Evaluating Academic Curriculum Effectiveness and Professional Preparedness among Quantity Surveying Graduates: Evidence from UiTM Malaysia

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ABSTRACT

Higher education institutions are increasingly expected to ensure that academic programmes provide graduates with knowledge and competencies that are relevant to professional practice. This expectation is particularly important in Quantity Surveying (QS), where graduates must integrate technical knowledge with communication, teamwork, analytical and problem-solving skills in rapidly changing construction environments. This study evaluates the perceived effectiveness of the academic curriculum in preparing Quantity Surveying graduates for professional practice, with particular emphasis on curriculum relevance and academic preparedness. A quantitative survey was conducted among 141 UiTM Quantity Surveying graduates who had completed industrial training. The questionnaire comprised five items measuring academic relevance and six items measuring academic preparedness using a four-point Likert scale. Descriptive statistics, reliability analysis, Spearman's rank-order correlation, Mann–Whitney U tests and Kruskal–Wallis tests were employed. The findings indicate that respondents generally perceived their academic curriculum as relevant to workplace requirements, although notable gaps remain. The highest-rated curriculum item concerned the relevance of subjects to internship tasks (M = 3.43), whereas the lowest-rated item concerned the adequacy of training in industry-standard tools and software (M = 2.80). Academic relevance recorded an overall mean of 3.07, while academic preparedness recorded a mean of 3.06. Academic relevance demonstrated a significant positive relationship with academic preparedness ($\rho = .612$, $p < .001$). A simple linear regression model showed that academic relevance significantly predicted academic preparedness ($\beta = .726$, $p < .001$), explaining 43.7% of the variance. No statistically significant differences were identified in academic relevance or preparedness according to gender, CGPA or internship organisation. The findings indicate that curriculum relevance is important but should be accompanied by stronger opportunities for authentic application, digital competency development and exposure to contemporary industry practices. The study contributes to the literature on curriculum–industry alignment by providing discipline-specific evidence from Malaysian Quantity Surveying education.

Keywords: Quantity surveying education; curriculum relevance; academic preparedness; graduate employability; curriculum–industry alignment

INTRODUCTION

Higher education has increasingly moved beyond the traditional objective of transmitting disciplinary knowledge towards preparing graduates for complex professional environments. Universities are now expected to develop graduates who can apply knowledge, communicate effectively, solve problems, collaborate with others and adapt to changing workplace requirements. Consequently, the relevance of academic curricula to professional practice has become an important issue in higher education research.

The issue is particularly significant for professionally oriented disciplines such as Quantity Surveying (QS). Quantity Surveyors operate across multiple stages of construction projects and are expected to possess competencies in measurement, estimating, cost planning, procurement, contract administration, project

management, construction technology and increasingly digital construction processes. The profession therefore requires graduates to integrate technical knowledge with interpersonal, analytical and technological capabilities.

The increasing emphasis on graduate employability has also intensified concerns about the alignment between university education and industry requirements. Recent Malaysian research has highlighted the relationship between curriculum design, work readiness and employability, arguing that the effective application of knowledge and skills acquired through higher education is central to graduate readiness for employment (Isa et al., 2023). Similarly, employer-based evidence from Malaysia indicates that digital skills, problem-solving and communication/collaboration are increasingly important requirements for entry-level graduates, suggesting that conventional academic preparation may need to evolve alongside technological and workplace changes (Tee et al., 2024).

Within Quantity Surveying education, curriculum relevance is particularly important because professional practice continues to evolve in response to digitalisation, Building Information Modelling (BIM), automation, new procurement approaches, sustainability requirements and increasingly multidisciplinary project environments. Recent research on QS education in Malaysia found that students identified both strengths and deficiencies in their programmes, particularly in areas involving sustainability, communication, global readiness and interdisciplinary collaboration (Yap et al., 2026).

Earlier Malaysian QS education research similarly demonstrated that students' learning experiences are influenced by curriculum structure, academic learning, lecturer competency, support facilities and the overall educational environment (Yap et al., 2022). The study highlighted the importance of ensuring that QS education provides students with learning experiences that contribute to professionalism and competency. However, curriculum relevance and academic preparedness are related but conceptually distinct. A student may perceive that a subject is relevant to professional practice without necessarily feeling adequately prepared to perform workplace tasks. Curriculum relevance concerns the extent to which academic content corresponds to professional requirements, whereas academic preparedness concerns students' perceived ability to apply the knowledge and skills gained through their academic programme.

