

Developing a Power BI Graduate Employability Dashboard: A Malaysian Public University Case Study

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ABSTRACT

Graduate tracer data can provide institutions with evidence about employment and broader graduate outcomes, but their value depends on consistent preparation and interpretation. This study documents the development and institutional application of the Universiti Teknologi MARA (UiTM) Graduate Employability (GE) Impact Dashboard, a descriptive business-intelligence platform developed in Microsoft Power BI. The study adopts an institutional case-study and system-development design. Seven annual cohorts of Malaysia's Graduate Tracer Study (Sistem Kajian Pengesanan Graduan, SKPG), covering 2019-2025, were validated, cleaned, harmonised and modelled for institutional analysis. The resulting dashboard supports monitoring of Graduate Employment (GE), Graduate Marketability (GM), qualification-appropriate skilled employment (GBSK), field-of-study alignment (BDB), Graduate Entrepreneurship (GU), salary, employers, employment sectors, selected graduate characteristics and graduate evaluations of educational experiences. Interactive filters allow users to examine trends and descriptive differences by year, level of study, faculty, campus and programme across more than 500 academic programmes, 27 faculties and 35 campuses. Dashboard results are also converted into faculty and campus report cards for leadership review, programme discussion and targeted follow-up. The latest cohort recorded 94.5% GE and 94.6% GM. These figures are reported as institutional outcomes and are not interpreted as evidence of a causal effect of the dashboard or as direct measures of teaching quality. The study's contribution is an applied and transparent account of how existing national tracer data can be transformed into a common institutional decision-support environment. It demonstrates how descriptive analytics can connect multidimensional graduate-outcome evidence with programme monitoring, review and management action without relying on predictive modelling or artificial intelligence.

Keywords: graduate tracer study; Power BI; business intelligence; higher education

INTRODUCTION

Graduate employability has become an important concern for higher education institutions because universities are increasingly expected to demonstrate not only student participation and academic completion, but also graduates' transition into work and other meaningful post-graduation pathways. Employment status remains an important outcome, but it does not fully represent the quality or relevance of graduate transition. Salary, occupational skill level, field-of-study alignment, entrepreneurship, employer type, employment sector and further study provide additional perspectives on graduate outcomes (Moo & Wan, 2023). In Malaysia, these outcomes are monitored nationally through the Sistem Kajian Pengesanan Graduan (SKPG), or Graduate Tracer Study, administered by the Ministry of Higher Education Malaysia (Ministry of Higher Education Malaysia, 2026).

The existence of tracer data does not, however, guarantee effective institutional use. Graduate outcomes are influenced by programme discipline, graduate characteristics, academic performance, internship experience, labour-market demand and wider economic conditions (Basir et al., 2022; Tee et al., 2024). They may also vary according to geographical location, employer demand and individual career choices. Consequently, a high employment rate should not be interpreted as a direct or isolated measure of teaching quality. Institutions require

analytical approaches that present multiple outcome dimensions together while preserving the definitions, denominators and contextual limitations associated with each indicator.

This challenge is particularly important in large, multi-campus universities. Universiti Teknologi MARA (UiTM) operates across 35 campuses and offers more than 500 academic programmes within a diverse institutional portfolio. Its annual SKPG data contain extensive information on graduate outcomes, but the datasets were originally maintained in separate spreadsheet files. Comparing cohorts, faculties, campuses and programmes therefore required repeated preparation and interpretation. University-level averages could also conceal important internal variation, including differences in salary, field-of-study alignment, occupational skill level and entrepreneurial participation.

Business intelligence provides a means of addressing this institutional information problem by combining data preparation, data modelling, indicator calculation and interactive visualisation. Higher education research indicates that the value of business intelligence depends on its alignment with institutional strategy, data governance, management processes and actual information requirements (Sequeira et al., 2024; Sorour & Atkins, 2024). Data-driven decision-making is also more likely to generate value when analytical outputs are incorporated into established assessment, planning and review processes (Kaspi & Venkatraman, 2023; Alkhwaldi et al., 2025). Dashboard research further emphasises the importance of user needs, appropriate reference points, contextual interpretation and responsible presentation of institutional data (de Vreugd et al., 2024; Sarmiento & Wise, 2022; Williamson & Kizilcec, 2022). These findings support the use of transparent definitions, hierarchical filtering and multiple levels of aggregation in an institutional graduate-outcome dashboard.

