Research Square

Preprints are preliminary reports that have not undergone peer review.
They should not be considered conclusive, used to inform clinical practice,
or referenced by the media as validated information.

User Experience and Usability Evaluation Identifies Learnability Barriers in an Industry Linked Vocational Learning Management System

Nuur Wachid Abdul Majid
nuurwachid@upi.edu
Indonesia University of Education
Atiek Zahratul Ulum
Indonesia University of Education
Muhammad Nurtanto
State University of Jakarta
Md Baharuddin Abdul Rahmah
Universiti Sains Malaysia
Mohamed Nor Azhari Azman
Sultan Idris Education University
Elysa Nensy Irawan
Shibaura Institute of Technology

Research Article

Keywords: industry-linked learning, learning management system, SDG 4 (quality education), System Usability Scale, user experience, vocational education

Posted Date: September 29th, 2026

DOI: https://doi.org/10.21203/rs.3.rs-10561526/v1

License: This work is licensed under a Creative Commons Attribution 4.0 International License.
Read Full License

Additional Declarations: No competing interests reported.

Abstract

Learning management systems used in industry-linked vocational education must do more than deliver content: they must enable clear and equitable participation in pathways leading to industry certification. This study evaluates UpMySkill (UMS), the learning platform used in the Axioo Class Program, by combining the User Experience Questionnaire (UEQ) and System Usability Scale (SUS). A cross-sectional online survey involved 232 users from Indonesian vocational education settings (212 students and 20 teachers). All UEQ means were positive: attractiveness 1.541, perspicuity 1.190, efficiency 1.489, dependability 1.438, stimulation 1.649, and novelty 0.941. Stimulation was benchmarked as good; four scales were above average; and perspicuity was below average. In contrast, the mean SUS score was 59.43 (SD = 16.09; 95% CI 57.36-61.50), with 73.3% of respondents below the reference value of 68. Five UEQ scales showed acceptable-to-good internal consistency (alpha = 0.73-0.86), whereas novelty was weaker (alpha = 0.59); SUS reliability was borderline acceptable (alpha = 0.70). Item-level and sensitivity analyses consistently identified learning effort, conventionality, and initial support as the main frictions. The study advances LMS research by treating UX as quality-assurance evidence in an industry-linked, certification-oriented vocational pathway and by showing that favourable multidimensional experience can coexist with inadequate global usability. This UX-usability gap supports redesign priorities centred on guided onboarding, visible learning and certification pathways, simplified navigation, and task-based usability testing. The findings indicate enabling conditions for quality digital education rather than direct evidence of learning, certification, employability, or SDG attainment.

Clinical trial registration

Clinical trial number: not applicable.

1. Introduction

Learning management systems (LMSs) have become core infrastructure for distributing learning materials, organising assessment, communicating expectations, and documenting progress. Their value, however, does not follow automatically from availability. E-learning success depends on the joint quality of the educational system, learner support, learner readiness, perceived usefulness, satisfaction, and actual use [1–3]. In vocational education, the design problem is more demanding because digital activities must remain connected to practical competencies, work processes, and industry expectations. Digital education is the primary option in the educational process, providing students to learn and acquire comprehensive competencies [4, 5]. Recent reviews show that e-learning can strengthen cognitive, psychomotor, and twenty-first-century skills in vocational schools, while also emphasising that platform choice, instructional design, digital competence, and contextual adaptability determine whether these benefits are realized [6–9].

These demands are visible in the Axioo Class Program (ACP), an industry-led social-impact initiative associated with PT Tera Data Indonusa Tbk. The programme links schools and industry through curriculum synchronization, teacher development, technology-supported learning, project-based

activities, and opportunities for national and international industry certification [10]. UpMySkill (UMS) functions as a digital layer within this ecosystem to learn directly by the asynchronous model of learning. UMS platform is public interface organises courses into industry-class categories and presents industrial partners and pathways related to online courses, internships, skills certification, and employment support. This platform allows online educational courses, providing students to obtain resources without needing to physically attend the Axioo Class Program (ACP) learning center, which is unlikely to be available for any educational organization affiliated with the ACP. ACP supervises various vocational schools around Indonesia, requiring wide availability to facilitate the proper distribution of academic materials. It is an access point to a learning and credentialing pathway whose usability may affect whether users can locate content, understand sequence, complete activities, and progress toward certification. This context is relevant to Sustainable Development Goal (SDG) Target 4.4, which calls for expanded access to technical and vocational skills for employment, decent work, and entrepreneurship [11]. UX evidence does not measure attainment of that target, but it can show whether the digital infrastructure supporting a vocational pathway creates avoidable barriers to participation.

User experience (UX) offers a broader perspective on how a technology or system is used. UX encompasses users' pragmatic assessments of clarity, efficiency, and control, as well as hedonic assessments of stimulation, novelty, and overall appeal [9, 12–14]. Evaluating user experience is therefore important for determining the efficacy of a digital learning platform: a platform can be informative and engaging, yet it must also demonstrably support learners' learning processes and achievements [15]. High-quality digital learning design therefore connects the technology, the pedagogical structure, and the social relations through which learners and instructors act [16, 17]. UX scores should consequently be interpreted as evidence about the conditions for learning, not as direct proof of learning effectiveness. This foundational relationship also matters for emerging-technology and AI-enabled pedagogy: adaptive or AI-driven learning features are only as effective as the platform that hosts them, so establishing a dependable and comprehensible base LMS experience is a necessary precondition for responsibly introducing such technologies into industry-linked vocational pathways aligned with SDG 4.

The current level of research indicates three academic gaps. Primarily, LMS-experience research has largely focused on higher education and only student samples. A scoping review of the 79 research articles found highly limited focus on educators and on the consistent application of metrics across various stakeholder groups [18]. Secondly, published evaluations of Learning Management Systems frequently assess general institutional platforms instead of vocational settings connected to industry, where the utilization of the platform is associated with competency verification and certification. Third, research often depends on a solitary tool. UEQ analysis can delineate an intricate profile of pragmatic and hedonic attributes [19–21]. whereas the SUS offers a succinct overall measure of perceived usability supported by a robust evidence foundation in educational technology [22, 23]. Employing them in conjunction allows for the assessment of whether a favorable multidimensional experience aligns with an acceptable overall usability evaluation.

This study examines those gaps through three linked contributions. This contextually analyzes user experience based on a certification-focused vocational trajectory associated with the industry, rather than within a conventional institutional learning management system. It systematically integrates UEQ profiles, benchmark analyses, SUS ratings, and item-specific data to ascertain if positive experience attributes align with satisfactory overall usability. Theoretically and practically, it regards learner experience as a factor in quality assurance for digital vocational education: insights into factors that may facilitate or hinder participation, rather than a substitute for learning outcomes, employability, certification achievement, or Sustainable Development Goal fulfillment. The research inquires: (1) In what manner do consumers assess UpMySkill utilizing the six UEQ metrics? How do the findings align with the UEQ standard? Does the global SUS outcome align with the UEQ profile, and what design priorities arise when both metrics are analyzed in conjunction?