This distinction is important because a curriculum may contain appropriate subjects while providing insufficient opportunities for authentic application, digital practice or professional problem-solving. Recent research on graduate employability has similarly questioned whether highly specialised or major-based curricula can adequately develop the broader combination of capabilities required in contemporary employment contexts (Li et al., 2023). Work-integrated learning provides an important mechanism through which students can test and apply academic knowledge. Large-scale evidence from Australia indicates that work-based WIL contributes to perceived improvements in foundation, adaptive and collaborative skills, although the benefits vary according to the type of WIL experience (Jackson & Dean, 2022).

The relationship between curriculum and professional preparation is therefore particularly relevant for QS programmes, where students are expected to transition from classroom-based learning to construction projects involving real commercial, contractual and technical constraints. Despite growing research on employability, WIL and QS education, there remains a need for empirical evidence examining how graduates themselves perceive the relationship between academic curriculum relevance and their preparedness for professional practice. This is particularly relevant in Malaysia, where higher education institutions continue to respond to changing construction industry requirements.

Therefore, this study evaluates the perceived effectiveness of the academic curriculum among UiTM Quantity Surveying graduates and examines the relationship between perceived academic relevance and academic preparedness. The study addresses the following research questions:

RQ1: How do UiTM Quantity Surveying graduates perceive the relevance of their academic curriculum to professional practice?

RQ2: How do UiTM Quantity Surveying graduates perceive their academic preparedness for professional practice?

RQ3: Is there a significant relationship between perceived academic relevance and academic preparedness?

RQ4: Does perceived academic relevance significantly predict academic preparedness?

LITERATURE REVIEW

Curriculum Effectiveness and Graduate Employability

Curriculum effectiveness is increasingly evaluated according to the extent to which graduates can transfer academic learning into professional and social contexts. The traditional view of curriculum effectiveness, which focuses primarily on disciplinary content and academic achievement, is increasingly insufficient in an environment where employers expect graduates to demonstrate combinations of technical, digital and transferable skills.

Graduate employability is a particularly important consideration. Employability should not be understood simply as obtaining a job immediately after graduation. Rather, it involves graduates' capacity to obtain, retain and develop employment through a combination of knowledge, skills, personal attributes and contextual resources. In the Malaysian context, Isa et al. (2023) argue that curriculum design is closely connected to students' knowledge, skills, work readiness and employability. Their study highlights the importance of examining curriculum design from the perspective of graduate preparedness rather than treating curriculum quality as an exclusively academic concern.

This perspective is relevant to QS education because the professional role requires graduates to combine discipline-specific competencies with broader professional capabilities. A technically strong graduate who lacks communication, teamwork or problem-solving abilities may nevertheless experience difficulties when entering professional practice. Healy (2023) similarly argues that graduate employability should be approached through an integrated understanding of careers and employability learning, rather than as a separate outcome added to the curriculum. This suggests that employability-related capabilities should be embedded within teaching, learning and assessment rather than provided solely through additional career activities. Thus, curriculum effectiveness should be considered in terms of whether academic experiences enable students to develop competencies that can subsequently be transferred to professional settings.

Curriculum–Industry Alignment

Curriculum–industry alignment refers to the degree to which the knowledge, skills and competencies developed through higher education correspond to those expected in professional practice. Misalignment can occur when academic programmes focus heavily on established disciplinary knowledge while industry requirements evolve more rapidly. This issue is particularly important in sectors affected by digital transformation.

Tee et al. (2024), using data from 376 Malaysian employers, found that employers placed high importance on digital skills among entry-level graduates. Information and data literacy, problem-solving and digital content creation were among the leading current digital skill requirements, while communication and collaboration and problem-solving were also identified as important future skills. The findings demonstrate the continuing need for higher education programmes to respond to changing workplace skill requirements.

The problem is therefore not necessarily that university curricula are irrelevant. Rather, a curriculum can remain fundamentally relevant while failing to provide sufficient depth or exposure in specific emerging competencies. This distinction is important in interpreting graduate perceptions. If students report that their subjects are relevant but simultaneously identify insufficient preparation in industry-standard software, this should be interpreted as evidence of partial curriculum–industry alignment, rather than complete curriculum failure.

Li et al. (2023) provide a related argument by demonstrating that a highly discipline-specific undergraduate curriculum can potentially constrain broader employability development if it limits opportunities to develop a more diverse combination of skills, social networks and career-management capabilities. For professional education, curriculum alignment therefore needs to encompass both disciplinary depth and the wider capabilities required to operate effectively in contemporary organisations.

