Indonesian Journal of Multidisciplinary on Social and Technology
Homepage: https://journal.ilmudata.co.id/index.php/ijmst
Vol. 4 No. 3 (2026) pp: 4395-4405
P-ISSN: 2986-6790, e-ISSN: 2986-6782

User Experience Analysis of the Pertamina Investment Information System Using UEQ and Open-Ended Responses

Raditya Fausta Rizki, Zidny Ilma Hasan
Program Studi Bisnis Digital, Fakultas Ekonomi dan Bisnis, Universitas Padjadjaran
raditya21003@mail.unpad.ac.id, zidny@unpad.ac.id

Abstract

The Pertamina Investment Information System (SIIP) is an internal enterprise application supporting project and investment management across PT Pertamina (Persero) Holding and six main Subholdings. Field observations and official internal meeting minutes identified recurring issues involving information accessibility, duplicate work, manual validation, and system response time. This study evaluates SIIP using the User Experience Questionnaire (UEQ) and optional scale-specific open-ended responses. A quantitative approach supported by qualitative data was applied to 62 active SIIP users. The 26-item UEQ measured Attractiveness, Perspicuity, Efficiency, Dependability, Stimulation, and Novelty. Quantitative data were analyzed using UEQ Data Analysis Tool version 14 and supported by Pearson item-to-total correlations and Cronbach's alpha in SPSS, while open-ended responses were grouped into recurring issue categories. Attractiveness obtained the highest mean (1.312), followed by Stimulation (0.927) and Novelty (0.907), whereas Perspicuity (-0.181), Dependability (-0.573), and Efficiency (-0.935) were weaker. At the dimension level, Attractiveness was 1.31, Hedonic Quality 0.92, and Pragmatic Quality -0.56. Benchmarking classified Attractiveness and Novelty as Above Average, Stimulation as Below Average, and Perspicuity, Efficiency, and Dependability as Bad. The results indicate a positive overall impression of SIIP but weak pragmatic quality, suggesting that development should prioritize clearer information, streamlined workflows, stronger validation and data-status feedback, and improved system stability.

Keywords: SIIP, User Experience, UEQ, Open-Ended Responses, Investment Information System

1. Introduction

Digital technology has become increasingly embedded in economic activity and organizational decision-making, including sectors in which projects are capital intensive, geographically dispersed, and operationally complex. In Indonesia, the expansion of the digital economy illustrates this broader shift. Google, Temasek, and Bain & Company (2024) reported that Indonesia's digital economy reached approximately USD 90 billion in gross merchandise value in 2024, about 13% higher than in 2023, and projected a value of roughly USD 200-360 billion by 2030. The trend does not only reflect growth in consumer-facing digital services; it also reinforces the importance of data, connectivity, and information systems in organizational processes. For large enterprises, the practical value of digitalization therefore depends on whether information systems can make data accessible, reduce coordination effort, and support timely decisions across units. Figure 1 summarizes the digital-economy.

Figure 1. Growth of Indonesia's Digital Economy
Source: e-Conomy SEA (2024)

This need is particularly relevant to the energy sector. Oil and gas projects involve large capital commitments, long project cycles, multiple organizational and technical actors, high operational risk, and continuous monitoring and reporting requirements. Indonesian oil and gas investment reached USD 15.6 billion in 2023, increasing from USD 13.9 billion in 2022, while sectoral policy targeted investment above USD 17.7 billion in 2024 (SKK Migas, 2024). The Ministry of Energy and Mineral Resources (2023) similarly emphasizes the strategic importance of investment, production, and infrastructure development in the national energy sector. Under these conditions, fragmented project information or inefficient reporting can increase the effort needed to coordinate investment activities, making integrated digital support important for planning, execution, monitoring, and management control. The investment trend is shown in Figure 2.

Figure 2. Indonesian Oil and Gas Investment Realization
Source: SKK Migas (2024).

Indonesia's broader information and communication technology development also provides context for the increasing reliance on digital systems. As reported by GoodStats (2024) using BPS data, the Information and Communication Technology Development Index (IP-TIK) rose from 5.07 in 2018 to 5.90 in 2023, with continued growth across the period. This pattern indicates wider technology access and use, but increasing adoption alone does not ensure that enterprise applications provide a clear, efficient, and dependable user experience. As digital systems become more central to daily work, the quality of interaction with those systems becomes increasingly relevant to the effectiveness of technology-enabled processes.