Existing graduate-employability research has used descriptive tracer analysis, employer studies, statistical modelling and predictive analytics. Malaysian studies have examined the factors associated with graduate employability and the skills demanded by employers (Basir et al., 2022; Tee et al., 2024). Other studies have applied machine-learning methods to predict graduate employability (Haque et al., 2024; Azmir et al., 2026). These approaches address important questions about determinants and prediction, but they serve a different purpose from a governance dashboard. Predictive modelling estimates the likelihood of an outcome, whereas institutional monitoring describes observed results, enables comparisons across organisational units and directs attention towards areas requiring further review.

Although previous studies have examined graduate outcomes, business intelligence and dashboard design, limited published work documents the complete process of transforming multiple annual national tracer datasets into a non-predictive institutional monitoring system at large scale. In particular, less attention has been given to the harmonisation of successive tracer cohorts, the preservation of comparable indicator definitions across reporting years, the comparison of outcomes across hundreds of academic programmes and the conversion of dashboard outputs into faculty- and campus-level report cards for management follow-up.

The present study addresses this practical gap through the UiTM Graduate Employability Impact Dashboard. Developed between November 2023 and April 2024 and launched for institutional use in May 2024, the dashboard integrates seven annual SKPG cohorts from 2019 to 2025 within a common Power BI environment. Because the datasets represent different graduating populations, year-to-year patterns are treated as repeated cross-sectional observations rather than as longitudinal evidence of individual career progression. The dashboard is intended to support institutional monitoring, diagnosis, programme review, resource prioritisation and targeted intervention; it is not designed for public programme ranking or automated judgement of teaching quality.

This study has two objectives. First, it documents the integration, cleaning, harmonisation and modelling processes used to develop the UiTM Graduate Employability Impact Dashboard. Second, it examines how the resulting platform supports descriptive analysis across more than 500 academic programmes, 27 faculties and 35 campuses, with dashboard evidence translated into customised report cards for leadership review, programme discussion and institutional follow-up. The contribution is therefore methodological and applied: it demonstrates how existing national graduate-tracer data can be transformed into a transparent decision-support environment for multidimensional graduate-outcome monitoring without relying on predictive modelling or artificial intelligence.

LITERATURE REVIEW

Graduate Employability as a Multidimensional Institutional Problem

Graduate employability cannot be adequately represented by a single employment percentage. It concerns graduates' ability to obtain, sustain and progress in employment by applying relevant knowledge, technical competencies, transferable skills and personal attributes. Graduate outcomes may therefore include employment status, salary, occupational skill level, field-of-study alignment, transition time, entrepreneurship, further study and employment quality (Moo & Wan, 2023).

The multidimensional nature of employability also reflects the influence of factors beyond the immediate control of an academic programme. Malaysian research has associated graduate outcomes with family income, field of study, academic performance, internship experience, communication, analytical ability and teamwork (Basir et al., 2022). Employer-based research has further highlighted the importance of digital literacy, information and data literacy, problem-solving, communication and collaboration skills (Tee et al., 2024). Graduate outcomes may also vary according to discipline, geographical location, employer demand, labour-market conditions and wider economic circumstances. These factors mean that graduate outcome indicators should not be interpreted as direct or isolated measures of teaching quality.

This literature establishes the measurement rationale for the present dashboard. A university may record a high overall employment rate while some programmes experience weaker salary outcomes, limited field-of-study alignment or lower participation in qualification-appropriate skilled employment. The UiTM dashboard therefore treats GE and GM as important headline indicators but presents them alongside BDB, GBSK, GU, salary, employer and sector information. This multidimensional structure allows programme-level comparisons to support monitoring, diagnosis and review while preserving the contextual interpretation required by the literature.