Quantity Surveying Education in Malaysia

Quantity Surveying is a professionally oriented discipline in which the relationship between academic education and industry practice is particularly important. QS graduates are expected to possess technical competencies while also demonstrating communication, analytical reasoning, teamwork, professional judgement and technological literacy. Changes in the construction industry have increased the importance of digital technologies and multidisciplinary collaboration.

Yap et al. (2022), in a Malaysian study of QS students, identified several dimensions influencing student learning experiences, including academic learning, lecturer professionalism and competency, academic support, curriculum structure and the physical learning environment. The findings indicate that curriculum structure is only one component of a broader educational experience that contributes to professional development.

More recent evidence demonstrates that QS education must continue to evolve. Yap et al. (2026) investigated curriculum reform among QS students in Malaysia and identified strengths in technical learning and digital exposure but also deficiencies in sustainability, communication, global readiness and interdisciplinary collaboration. The authors argued for stronger academic–industry collaboration and a more forward-looking curriculum to improve graduate readiness.

These findings are directly relevant to the present study because the current research examines graduates after they have experienced an industry placement. Their perceptions therefore provide an opportunity to assess whether the academic curriculum appeared relevant when confronted with actual workplace requirements.

Academic Preparedness for Professional Practice

Academic preparedness refers to the extent to which students perceive themselves as having acquired the knowledge and competencies necessary to perform professional tasks. In the present study, preparedness encompasses technical competence, confidence in applying knowledge, digital tools and software, communication, teamwork, and problem-solving and analytical skills. This multidimensional interpretation is consistent with contemporary employability research. Graduate readiness requires more than technical knowledge because workplace performance depends on the ability to communicate, collaborate and respond to problems.

Monogaran and Subramaniam (2023), studying interns and employers in a Malaysian public university, found differences between employer expectations and intern performance, particularly in values, attitudes, professionalism, communication, leadership and teamwork. Their findings demonstrate the importance of considering broader capabilities when evaluating whether university education prepares students for employment.

For QS education, these capabilities are particularly important because Quantity Surveyors operate in multidisciplinary project teams and interact with clients, consultants, contractors, suppliers and other stakeholders. Academic preparedness can therefore be understood as the bridge between curriculum content and workplace performance.

Digital Competence and QS Education

Digital competence has become an increasingly important dimension of graduate preparedness. Construction organisations increasingly use BIM, digital measurement, project management systems, data analytics and

other digital technologies.

The Malaysian employer study by Tee et al. (2024) provides evidence that digital skills are increasingly valued alongside technical and soft skills. The authors found particularly important gaps in communication and collaboration, problem-solving and other digital competencies among entry-level graduates. The issue is especially relevant to QS graduates because digital tools increasingly influence measurement, estimating, cost management, documentation and information exchange. Consequently, QS curricula should not only teach students how to understand professional processes conceptually but should also provide opportunities to work with tools that resemble those used in professional practice. The recent Malaysian QS curriculum study by Yap et al. (2026) further reinforces the need for curriculum reform in response to changing industry expectations.

Work-Integrated Learning as a Context for Evaluating Curriculum

Although the present study focuses on academic curriculum rather than internship quality, the internship context provides an important basis for evaluating academic preparedness. Work-integrated learning allows students to compare academic expectations with actual professional practice. Jackson and Dean (2022), using data from 76,261 graduates, found that work-based WIL was associated with improvements in perceived skills and employability outcomes.

Ng et al. (2022), based on 588 students with internship experience, similarly found relationships between WIL, human capital, career self-management and perceived employability. These studies support the use of post-internship graduate perceptions as an informative source for curriculum evaluation. Graduates who have experienced workplace requirements are in a position to judge whether academic knowledge and skills were sufficiently aligned with professional demands.

Research Hypotheses

Based on the conceptual framework, the following hypotheses were formulated:

H1: Perceived academic relevance is significantly and positively associated with academic preparedness among UiTM Quantity Surveying graduates.

H2: Perceived academic relevance significantly predicts academic preparedness among UiTM Quantity Surveying graduates.

The first hypothesis addresses the association between the two constructs, while the second examines whether academic relevance provides significant explanatory power for academic preparedness.

METHODOLOGY

Research Design

A quantitative cross-sectional survey design was adopted. The study examined the perceptions of Quantity Surveying graduates after exposure to internship or industrial training. The post-internship perspective was considered appropriate because respondents had an opportunity to compare academic learning with actual workplace requirements.