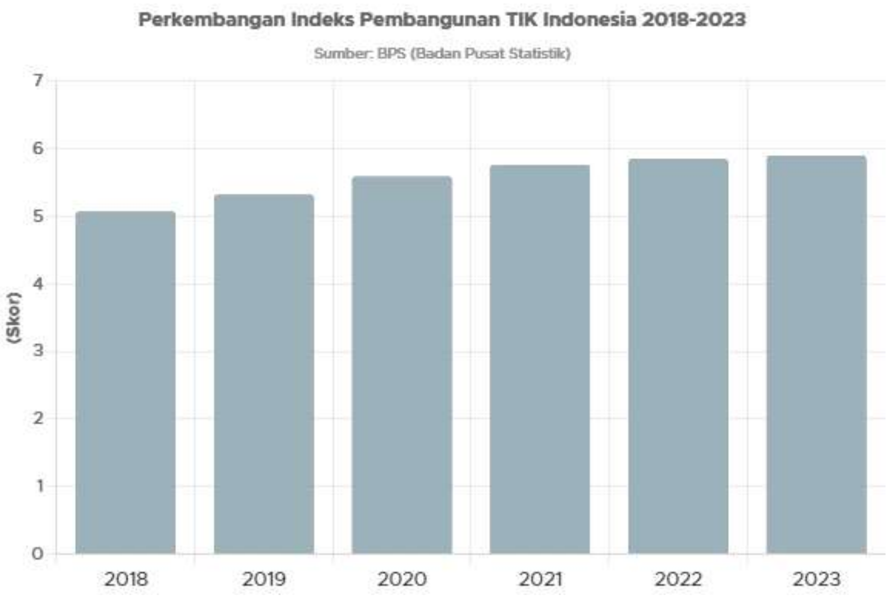
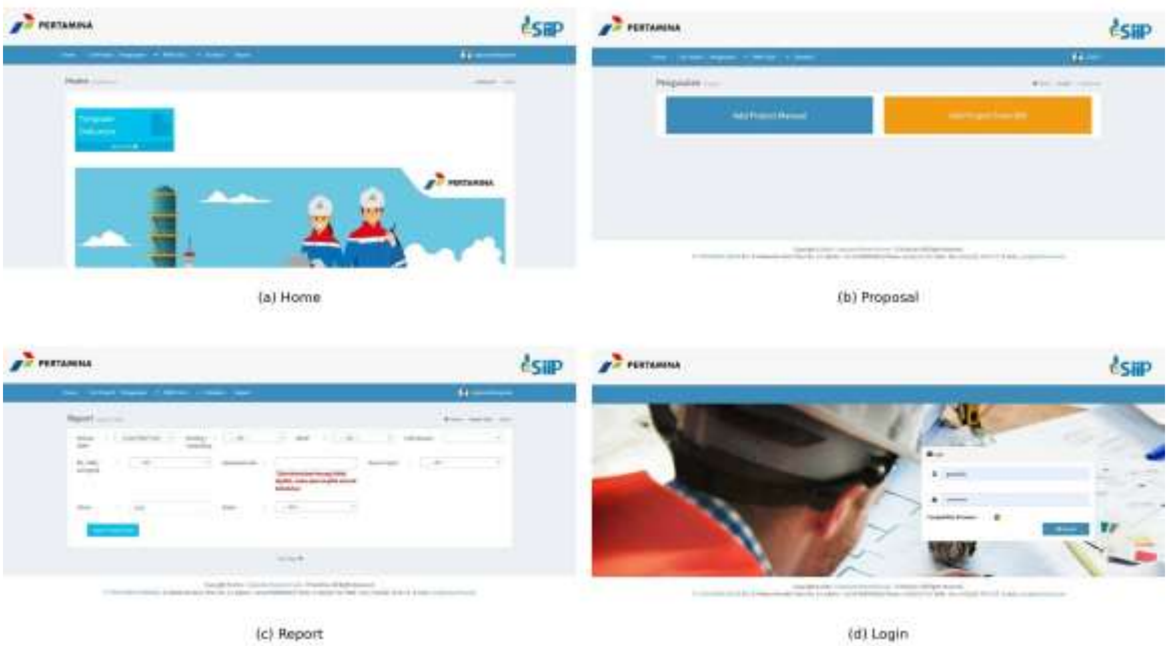


Figure 3. Development of the Indonesian ICT Development Index (IP-TIK), 2018-2023
Source: GoodStats (2024), based on BPS data.

DOI: https://doi.org/10.69693/ijmst.v4i3.13268

Within organizations, information systems collect, process, store, and distribute information to support coordination, control, analysis, and decision-making (Laudon & Laudon, 2020). Project Management Information Systems (PMIS) extend this role by integrating project information and supporting planning, organizing, monitoring, reporting, and control across projects with different levels of complexity (Micale et al., 2021). Empirical research also suggests that digital transformation can contribute to operational efficiency and cost performance when digital processes are effectively integrated into organizational activities (Guo & Xu, 2021). For investment-intensive enterprises, an investment information system therefore has value not only as a data repository but also as an operational interface through which users search for project information, update data, validate progress, monitor execution, and prepare reports.

PT Pertamina developed the Pertamina Investment Information System (SIIP) as an end-to-end internal platform for project and investment management across the Holding company and its main Subholdings. The system was designed to support real-time reporting, an integrated project database, and investment decision-making (Pertamina, 2016; Panggabean, 2018). Its workflow covers several stages of the investment process. The Home menu provides access to the major modules; Project List consolidates projects across proposal, RKAP, and execution stages together with project details, documents, work breakdown structure, cost drawdown, and progress information; Proposal covers projects that have not yet received Final Investment Decision approval; RKAP Approval supports projects entering the Company Work Plan and Budget process; Execution provides access to project details, cost realization, physical progress, Status Progress Obstacles and Follow-up (SKTL), documents, and project progress; and Report allows users to download selected project information in CSV format using filters such as RKAP period, Holding/Subholding, operating unit, project name, year, and month. These functions position SIIP as a central working interface for project monitoring and reporting rather than a single-purpose application. Selected SIIP interfaces are shown in Figure 4.



