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Managing Tracer Studies for Evidence-Based Quality Assurance: A Case Study of Graduate Quality Evaluation

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ABSTRACT

This study examines how tracer studies are managed and integrated into evidence-based quality assurance for graduate quality evaluation. A qualitative case study was conducted at a public university in Indonesia. Data were collected through semi-structured interviews with 35 purposively selected university managers, faculty coordinators, alumni, employers, and students, supplemented by non-participant observations and institutional documents. The data were analyzed using Miles, Huberman, and Saldaña's interactive model and triangulated across sources and techniques. The findings show that effective tracer study governance comprises five interrelated components: planning, integrated data management, stakeholder collaboration, evidence-based decision-making, and continuous quality improvement. Institutional records further showed that tracer study and employer-survey evidence informed performance reporting, accreditation, curriculum review, graduate competency evaluation, and career services. However, its strategic value depended on database completeness, data validation, employer participation, cross-unit coordination, dissemination, and documented follow-up. The study proposes an Evidence-Based Tracer Study Management Framework that integrates POAC management functions with the PPEPP quality assurance cycle, positioning tracer studies as a continuous improvement mechanism rather than merely an administrative reporting requirement.

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INTRODUCTION

Globalization, the Fourth Industrial Revolution, and digital transformation have shifted higher education quality assurance from input-based to outcome-based evaluation. University quality is increasingly assessed through graduate outcomes, competency relevance, employer satisfaction, and career development. Educational quality therefore requires continuous improvement to meet stakeholder expectations (Sallis, 2014) and alignment among institutional objectives, educational processes, and achieved outcomes under the fitness-for-purpose perspective (Harvey & Green, 1993). Consequently, graduate employability and career development have become central concerns in higher education evaluation (Healy et al., 2022).

In Indonesia, outcome-based quality assurance is implemented through the Higher Education Quality Assurance System (SPM Dikti) and its PPEPP cycle of determination, implementation, evaluation, control, and improvement, as stipulated in the Regulation of the Minister of Higher Education, Science, and Technology Number 39 of 2025, which requires higher education quality assurance through the determination, implementation, evaluation, control, and improvement of higher education standards (Kementerian Pendidikan Tinggi, Sains, dan Teknologi Republik Indonesia, 2025). Within this system, tracer studies provide evidence on graduates' employment transitions, waiting periods, job relevance, income, career development, and educational experiences. Combined with employer or user surveys, these data can support curriculum review, learning and academic service improvement, and graduate competency evaluation.

Tracer studies have been widely examined as instruments for mapping graduate outcomes and assessing the relationship between higher education and labor-market needs (Harvey, 2001; Schomburg, 2016). Existing studies can be grouped into three main streams. The first uses tracer studies to describe employment status, waiting periods, job relevance, income, graduate competencies, and learning experiences (Andari et al., 2021; Muhammad et al., 2024). The second emphasizes technological systems for collecting, monitoring, and reporting alumni data (Haq et al., 2020). The third discusses the potential use of tracer study findings for curriculum evaluation, institutional services, and graduate quality management (Haryanta & Dihardjo, 2026; Johansyah et al., 2025). Although these studies establish the importance of tracer studies, they primarily explain what graduate data are collected, how surveys are administered, or how findings may support institutional evaluation. They provide limited explanation of the governance process through which responsibilities are distributed, alumni and employer data are validated, stakeholders are mobilized, findings enter institutional decision forums, and follow-up actions are documented. Previous research also shows that outdated contact information and demanding survey procedures can reduce alumni participation (Romadlon & Arifin, 2021), while formal expectations for employer involvement do not necessarily result in effective participation in quality assurance (Hou et al., 2022). These limitations indicate that the central problem is not merely data collection but the institutional process that converts tracer study evidence into continuous quality improvement.

This unresolved governance problem is particularly relevant to Universitas Negeri Surabaya (UNESA), where tracer studies and User Surveys support graduate quality evaluation and Key Performance Indicator 1 (IKU 1). UNESA targets a 95% tracer study response rate, 80% Gold Standard achievement, and 10% user survey participation (Universitas Negeri Surabaya, 2025). Achieving these targets and generating institutional value depend on effective planning, integrated alumni and employer data, stakeholder coordination, evidence-based decision-making, and systematic follow-up. Tracer study governance must therefore ensure that collected evidence contributes to quality improvement rather than merely satisfying reporting and accreditation requirements.

This study investigates tracer study management as an evidence-based quality assurance instrument for graduate quality evaluation at UNESA by answering three questions: (1) How are tracer studies planned and organized to support graduate quality evaluation? (2) How are tracer study and user survey data managed and used in evidence-based academic decision-making? and (3) How are tracer study results integrated into the PPEPP cycle to support continuous quality improvement?