Respondents

Table 1. Respondent profile

Characteristic	Category	N	%
Gender	Female	98	69.5
	Male	43	30.5
CGPA	Below 2.50	2	1.4

	2.50–2.99	16	11.3
	3.00–3.49	95	67.4
	3.50–4.00	28	19.9
Internship organisation	Contractor	64	45.4
	QS Consultant Firm	44	31.2
	Developer	18	12.8
	Government Agency	9	6.4
	Local Authority	2	1.4
	Others	4	2.8
	Total	141	100

A total of **141 valid responses** were obtained. The sample consisted of 98 female respondents (69.5%) and 43 male respondents (30.5%). The majority of respondents reported a CGPA between 3.00 and 3.49 (n = 95, 67.4%), followed by respondents with a CGPA of 3.50–4.00 (n = 28, 19.9%), 2.50–2.99 (n = 16, 11.3%), and below 2.50 (n = 2, 1.4%).

In terms of internship organisation, 64 respondents (45.4%) were attached to contractors, 44 (31.2%) to QS consultancy firms, 18 (12.8%) to developers, nine (6.4%) to government agencies, two (1.4%) to local authorities and four (2.8%) to other organisations.

Research Instrument

The questionnaire consisted of two sections relevant to this manuscript.

Section A: Academic Relevance

Five items assessed the perceived relevance and curriculum–industry alignment of the academic programme:

1. Subjects taken were relevant to internship tasks.
2. Theoretical knowledge was directly applicable during the internship.
3. Practical classes prepared students for workplace tasks.
4. Assessment tasks simulated real industry problems.
5. There were large gaps between academic learning and industry needs.

The fifth item was negatively worded and was reverse coded prior to the construction of the academic relevance composite.

Section B: Academic Preparedness

Six items assessed academic preparedness:

1. The academic programme taught the technical skills required for internship tasks.
2. Students felt confident applying technical knowledge to real work.
3. Students received adequate training in industry-standard tools/software.
4. Coursework developed written and verbal communication skills.
5. Academic experience supported effective teamwork.

6. Academic training improved problem-solving and analytical skills.

All items were measured using a four-point Likert scale:

Table 2. Likert Scale Used

Scale	Interpretation
1	Strongly Disagree
2	Disagree
3	Agree
4	Strongly Agree

Data Analysis

Descriptive statistics were used to examine item-level and construct-level perceptions. Cronbach's alpha was calculated to assess internal consistency. Spearman's rank-order correlation was used to examine the relationship between academic relevance and academic preparedness. A simple linear regression was subsequently conducted to determine whether academic relevance significantly predicted academic preparedness. Because Likert-scale responses are ordinal and some demographic groups were small, non-parametric tests were also employed to examine whether academic relevance and preparedness differed according to gender, CGPA and internship organisation. The statistical significance threshold was set at $\mathbf{p < .05}$.

RESULTS

Descriptive Statistics

Table 3. Descriptive statistics for academic relevance

Academic relevance item	Mean
Subjects were relevant to internship tasks	3.43
Theoretical knowledge was directly applicable	3.28
Practical classes prepared students for workplace tasks	3.26
Assessment tasks simulated real industry problems	3.11
Academic–industry gap item, reverse coded	2.29
Overall academic relevance	3.07

The overall mean for academic relevance was **3.07**, indicating generally positive perceptions of curriculum relevance. Academic preparedness recorded a very similar mean of **3.06**. The highest-rated item was the relevance of subjects to internship tasks (M = 3.43). This indicates that respondents generally recognised a strong connection between their academic subjects and the work they encountered during internship. The second-highest item concerned the applicability of theoretical knowledge (M = 3.28), followed by practical classes (M = 3.26).

Assessment tasks received a lower but still positive mean of 3.11. This suggests that respondents generally considered academic assignments useful, although they may not have fully replicated authentic industry problems. The reverse-coded academic–industry gap item produced the lowest score (M = 2.29 after reverse coding). The raw item mean was 2.71, with 58.9% of respondents selecting Agree or Strongly Agree. This is an important finding because it suggests that respondents could simultaneously perceive their subjects as relevant and still identify a noticeable gap between academic learning and actual industry requirements.