2. Literature review

2.1. From usability to learner experience

Usability pertains to the ability of designated users to accomplish defined objectives effectively, efficiently, and satisfactorily within a particular usage scenario[13, 24, 25]. User experience broadens the assessment framework to encompass the significances, feelings, anticipations, and perceptions associated with interaction. This comprehensive perspective is particularly advantageous for educational technologies as the learner functions both as a system user and an active participant in the instructional process. The interface facilitates access to content, feedback, evaluation, communication, and indicators of progress; any obstruction at these junctures can disrupt learning, even if the information is of high quality.

Research on LMS corroborates this socio-technical perspective. A correlation between students' experiences with the LMS and their engagement as well as their intention to persist in utilizing the platform [26]. The most powerful and interrelated aspects of LMS experience evaluation consist of Ease of use, communication, course development, monitoring and evaluation, content administration, and technical support [27]. These results warn against simplifying user experience to mere aesthetics. In vocational education associated with industry, the pertinent inquiry is whether the platform aids users in comprehending their tasks, executing actions efficiently, maintaining focus on the learning trajectory, and identifying the relationship between activities and practical skills as well as certification.

2.2. UEQ and SUS as complementary measures

The UEQ was developed to provide a rapid, standardised measure of interactive-product experience through 26 bipolar items organised into six scales [28]. Attractiveness reflects the overall impression of a system during its use by users. Clarity reflects ease of learning and understanding, allowing users to optimize their learning process within the system. Efficiency relates to completing tasks without unnecessary effort; users can complete the learning process without having to add several aspects inside or outside the learning system. Reliability encompasses predictability, control, and security,

allowing the system to maintain its functionality and minimize bugs/vulnerabilities. Stimulation represents excitement and motivation, while novelty reflects creativity and innovation. Clarity, efficiency, and reliability constitute pragmatic qualities; stimulation and novelty constitute hedonic qualities. The benchmark to helps interpret a product's position relative to a large set of prior evaluations [25].

The UEQ and its modular extensions have been adapted and used in the Indonesian educational context. The application of the Indonesian UEQ adaptation to a student-centered e-learning environment [9, 29]. The UEQ tool was used to measure the e-learning adoption evenly and demonstrate the structured translation workflow, readability, validity, and reliability for the UEQ + in two online learning cases [9, 14, 30, 31]. These studies establish the relevance of culturally and linguistically appropriate UX measurements while demonstrating why numerical profiles should be interpreted in relation to real-life usage scenarios.

The SUS provides different levels of diagnosticity. It consists of ten alternating positive and negative statements, yielding a composite score ranging from 0 to 100 [32]. The score, rather than a percentage, as with other questionnaires, can be categorized as a measure of how users perceive a system's usability. Large empirical studies have linked SUS scores to adjective ratings and acceptance ranges, and scores near 68 are generally used as historical reference points rather than universal pass-fail thresholds [33–35]. A systematic review of 170 educational technology evaluations reported a mean SUS score of 70.09 and a mean of 66.25 for internet platforms, illustrating the value of domain-aware comparisons [22]. Because the SUS is global and the UEQ is diagnostic, convergence strengthens the overall assessment; divergence may reveal that positive appeal or stimulation coexists with unresolved interaction costs.

2.3. Research gap and analytical proposition

The majority of standardized LMS experience research are focused on institutions, directed towards higher education, and predominantly focussed on students [18]. Vocational assessments demand that platform functionalities correspond with pragmatic teaching methods and regional environments, although they offer scant empirical evidence based on industry-specific platform experiences [6, 7, 36]. This research evaluates the utilization of e-learning by vocational school students (in Indonesia: SMK or *sekolah menengah kejuruan*) and teachers in effectively executing instruction. The LMS platform represents a sector advancement, presently partnering with the Universitas Pendidikan Indonesia (UPI) to develop a functional system. Consequently, this research considers the amalgamated UEQ and SUS scores as a diagnostic framework. A robust UEQ score alongside a diminished SUS score suggests that people value the experience even while encountering challenges in learning or interaction. The contrasting pattern would suggest a functional platform although emotionally or motivationally immature. Both patterns are more pragmatic than a singular aggregate score.

2.4. Conceptual framework

Figure 1 completely presents and summarizes the conceptual framework of this research. The vocational ecosystem applicable to the sector identifies the responsibilities and objectives users

encounter while utilizing a Learning Management System. Human-centered design and UX theory differentiate between aesthetic attributes and functional characteristics (clarity, efficiency, and reliability) as well as pleasurable attributes (stimulation and novelty); the UEQ implements these dimensions, whereas the SUS offers supplementary evaluations of overall usability perceptions and learnability-related insights [12, 13, 28, 32]. The integration of benchmarking, item-level analysis, dependability, and response quality data is utilized to discern the convergence or discrepancies in UX usability. The resultant diagnostics facilitate quality assurance and iterative redesign. The outcomes of task performance, learning engagement and completion, proficiency, certification, and employability are proposed for future validation rather than being assessed by this survey; SDG Target 4.4 establishes the policy framework [11, 16].

The beginning stage defines the usage environment instead of considering the LMS as a standalone interface. The alignment of school and industry curriculum, establishing competency-driven course requirements, platform-based learning and evaluation, along with industry certification standards, collectively define the responsibilities users need to comprehend and fulfill. Thus, usability in this context encompasses not merely the functionality of a site or feature, but also the ability of students and educators to discern the framework of the vocational pathway, locate necessary activities, comprehend completion criteria, and grasp the correlation between platform actions and progress. This contextual dimension elucidates the necessity for industry-specific LMSs to undergo a more nuanced review compared to a generic examination of interface preferences.

The second phase describes the experience produced via learner-LMS engagements. According to UX theory, the framework distinguishes between aesthetic appeal and practical as well as pleasurable attributes. Pragmatic attributes pertain to the platform's comprehensibility, efficiency, predictability, and facilitation of goal achievement; these are embodied by clarity, efficiency, and dependability. Hedonic attributes pertain to the stimulation of the experience and its perception as original or innovative. This differentiation holds theoretical significance since consumers could come to value and like a platform once they have acclimated to it, while enduring considerable initial learning challenges. A solitary satisfaction or usability metric may obscure these trends.

The next stage implements the concepts via supplementary metrics. The UEQ offers a comprehensive profile and external reference, whereas the SUS encapsulates usability impressions throughout whole encounters. Scale averages by themselves are deemed inadequate evidence: the benchmark position, item-level replies, internal consistency assessments, and sensitivity evaluations for response quality are analyzed collectively. The alignment between the UEQ and SUS facilitates a consistent evaluation of the platform, whilst any discrepancy is deemed diagnostically significant. In this research, favorable experience evaluations together diminished clarity and overall SUS outcomes form the suggested UX-usability disparity.