(a) Home (b) Proposal

(c) Report (d) Login

Figure 4. Selected SIIP Interfaces
Source: SIIP Application

Despite this strategic role, SIIP had not undergone further development sufficient to fully accommodate changes in user needs and organizational dynamics since its initial launch in 2016. Field observations and the official minutes of the All Stream Organic Investment Monitoring and Evaluation Meeting in April 2025 were reviewed to identify recurring operational concerns. These concerns were grouped into four main issues. First, information accessibility was limited for important project information such as scope of work, milestones, and persons in charge, requiring additional searching or confirmation. Second, process inefficiency occurred when users had to enter or maintain similar information in supporting documents and SIIP, creating duplicate work. Third, parts of the validation process still required users to match and verify data manually because the system did not fully automate data reading and checking. Fourth, system response time could become slow or heavy at certain times, lengthening access and task completion. Together, these issues suggested a mismatch between the intended

DOI: https://doi.org/10.69693/ijmst.v4i3.13268

integrated role of SIIP and the practical experience of users performing monitoring, validation, input, and reporting activities.

User experience offers an appropriate perspective for examining this mismatch because it addresses more than functional availability. ISO 9241-210 frames user experience within human-centred interaction between users, systems, and contexts of use (ISO, 2019). Interaction-design literature similarly distinguishes user experience from narrow usability by considering perceptions, emotions, trust, comfort, and motivation in addition to effectiveness and ease of use (Hassenzahl, 2010; Rogers et al., 2023). This distinction is relevant for an internal enterprise system such as SIIP. A system can be organizationally necessary and still receive a favorable overall impression while imposing substantial cognitive or operational effort through unclear information, repeated checking, inefficient task sequences, uncertain validation states, or slow response. Evaluation therefore needs to capture both the pragmatic quality of completing work and the broader experiential impression of using the system.

The User Experience Questionnaire (UEQ) was selected for this purpose because it measures six standardized scales: Attractiveness, Perspicuity, Efficiency, Dependability, Stimulation, and Novelty. Attractiveness represents the overall impression of the product. Perspicuity addresses whether the system is easy to understand and learn; Efficiency concerns whether users can complete tasks with appropriate speed and effort; Dependability concerns predictability, control, and security during interaction; Stimulation reflects whether use feels motivating and engaging; and Novelty concerns innovation and creative design. These scales form three broader dimensions: Attractiveness as overall impression, Pragmatic Quality through Perspicuity, Efficiency, and Dependability, and Hedonic Quality through Stimulation and Novelty (Schrepp et al., 2017; Schrepp, 2023). Compared with instruments that emphasize usability or broader pragmatic/hedonic constructs, UEQ was particularly useful for this study because its benchmark dataset allows the resulting scores to be interpreted both in absolute terms and relative to evaluations of other products.

Previous studies show that information systems can produce markedly different UEQ profiles depending on their tasks and context. Pratama et al. (2022) reported positive user experience in an integrated learning information system, with Perspicuity and Efficiency among its stronger aspects. Putro et al. (2020) also reported strong Perspicuity and Efficiency in a public-service application, while Rondonuwu and Kurniawan (2024) identified information clarity as a strength in a library information system. In another context, Suud (2025) found positive emotional evaluation while still identifying information-clarity and functional-stability concerns. Zhafirah and Kamal (2023) reported positive UEQ results across a consumer banking application. These studies demonstrate the usefulness of UEQ for comparing experience profiles, but the studies largely emphasize numerical scale results and general recommendations. They provide more limited explanation of the organizational or workflow conditions that may underlie each score, which is particularly important for a complex enterprise application.

This article addresses this gap by combining standardized UEQ measurement and benchmark interpretation with optional, scale-specific open-ended responses from active SIIP users across seven Pertamina entities. The quantitative component identifies how SIIP performs on the six UEQ scales and the three broader dimensions, which aspects are strongest and weakest, and how the six scale scores are positioned against the UEQ benchmark. The open-ended responses serve an explanatory role by identifying practical experiences associated with the numerical results without treating those comments as prevalence estimates for all users. Accordingly, the analysis examines how SIIP performs across the UEQ scales and dimensions, which scores are highest and lowest and how they compare with the benchmark, and what improvement priorities can be formulated from the combined quantitative and qualitative evidence. This integrated design is intended to retain the comparability of a standardized UX instrument while providing more context-specific guidance for future SIIP development.

2. Research Method

2.1 Research Design and Participants

The study used a quantitative approach supported by qualitative data. Primary questionnaire data comprised quantitative UEQ responses and scale-specific open-ended responses, with the quantitative UEQ results serving as the principal analytic component for measuring the six UEQ scales, three UEQ dimensions, and benchmark positions. The open-ended responses provided qualitative explanations of the experiences and issues associated with the numerical scores, and both types of questionnaire evidence were integrated at the interpretation stage (Creswell & Creswell, 2018; Sugiyono, 2019). Field observations provided contextual background, while PT

Pertamina internal documents, including the official April 2025 monitoring and evaluation meeting minutes, were used as secondary data to describe the operational issues motivating the evaluation; these contextual sources were not used to calculate UEQ scores.