Existing Approaches to Graduate Outcome Analysis

Graduate outcomes have been examined through descriptive tracer studies, employer surveys, statistical modelling and predictive analytics. Descriptive analysis is useful for identifying employment patterns, salary levels, skill gaps and relationships between graduate characteristics and labour-market outcomes. When collected consistently across large populations, tracer data can support policy discussion, programme review and institutional planning.

Predictive studies provide a different analytical perspective. Haque et al. (2024), for example, compared machine-learning classification techniques using Malaysian graduate data to examine the prediction of graduate employability. Such models can identify variables associated with employability and estimate the likelihood of an outcome for an individual or group. Their purpose, however, differs from institutional monitoring. Prediction focuses on estimating a future or unobserved outcome, whereas monitoring describes observed results, compares organisational units and directs management attention towards areas requiring further investigation.

Recent work has also combined graduate-outcome data with dashboard visualisation. Azmir et al. (2026) developed a graduate employability dashboard for Malaysian community colleges that incorporated data preparation, exploratory analysis, predictive modelling and Power BI visualisation. This study demonstrates the practical value of dashboard-based employability analysis, while also illustrating the distinction between a dashboard that includes predictive functions and the present system, which is designed primarily for descriptive and diagnostic monitoring.

The literature therefore supports a deliberate methodological choice in the present study. Predictive modelling may be valuable for forecasting individual or group outcomes, but it is not necessary for an institutional platform intended to compare observed graduate outcomes across faculties, campuses and programmes. The UiTM dashboard uses descriptive analytics because its immediate purpose is to provide a common evidence base for monitoring, programme review, resource prioritisation and targeted institutional follow-up. This focus also

allows the platform to retain transparent indicator definitions and present results in forms that can be interpreted by academic and administrative users.

Business Intelligence and Contemporary Analytics Methods in Higher Education

Business intelligence provides an organisational approach for transforming large and heterogeneous datasets into information for decision-making. In higher education, BI systems may combine data preparation, data integration, data modelling, indicator calculation and visualisation to support quality monitoring, academic planning and institutional review. Its relevance to graduate employability lies in the ability to bring separate tracer datasets and organisational dimensions into a common analytical environment.

The value of BI depends on more than the technical availability of a dashboard. Sequeira et al. (2024), in a systematic literature review, emphasised the importance of implementation planning, data governance, system integration and alignment with institutional requirements. Sorour and Atkins (2024) similarly showed how BI dashboards can support the monitoring of quality-related information in higher education institutions. These findings indicate that the UiTM dashboard must be understood as an institutional information system rather than merely a collection of visualisations. Its indicators, data model and filters must correspond to actual questions about graduate outcomes and organisational performance.

The use of analytics also depends on institutional readiness and decision-making culture. Kaspi and Venkatraman (2023) demonstrated how structured data use can support assessment-related decisions in higher education, while Alkhwalidi et al. (2025) examined the role of a data-driven decision-making culture in BI adoption. Their findings imply that dashboard outputs have limited value if they are not connected to established processes of review, planning and management action. This supports the UiTM practice of translating dashboard outputs into faculty and campus report cards for leadership engagement and programme discussion.

Dashboard research further highlights the importance of user needs, interpretation and responsible presentation. De Vreugd et al. (2024) linked dashboard design to users' information needs and self-regulation, while Sarmiento and Wise (2022) emphasised the value of participatory and co-design approaches in learning analytics systems. Williamson and Kizilcec (2022) cautioned that dashboards may create equity concerns when data are presented without sufficient context or when sensitive groups are made visible without considering the consequences. Although these studies are situated mainly in learning analytics, their implications are relevant to graduate-outcome monitoring. Users require clear indicator definitions, appropriate comparison points, filters that match their responsibilities and sufficient contextual information to avoid overinterpreting programme-level results.