The final stage converts this assessment into a cyclical quality assurance procedure. This framework steers the redesign towards structured onboarding, transparent learning and certification trajectories,

uniform navigation, and contextual assistance, succeeded by revised task-oriented and perception-oriented assessments. Consequently, the feedback arrows signify iterative processes focusing on human experience, rather than isolated summative evaluations. This concept does not propose that advantageous user experience inherently results in proficiency, accreditation, or job placement. The outcomes are situated within the prospective validation tier denoted by the dashed line, as demonstrating such effects necessitates longitudinal or experimental proof connecting interface enhancements to measurable task success, engagement, course completion, heightened learning, certification acquisition, and employment-related metrics.

3. Method

3.1. Research design and setting

This research enhances the quality assurance of a well-utilized existing system. A descriptive cross-sectional survey was conducted to assess the retrospective user experience with the UpMySkill Learning Management System. This poll concentrated on individuals who engaged with the platform during the educational activities of the Axioo Class Program (ACP). The UpMySkill platform functions as a Learning Management System where users engage with educational content, perform assignments, and participate in quizzes across several professional course categories. Upon finishing, participants are awarded a certificate of completion along with a certificate of recognition authorized by the industry. In the analyzed setup, educational resources are obtained directly through the platform. The assessment was performed following users' acquisition of practical experience in real-world settings, rather than solely in laboratory conditions, rendering the findings a comprehensive field evaluation of user experience and perceived usability.

3.2. Participants and recruitment

The research study involved 232 participants: 212 children (91.4%) and 20 educators (8.6%). The sample exhibited a near gender balancing, comprising 119 male participants (51.29%) and 113 female participants (48.71%). The majority of participants were aged 15–24 years (n = 214, 92.24%), aligning with the platform's main demographic of vocational students. The leftover participants were categorized as 25–34 years (n = 9, 3.88%), 35–44 years (n = 8, 3.45%), and 45 years or above (n = 1, 0.43%). Recruitment was conducted on a programmatic basis and utilized non-probability methods; therefore, the results should be regarded as indicative of the participating users rather than as a demographic estimate for all vocational schools in Indonesia.

Table 1
Participant characteristics

Characteristic	Category	n	%
Role	Student	212	91.38
	Teacher	20	8.62
Gender	Male	119	51.29
	Female	113	48.71
Age	15–24	214	92.24
	25–34	9	3.88
	35–44	8	3.45
	45 or older	1	0.43

3.3. Instruments

The Indonesian UEQ experienced 26 semantic-differential elements evaluated on a seven-point scale. Responses to items were converted based on their polarity to a range from − 3 (most unfavorable) to + 3 (most favorable). The six scale scores were derived from the sanctioned UEQ item categorization. numbers over 0.8 are typically regarded as good, those ranging from − 0.8 to 0.8 are considered neutral, and numbers falling below − 0.8 are viewed as negative. Benchmark classifications were derived from the UEQ data-analysis instrument: exceptional, satisfactory, above median, below median, and poor [25, 29].

The SUS employed 10 assertions evaluated on a scale from 1 (strongly disagree) to 5 (strongly agree). For positively phrased odd items, one was deducted from the response; for negatively phrased even items, the response was subtracted from five. The ten donations were aggregated and then multiplied by 2.5. Elevated ratings signify enhanced perceived usability. A value of 68 served as a shared historical benchmark for analysis, rather than as a definitive quality standard [34, 35].

The internal consistency was assessed using Cronbach's alpha. The official UEQ analysis workbook generated alpha coefficients for every scale, whereas the SUS coefficient was recalculated independently based on the contributions of the ten scored items. Alpha was viewed as endorsing score consistency instead of serving as proof of one-dimensionality; numbers falling short of the traditional 0.70 benchmark were approached with caution rather than being automatically grounds for eliminating a scale.

3.4. Data collection and analysis

The UEQ and SUS were collected via a Google Forms survey over a duration of four weeks. Responses were extracted to a spreadsheet, verified for thoroughness, then reclassified according to the official grading guidelines. All 232 instances included comprehensive replies for the 26 UEQ and ten SUS issues.

The mean, standard deviation, and 95% confidence interval for each UEQ scale were presented with their benchmark category. For the SUS, contributions scored at the respondent level were recalibrated from the study worksheet. The examination encompassed the average, standard deviation, median, interquartile range, range, 95% confidence interval, the percentage below 68, and Cronbach's alpha. The results of the Student and teacher SUS were presented descriptively; inferential comparisons were not regarded as confirmatory because to the small size of the instructor group and the significant disparity in group sizes.

The quality of responses for the UEQ was further assessed using the official tool's two heuristic metrics: (a) a within-scale response variation exceeding three points on a minimum of three scales, and (b) the application of the identical response category for over 15 of the 26 items. These signs reveal possibly inattentive or internally contradictory patterns, although they do not establish that an answer is invalid. Due to the absence of a predetermined exclusion criterion before to data collection, the entire sample was preserved for the principal analysis. A sensitivity study recalculated the six scale averages following the exclusion of examples identified by either approach.

4. Results

4.1. UEQ profile

All six UEQ means were in the positive evaluation range. Stimulation received the highest score (M = 1.649), followed by attractiveness (M = 1.541), efficiency (M = 1.489), dependability (M = 1.438), perspicuity (M = 1.190), and novelty (M = 0.941). The confidence intervals for all scales remained predominantly above the positive threshold of 0.8. Novelty was the weakest hedonic dimension and its lower confidence limit (0.796) lay essentially at the threshold, suggesting that perceptions of innovation were positive but less robust than perceptions of stimulation and attractiveness.

Table 2
UEQ scale results (n = 232)

Scale	Mean	SD	95% CI	Evaluation
Attractiveness	1.541	1.056	1.405–1.677	Positive
Perspicuity	1.190	1.169	1.039–1.340	Positive
Efficiency	1.489	1.040	1.355–1.623	Positive
Dependability	1.438	1.060	1.301–1.574	Positive
Stimulation	1.649	1.134	1.503–1.795	Positive
Novelty	0.941	1.121	0.796–1.085	Positive

The aggregated pragmatic-quality mean was 1.372, while the hedonic-quality mean was 1.295. This indicates a broadly positive experience on both dimensions. The difference within hedonic quality is

nevertheless important: stimulation was the strongest individual scale, whereas novelty was the weakest.

Internal consistency was good for attractiveness (alpha = 0.855) and stimulation (alpha = 0.806), and acceptable for perspicuity (alpha = 0.751), efficiency (alpha = 0.753), and dependability (alpha = 0.728). Novelty showed weaker consistency (alpha = 0.592), so its mean should be read as a broad directional signal rather than as a highly precise latent-scale estimate.