By integrating the Planning, Organizing, Actuating, and Controlling (POAC) functions with the PPEPP quality assurance cycle, this study develops an Evidence-Based Tracer Study Management Framework. Theoretically, it explains the relationship among tracer study governance, evidence-based decision-making, and continuous improvement. Practically, it guides university leaders, quality assurance units, faculties, study programs, and other stakeholders in strengthening data-driven graduate quality evaluation and the relevance of higher education outcomes.

LITERATURE REVIEW

This review synthesizes studies published between 2016 and 2026 on graduate quality, tracer study implementation, and evidence-based quality assurance. Earlier works by Harvey and Green (1993), Schomburg (2003), and Sallis (2014) are retained as foundations for defining educational quality, graduate tracking, and continuous improvement.

Graduate Quality and Higher Education Quality Assurance

Recent literature evaluates graduate quality through measurable employment outcomes (Healy et al., 2022) and holistic competencies, including communication, teamwork, adaptability, professional attitudes, and employer satisfaction (Chan & Luk, 2021). These perspectives combine fitness for purpose, which emphasizes alignment among objectives, processes, and outcomes (Harvey & Green, 1993), with stakeholder-oriented continuous improvement (Sallis, 2014). In Indonesia, Regulation of the Minister of Higher Education, Science, and Technology Number 39 of 2025 institutionalizes this relationship through the PPEPP cycle, in which graduate evidence supports curriculum evaluation, learning-outcome review, academic-service improvement, and educational relevance evaluation (Kementerian Pendidikan Tinggi, Sains, dan Teknologi Republik Indonesia, 2025).

Tracer Studies as Graduate Quality Evaluation Instruments

Tracer studies examine graduates' employment transitions, competency relevance, career development, and educational experiences (Schomburg, 2016; Teichler, 2018). They also help institutions assess whether graduates possess skills relevant to employment, entrepreneurship, and changing labor-market needs (UNESCO, 2016). The literature presents two perspectives: tracer studies as administrative instruments for profiling, accreditation, and performance reporting (Andari et al., 2021; Muhammad et al., 2024), and as strategic instruments connecting graduate evidence with curriculum, policy, and institutional improvement (Direktorat Jenderal Pendidikan Tinggi, 2021; Schomburg, 2016; Teichler, 2018). Although information systems facilitate alumni data collection (Haq et al., 2020), institutional improvement also requires systematic interpretation and follow-up. Employer or user surveys strengthen this process by complementing alumni self-reports with external assessments of graduate competencies and workplace relevance (Haryanta & Dihardjo, 2026).

Evidence-Based Tracer Study Management

Tracer study implementation requires coordinated planning, role distribution, stakeholder mobilization, data validation, monitoring, reporting, and follow-up. POAC provides the

managerial lens for these processes (Terry, as cited in Syahputra & Aslami, 2023), whereas PPEPP explains how validated evidence is incorporated into evaluation, control, and improvement. Their integration produces an Evidence-Based Tracer Study Management Framework comprising planning, integrated data management, stakeholder collaboration, evidence-based decision-making, and continuous quality improvement. These components connect graduate and employer evidence with curricula, learning outcomes, accreditation, policy, and institutional development (Fergusson & van der Laan, 2021), as presented in Figure 1.

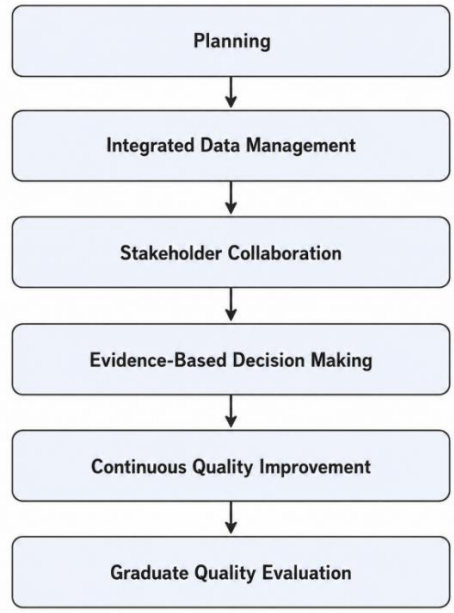

Figure 1. Evidence-Based Tracer Study Management Framework for Graduate Quality Evaluation

Figure 1 shows how planning, integrated data, and stakeholder collaboration produce validated evidence for institutional decisions and continuous improvement through PPEPP.