Academic Preparedness

Table 4. Descriptive statistics for academic preparedness

Academic preparedness item	Mean
Academic programme taught required technical skills	3.13
Confidence applying technical knowledge	3.01
Adequate training in industry-standard tools/software	2.80
Coursework developed communication skills	3.10
Academic experience supported teamwork	3.17
Academic training improved problem-solving/analytical skills	3.16
Overall academic preparedness	3.06

The results demonstrate that academic preparedness was generally positive. Teamwork received the highest rating (M = 3.17), followed closely by problem-solving and analytical skills (M = 3.16) and technical skills (M = 3.13). The lowest-rated dimension was training in industry-standard tools and software (M = 2.80). This finding represents one of the most important implications of the study. The relatively lower score for digital/industry-standard tools suggests that while respondents generally believed that their academic programme provided an appropriate theoretical and professional foundation, they were less confident that it had exposed them sufficiently to the technologies used in contemporary professional practice.

Reliability Analysis

Table 5. Reliability analysis

Construct	No. of items	Cronbach's alpha	Interpretation
Academic relevance	5	0.653	Marginal/acceptable for exploratory research
Academic preparedness	6	0.843	Good

The academic preparedness scale demonstrated strong internal consistency with Cronbach's alpha of 0.843. The academic relevance scale produced an alpha of 0.653, which falls below the commonly preferred .70 threshold. In conjunction to that, rather than treating the value as unequivocally acceptable, the result suggests that the five academic-relevance items may not function as a highly homogeneous scale. This may reflect the breadth of the construct, which combines subject relevance, applicability of theory, practical preparation, assessment authenticity and the perceived academic-industry gap. Accordingly, findings involving the academic-relevance composite should be interpreted as exploratory. Future instrument refinement should examine corrected item-total correlations, inter-item correlations and the dimensional structure of the scale, and should consider revising or expanding items before confirmatory validation in an independent sample.

Relationship between Academic Relevance and Academic Preparedness

Spearman's rank-order correlation was conducted to test H1.

Table 6. Correlation between academic relevance and academic preparedness

Variables	ρ	p-value	Interpretation
Academic relevance ↔ Academic preparedness	**0.612**	**< .001**	Strong positive association

The analysis revealed a statistically significant positive relationship between academic relevance and academic preparedness, **ρ = .612, p < .001**. Therefore, **H1 is supported**. The magnitude of the coefficient indicates that respondents who perceived their academic curriculum as more relevant also tended to report higher levels of academic preparedness.

Regression Analysis

A simple linear regression was conducted with academic preparedness as the dependent variable and academic relevance as the independent variable.

Table 7. Regression model summary

Statistic	Value
R	0.661
R^2	**0.437**
Adjusted R^2	**0.433**
F	**108.10**
p	**< .001**
N	**141**

The regression model was statistically significant, **$F(1,139) = 108.10$, $p < .001$**.

Academic relevance explained **43.7% of the variance in academic preparedness**.

Table 8. Regression coefficients

Predictor	B	SE	β	t	p
Constant	0.832	0.217	—	3.838	< .001
Academic relevance	0.726	0.070	**0.661**	**10.396**	**< .001**

Academic relevance was a significant positive predictor of academic preparedness, **$\beta = .661$, $p < .001$**. Therefore, **H2 is supported**. The unstandardised coefficient indicates that a one-unit increase in perceived academic relevance was associated with an estimated 0.726-unit increase in academic preparedness.

The findings provide empirical support for the proposed conceptual framework.

Differences by Gender

A Mann–Whitney U test was conducted to determine whether perceptions differed between male and female respondents.

Table 9. Gender differences

Construct	Female Mean	Male Mean	p-value
Academic relevance	3.09	3.04	.709
Academic preparedness	3.06	3.07	.658

No statistically significant differences were found for academic relevance or academic preparedness. This suggests that perceptions of curriculum effectiveness were relatively consistent across gender.

Differences by CGPA

Kruskal–Wallis tests were conducted to examine differences across CGPA groups.

Table 10. Differences according to CGPA

Construct	H	p-value
Academic relevance	3.280	.350
Academic preparedness	4.618	.202

No statistically significant differences were identified. Although respondents with CGPA between 3.00 and 3.49 reported slightly higher mean scores for both constructs, the differences were not statistically significant. This suggests that perceptions of academic curriculum effectiveness were not strongly determined by academic achievement.

Differences by Internship Organisation

A Kruskal–Wallis test was also conducted across internship organisation categories.

Table 11. Differences according to internship organisation

Construct	H	p-value
Academic relevance	3.183	.672
Academic preparedness	2.457	.782

No significant differences were identified according to internship organisation. This suggests that the overall perception of academic preparation was relatively consistent across the organisation categories represented in the sample. However, this finding should not be interpreted as evidence of equivalence across sectors because the group sizes were highly uneven. In particular, the local authority (n = 2) and other organisation (n = 4) categories were too small to support robust subgroup inference. The non-significant result may therefore reflect limited statistical power in some categories, and the subgroup analysis should be regarded as exploratory rather than generalisable.