4.2. Item-level and response-quality analysis

The item profile sharpened the scale-level diagnosis. The lowest UEQ item was inventive-conventional (item 10, M = 0.302), followed by unpredictable-predictable (item 8, M = 0.741), creative-dull (item 3, M = 0.927), complicated-easy (item 13, M = 0.983), fast-slow (item 9, M = 1.013), and easy to learn-difficult to learn (item 4, M = 1.086), after polarity transformation to the − 3 to + 3 positive-direction scale. The strongest items were valuable-inferior (item 5, M = 2.134) and good-bad (item 12, M = 2.017). Thus, users strongly recognized value and overall quality, while originality, predictability, simplicity, and learnability remained less secure.

The official response-pattern heuristics flagged 34 cases for large inconsistencies across at least three UEQ scales and 22 cases for repeating one response category on more than 15 items; three cases met both criteria. The union comprised 53 responses, leaving 179 in the screened sensitivity sample. Removing these cases increased the scale means by 0.244–0.289 points: attractiveness 1.830, perspicuity 1.476, efficiency 1.743, dependability 1.684, stimulation 1.936, and novelty 1.184. The ordering remained substantively similar, with stimulation highest, novelty lowest, and perspicuity still below the other pragmatic scales. The full-sample estimates were therefore retained as the more conservative primary results.

4.3. UEQ benchmark comparison

The benchmark produced a differentiated picture. Stimulation was classified as good, meaning that only about 10% of benchmarked results were higher while approximately 75% were lower. Attractiveness, efficiency, dependability, and novelty were above average. Perspicuity was the only scale classified below average. Thus, the platform's relative weakness was not its ability to interest or motivate users; it was the ease with which users could become familiar with the system and understand how to use it.

Table 3
UEQ benchmark classification

Scale	Mean	Benchmark	Interpretation
Attractiveness	1.54	Above average	25% of results better; 50% worse
Perspicuity	1.19	Below average	50% of results better; 25% worse
Efficiency	1.49	Above average	25% of results better; 50% worse
Dependability	1.44	Above average	25% of results better; 50% worse
Stimulation	1.65	Good	10% of results better; 75% worse
Novelty	0.94	Above average	25% of results better; 50% worse

4.3. SUS results

The overall SUS mean was 59.43 (SD = 16.09; 95% CI 57.36–61.50). The median was 58.75, the interquartile range was 50.00–70.00, and observed scores ranged from 10 to 100. A total of 170 respondents (73.3%) scored below 68, while 62 (26.7%) scored at or above it. The distribution in Fig. 3 confirms substantial heterogeneity: some users reported high usability, but the centre of the distribution remained below the common reference point. Internal consistency was borderline acceptable (Cronbach's alpha = 0.698, rounded to 0.70).

Table 4
SUS descriptive results overall and by role

Group	n	Mean	SD	Median	Below 68, n (%)	At/above 68, n (%)
All users	232	59.43	16.09	58.75	170 (73.3)	62 (26.7)
Students	212	58.90	15.93	57.50	160 (75.5)	52 (24.5)
Teachers	20	65.00	17.21	67.50	10 (50.0)	10 (50.0)
Note: Role results are descriptive because the teacher subgroup is small and the groups are highly unequal.						

The teacher mean (65.00) was descriptively higher than the student mean (58.90), but its uncertainty was large because only 20 teachers participated. Item-level adjusted contributions (0–4) were lowest for item 10 (M = 1.69), which concerns the amount that users feel they must learn before using the system, and item 4 (M = 2.19), which concerns the perceived need for technical support. These results provide a direct usability explanation for the below-average perspicuity benchmark.

4.4. Cross-instrument diagnosis

The UEQ and SUS did not completely converge in the case study. The UEQ profile exhibited acceptable and competitive results across five of the six evaluated characteristics, although the SUS average fell short of the historical standard of 68 and the stated average for educational technology [22]. This

seemingly contradictory situation clarifies when the metrics are interpreted at the correct level. Users regarded UpMySkill as an invigorating, captivating, effective, and trustworthy platform following their experience. Therefore, the majority did not consider the system to be user-friendly or straightforward to master. The gap in UX usability constitutes a significant empirical discovery.

5. Discussion

5.1. A positive experience with a learnability bottleneck

Beneficial UEQ outcomes suggest that UpMySkill offers an accurate experiential foundation. The stimulation metric, which received the highest rating and is the sole representative in the commendable benchmark category, demonstrates that the platform effectively renders industry-focused education both significant and captivating. The platform's exceptional attractiveness, effectiveness, and dependability suggest that users typically appreciate it, can perform tasks at a satisfactory speed, and feel sufficiently in command throughout engagements. These attributes are crucial in the ACP pathway as students consistently engage with resources, tasks, assessments, and certification-oriented learning activities.

Nevertheless, the clarity and SUS outcomes suggest that affirmative participation should not be synonymous with effortless usage. Clarity pertains directly to being acquainted with the system and comprehending its utilization. The subpar benchmark classification, along with the little SUS contribution to the necessity of system comprehension and the perceived requirement for assistance, highlights onboarding and orientation as significant obstacles. This framework is logically coherent: individuals could consider a system engaging and effective after they grasp its norms, but yet regard the initial learning challenge as too demanding.

The unprocessed item evidence provides an additional, more qualitative design indication. The exceedingly low inventive-conventional metric elucidates why novelty ranks as the least robust UEQ scale, but the complex-easy and easy-to-learn-difficult-to-learn metrics enhance the clarity assessment. The novelty alpha of 0.592 simultaneously suggests that its four components exhibit less consistency compared to other scales in this context. Consequently, redesign choices must to emphasize convergent evidence of learnability and regard assertions regarding innovation as provisional until validated by qualitative research or consistent assessments.

These findings further elucidate the differentiation between UX and usability as articulated in the HCI literature [8, 17]. The platform's pleasurable and functional attributes are predominantly favorable, although the overall SUS outcomes reflect the aggregation of friction throughout the complete encounter. In the realm of educational technology, such friction could encompass locating the subsequent activity, deciphering the course framework, comprehending completion criteria, rectifying navigation issues, or recognizing when assistance is necessary. Due to the absence of measurements for task accomplishment or learning improvements in the survey, this study cannot assert that this

friction diminishes achievement. Nonetheless, this research can recognize it as a valid obstacle that ought to be evaluated prior to deeming usability sufficient for educational purposes.