Research Gaps and Study Contribution

The synthesis identifies three interrelated research gaps. First, most tracer study research remains outcome-oriented, focusing on employment status, waiting periods, job relevance, income, and graduate competencies without examining the organizational mechanisms that transform those findings into academic action (Andari et al., 2021; Achmad et al., 2023; Chima et al., 2023; Muhammad et al., 2024). Second, studies of tracer study information systems emphasize survey distribution, data collection, and reporting efficiency but provide limited explanation of responsibility allocation, cross-unit coordination, data validation, decision authority, and documented follow-up (Haq et al., 2020). This distinction is important because technological availability does not automatically resolve inactive alumni contacts, nonresponse, uneven organizational participation, or the underuse of institutional data (Romadlon & Arifin, 2021; Senekal & Munro, 2019).

Third, the reviewed literature does not provide an integrated governance model connecting POAC managerial functions with the PPEPP quality assurance cycle. POAC explains how tracer studies are planned, organized, implemented, and controlled, whereas PPEPP explains how institutional evidence is incorporated into standard determination, implementation, evaluation, control, and improvement. Without integrating these perspectives, it remains unclear how graduate and employer evidence moves from survey administration and performance reporting into recurring curriculum, competency, service, and policy improvement. This study addresses that gap by developing an Evidence-Based Tracer Study Management Framework that connects planning, integrated data

management, stakeholder collaboration, evidence-based decision-making, and continuous quality improvement.

METHODS

Research Design

This study employed a qualitative case study to investigate tracer study management as an evidence-based instrument for graduate quality evaluation at Universitas Negeri Surabaya (UNESA). This design enabled an in-depth examination of institutional processes, stakeholder experiences, management practices, and graduate data utilization within their real organizational context. Case studies are appropriate for investigating contemporary phenomena within bounded systems when the boundaries between the phenomenon and its context are unclear (Creswell & Poth, 2018; Merriam & Tisdell, 2015; Yin, 2018).

The case was institutionally bounded within UNESA and conceptually focused on planning, integrated data management, stakeholder collaboration, evidence-based decision-making, and continuous quality improvement. POAC was used to analyze tracer study governance, while PPEPP explained how its findings were incorporated into evaluation, control, and institutional improvement.

The study was conducted from November 2025 to April 2026 at UNESA, Surabaya, East Java, Indonesia. UNESA was purposively selected because its tracer studies and user surveys involve institutional governance, integrated alumni data, cross-unit coordination, and employer participation in graduate evaluation, IKU reporting, accreditation, curriculum review, and internal quality assurance.

Research Target/Subject

The research targeted the management and utilization of tracer study data for graduate quality evaluation. Thirty-five informants were purposively selected based on their direct involvement, experience, or knowledge of tracer study implementation. Eligible informants managed, provided, evaluated, or used graduate outcome data for quality assurance, employment, academic, or career-related purposes.

Table 1. Informant Profile

Informant group	Number	Role and data contribution
University managers	3	Policy, governance, systems, validation, reporting, and quality assurance
Faculty coordinators	8	Coordination, alumni tracking, response monitoring, and validation
Alumni	15	Employment transition, job relevance, career development, and learning feedback
Employers/users	5	Competencies, workplace relevance, professional attitudes, and satisfaction
Students	4	Career information, required competencies, and career preparation
Total	**35**	

Informant adequacy was determined through data saturation, reached when additional interviews generated no substantially new categories or themes. Recurring themes included database readiness, response rates, coordination, validation, employer feedback, and the academic use of tracer study findings. The five informant groups also enabled source triangulation.

Research Procedure

The study involved six stages: (1) defining the case boundaries, research focus, instruments, informants, and documents; (2) purposively selecting informants; (3) collecting data through interviews, observations, and document analysis until saturation; (4) transcribing, organizing, classifying, and coding the data; (5) developing categories and themes related to the proposed framework, supporting and inhibiting factors, and optimization strategies; and (6) verifying evidence across sources and interpreting the themes through POAC and PPEPP.

Instruments and Data Collection Techniques

The researcher served as the primary research instrument, supported by a semi-structured interview guide, a non-participant observation protocol, a field-note sheet, and a document review matrix. Semi-structured interviews were conducted with 35 purposively selected informants comprising university managers, faculty tracer study coordinators, alumni, employers or graduate users, and students. The interviews examined tracer study planning, responsibility distribution, database preparation, survey implementation, stakeholder coordination, response monitoring, data validation, result dissemination, institutional utilization, implementation barriers, and improvement strategies. Non-participant observations were used to document the operation of the tracer study platform, response monitoring, data-management activities, coordination processes, and the use of tracer study information in institutional quality assurance activities.