DISCUSSION

Overall Effectiveness of the Academic Curriculum

The results demonstrate that UiTM Quantity Surveying graduates generally perceive their academic curriculum positively. The overall academic relevance score of 3.07 indicates that respondents tended to agree that their academic education was relevant to their workplace experience. The strongest result was the relevance of academic subjects to internship tasks (M = 3.43). This indicates that the core disciplinary content of the programme remains useful when graduates enter professional environments.

This finding is broadly consistent with Malaysian QS education research. Yap et al. (2022) identified curriculum structure and academic learning as important dimensions of QS students' educational experience and highlighted the role of academic learning in developing professionalism and competency. The result is also consistent with the more recent study by Yap et al. (2026), which found that Malaysian QS students recognised important strengths within their programmes while also identifying areas requiring reform.

The implication is therefore not that the existing QS curriculum is ineffective. Instead, the results suggest that the programme provides a sound academic foundation but requires continuous calibration against evolving professional practice.

The Curriculum and Industry Gap

One of the most important findings is the apparent coexistence of high curriculum relevance and a perceived curriculum and industry gap. Although 98.6% of respondents agreed that their subjects were relevant to

internship tasks, 58.9% also agreed that there were large gaps between academic learning and industry needs. At first glance, these results appear contradictory. However, they can be reconciled by distinguishing general relevance from depth of workplace preparedness.

A subject can be relevant to professional work while still failing to replicate the complexity of real projects; commercial pressures; professional software; communication with clients and consultants; multidisciplinary coordination; contractual decision-making; time constraints; and organisational procedures.

Therefore, the finding should not be interpreted as evidence that the QS curriculum is irrelevant. Rather, it suggests that respondents recognised a translation gap between academic knowledge and professional application. This interpretation is consistent with recent research showing that curriculum design and work readiness are interconnected but not identical concepts (Isa et al., 2023).

Academic Preparedness and Professional Competence

The overall academic preparedness score of 3.06 indicates a generally positive perception. Teamwork and problem solving received relatively strong ratings, suggesting that the academic programme provides opportunities for students to develop transferable capabilities.

This is significant because professional QS practice requires graduates to interact with multiple stakeholders and respond to project problems. The development of communication, teamwork and analytical capabilities therefore complements technical knowledge.

The findings are consistent with Monogaran and Subramaniam (2023), who demonstrated that communication, leadership, teamwork, professionalism and related capabilities remain important areas in graduate employability and can represent gaps between employer expectations and graduate performance. The relatively positive ratings for teamwork and problem-solving in the present study may indicate that these capabilities are already embedded to some extent within the QS academic programme.

Industry-Standard Software as a Curriculum Weakness

The lowest academic preparedness score was for training in industry-standard tools and software (M = 2.80). This finding deserves particular attention because it represents a potential point of curriculum–industry misalignment. The construction industry is undergoing significant digital transformation. QS practice increasingly involves digital measurement, BIM, automated quantity take-off, cost databases, digital documentation and integrated project information.

Tee et al. (2024) found that Malaysian employers place considerable importance on digital competencies among entry-level graduates and identified measurable gaps between the digital skills demanded by employers and graduate competencies.

The current findings suggest that the issue is also visible from the graduate perspective. The implication is not that students should simply be trained in a larger number of software packages. Instead, curriculum design should prioritise authentic digital application in professional QS contexts. This can include BIM enabled measurement and quantity take off, digital estimating and cost-planning platforms, electronic tendering, common data environments, project information management and digitally supported reporting. Where possible, these applications should be embedded in real or realistically simulated project case studies co-developed with industry practitioners so that students learn not only software operation but also when, why and how digital tools support professional decision making.

For example, students could be required to complete integrated assignments involving digital measurement; BIM-based quantity extraction; cost planning; estimating; tender documentation; project information management; and digital reporting. Such approaches would allow digital skills to become embedded within QS professional tasks rather than being taught as isolated software skills.

Academic Relevance as a Predictor of Preparedness

The strongest empirical finding is the significant positive relationship between academic relevance and academic preparedness. The Spearman coefficient of $\rho = .612$ indicates a strong positive association.