5.2. Contribution to LMS and vocational-learning research

These results extend the investigation of LMS experiences in three distinct manners. Initially, they transition the focus of analysis from a conventional university learning management system to a vocational platform associated with industry. The educational framework includes curricular coherence, practical skills, and advancement towards professional certification, rendering the clarity of learning trajectories beyond mere interface choices. Secondly, the research encompasses both educators and learners, rectifying stakeholder disparity, albeit the teacher cohort is very minor. Third, the integration of the UEQ and SUS uncovers insights that would remain inaccessible if either tool were utilized independently. Relying exclusively on the UEQ for conclusions would yield excessively favorable results; conversely, relying solely on the SUS would mask the platform's substantial stimulation, attractiveness, efficacy, and dependability.

This dual-instrument methodology further enhances the benchmarking terminology. A subpar clarity score does not imply that users perceive every feature as ambiguous, nor does a SUS score beneath 68 serve as an absolute benchmark for failure. Both serve as reference indicators. The alignment of the two about learnability, along with item-level SUS data, reinforces the assessment. Consequently, the inquiry that requires attention is not if the platform ought to be embraced or dismissed, but rather which components of the educational experience necessitate reconfiguration and reevaluation.

Consequently, its input does not represent a novel UX metric or proof of advancements in causal learning. It is a versatile assessment framework for vocational platforms pertinent to industry: various experiences, worldwide applicability, standards, and item evidence are collectively analyzed to ascertain if the digital infrastructure is adequately comprehensible to facilitate engagement in competency pathways and certification. Pertaining to SDG Target 4.4, the findings indicate favorable conditions for high-quality digital vocational education, rather than demonstrating that UpMySkill has enhanced skills, employment, or certification results.

5.3. Design and implementation implications

The primary objective is the onboarding process. Novice users must to be presented with a concise, role-oriented manual that illustrates how to access the course, recognize mandatory tasks, submit assignments, do quizzes, track progress, and locate assistance. The guide ought to be accessible upon request following the initial session, rather than vanishing indefinitely.

The second priority is to the clarity of the educational trajectory. Every course must to include a comprehensive progress chart delineating finished, in-progress, restricted, and forthcoming tasks, as well as the interconnections among modules, evaluations, and certificates. Clear completion guidelines and uniform status indicators will diminish the necessity for users to deduce subsequent actions.

The third priority is uniformity in navigation. Course classifications, navigational breadcrumbs, action prompts, return pathways, and mobile designs must adhere to a uniform interaction syntax. Tasks that are executed regularly ought to necessitate minimal transitions, and error notifications should articulate what occurred, the significance of the issue, and the steps for resolution.

The fourth priority is a collaborative support system between educational institutions and industry. Contextual assistance often posed inquiries, educator-centric oversight instruments, and transparent escalation pathways can fulfill the perceived requirements for technical support without overwhelming teachers. Usage analysis ought to be integrated with iterative, task-oriented usability assessments and succinct post-task inquiries. This adopts a research-for-enhancement methodology, wherein digital learning experiences are progressively restructured instead of being assessed solely post-implementation [16].

5.4. Limitations and future research

Several limitations bound the conclusions. The study used a cross-sectional, non-probability sample, and the numbers of participating schools and regions were not retained in the manuscript source. The sample was dominated by students aged 15–24, while only 20 teachers participated; role differences should therefore be treated as descriptive. The study measured retrospective perceptions, not observed task completion, error rates, time on task, course completion, certification attainment, or learning gain. Causal claims about learning effectiveness are not supported.

The UEQ response-quality sensitivity analysis showed that 53 cases met at least one heuristic flag and that screening increased all six-scale means. Because the rules were not specified prospectively and heuristic flags do not prove invalidity, the full sample was retained; nevertheless, future surveys should define quality criteria before analysis and record completion-time or attention-check evidence. Novelty's alpha of 0.592 warrants cautious interpretation, while the SUS alpha of approximately 0.70 indicates that item functioning and the Indonesian wording should be checked. Finally, no qualitative comments were available to explain specific pain points. Future work should combine UEQ and SUS with moderated task testing, screen or clickstream analysis, interviews, and comparisons across device type, school context, prior LMS experience, gender, and user role.

A particularly valuable next step would be a longitudinal redesign study. Baseline measures could be repeated after introducing guided onboarding and a visible certification pathway. Improvement should be tested not only through UEQ and SUS but also through task success, time to locate required activities, help requests, module completion, and certification outcomes. Such a design would connect interface quality more directly to participation and learning.

6. Conclusion

UpMySkill provides a generally positive user experience for participants in an industry-linked vocational learning programme. Users regarded the platform as stimulating, attractive, efficient, and dependable,

and five of the six UEQ scales compared favourably with the benchmark. Yet the SUS mean of 59.43 and the below-average perspicuity classification show that the platform is not consistently self-explanatory or effortless for all users. The answer to the title question is therefore conditional: the system is usable enough to sustain learning activity for many users, but not yet clear enough to assume equitable, low-friction participation without onboarding and support.

The contextual contribution is evidence from an industry-linked, certification-oriented LMS that remains underrepresented in UX research. The methodological contribution is the demonstration that UEQ and SUS should be interpreted together: their divergence transforms a broad judgement into a precise design problem. The quality-assurance contribution is a focused redesign agenda - make the learning and certification pathway visible, reduce initial learning effort, standardise navigation, provide contextual support, and validate improvements with observed tasks as well as perception scales. In this way, learner UX informs the conditions for quality digital vocational education while avoiding unsupported claims about learning, employability, certification, or SDG outcomes.

Declarations

Ethics approval and consent to participate

This study was conducted in full compliance with the Declaration of Helsinki (World Medical Association, 2013), including its provisions for research involving vulnerable populations (underage students). Ethical approval was obtained from Sultan Idris Education University's Ethics Committee (UPSI/RMIC/REC/2026/122). All procedures were conducted in accordance with the committee's ethical guidelines, applicable regulations, and the principles of the Declaration of Helsinki. Written informed consent to participate was obtained from all adult participants. For participants under 18 years of age, written informed consent was obtained from a parent or legal guardian, and assent was obtained from the participants.

Consent for publication

Not applicable.

Competing interests

The authors declare no competing interests.

Funding

This research is funded by the Universitas Pendidikan Indonesia through the research scheme/program of Research for QS Ranking Improvement (QS) with Contract No. 684/UN40.F7/PT.01.01/2026.

Author Contribution

Nuur Wachid contributed a role in the conceptualization, approach, investigation, and drafting of the original documents. Atiek Zahratul Ulum participated in the inquiry, verification, formal analysis, data gathering, and data interpretation. Muhammad Nurtanto contributed a role in the data curation and evaluation resources, as well as in the review and refinement of the manuscript. Md Baharuddin contributed a role in data curation, as well as in the review and editing of the manuscript. Mohamed Nor Azhari participated in the review and editing of the manuscript. All authors reviewed and approved the completed manuscript. Elysa contributed to verification, data analyst, and proofread of the final manuscript.