Documentary data were collected from tracer study and User Survey guidelines, management team decrees, survey instruments, implementation schedules, alumni and employer recapitulations, response-rate records, validation documents, institutional TS-US reports, accreditation documents, curriculum evaluation records, quality assurance documents, and documented follow-up recommendations. For analytical purposes, these documents were differentiated into narrative documents and institutional quantitative records. Narrative documents included guidelines, decrees, meeting or coordination records, curriculum recommendations, accreditation evidence, and follow-up documents. These materials were used to examine institutional procedures, assigned responsibilities, decision processes, and evidence of academic follow-up.

Institutional quantitative records were used as complementary descriptive evidence rather than as data generated from the 35 interviews. The percentages for employed graduates, graduates continuing their studies, entrepreneur graduates, total Gold Standard achievement, tracer study response rates, and User Survey participation were obtained from the official 2025 Tracer Study–User Survey report, platform recapitulations, response-rate records, and institutional validation documents. The study did not independently estimate these percentages from interview data. Verification involved comparing the figures reported across the final TS-US report, platform recapitulations, and available validation records, checking their internal arithmetic consistency, and clarifying their interpretation with the university tracer study managers. The institutional percentages were retained as officially validated values and were used to contextualize the qualitative findings concerning data utilization, performance reporting, and quality assurance.

Data Analysis Technique

Qualitative and institutional quantitative data were analyzed through different but complementary procedures. The qualitative evidence comprised interview transcripts, observation notes, field notes, and narrative institutional documents. These materials were analyzed concurrently with data collection using the interactive model of Miles et al. (2020), consisting of data condensation, data display, and conclusion drawing and verification. During data condensation, the materials were selected, coded, compared, and categorized

according to the research questions, the five proposed framework components, POAC managerial functions, PPEPP stages, and themes emerging from the data. Coding focused on planning, responsibility distribution, database readiness, stakeholder collaboration, data validation, decision-making, follow-up, supporting and inhibiting factors, and optimization strategies.

The condensed qualitative data were displayed through narrative summaries, thematic matrices, and pattern–relationship–theme displays. These displays were used to compare perspectives across university managers, faculty coordinators, alumni, employers, and students and to identify convergent, divergent, and complementary evidence. Conclusions were developed progressively and verified through comparisons among interview accounts, observation records, narrative documents, informant groups, and supporting or contradictory evidence. The verified qualitative themes were then interpreted through POAC and PPEPP to explain how tracer study governance contributed to evidence-based graduate quality evaluation.

Institutional percentage data were not subjected to the interactive qualitative analysis model. The Gold Standard percentages, tracer study response rates, User Survey participation rates, and program-level response rates were treated as institutional secondary records and analyzed descriptively. Verification consisted of cross-checking the reported values across the final TS-US report, platform recapitulations, response records, and validation documents; examining consistency in the category labels and reporting period; and checking arithmetic consistency where the component percentages formed an institutional total. No inferential statistical tests were performed because these numerical records were used to describe institutional outcomes and to contextualize the qualitative findings rather than to test statistical relationships. During interpretation, the verified descriptive records were compared with interview, observation, and documentary evidence to determine how institutional results were monitored, interpreted, disseminated, and used in quality assurance decisions.

Trustworthiness of the Data

Trustworthiness was established through source and technique triangulation, member checking, an audit trail, and thick description. Information was compared across informant groups and among interviews, observations, and documents; key summaries and preliminary interpretations were confirmed with relevant informants. Interview records, field notes, documents, coding decisions, categories, and themes were systematically documented, while contextual description supported the credibility, dependability, confirmability, and transferability of the findings.

Ethical Considerations

The study did not undergo formal ethics committee review, and no ethics approval number or written institutional permission was issued. Before data collection, the researchers obtained verbal permission from the relevant institutional authorities to access the research setting, tracer study activities, and institutional documents required for the study. Before each interview, the researchers orally explained the purpose of the study, the data collection procedures, the intended use of the information, and the protection of participants' identities. All 35 informants provided verbal informed consent before participating. Interviews were conducted only after consent had been given. Participation was voluntary, and informants were identified using role-based codes rather than personal names in interview records, quotations, and the presentation of findings.

FINDINGS AND DISCUSSION

Findings

Findings were organized around the framework's five components and triangulated across interviews, observations, documents, and five stakeholder groups. Table 2 summarizes the findings and their quality assurance implications.