Taken together, the literature supports several design principles adopted in the UiTM dashboard: integrated data preparation, transparent indicator definitions, hierarchical navigation, trend analysis, organisational filters, appropriate aggregation and connection to established review processes. It also clarifies the contribution of the present study. Existing employability research commonly focuses on determinants, skills or prediction, while BI and dashboard studies often focus on adoption, usability or specific institutional functions. Less attention has been given to how several annual national tracer datasets can be harmonised into a transparent, non-predictive monitoring system covering more than 500 academic programmes and multiple organisational levels. The present study contributes an applied account of this process by documenting how seven annual SKPG cohorts were operationalised in Power BI and connected to programme, faculty and campus review. The dashboard is therefore positioned as a decision-support mechanism for monitoring, diagnosis, programme review, resource prioritisation and targeted intervention rather than as a public ranking system or an automated measure of teaching quality.

METHODOLOGY

Research Design and Institutional Context

This study adopts a descriptive institutional case-study and system-development design. The case is the UiTM Graduate Employability Impact Dashboard, developed by the university's Graduate Employability Unit as an

internal decision-support platform. The study documents the data workflow, indicator formulation, dashboard structure and management use of the platform rather than evaluating a predictive model.

The dashboard integrates SKPG data from seven graduating cohorts between 2019 and 2025. Each year represents a different graduating cohort; therefore, the data constitute repeated cross-sectional observations rather than a longitudinal study tracking the same graduates over time. Year-to-year differences may reflect changes in cohort composition, labour-market conditions, programme characteristics and institutional initiatives.

Data Source and Scope

The primary data source is the national SKPG, administered by the Ministry of Higher Education (MOHE), Malaysia. Graduates complete the tracer study through the national system, after which institutional data are downloaded for internal analysis. The UiTM database contains more than 50,000 respondents annually and covers more than 500 academic programmes across 27 faculties and 35 campuses. The 2025 cohort contained approximately 56,895 respondents, with a response rate of 97.7%. The number of records and available variables varies across cohorts according to the relevant SKPG cycle and questionnaire structure.

SKPG questionnaires are reviewed approximately every two years through MOHE-led expert reviews involving more than 140 personnel from ministries, stakeholders, higher education institutions and industry. The revisions are generally limited, focusing mainly on student-experience items and the removal or reduction of selected questions. Accordingly, each cohort was reviewed against its applicable SKPG definitions, questionnaire structure and data dictionary before harmonisation.

The dashboard includes employment status, further study, programme and campus identifiers, salary, occupation, field-of-study alignment, employer characteristics, economic sector, entrepreneurship, demographic characteristics and graduate evaluation data where available. Table 1 summarises the organisational coverage, data period and principal dimensions included in the UiTM GE Impact Dashboard.

Table 1. Scope of the UiTM GE Impact Dashboard

Component	Scope
Cohorts	2019-2025 (seven different graduating cohorts)
Respondents	More than 50,000 respondents annually
Academic coverage	500+ academic programmes
Organisation	27 faculties; 35 campuses
Platform	Microsoft Power BI
Primary purpose	Descriptive and diagnostic monitoring for institutional decision-making
Main filters	Year, level of study, faculty, programme, campus
Page navigator and bookmarks	Main outcomes, trend analysis, comparison by faculties/campuses, hiring companies, salary and economic sectors, selected graduate/employment characteristics and graduate evaluation.
Indicators	Gender, CGPA, entry qualification, English proficiency, certification and upskilling history, disability status (OKU), job status and position, salary, location and many more.

From Raw Excel Data to the Power BI Dashboard

Figure 1 presents the high-level workflow through which graduate responses were transformed into institutional dashboard information. Graduates first completed the national SKPG, after which the annual data files were retrieved from the MOHE system for institutional processing. The files were then integrated, analysed and visualised in Power BI to support institutional monitoring and decision-making. The figure provides an overview of this three-stage workflow, while the following paragraphs describe the detailed data-preparation and modelling procedures.

The original SKPG files were downloaded as large annual spreadsheets. Consequently, the primary development challenge involved data preparation and harmonisation rather than visualisation alone. Each cohort file was inspected for its variable structure, coded values, missing and non-applicable fields, programme identifiers, organisational fields and classification changes. Variables required for institutional analysis were retained, renamed where necessary and mapped into common analytical categories.