The study population consisted of 162 active SIIP users across seven Pertamina entities: PT Pertamina (Persero) Holding and six main Subholdings. The population distribution recorded in internal data comprised 24 users in Holding, 38 in Upstream, 31 in Commercial and Trading, 21 in Refinery and Petrochemical, 11 in the Integrated Marine Logistics/Shipping Subholding (represented by PT Pertamina International Shipping; PIS), 14 in Gas, and 23 in New and Renewable Energy. Non-probability purposive sampling was used because respondents had to be employees of these entities who actively used SIIP and therefore had direct knowledge of its operation. The UEQ handbook notes that approximately 20-30 respondents can already produce relatively stable results for typical product evaluations; the final sample included 62 active users, well above that typical range (Schrepp, 2023).

2.2 Instrument and Data Collection

Data were collected online using Google Forms. The standardized UEQ contains 26 bipolar adjective items measured on a seven-point semantic differential scale. After transformation, UEQ values range from -3 to +3, with higher scores representing more positive evaluations. Attractiveness contains six items, while Perspicuity, Efficiency, Dependability, Stimulation, and Novelty each contain four items. The instrument structure was retained so that results could be processed with the official UEQ Data Analysis Tool version 14 (Schrepp et al., 2017; Schrepp, 2023).

Six scale-specific open-ended questions were added, corresponding to Attractiveness, Perspicuity, Efficiency, Dependability, Stimulation, and Novelty. The questions were optional and asked respondents to explain aspects they considered to require improvement. This scale-level design was used to reduce respondent burden while keeping the qualitative data manageable. For example, the Perspicuity question focused on unclear or difficult-to-understand parts of the system, Efficiency focused on experiences that increased time or effort, and Dependability focused on control and reliability. The open-ended questions were included because a UEQ score indicates the direction and intensity of an evaluation but does not independently identify whether a weak score is associated with system response time, repeated checking, duplicate data entry, information structure, or another workflow condition.

2.3 Data Analysis

Raw UEQ responses were entered into the UEQ Data Analysis Tool version 14. The tool transformed the original response scale to the standard -3 to +3 UEQ scale and calculated item means, scale means, the three broader dimensions, scale consistency, and benchmark positions. Response consistency was additionally screened using the Inconsistencies worksheet in the UEQ Data Analysis Tool; a value of three or higher in the 'Critical?' column was treated as potentially problematic and considered for exclusion. The benchmark used in this study contained 468 evaluated products and 21,175 respondents, providing comparative categories of Bad, Below Average, Above Average, Good, and Excellent (Schrepp, 2023). Mean values above 0.8 were interpreted as positive evaluations, values from -0.8 to 0.8 as neutral, and values below -0.8 as negative.

Instrument quality was additionally checked using SPSS. Pearson Product Moment correlations were calculated between each UEQ item and its corresponding total score (Pearson item-to-total correlation), following the Pearson correlation approach described by Benesty et al. (2009). Items were considered valid when the r-count exceeded the r-table value of 0.250 and the significance value was below 0.05. All tested item-to-total correlations were significant at $p < .001$. Reliability was assessed using Cronbach's alpha, with values of at least 0.70 treated as acceptable internal consistency (Taherdoost, 2016; Izah et al., 2023). Descriptive statistics were used to summarize respondent characteristics and UEQ scores (Manikandan, 2011).

Open-ended responses were analyzed in three steps. First, responses were collected by UEQ scale. Second, key meanings were identified and grouped into categories with similar content. Third, the frequency of each category was counted to identify recurring concerns among the submitted responses. Because the open-ended questions were optional and improvement-oriented, the number of responses differed across UEQ scales: Attractiveness (n = 6), Perspicuity (n = 21), Efficiency (n = 24), Dependability (n = 19), Stimulation (n = 5), and Novelty (n = 6). These frequencies should not be interpreted as percentages or prevalence estimates among all 62 respondents.

DOI: https://doi.org/10.69693/ijmst.v4i3.13268

Quantitative and qualitative evidence was integrated at the interpretation stage by comparing each UEQ score and benchmark position with the corresponding recurring categories.

Table 1. Respondent profile (n = 62)

Characteristic	**Distribution**
Gender	Male 44 (70.97%); Female 18 (29.03%)
Age	20-30: 19 (30.65%); 30-40: 27 (43.55%); 40-50: 12 (19.35%); >50: 4 (6.45%)
Position	Analyst/equivalent 28 (45.16%); Senior Analyst/equivalent 21 (33.87%); Manager/equivalent 13 (20.97%)
Work entity	Holding 10 (16.13%); PHE 9 (14.52%); KPI 9 (14.52%); Patra Niaga 9 (14.52%); PGN 9 (14.52%); PIS 8 (12.90%); PNRE 8 (12.90%)
Length of SIIP use	<1 year: 2 (3.23%); 1-2 years: 16 (25.81%); >2 years: 44 (70.97%)

Source: Processed survey data.

Note: Age categories are reproduced as defined in the questionnaire. PHE = PT Pertamina Hulu Energi; KPI = PT Kilang Pertamina Internasional; PGN = PT Perusahaan Gas Negara; PIS = PT Pertamina International Shipping; PNRE = New & Renewable Energy Subholding, represented by PT Pertamina Power Indonesia.