Table 2. Summary of Findings on Tracer Study Implementation

Focus	Main finding	Evidence	Quality assurance implication
Planning	Objectives, respondents, instruments, schedules, and roles are aligned with IKU 1, accreditation, curriculum review, and graduate evaluation.	Guidelines, instruments, schedules, targets, database records, and interviews	Provides strategic direction and quality-relevant data
Integrated data management	Complete, valid, accessible, and updated alumni and employer data determine effectiveness.	Databases, TS-US platform and reports, response records, validation documents, observations, and interviews	Produces accurate, representative, and usable evidence
Stakeholder collaboration	University units, faculties, study programs, alumni, employers, and students collaborate throughout implementation.	Team decree, task distribution, coordination records, interviews, and observations	Strengthens participation, coordination, collection, and interpretation
Evidence-based decision-making	Validated TS-US data inform IKU reporting, accreditation, curriculum and learning outcome reviews, career services, and academic policy.	TS-US reports, academic and accreditation documents, and interviews	Supports graduate- and employer-informed decisions
Continuous quality improvement	Findings guide improvements in curricula, competencies, employability, academic services, and career preparation.	Follow-up reports, quality assurance documents, curriculum recommendations, and interviews	Integrates tracer study evidence into PPEPP

Tables 2 and 3 show that institutional commitment and planning support database readiness and collaboration, enabling validated evidence to inform academic decisions and graduate quality improvement.

Table 3. Patterns, Relationships, and Emerging Themes of Tracer Study Management

Pattern	Relationship	Emerging theme
Planning determines respondents, instruments, schedules, and implementation mechanisms	Planning influences database readiness and response rates	Planning as the foundation of evidence-based tracer studies
Alumni data readiness affects distribution, tracking, and validation	Integrated databases improve completeness and validity	Integrated data management as a prerequisite for valid evidence
Stakeholders provide complementary perspectives	Collaboration strengthens collection and interpretation	Collaboration as a graduate quality evaluation mechanism

Validated tracer study and User Survey data support institutional and academic evaluation	Data validity enables evidence-based decisions	Tracer studies as quality assurance instruments
Findings generate curriculum and competency recommendations	Evidence-based decisions support improvement	Graduate quality improvement through data-driven action

The emerging pattern indicates a sequential relationship: institutional commitment supports strategic planning; planning strengthens collaboration and database readiness; integrated and validated data enable evidence-based decisions; and these decisions inform curriculum improvement and graduate quality development. Tracer study data therefore generate institutional value only when they are systematically managed and followed up.

Planning of Evidence-Based Tracer Studies

Tracer study planning at UNESA was directed toward graduate quality evaluation, IKU 1 reporting, accreditation, curriculum review, and institutional performance measurement. It included determining objectives, target respondents, instruments, schedules, responsibilities, system readiness, and alumni database preparation. The 2025 Tracer Study–User Survey report established targets of a 95% tracer study response rate, 80% Gold Standard achievement, and 10% User Survey participation.

The instruments covered employment status, waiting periods, job relevance, income, entrepreneurship, further study, and feedback on educational experiences. The User Survey complemented these indicators with employer assessments of professional attitudes, communication, teamwork, adaptability, and job-related competencies. A university manager explained:

"*Tracer study planning does not only involve preparing questionnaires, but also determining what data the university needs, especially for IKU, accreditation, and graduate evaluation*." (Interview, UNESA Tracer Study Team/TSU-1)

However, incomplete or outdated telephone numbers, email addresses, and workplace information created difficulties before survey distribution. Consequently, faculties, study programs, and alumni networks had to update contact information and prepare the respondent database. Observation also confirmed that system and database readiness strongly influenced survey distribution and response monitoring.

Integrated Data Management

Integrated data management supported survey distribution, respondent tracking, participation monitoring, response validation, and report preparation. The tracer study platform enabled managers to identify faculties and study programs that had achieved the expected response rate and those requiring further follow-up. Documentary evidence from alumni recapitulations, response-rate records, validation documents, and TS-US reports confirmed the central role of the information system.

The primary problem was the irregular updating of alumni records. As one faculty coordinator stated:

"*Some phone numbers are no longer active, emails are no longer used, or alumni have moved to different workplaces. Therefore, before the survey begins, we need to update the data through faculties, study programs, and alumni networks.*" (Interview, Faculty Tracer Study Manager/FTM-2)

These findings show that monitoring response rates alone is insufficient. The completeness, consistency, validity, and accessibility of alumni and employer data determine whether tracer study findings can be reliably used for IKU reporting, accreditation, curriculum evaluation, and graduate quality assurance.

Stakeholder Collaboration

Tracer study implementation involved complementary roles. University managers provided institutional direction, systems, validation, and reporting mechanisms. Faculty coordinators and study programs supported alumni tracking, survey dissemination, response monitoring, and follow-up communication. Alumni supplied graduate outcome information, employers assessed workplace competencies, and students provided perspectives on the use of tracer study information for career preparation.