Data cleaning included the identification and removal of confirmed duplicate records within each cohort. Duplicate checks used the available graduate, programme and organisational identifiers before aggregation. Missing values were distinguished from valid zero values and non-applicable responses; they were not automatically recoded as zero. For indicator calculations, missing or invalid responses were treated according to the denominator and eligibility rules of the relevant measure.

Programme names and identifiers were standardised to address differences in spelling, abbreviations, punctuation and naming conventions across annual files. Historical programme names were mapped to common programme identifiers when they represented the same academic offering. Faculty and campus fields were similarly mapped to standard organisational labels to support consistent filtering and aggregation. Where a programme or organisational unit could not be matched confidently across cohorts, the original cohort-specific value was retained and flagged for review.

Employment-related categories were harmonised according to the applicable SKPG definitions and the analytical requirements of the dashboard. Categories such as employment, further study, skills enhancement, seeking employment, entrepreneurship and other non-employment statuses were reviewed to prevent inconsistent classification across cohorts. Salary responses were also standardised into common reporting bands. Where salary structures differed between years, categories were mapped only when their underlying ranges were conceptually comparable. Changes in SKPG definitions, questionnaire wording and classification rules were documented and considered when interpreting cross-cohort trends.

The preparation process comprised six connected stages: data acquisition, structural validation, data cleaning, variable and category harmonisation, cohort and organisational mapping, and indicator preparation for Power BI modelling. A cohort-year field was retained for every record to distinguish the different graduating populations represented in the repeated cross-sectional dataset.

The cleaned annual datasets were subsequently consolidated in the Power BI data model. Relationships were established among graduate records, programme information and organisational dimensions, including faculty and campus. Measures were created using the approved numerator, denominator and eligibility rules for each indicator. Before dashboard publication, aggregated results were checked against corresponding source totals, while selected calculations were independently reviewed to identify discrepancies in record counts, percentages and category mappings. Slicers and drill-down functions were then configured to allow users to move from university-level information to faculty, campus and programme views.

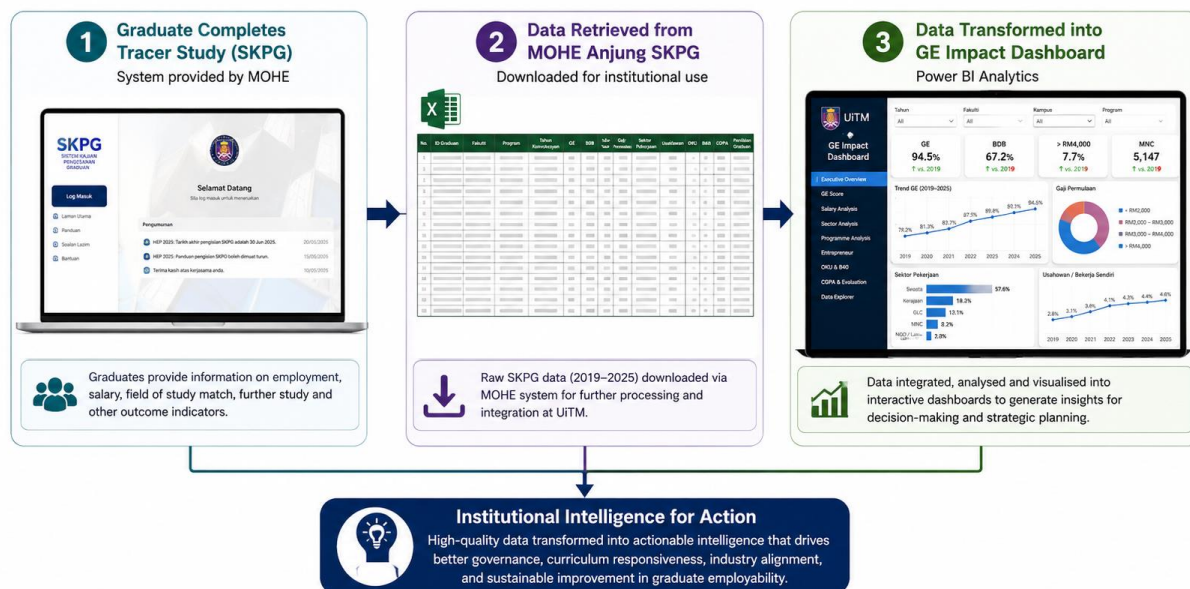


Figure 1. Workflow from SKPG data collection and retrieval to Power BI dashboard integration and institutional use.