More importantly, the regression analysis demonstrates that academic relevance explains 43.7% of the variance in academic preparedness. This provides evidence that graduates' perceptions of curriculum relevance are meaningfully connected to their perceptions of being prepared for professional practice. The finding supports the argument that curriculum design should be considered a fundamental component of graduate employability rather than a purely academic concern. It also supports the position of Healy (2023), who argues that employability development should be integrated within teaching and learning rather than treated as a separate activity. Nevertheless, the R^2 of 43.7% also indicates that more than half of the variance in academic preparedness remains unexplained.

This is theoretically important. It means that curriculum relevance alone is not sufficient to explain graduate preparedness. Other factors may include teaching quality; lecturer competence; practical learning; internship quality; individual motivation; prior work experience; exposure to industry; digital learning resources; university facilities; and workplace supervision. This finding creates a useful foundation for the second manuscript, which will investigate internship quality and internship outcomes separately.

Similarity across Student Groups

The absence of significant differences according to gender, CGPA and internship organisation is also informative. The findings suggest that perceptions of curriculum effectiveness are relatively consistent across different student characteristics. The lack of significant differences by CGPA indicates that academically stronger students did not necessarily perceive the curriculum as substantially more effective than other students.

Similarly, the absence of significant differences between internship organisations should be interpreted cautiously. The highly unequal group sizes, including only two respondents from local authorities and four from other organisations, limit the stability of the Kruskal-Wallis comparison and reduce confidence in sector-level generalisation. Future studies should recruit larger and more balanced samples across internship settings before drawing conclusions about whether curriculum perceptions are genuinely consistent between contractors, consultancy firms, developers and public-sector organisations.

Implications

Implications for Curriculum Development

The findings suggest that curriculum review should move beyond asking whether subjects are relevant. Curriculum evaluation should also ask:

“Can students apply what they have learned in authentic professional situations?”

Therefore, curriculum development should incorporate authentic industry-based assignments; real construction project case studies; current QS software and BIM enabled workflows; digital measurement and quantity take-off; multidisciplinary project activities; professional communication; problem-solving and analytical tasks; and industry-informed assessment. Greater industry participation in the design, delivery and review of these learning activities would help ensure that digital and professional competencies remain aligned with contemporary practice.

Strengthening Digital Competence

The relatively low score for industry-standard tools and software suggests that digital competency should be prioritised. Rather than introducing digital tools as isolated subjects, universities could integrate them vertically across existing QS subjects and progressively increase the authenticity and complexity of their application. For

example, Measurement could incorporate BIM-based quantity take-off; Estimating could use digital estimating platforms; Cost Planning could apply integrated cost databases; Procurement could include electronic tendering; and Project Management could use common data environments and digital project-information systems. Industry practitioners and software users could also contribute through live project demonstrations, co-designed case studies, short technical workshops and assessment feedback. This approach would strengthen transfer from classroom learning to professional practice while reducing the risk of curriculum overload.

For example Measurement to BIM/digital take-off; Estimating to digital estimating tools; Cost planning to integrated cost databases; Procurement to digital tendering and Project management to digital project information. This approach would improve the authenticity of learning while reducing the risk of curriculum overload.

Industry Participation in Curriculum Review

The curriculum-industry gap identified by respondents suggests that industry should have a stronger role not only in curriculum evaluation but also in selected aspects of curriculum delivery and assessment. Industry practitioners could contribute through curriculum advisory panels, guest lectures, co-developed real-project case studies, BIM and QS-software workshops, curriculum mapping, assessment moderation, mentoring and periodic graduate-competency reviews. Such collaboration can provide more current evidence of workplace expectations and help universities update learning activities before gaps become embedded in the curriculum. This direction is consistent with recent calls for stronger academic-industry collaboration in Malaysian QS education (Yap et al., 2026).

Limitations and Future Research

Several limitations should be considered when interpreting the findings. First, the study relies on graduates' self-reported perceptions of curriculum relevance and preparedness. These perceptions are valuable for understanding the student-to-work transition, but they do not directly measure actual workplace performance, professional competency or employer-rated readiness. Consequently, the findings should be interpreted as evidence of perceived preparedness rather than objective professional competence. Future research should triangulate graduate perceptions with employer assessments, supervisor evaluations, workplace performance indicators and qualitative feedback from industry practitioners.

Second, the academic relevance scale recorded Cronbach's alpha of 0.653, indicating borderline internal consistency. Although the construct intentionally covers several related aspects of curriculum-industry alignment, the value limits the precision with which the composite score can be interpreted. Future studies should conduct item-level diagnostics and further scale validation, including corrected item-total correlations, assessment of dimensionality and replication with a larger independent sample.