"*The university prepares the system and main coordination, but faculties and study programs have closer connections with alumni. Therefore, task distribution must be clear*." (Interview, UNESA Tracer Study Team/TSU-2)

Alumni participation increased when surveys were distributed through study programs, lecturers, or alumni networks and accompanied by a clear explanation of their institutional purpose. Employer feedback indicated that graduates generally possessed an adequate academic foundation, although communication, adaptability, and problem-solving skills required further strengthening. Collaboration therefore supported data collection, enriched interpretation, and connected tracer study evidence with academic follow-up.

Evidence-Based Decision-Making

Validated tracer study and User Survey findings were used for IKU 1 reporting, Gold Standard assessment, accreditation, curriculum review, CPL/CLO/PLO evaluation, learning improvement, career service development, and academic policy formulation. Institutional documents confirmed the inclusion of graduate employment, waiting period, job relevance, entrepreneurship, further study, and employer assessment data in accreditation and curriculum evaluation.

"*Tracer study data should not stop as a report. The data need to be reviewed by faculties and study programs and then used to improve the curriculum, academic services, and competency development*." (Interview, UNESA Tracer Study Team/TSU-3)

Response monitoring, completeness checks, and validation served as a bridge between data collection and institutional decision-making. The academic value of tracer studies consequently depended on the validity, interpretation, dissemination, and formal use of their results. The institutional outcome data are presented in Table 4.

Table 4. UNESA Gold Standard Achievement in 2025

Graduate outcome	Achievement
Employed graduates	67.72%
Graduates continuing their studies	5.04%
Entrepreneur graduates	13.25%
Total Gold Standard achievement	**86.01%**

Note. The percentages were obtained from the officially validated 2025 Tracer Study–User Survey institutional report and platform recapitulation. Total Gold Standard achievement represents the sum of employed graduates (67.72%), graduates continuing their studies (5.04%), and entrepreneur graduates (13.25%). The figures were used as descriptive institutional records and were not calculated from the 35 qualitative informants

Official institutional records reported a total Gold Standard achievement of 86.01%, exceeding the institutional target of 80%. This figure comprised employed graduates at 67.72%, graduates continuing their studies at 5.04%, and entrepreneur graduates at 13.25%. These percentages are presented as verified institutional secondary data and provide contextual evidence of graduate outcomes; they are not outputs of the qualitative interview analysis.

Continuous Quality Improvement

Tracer study findings supported institutional and program-level improvement. At the institutional level, the data informed IKU 1 reporting, accreditation, Gold Standard monitoring, and performance evaluation. At the academic level, the findings supported curriculum evaluation, graduate learning outcome review, competency development, learning improvement, academic services, and career preparation.
Evidence from the S1 Mathematics Education Study Program illustrates this use. Its 2024 tracer study of 2023 graduates achieved a response rate of 98.68%. Employers rated most alumni competencies as good to very good, particularly critical thinking, professionalism, teamwork, integrity, and creativity. The findings generated recommendations concerning alignment with the Merdeka Curriculum, digital literacy, communication skills, industry networks, and competency certification.

Alumni viewed tracer studies as a mechanism for communicating workplace needs, particularly practical skills, communication, and work readiness. Students considered information on alumni careers and required competencies useful for career preparation. Nevertheless, utilization remained uneven, indicating that tracer study findings still needed to be more consistently incorporated into curriculum review, CPL/CLO/PLO development, learning innovation, and student career services.

Supporting Factors, Inhibiting Factors, and Optimization Strategies

Supporting factors included institutional commitment, designated management units, faculty and study program participation, information system availability, alumni networks, and the institutional demand for IKU, accreditation, and quality assurance evidence. The principal barriers were incomplete alumni databases, uneven alumni participation, limited employer involvement, differences in cross-unit coordination, and unequal use of findings among study programs.

Five optimization strategies emerged from the evidence: regularly integrating and updating alumni databases; clarifying responsibilities and monitoring across university, faculty, and study program levels; strengthening alumni communication through multiple channels; expanding systematic employer participation in the User Survey; and formally incorporating findings into curriculum evaluation, CPL/CLO/PLO review, accreditation, IKU reporting, and the SPMI/PPEPP cycle.

Overall, UNESA has established the organizational and technological foundations for tracer study implementation. However, its effectiveness as an evidence-based quality assurance instrument ultimately depends on the systematic validation, interpretation, dissemination, and academic use of graduate and employer data.

Discussion

Evidence-Based Tracer Study Management Framework

The findings reposition tracer studies from instruments for describing graduate outcomes into institutionally managed quality assurance processes. Previous tracer studies have primarily mapped employment status, waiting periods, job relevance, competency alignment, and graduate career development (Andari et al., 2021; Achmad et al., 2023; Chima et al., 2023; Muhammad et al., 2024). These studies establish the value of graduate outcome data, but they generally focus on the information produced by tracer studies rather than on the organizational process through which that information becomes institutional action. The present study extends this literature by showing that the institutional value of tracer study evidence depends on five interrelated components: planning, integrated data management, stakeholder collaboration, evidence-based decision-making, and continuous quality improvement.