Indicator Definitions and Calculations

The dashboard uses graduate-outcome indicators selected for their relevance to national reporting, institutional KPIs and programme-level diagnosis. The principal measures examined in this study are Graduate Employment (GE), Graduate Marketability (GM), qualification-appropriate skilled employment (GBSK), field-of-study alignment (BDB) and Graduate Entrepreneurship (GU). Salary and employer indicators provide complementary information about employment quality and labour-market engagement. Indicator coding follows the applicable SKPG data dictionary for each cohort, and the main calculation bases are presented in Table 2.

The composite outcome represented by the GM formula in Table 2 used the same numerator categories throughout 2019-2025: employed, further study, skills enhancement and waiting for placement. Before 2024, this composite outcome was reported under the Graduate Employment (GE) label. From 2024, following the introduction of a revised GE definition, the same composite outcome was reported as Graduate Marketability (GM). Thus, the underlying calculation categories remained consistent, while the official terminology and interpretation of GE and GM changed. Historical GE values should therefore be interpreted as the earlier version of the composite outcome and not as equivalent to the revised GE measure introduced in 2024.

For GBSK, only eMASCO occupational major groups 1-3, Managers, Professionals, and Technicians and Associate Professionals, were classified as qualification-appropriate skilled employment. Employed graduates constituted the denominator. BDB was calculated from employed graduates' reported alignment between their current work and field of study, while GU was calculated using the applicable entrepreneurship categories in the relevant SKPG framework. Variables were harmonised across cohorts only when their meanings, categories and denominators were conceptually comparable. Where questionnaire items, classification rules or indicator definitions differed, the original cohort-specific definition was retained and the resulting limitation was considered during interpretation.

Table 2. Main Graduate Outcome Indicators Used in the Dashboard

Indicator	Purpose	Operational formula
Graduate Employment (GE)	Measures the proportion of graduates in the labour force who are employed.	$GE = \text{Employed} / \text{Graduates in Labour Force} \times 100$

Graduate Marketability (GM)	Measures graduates in recognised positive post-graduation outcomes under the applicable SKPG definition.	$GM = (\text{Employed} + \text{Further Study} + \text{Skills Enhancement} + \text{Waiting for Placement}) / \text{Total Respondents} \times 100$
GBSK	Measures employed graduates whose occupation classified as qualification-appropriate skilled employment, according to the eMASCO/SKPG classification codes 1,2 and 3.	$GBSK = \text{Qualification-appropriate skilled employed graduates} / \text{Employed graduates} \times 100$
Bekerja Dalam Bidang (BDB)	Measures employed graduates reporting that their current work is aligned with their field of study.	$BDB = \text{Employed graduates working in field} / \text{Employed graduates} \times 100$
Graduan Usahawan (GU)	Measures employed graduates classified as entrepreneurs under the applicable institutional/SKPG definition.	$GU = \text{Graduate entrepreneurs} / \text{Employed graduates} \times 100$

Dashboard Structure and Interactive Analysis

The Power BI interface was organised around a hierarchical analytical pathway. Users can begin with institutional-level results and progressively filter the data by cohort year, level of study, campus, faculty and academic programme. The dashboard provides access to core graduate-outcome indicators, year-on-year trends and comparisons across faculties and campuses. Additional analytical modules cover field-of-study alignment (BDB), qualification-appropriate skilled employment (GBSK), Graduate Entrepreneurship (GU), hiring companies and employer profiles, salary distributions, economic sectors, employment characteristics and selected graduate or employment groups.

Figure 2 illustrates an example of the dashboard's interactive analytical interface. It shows the available navigation categories, filtering options and the presentation of employment-sector and salary information within a single analytical view. The figure is included to demonstrate the dashboard's structure, navigation and visual organisation. The values and distributions displayed are not analysed as substantive results in this article.