Acknowledgement

The authors gratefully acknowledge Universitas Pendidikan Indonesia for supporting this research through the Research for QS Ranking Improvement (QS) scheme/program under Contract No. 684/UN40.F7/PT.01.01/2026. The authors also acknowledge the participating students, teachers, schools, and program stakeholders who supported the evaluation.

Data Availability

The data used for the study will be made available upon reasonable request

References

1. Al-Fraihat D, Joy M, Masa'deh R, Sinclair J. Evaluating E-learning systems success: An empirical study. Comput Hum Behav. 2020;102:67–86. https://doi.org/10.1016/j.chb.2019.08.004.
2. Mendez Gijon F, Aguirre Hidalgo V, Arellano Vega AI. The Role of Open-Source Software as a Technological Alternative for Blended Learning in LMS Systems. Int J Eng Pedagogy (iJEP). 2025;15:4–14. https://doi.org/10.3991/ijep.v15i2.50169.
3. Majid NWA, Fuada S, Fajri MK, Nurtanto M, Akbar R. Progress Report of Cyber Society v1.0 Development as a Learning Media for Indonesian Society to Support EFA. Int J Eng Pedagogy. 2020;10:133–44.
4. Nurtanto M, Nawanksari S, Okianna, Sutrisno VLP, Majid NWA, Kholifah N. A Systematic Literature Review on the Impact of Reading Literacy on Students' Critical Thinking Skills in Vocational Education. J Teach Learn. 2026;20. https://doi.org/10.22329/jtl.v20i1.10049.
5. Pradana M, Elisa HP. Metaverse in education: A systematic literature review. Cogent Soc Sci. 2023;9. https://doi.org/10.1080/23311886.2023.2252656.
6. Budiarto MK, Asrowi, Gunarhadi, Karsidi R, Rahman A. E-learning platform for enhancing 21st century skills for vocational school students: A systematic literature review. Electron J e-Learning.

2024;22:76–90. https://doi.org/10.34190/ejel.22.5.3417.

7. Munisamy M, Osman SZM, Sanmugam M, Ng WF. From platforms to practice: A systematic review of learning management system integration in vocational teaching. Int J Mod Educ. 2025;7:1–21. https://doi.org/10.35631/IJMOE.727001.
8. Majid NWA, Barri MAF, Sari AP, Sodikin RA, Azman MNA, Prestoza MJR. Vocational Teachers' Insights on Artificial Intelligence and Computational Thinking Integration. Jurnal Penelitian dan Pengkajian Ilmu Pendidikan: e-Saintika. 2026;10:1–15. https://doi.org/10.36312/e-saintika.v10i1.3660.
9. Majid NWA, Maghfira DA, Sodikin RA, Iskandar S, Azman MNA. User Experience Analysis of a National Instructional Platform for Self-Learning and Competency Improvement: A Teacher's Perspective. J Curriculum Stud Res. 2026;8:388–407. https://doi.org/10.46303/jcsr.2026.20.
10. Axioo Class Program. Axioo Class Program: About and programs [Internet]. https://new.axiooclassprogram.org/. 2026 [cited 2026 Jul 31]. https://new.axiooclassprogram.org/. Accessed 31 Jul 2026.
11. United Nations. Transforming our world: the 2030 Agenda for Sustainable Development [Internet]. Department of Economic and Social Affairs. 2015 [cited 2026 Jul 31]. https://sdgs.un.org/2030agenda. Accessed 31 Jul 2026.
12. Hassenzahl M, Tractinsky N. User experience - a research agenda. Behav Inform Technol. 2006;25:91–7. https://doi.org/10.1080/01449290500330331.
13. for Standardization IO. ISO 9241 – 210:2019 Ergonomics of human-system interaction - Part 210: Human-centred design for interactive systems [Internet]. International Organization for Standardization; 2019. https://www.iso.org/standard/77520.html.
14. Pratama A, Faroqi A, Mandyartha EP. Evaluation of User Experience in Integrated Learning Information Systems Using User Experience Questionnaire (UEQ). J Inform Syst Inf. 2022;4:1019–29. https://doi.org/10.51519/journalisi.v4i4.394.
15. Pratama H, Kenzhaliyev O, Azman MNA, Othman MS, Marmoah S, Fajrie N. Bibliometric analysis of digital game-based learning research. Multidisciplinary Reviews. 2025;9:2026086. https://doi.org/10.31893/multirev.2026086.
16. Jahnke I. Quality of digital learning experiences - effective, efficient, and appealing designs? Int J Inform Learn Technol. 2023;40:17–30. https://doi.org/10.1108/IJILT-05-2022-0105.
17. Suryawan IPP, Pujawan IGN, Mahayukti GA, Jana P, Azman MNA. Measuring Inclusivity in Mathematics Learning Evaluation: Instrument Development Using a Design for Change Approach. J Curriculum Teach. 2026;15:311. https://doi.org/10.5430/jct.v15n1p311.
18. Simon P, Jiang J, Fryer LK. Measurement of higher education students' and teachers' experiences in learning management systems: A scoping review. Assess Eval High Educ. 2024;49:441–52. https://doi.org/10.1080/02602938.2023.2266154.
19. Santoso HB, Schrepp M, Isal RYK, Utomo AY, Priyogi B. Measuring user experience of the student-centered e-learning environment. J Educators Online [Internet]. 2016;13:58–79. https://eric.ed.gov/?

id=EJ1087680.