The proposed framework connects these components through the integration of POAC and PPEPP. POAC explains the managerial conditions required to produce credible and usable evidence, whereas PPEPP explains how that evidence enters standard determination, implementation, evaluation, control, and improvement. The relationship should not be interpreted as a rigid or automatically causal sequence. Instead, the findings indicate an interdependent governance pathway: planning establishes the purposes and data requirements; organizing distributes responsibilities; actuating mobilizes alumni, employers, faculties, and study programs; and controlling monitors participation, completeness, and validity. The resulting evidence can support PPEPP only when it is interpreted, discussed in formal institutional forums, translated into follow-up actions, and subsequently reviewed.

This finding also qualifies technology-centered accounts of tracer study implementation. Digital systems can facilitate survey distribution, respondent monitoring, data storage, and reporting (Haq et al., 2020). However, the availability of a platform does not automatically ensure complete, representative, or institutionally useful evidence. Romadlon and Arifin (2021) similarly found that inaccurate graduate records, inactive telephone numbers, lengthy survey procedures, and respondent fatigue constrained tracer study participation. Senekal and Munro (2019) also emphasized that weak implementation arrangements and incomplete contact information can reduce the quality of tracer study results. In the present study, outdated alumni contacts and uneven database updating persisted despite the availability of an institutional platform. Technological integration is therefore necessary but insufficient; it must be accompanied by clear data ownership, regular database updating, cross-unit coordination, and validation procedures.

Tracer Studies as a Managerial Process

Planning was the foundation of tracer study implementation because it aligned survey objectives, target respondents, indicators, instruments, schedules, institutional targets, and information requirements. The findings show that planning was linked not only to survey administration but also to IKU reporting, accreditation, curriculum evaluation, graduate competency review, and institutional performance measurement. Nevertheless, weaknesses in alumni database preparation reduced the operational value of otherwise comprehensive plans. This demonstrates that planning quality should be evaluated through the readiness of respondents, data, systems, and responsible units rather than through the existence of schedules and instruments alone.

Organizing distributed responsibilities among university-level managers, faculties, study programs, information-system personnel, alumni, and employers. University units provided policy direction, platforms, validation procedures, and reporting mechanisms, while faculties and study programs maintained closer communication with alumni. This division of responsibility was functionally appropriate but produced different levels of implementation because alumni contact information, communication networks, and follow-up capacity were unevenly distributed. Thus, a formal team decree did not by itself guarantee consistent organizational performance. This finding reflects the broader policy–implementation gap identified by Hou et al. (2021), in which institutional employability commitments were not always matched by consistent implementation.

Actuating involved survey distribution, communication with alumni and employers, response follow-up, data processing, and reporting. Multiple communication channels and the involvement of study programs increased the possibility of reaching alumni because program-level actors possessed closer relational networks. At the same time, relying heavily on informal networks may create unequal participation when some study programs maintain stronger alumni relationships than others. Controlling therefore became essential through response-rate monitoring, completeness checks, validation, and follow-up with nonrespondents. These findings show that the four POAC functions are mutually

dependent: implementation is weakened when planning is not supported by an updated database, while monitoring has limited institutional value when identified problems are not followed by corrective action.

The managerial contribution of the framework consequently lies in connecting formal responsibility with actual data and follow-up practices. Tracer study management should not be assessed solely by whether a team, platform, survey, or report exists. It should also be assessed by whether responsibilities are operationalized, data problems are corrected, underperforming units receive follow-up, and findings are formally incorporated into academic and quality assurance processes.

Tracer Studies as Evidence-Based Quality Assurance

The findings demonstrate that validated tracer study and User Survey data can connect graduate experiences and employer assessments with curriculum evaluation, learning outcomes, accreditation, career services, and institutional policy. This is consistent with research on data-driven decision-making in higher education, which emphasizes that institutional data must be converted into interpretable information before they can support action (Gaftandzhieva et al., 2023; Kaspi & Venkatraman, 2023). The present study adds that data integration and analytical tools alone are not sufficient. Evidence becomes actionable only when institutional actors trust its validity, understand its meaning, disseminate it to relevant units, and possess the authority and capacity to formulate follow-up decisions.