3. Results and Discussion

3.1 Respondent Profile and Data Quality

All 62 participants confirmed that they were active SIIP users. The sample was dominated by male respondents (44; 70.97%), while 18 respondents (29.03%) were female. The largest age group was 30-40 years (27; 43.55%), followed by 20-30 years (19; 30.65%), 40-50 years (12; 19.35%), and over 50 years (4; 6.45%). In terms of position, 28 respondents (45.16%) were Analyst or equivalent, 21 (33.87%) were Senior Analyst or equivalent, and 13 (20.97%) were Manager or equivalent. Respondents were relatively evenly distributed across the seven Pertamina entities, and 44 participants (70.97%) had used SIIP for more than two years. This indicates that the evaluation was largely based on users with substantial experience using SIIP.

The UEQ inconsistency check detected no respondent with a critical inconsistency value of three or higher, so all 62 responses were retained. Every item exceeded the predefined Pearson item-to-total r-table threshold of 0.250, and all item-to-total correlations were significant at $p < .001$. Correlations ranged from 0.814 to 0.905 for Attractiveness, 0.889 to 0.944 for Perspicuity, 0.792 to 0.841 for Efficiency, 0.826 to 0.936 for Dependability, 0.831 to 0.895 for Stimulation, and 0.849 to 0.879 for Novelty. Scale-level Cronbach's alpha values were 0.927, 0.921, 0.815, 0.904, 0.879, and 0.887, respectively. All six alpha values exceeded 0.70, indicating acceptable internal consistency for subsequent interpretation.

3.2 UEQ Scores and Benchmark Positions

The six UEQ scales produced an uneven evaluation profile. Attractiveness obtained the highest mean score of 1.312, indicating a positive overall impression. Stimulation (0.927) and Novelty (0.907) were also positive. Perspicuity was close to neutral at -0.181, Dependability was neutral but negative in direction at -0.573, and Efficiency was the weakest scale at -0.935, placing it in the negative evaluation range. At the broader dimension level, Attractiveness scored 1.31, Hedonic Quality scored 0.92, and Pragmatic Quality scored -0.56. Thus, users' general and hedonic evaluations were positive while the combined pragmatic dimension remained weak.

Table 2. UEQ item correlations, internal consistency, mean scores, and benchmark positions

Scale	**Pearson item-to-total r-value range**	**Cronbach's alpha**	**Mean**	**Evaluation**	**Benchmark**
Attractiveness	0.814-0.905	0.927	1.312	Positive	Above Average
Perspicuity	0.889-0.944	0.921	-0.181	Neutral	Bad
Efficiency	0.792-0.841	0.815	-0.935	Negative	Bad

Scale	Pearson item-to-total r-value range	Cronbach's alpha	Mean	Evaluation	Benchmark
Dependability	0.826-0.936	0.904	-0.573	Neutral	Bad
Stimulation	0.831-0.895	0.879	0.927	Positive	Below Average
Novelty	0.849-0.879	0.887	0.907	Positive	Above Average

Source: Processed survey data using UEQ Data Analysis Tool v14 and SPSS.

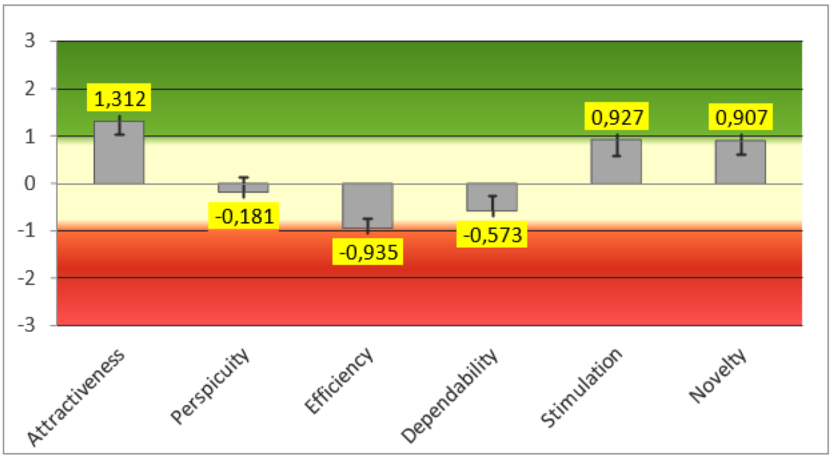


Figure 5. Mean UEQ Scores for SIIP
Source: Processed survey data using UEQ Data Analysis Tool v14.

Benchmarking sharpened this interpretation. Attractiveness and Novelty were classified as Above Average. Stimulation, despite its positive absolute mean, was classified as Below Average. Perspicuity, Efficiency, and Dependability were classified as Bad. The difference between absolute evaluation and benchmark position is important: a positive mean indicates that responses tended toward the positive side of the UEQ scale, while the benchmark indicates how the same score compares with other products. This explains why Stimulation can be positive in absolute terms while remaining Below Average relative to the benchmark.

3.3 Open-Ended Findings

The open-ended responses helped contextualize the numerical pattern. For Attractiveness, six respondents provided comments, distributed evenly across user impression, user satisfaction, and user enjoyment, with two responses in each category. Respondents described the application as functional and acceptable but sometimes ordinary, rigid, or less comfortable during prolonged use; one respondent also expressed a positive impression of the design. These comments are consistent with a positive overall mean that does not necessarily indicate an outstanding or highly polished experience.

For Perspicuity, 21 respondents provided open-ended comments. Information accessibility appeared eleven times, followed by learning support four times, system workflow clarity twice, system navigation clarity twice, and feature clarity twice. Users described the need to read project information repeatedly, spend time understanding project progress, and learn how different sections relate to one another. The pattern indicates that difficulty was not limited to a single interface element; it reflected the combination of project information, investment stages, progress relationships, navigation paths, reporting structures, and learning support.