The Graduate Evaluation module provides a separate view of graduates' structured evaluations of their educational experience, as illustrated in Figure 3. The module covers curriculum, teaching staff, learning facilities, career guidance and counselling, and other educational experiences. Each aspect is measured using a 10-point Likert scale, ranging from 1 to 10, with higher scores indicating more favourable evaluations. Figure 3 is presented to demonstrate the design and content structure of the evaluation module rather than to report or interpret evaluation findings.

All figures included in this article are presented primarily to illustrate the dashboard architecture, navigation, analytical modules and visual design. They should not be interpreted as standalone empirical results, programme rankings or evidence of causal relationships. The dashboard was designed as a descriptive and diagnostic exploration platform. It does not use predictive modelling, automated recommendations or algorithmic decision rules. Its purpose is to make complex graduate-tracer data easier to explore, compare and interpret, enabling academic and administrative leaders to identify patterns requiring further investigation, programme discussion or institutional follow-up.

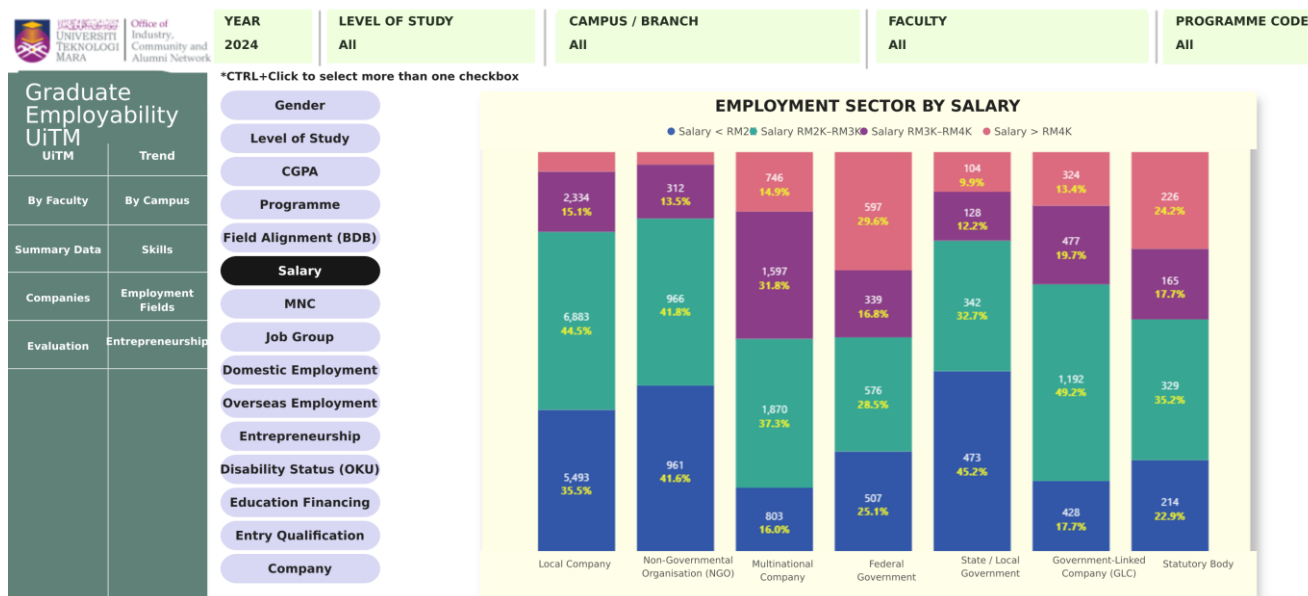


Figure 2. Example of the dashboard's interactive navigation and employment-sector salary view. Note. The figure illustrates dashboard structure and visual organisation only, not to be interpreted as substantive findings.