Third, the internship-organisation groups were uneven, with particularly small numbers for local authorities and other organisations. The subgroup comparisons therefore have limited statistical power and should not be generalised to all internship sectors. Larger and more balanced multi-cohort or multi-institutional samples would allow more reliable comparison across organisation types and improve the external validity of the findings.

CONCLUSION

This study examined the perceived effectiveness of the academic curriculum among 141 UiTM Quantity Surveying graduates. The findings indicate that graduates generally perceive their academic curriculum as relevant to professional practice. The highest rating was obtained for the relevance of academic subjects to internship tasks, indicating that the core academic content provides a useful foundation for workplace learning. However, the findings also demonstrate that curriculum relevance does not necessarily mean complete professional preparedness. More than half of the respondents perceived a gap between academic learning and industry needs, while training in industry-standard tools and software received the lowest preparedness score.

The study further demonstrated a strong positive relationship between academic relevance and academic preparedness. Academic relevance significantly predicted academic preparedness and explained 43.7% of its variance. The results therefore support the central argument that curriculum relevance is an important foundation for professional preparedness, but it should be complemented by authentic application, digital competency development and continued engagement with industry.

For Quantity Surveying education in Malaysia, curriculum effectiveness should consequently be viewed as a continuous process rather than a fixed condition. As construction practices become increasingly digital and multidisciplinary, QS programmes must continuously evaluate whether graduates are being prepared not only with appropriate disciplinary knowledge but also with the ability to apply that knowledge in contemporary professional environments.

The study contributes to the literature by providing discipline-specific empirical evidence from Malaysian QS graduates and by distinguishing between curriculum relevance and academic preparedness. At the same time, the conclusions are bounded by the perceptual nature of the data, the borderline reliability of the academic-relevance scale and the small size of several internship-organisation subgroups. Future research should therefore validate the measurement instrument further and combine graduate perceptions with employer or supervisor assessments, workplace performance evidence and qualitative industry feedback. Such triangulation would provide a stronger basis for evaluating how curriculum design translates into professional competence.

REFERENCES

1. Healy, M. (2023). Careers and employability learning: Pedagogical principles for higher education. Studies in Higher Education, 48(7), 1303–1314. https://doi.org/10.1080/03075079.2023.2196997.
2. Isa, F. M., Sharaf, M. A., Ahmdon, M. A. S., & Noor, S. (2023). Curriculum, work readiness, and employability in Malaysian higher education: Unpacking the nexus. Akademika, 94(1). https://doi.org/10.17576/akad-2023-9401-19.
3. Jackson, D., & Dean, B. A. (2022). The contribution of different types of work-integrated learning to graduate employability. Higher Education Research & Development, 42(1), 93–110. https://doi.org/10.1080/07294360.2022.2048638.
4. Li, H., Cao, F., & Dai, W. (2023). Major-based undergraduate curriculum as an obstacle to graduate employability development. Higher Education Research & Development, 43(3), 705–719. https://doi.org/10.1080/07294360.2023.2258844.
5. Monogaran, M., & Subramaniam, T. (2023). Skills acquisition and employability among Arts and Social Sciences interns in a Malaysian public university. Institutions and Economies, 15(2), 59–86. https://doi.org/10.22452/IJIE.vol15no2.3.
6. Ng, P. M. L., Wut, T. M., & Chan, J. K. Y. (2022). Enhancing perceived employability through work-integrated learning. Education + Training, 64(4), 559–576. https://doi.org/10.1108/ET-12-2021-0476.
7. Tee, P. K., Wong, L. C., Dada, M., Song, B. L., & Ng, C. P. (2024). Demand for digital skills, skill gaps and graduate employability: Evidence from employers in Malaysia. F1000Research, 13, 389. https://doi.org/10.12688/f1000research.148514.1.
8. Yap, J. B. H., Hew, Q. L. T., & Skitmore, M. (2022). Student learning experiences in higher education: Investigating a Quantity Surveying programme in Malaysia. Construction Economics and Building, 22(1). https://doi.org/10.5130/AJCEB.v22i1.7835.
9. Yap, J. B. H., Ling, J. J., & Skitmore, M. (2026). Curriculum reform in Quantity Surveying: Learner insights for enhancing graduate readiness in the built environment of developing countries. Journal of Construction in Developing Countries, 31(1), 1–22. https://doi.org/10.21315/jcdc.2026.31.1.1.