For Efficiency, 24 respondents provided open-ended comments, representing the largest number of submitted responses among the six scales. Task execution appeared 18 times, while data input and system response time appeared three times each. Respondents described repeated checking, back-and-forth navigation, substantial input requirements, duplicate entry between supporting documents and SIIP, and slow processing. These findings help contextualize why Efficiency was the only scale with a mean below -0.8. The perceived inefficiency was associated with the total work sequence required to monitor, verify, enter, and report project information rather than only with page-loading speed.

DOI: https://doi.org/10.69693/ijmst.v4i3.13268

For Dependability, 19 respondents provided open-ended comments. Validation process and system stability each appeared eight times, system reliability twice, and data security once. Users reported the need to recheck project information, confirm data with colleagues, verify whether information was current, and deal with slow responses or downtime during periods of high access. These responses suggest that users' perceptions of Dependability were associated not only with system availability but also with confidence in data status, validation effort, feedback, and control during interaction.

Stimulation received five open-ended responses, with user engagement and user motivation appearing twice each and user excitement once. The comments indicate that SIIP supports work activities, but repeated monitoring can feel routine, tiring, or monotonous, and one respondent noted that the system is used mainly because it is required rather than motivating. Novelty received six open-ended responses: system modernity appeared three times, innovation level twice, and feature development once. Although Novelty was Above Average in the benchmark, users still pointed to greater system integration and additional feature development as areas for improvement. These responses should be read as improvement-oriented qualitative evidence rather than as a balanced measure of overall sentiment.

Table 3. Recurring categories in scale-specific open-ended responses

UEQ scale	Responses (n)	Recurring categories and frequency
Attractiveness	6	User impression (2); User satisfaction (2); User enjoyment (2)
Perspicuity	21	Information accessibility (11); Learning support (4); System workflow clarity (2); System navigation clarity (2); Feature clarity (2)
Efficiency	24	Task execution (18); Data input (3); System response time (3)
Dependability	19	Validation process (8); System stability (8); System reliability (2); Data security (1)
Stimulation	5	User engagement (2); User motivation (2); User excitement (1)
Novelty	6	System modernity (3); Innovation level (2); Feature development (1)

Note: Open-ended questions were optional and improvement-oriented. Frequencies indicate recurring categories among submitted responses and are not percentages or prevalence estimates for all 62 respondents.

3.4 Integrated Discussion

The most important result is the separation between a positive overall impression and weak pragmatic quality. Attractiveness was the highest scale and Hedonic Quality was positive, while Pragmatic Quality was neutral by the study's absolute threshold but below zero (-0.56) and substantially weaker than the other two dimensions. These findings are not contradictory because the UEQ constructs measure different aspects of experience. Users can report a favorable overall impression of SIIP while simultaneously experiencing inefficient workflows, limited information clarity, or uncertainty during validation and checking. These findings show that a favorable overall impression can coexist with burdensome task interactions in the SIIP context.

The weak Perspicuity result differs from the findings of Pratama et al. (2022), Putro et al. (2020), and Rondonuwu and Kurniawan (2024), where information clarity or ease of use represented strengths. The difference is consistent with the greater workflow complexity of SIIP. SIIP contains extensive project data and supports proposal, RKAP, execution, monitoring, and reporting activities across multiple entities. Users must therefore understand not only interface labels but also project stages, progress relationships, organizational procedures, and reporting logic. The open-ended comments show that this contextual complexity translates into additional cognitive effort when users search for and interpret information.

Efficiency is the clearest development priority because it combined the lowest mean score (-0.935), a Bad benchmark position, and recurring qualitative concerns related to task execution, data input, and response time. The comments indicate that the problem is distributed across the total work sequence rather than only technical loading speed. This finding is consistent with evidence that digital transformation can contribute to operational efficiency (Guo & Xu, 2021), while the SIIP findings show that workflow-related effort can remain when system interactions require repeated work. For SIIP, reducing duplicate entry, repeated checking, and unnecessary navigation is therefore as important as improving technical response time.

Dependability further demonstrates the connection between interaction experience and organizational data processes. The Bad benchmark position was accompanied by recurring comments about validation and stability. The open-ended responses suggest that users' perceptions of Dependability were associated with validation effort, confidence in whether data were complete and current, perceived system stability, and feedback about successful processing. The issue is therefore not limited to technical reliability; it also concerns how clearly the system communicates status and supports users' sense of control. This interpretation is partly comparable to Suud (2025), who showed that positive emotional evaluation can coexist with functional-stability concerns in a different product context.

Stimulation and Novelty provide another example of why benchmark interpretation is necessary. Stimulation was positive but Below Average, meaning that the system supports user engagement to some extent but does not compare strongly with the benchmark dataset. Novelty was positive and Above Average, yet users still requested additional integration and modern features. The consumer banking application evaluated by Zhafirah and Kamal (2023) received positive UEQ results across all scales, showing a different UX profile from SIIP. Differences in task structure, usage context, and organizational requirements may contribute to such variation across products. The SIIP results therefore highlight the importance of interpreting UEQ outcomes in relation to the specific work and organizational context in which a system is used.