20. Wijanarko BD, Leandros R, Murad DF. Evaluasi pengalaman pengguna pada learning management system menggunakan metode User Experience Questionnaire. Jurnal Sistem Informasi Bisnis. 2024;14:385–91. https://doi.org/10.21456/vol14iss4pp385-391.
21. Abdul Rahman MB, Subri US, Ahmad FA, Sun Q, Muhamed Fauzi N. The Effect of Vocational Technical Module F-WBL4C on Trainers in Malaysia. Asia Pac J Educators Educ. 2026;40:381–92. https://doi.org/10.21315/apjee2025.40.3.15.
22. Vlachogianni P, Tselios N. Perceived usability evaluation of educational technology using the System Usability Scale (SUS): A systematic review. J Res Technol Educ. 2022;54:392–409. https://doi.org/10.1080/15391523.2020.1867938.
23. Vlachopoulos D, Pachni Tsitiridou O. Preparing University Graduates for the Labour Market Through Employability Skills Development and University–Industry Collaboration: A Systematic Review. Educ Sci (Basel). 2026;16. https://doi.org/10.3390/educsci16030426.
24. Kushendriawan MA, Santoso HB, Panca O, Hadi Putra M, Schrepp. Evaluating User Experience of a Mobile Health Application 'Halodoc' using User Experience Questionnaire and Usability Testing. Jurnal Sistem Informasi. 2021;17:58–71. https://doi.org/10.21609/jsi.v17i1.1063.
25. Schrepp M, Hinderks A, Thomaschewski J. Construction of a benchmark for the User Experience Questionnaire (UEQ). Int J Interact Multimedia Artif Intell. 2017;4:40–4. https://doi.org/10.9781/ijimai.2017.445.
26. Maslov I, Nikou S, Hansen P. Exploring user experience of learning management system. Int J Inform Learn Technol. 2021;38:344–63. https://doi.org/10.1108/IJILT-03-2021-0046.
27. Llamas MCAR, Vilela-Malabanan CM, Dinawanao DD. Needs and challenges of academics and students in using a learning management system: A user experience approach. J Educ Learn (EduLearn). 2025;19:1662–9. https://doi.org/10.11591/edulearn.v19i3.22350.
28. Laugwitz B, Held T, Schrepp M. Construction and evaluation of a User Experience Questionnaire. HCI and Usability for Education and Work. Springer; 2008. pp. 63–76. https://doi.org/10.1007/978-3-540-89350-9_6.
29. Santoso HB, Schrepp M, Hasani LM, Fitriansyah R, Setyanto A. The use of User Experience Questionnaire Plus (UEQ+) for cross-cultural UX research: evaluating Zoom and Learn Quran Tajwid as online learning tools. Heliyon. 2022;8:e11748. https://doi.org/10.1016/j.heliyon.2022.e11748.
30. Yu L. User experience of english online classroom E-learning based on routing algorithm and data visualization analysis. Entertain Comput. 2024;51:100733. https://doi.org/10.1016/j.entcom.2024.100733.
31. Alhazzaa K, Yan W. Immersive technologies in Education: Exploring user experience and engagement in building energy simulations through AR and VR. Computers & Education: X Reality. 2025;6:100097. https://doi.org/10.1016/j.cexr.2025.100097
32. Brooke J. SUS: A quick and dirty usability scale. Usability Evaluation in Industry. Taylor & Francis; 1996. pp. 189–94.

33. Bangor A, Kortum PT, Miller JT. An Empirical Evaluation of the System Usability Scale. Int J Hum Comput Interact. 2008;24:574–94. https://doi.org/10.1080/10447310802205776.
34. Bangor A, Kortum PT, Miller JT. An Empirical Evaluation of the System Usability Scale. Int J Hum Comput Interact [Internet]. 2008;24:574–94. https://doi.org/10.1080/10447310802205776.
35. Bangor A, Kortum P, Miller J. Determining what individual SUS scores mean: Adding an adjective rating scale. J Usability Stud. 2009;4:114–23. https://doi.org/10.5555/2835587.2835589.
36. Majid NWA, Fuada S. E-Learning for Society: A Great Potential to Implement Education for All (EFA) Movement in Indonesia. Int J Interact Mob Technol [Internet]. 2020;14:250–8. https://www.online-journals.org/index.php/i-jim/article/view/11363.

Figures

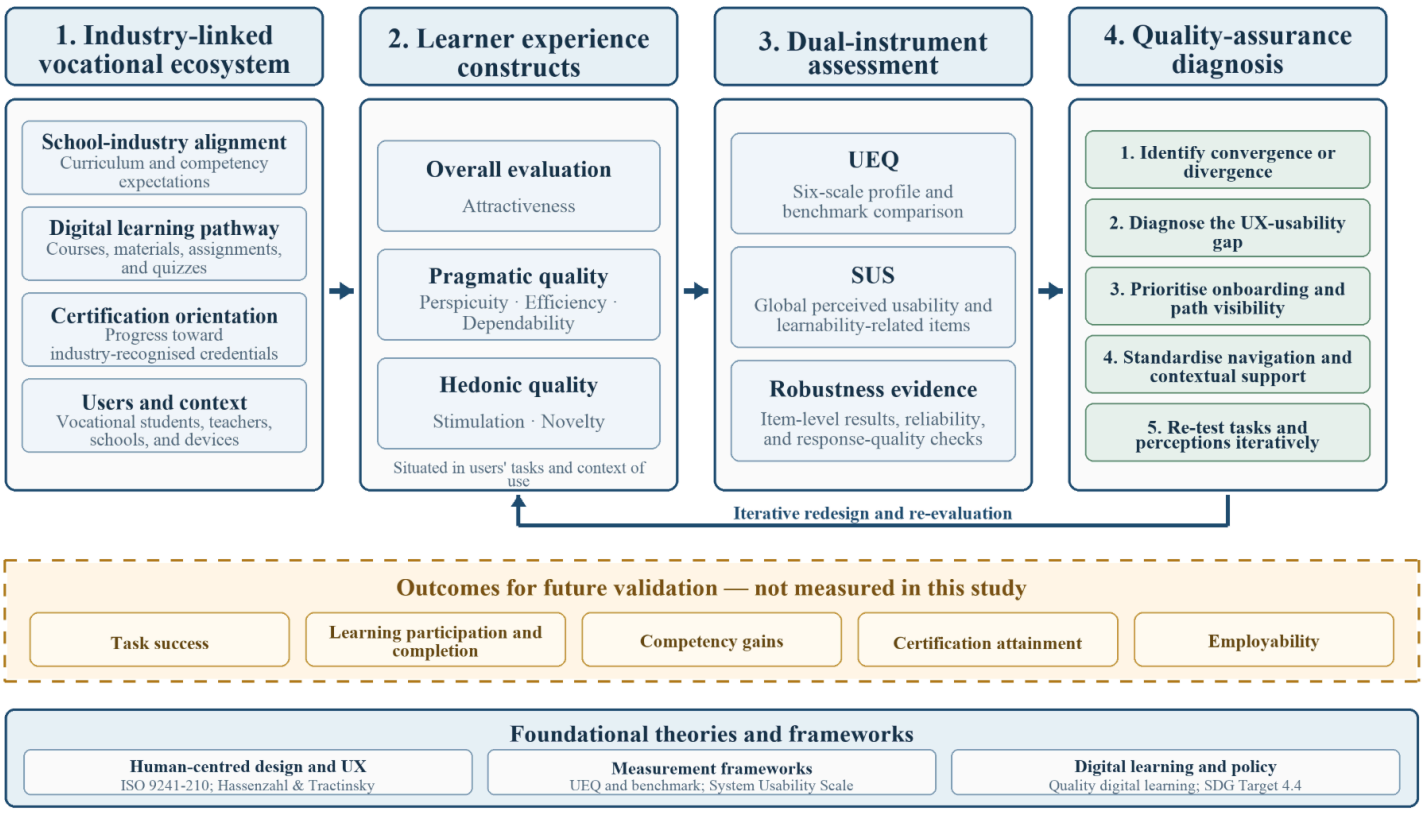


Figure 1

Conceptual framework for evaluating an industry-linked vocational LMS as an enabling condition for quality digital education