Employer participation is especially important because User Survey data provide an external assessment of communication, teamwork, adaptability, professionalism, and job-related competencies. Nevertheless, the findings revealed limited and uneven employer involvement. This result provides a critical qualification to assumptions that formally including employers automatically strengthens quality assurance. Hou et al. (2022) found that although employer engagement has been incorporated into higher education quality assurance policies across Asian systems, its implementation frequently remains ineffective. Similarly, Kvilhaugsvik (2022) showed that the contribution of employer panels depends on how external actors are positioned within university governance and how their advice is connected to institutional decision-making. In the present context, increasing the number of employer responses is therefore insufficient unless their feedback is systematically interpreted and connected to curriculum, competency, and career-service decisions.

A further tension emerged between accountability and improvement. Tracer study data were consistently useful for IKU reporting, accreditation, Gold Standard monitoring, and institutional performance documentation. These accountability functions are legitimate, but they do not automatically demonstrate continuous quality improvement. The findings showed that the academic use of tracer study results remained uneven among study programs. This contrasts with a fully developed quality improvement process in which evaluation is followed by planning, implementing, and reviewing concrete changes. Lucander and Christersson (2020), for example, demonstrate that quality assurance produces improvement when evidence is moved through inventory, analysis, evaluation, change planning, and the realization of change. Accordingly, tracer study reporting should be distinguished from tracer study utilization: the former produces evidence, whereas the latter requires documented decisions, responsible units, implementation schedules, and subsequent evaluation.

The integration of tracer study evidence into PPEPP addresses this distinction. Evaluation identifies patterns in employment, job relevance, graduate competencies, and employer assessments; control identifies gaps between expected and achieved outcomes; and improvement translates those gaps into curriculum revision, learning innovation,

competency certification, employer collaboration, academic services, and career preparation. The theoretical contribution of the present framework is therefore not simply the juxtaposition of POAC and PPEPP. It explains how managerial arrangements condition the production of credible evidence and how quality assurance mechanisms condition its conversion into institutional improvement.

Optimization and Implications

The optimization strategies emerging from the study correspond directly to the identified barriers. Regular integration and updating of alumni databases address unreachable respondents and inconsistent contact records. Clear responsibility matrices and monitoring mechanisms address differences in coordination among university, faculty, and study program levels. Multiple communication channels and continuing alumni engagement address uneven participation, while more systematic employer involvement strengthens external competency evidence. Finally, formal incorporation of tracer study findings into curriculum review, learning-outcome evaluation, accreditation preparation, career services, and quality assurance meetings addresses the gap between reporting and documented follow-up.

Practically, university-level units should establish common data standards, validation procedures, monitoring indicators, and reporting formats, while faculties and study programs should maintain alumni relationships and document academic responses to tracer findings. Follow-up records should specify the identified issue, evidence used, responsible unit, planned action, implementation period, and subsequent evaluation. These records would enable institutions to assess not only whether tracer study data were collected but also whether they produced identifiable changes.

The framework has analytical rather than universal status because it was developed from a qualitative case at one institution. Its transfer to other universities therefore depends on differences in organizational structure, information-system capacity, alumni networks, employer participation, and internal quality assurance arrangements. Nevertheless, the framework provides a testable proposition: tracer studies are more likely to generate institutional value when data collection is supported by coordinated management and when validated findings are incorporated into documented cycles of evaluation, control, improvement, and re-evaluation.

CONCLUSION

This study shows that tracer study management can be explained through an Evidence-Based Tracer Study Management Framework comprising planning, integrated data management, stakeholder collaboration, evidence-based decision-making, and continuous quality improvement. The integration of POAC and PPEPP positions tracer studies as managed quality assurance processes in which validated graduate and employer evidence is translated into academic and institutional action. The framework also indicates that response rates alone are insufficient; effectiveness must include database completeness, data validity, stakeholder participation, dissemination, and documented follow-up.

Practically, universities should establish clear data ownership, regularly update alumni databases, institutionalize employer participation, and require documented follow-up of tracer study findings within the PPEPP cycle. These measures are necessary to ensure that tracer study evidence contributes to academic improvement rather than being used solely for performance reporting and accreditation.

Limitations of the Study

This study is limited by its qualitative single-case design, the availability of informants, access to institutional activities, and the completeness of documentary evidence.

Consequently, the findings support analytical and contextual rather than statistical generalization. The study also did not examine software development, macro-level labor-market conditions, or the causal effects of tracer study governance on graduate quality.

Suggestions for Further Research

Future research should quantitatively test the relationships among database readiness, stakeholder participation, evidence utilization, and graduate-quality outcomes. Comparative and longitudinal studies are also needed to evaluate the framework across different institutional settings, examine alternative governance models, and assess whether documented tracer study follow-up produces sustained improvements in curricula, employer satisfaction, employability, and institutional performance.

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CONFLICTS OF INTEREST

The authors declare no conflict of interest.

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