The combined evidence also strengthens the interpretation without converting subjective UEQ scores into objective performance measures. UEQ measures user perception, not actual processing time. However, the negative Efficiency score is supported by recurring descriptions of duplicate work, repeated checking, slow response, and long task sequences. Objective confirmation would require additional methods such as task-completion timing, system-log analysis, controlled usability testing, or technical performance monitoring. Within the scope of the present study, the convergence between the benchmarked scores and scale-specific comments provides a stronger basis for practical recommendations than either source would provide alone.

3.5 Improvement Priorities

The combined results indicate that SIIP development should prioritize Perspicuity, Efficiency, and Dependability while preserving the positive elements of Attractiveness and Hedonic Quality. Based on the recurring problems identified from the combined UEQ and open-ended findings, recommended design responses include clearer indicators for project status, project stage, milestone status, physical and financial progress, together with concise help notes, stage labels, clearer navigation paths, breadcrumbs, and descriptions for unclear features or report fields. These are proposed design responses to the recurring categories of information accessibility, learning support, system workflow clarity, system navigation clarity, and feature clarity rather than features directly requested by every respondent.

For Efficiency, the findings support reducing the number of actions required to complete common tasks. A consolidated project-monitoring view could place key information, progress, milestones, documents, and report access in one location. Duplicate data entry could be reduced through Excel import, autofill, data reuse from previous stages, or integration with supporting documents. Loading performance could also be improved for search, filtering, settings, report generation, and data processing, especially on Project List, Execution, and Report pages. These recommendations translate the recurring task-execution, data-input, and response-time concerns into potential design improvements.

For Dependability, proposed improvements include clearer validation and processing states through validation status, data-completeness indicators, last-updated information, change history, explicit confirmation messages for saving and downloading, and clearer role or access-control information. System stability should also be strengthened during periods of high access, particularly when many users simultaneously input, check, or download project data. Attractiveness could be supported by organizing frequently used pages around key project information and providing direct shortcuts. Stimulation could be improved through progress summaries, milestone alerts, task-completion feedback, saved filters, and favorite projects. Novelty could be maintained through periodic feature review, relevant integration, practical automation, and feature-development priorities derived from repeated user needs.

DOI: https://doi.org/10.69693/ijmst.v4i3.13268

4. Conclusion

This study evaluated the Pertamina Investment Information System using UEQ data from 62 active users across seven Pertamina entities, supplemented by optional scale-specific open-ended responses. The results show a mixed user-experience profile. Attractiveness obtained the highest mean score at 1.312, followed by Stimulation at 0.927 and Novelty at 0.907. Perspicuity scored -0.181, Dependability -0.573, and Efficiency -0.935, making Efficiency the weakest scale. At the dimension level, Attractiveness was 1.31 and Hedonic Quality was 0.92, while Pragmatic Quality was -0.56. Benchmarking classified Attractiveness and Novelty as Above Average, Stimulation as Below Average, and Perspicuity, Efficiency, and Dependability as Bad. The scale-specific open-ended responses help explain why a positive overall impression can coexist with weak pragmatic quality. Users still described additional effort to understand project information and workflows, perform repeated checking and data input, verify and confirm project data, and manage periods of slow or unstable system response. The main improvement direction should therefore focus on clearer information presentation, more efficient task flows, reduced duplicate input, stronger validation and data-status feedback, and better system stability. Attractiveness can be supported through greater interface comfort and consistency, Stimulation by making repeated monitoring easier to follow, and Novelty through periodic feature evaluation and relevant system integration. A methodological contribution of this article is the integration of standardized UEQ scores and benchmark positions with scale-specific open-ended evidence. This approach provides a more contextual interpretation of enterprise user experience. However, the findings should be interpreted in light of the purposive, non-probability sampling strategy and should not be treated as statistically representative of all SIIP users. In addition, the optional open-ended prompts were improvement-oriented and therefore primarily captured perceived difficulties rather than a balanced measure of positive and negative sentiment. The findings also remain specific to SIIP and require comparative research before being generalized to other enterprise systems. Future research should re-evaluate SIIP after further system development or feature improvements to examine whether Perspicuity, Efficiency, and Dependability improve, and similar evaluations can be applied to project and investment information systems in other companies or industries.