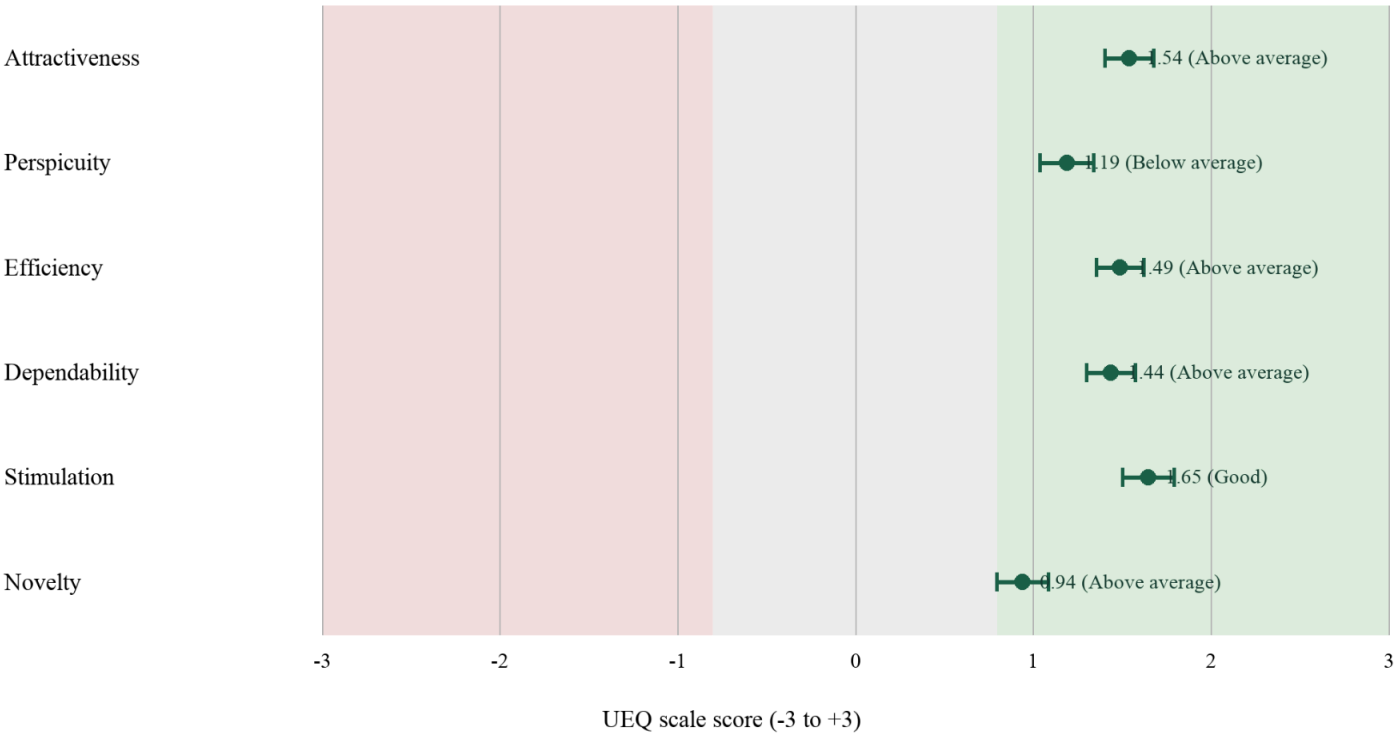


Figure 2

UEQ scale means and 95% confidence intervals. Benchmark categories are shown in labels.

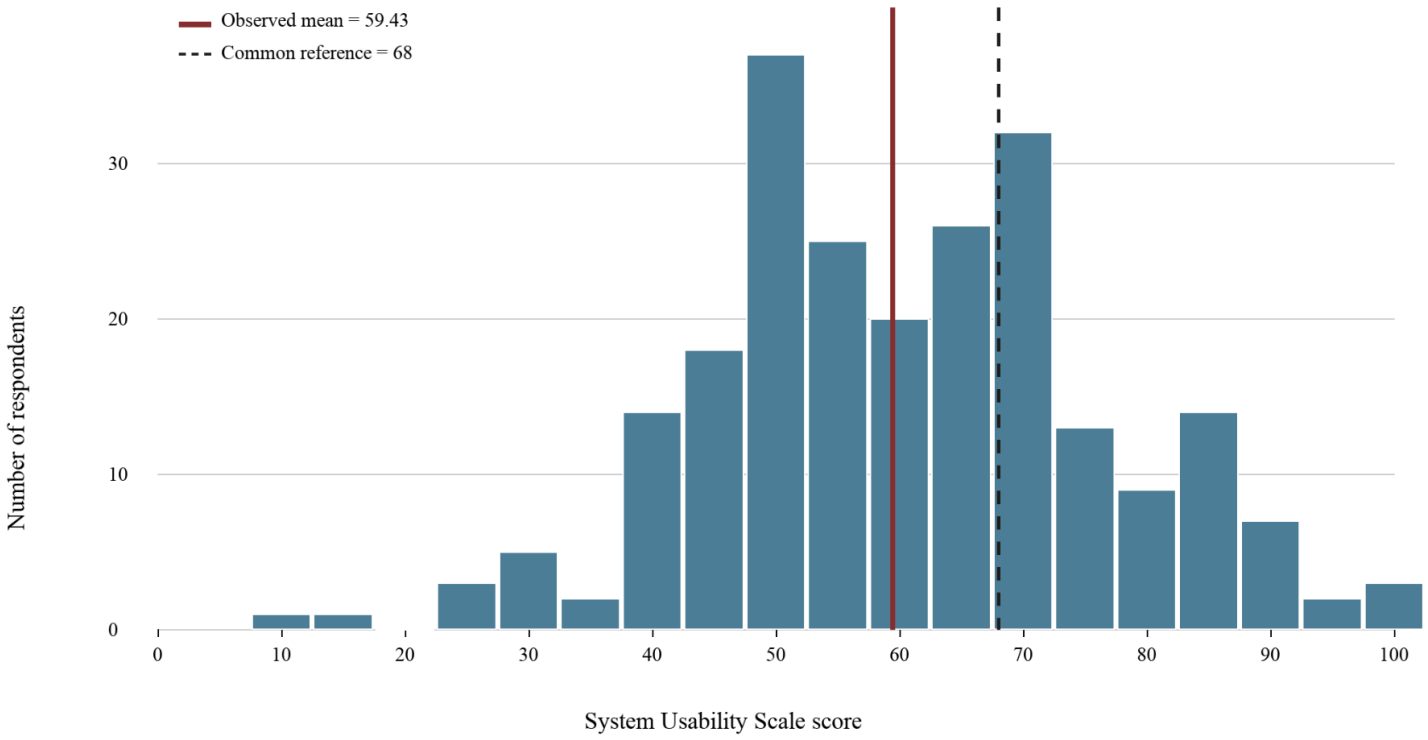


Figure 3

Distribution of respondent-level SUS scores (n = 232).