References

1. Benesty, J., Chen, J., Huang, Y., & Cohen, I. (2009). Pearson correlation coefficient. In Noise reduction in speech processing (pp. 1-4). Springer. https://doi.org/10.1007/978-3-642-00296-0_5
2. Colley, A., Mayer, S., & Häkkilä, J. (2023). Developing an emoji-based User Experience Questionnaire: UEQ-Emoji. In Proceedings of the 22nd International Conference on Mobile and Ubiquitous Multimedia. Association for Computing Machinery. https://doi.org/10.1145/3626705.3627767
3. Creswell, J. W., & Creswell, J. D. (2018). Research design: Qualitative, quantitative, and mixed methods approaches (5th ed.). SAGE Publications.
4. Google, Temasek, & Bain & Company. (2024). e-Conomy SEA 2024 report. https://economysea.withgoogle.com/report/2024
5. GoodStats. (2024). Indeks Pembangunan TIK Indonesia kembali meningkat. https://data.goodstats.id/statistic/indeks-pembangunan-tik-indonesia-kembali-meningkat-RnbEG
6. Guo, L., & Xu, L. (2021). The effects of digital transformation on firm performance: Evidence from China's manufacturing sector. Sustainability, 13(22), 12844. https://doi.org/10.3390/su132212844
7. Hassenzahl, M. (2010). Experience design: Technology for all the right reasons. Morgan & Claypool. https://doi.org/10.2200/S00261ED1V01Y201003HCI008
8. ISO. (2019). ISO 9241-210:2019 Ergonomics of human-system interaction - Part 210: Human-centred design for interactive systems. International Organization for Standardization. https://www.iso.org/standard/77520.html
9. Izah, S. C., Sylva, L., & Hait, M. (2023). Cronbach's Alpha: A cornerstone in ensuring reliability and validity in environmental health assessment. ES Energy & Environment, 23, 1057. https://doi.org/10.30919/esee1057
10. Laudon, K. C., & Laudon, J. P. (2020). Management information systems: Managing the digital firm (16th global ed.). Pearson.
11. Lewis, J. R. (1995). IBM computer usability satisfaction questionnaires: Psychometric evaluation and instructions for use. International Journal of Human-Computer Interaction, 7(1), 57-78. https://doi.org/10.1080/10447319509526110
12. Manikandan, S. (2011). Frequency distribution. Journal of Pharmacology and Pharmacotherapeutics, 2(1), 54-56. https://doi.org/10.4103/0976-500X.77120
13. Micale, R., La Fata, C. M., Lombardo, A., & La Scalia, G. (2021). Project Management Information Systems (PMISs): A statistical-based analysis for the evaluation of software packages features. Applied Sciences, 11(23), 11233. https://doi.org/10.3390/app112311233
14. Ministry of Energy and Mineral Resources. (2023). Indonesian energy statistics 2023. https://esdm.go.id/assets/media/content/content-handbook-of-energy-and-economic-statistics-of-indonesia-2023.pdf
15. OECD. (2022). The OECD Going Digital Measurement Roadmap. OECD Digital Economy Papers, No. 328. OECD Publishing. https://doi.org/10.1787/bd10100f-en
16. Panggabean, R. P. (2018). Investment Information System: A breakthrough in monitoring and evaluation system of investment project in PT Pertamina. Offshore Technology Conference Asia. https://onepetro.org/OTCASIA/proceedings-abstract/18OTCA/4-18OTCA/179590
17. Pertamina. (2016). Pertamina Investment Information System (SIIP) [Video]. PT Pertamina (Persero). https://youtu.be/tsBvAUn7Aho?si=8lX_YqH_6DoXRlea
18. Pratama, A., Faroqi, A., & Mandyartha, E. P. (2022). Evaluation of user experience in integrated learning information systems using User Experience Questionnaire (UEQ). Journal of Information Systems and Informatics, 4(4), 1019-1029. https://doi.org/10.51519/journalisi.v4i4.394

19. Putro, S., Kusrini, K., & Kurniawan, M. P. (2020). Penerapan metode UEQ dan cooperative evaluation untuk mengevaluasi user experience Lapor Bantul. Creative Information Technology Journal, 6(1), 27-37. https://doi.org/10.24076/citec.2019v6i1.242
20. Rogers, Y., Sharp, H., & Preece, J. (2023). Interaction design: Beyond human-computer interaction (6th ed.). Wiley.
21. Rondonuwu, Y. V., & Kurniawan, D. T. (2024). Evaluasi User Experience pada Sistem Informasi Perpustakaan menggunakan User Experience Questionnaire. Journal of Information System Research (JOSH), 5(4), 1500-1507. https://doi.org/10.47065/josh.v5i4.5296
22. Schrepp, M. (2023). User Experience Questionnaire handbook: All you need to know to apply the UEQ successfully in your projects. UEQ Research Group. https://www.ueq-online.org/Material/Handbook.pdf
23. Schrepp, M., Hinderks, A., & Thomaschewski, J. (2017). Construction of a benchmark for the User Experience Questionnaire (UEQ). International Journal of Interactive Multimedia and Artificial Intelligence, 4(4), 40-44. https://doi.org/10.9781/ijimai.2017.445
24. SKK Migas. (2024). Laporan tahunan SKK Migas 2023. https://www.skkmigas.go.id/publication?tab=laporan+tahunan
25. Suud, J. (2025). Evaluation of user experience in adaptive stick for blind society Sarawak Malaysia using User Experience Questionnaire (UEQ). Jurnal Kejuruteraan, Teknologi and Sains Sosial (JKTSS), 11(1), 41-55. https://jktss.puo.edu.my/jurnalpuo/index.php/jurnal/article/view/228
26. Sugiyono. (2019). Metode penelitian kuantitatif, kualitatif dan R&D (2nd ed.). Alfabeta.
27. Taherdoost, H. (2016). Validity and reliability of the research instrument: How to test? International Journal of Academic Research in Management, 5(3), 28-36. https://doi.org/10.2139/ssrn.3205040
28. Tullis, T., & Albert, B. (2013). Measuring the user experience: Collecting, analyzing, and presenting usability metrics (2nd ed.). Morgan Kaufmann.
29. Zhafirah, Y., & Kamal, I. (2023). User Experience (UX) analysis on New Livin' by Mandiri application in Jabodetabek using User Experience Questionnaire. International Journal of Management and Business Economics, 1(3), 148-154. https://doi.org/10.58540/ijmebe.v1i3.200