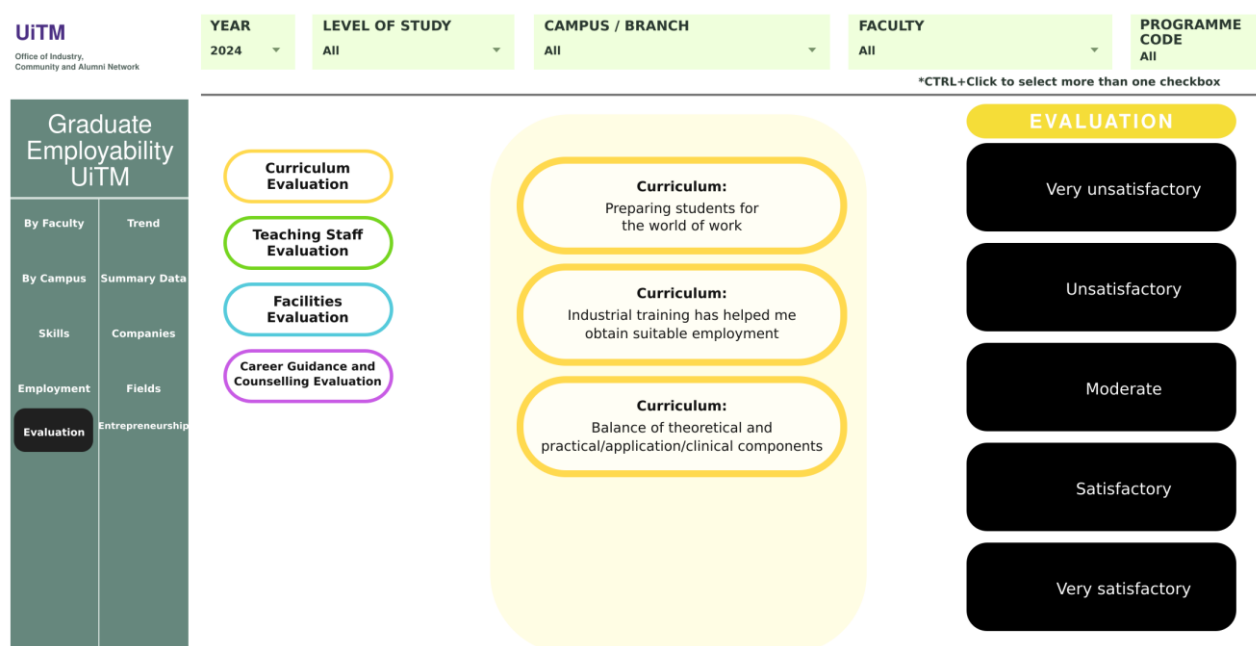


Figure 3. Example of the Graduate Evaluation module and its 10-point evaluation scale.

From Dashboard Results to Faculty and Campus Report Cards

The final methodological stage links the dashboard to institutional management. Dashboard results are summarised in customised performance report cards for faculties and campuses. These report cards present relevant graduate-outcome indicators, trends and areas requiring attention. They are used during leadership engagement with deans and rectors and provide a common evidence base for discussing programme performance.

When gaps are identified, the Graduate Employability Unit and the relevant academic or campus leadership can examine the affected programme, indicator and cohort in greater detail. Subsequent interventions may focus on industry engagement, career development, curriculum relevance, entrepreneurship support or other programme-specific issues. Later cohorts can then be monitored through the same dashboard to assess whether the observed pattern changes.

Overall, the workflow begins with the preparation of raw SKPG data, followed by dashboard analysis, the development of faculty and campus report cards, leadership review and targeted institutional follow-up.

RESULTS

Dashboard Development and Features

The completed Power BI environment provides a common interface for analysing seven annual SKPG cohorts from 2019 to 2025. Its navigation buttons allow users to select different analytical views, including graduate marketability status, graduate employment score, response rate, demographic characteristics, field-of-study alignment, salary, employer type, multinational-company employment, overseas employment, entrepreneurship, education financing and entry qualifications. Figure 4 illustrates the faculty-level view for a selected graduate-outcome indicator. The horizontal stacked bars display the distribution of graduate outcome categories across faculties, allowing users to examine both the overall level and the composition of outcomes. This view demonstrates how the dashboard supports comparison beyond a single institutional percentage.

Users can move from faculty-level results to more detailed campus and programme views using the available filters and drill-down functions. The same graduate population can also be examined through related indicators, including GE, GM, GBSK, BDB, GU, salary, employer type, employment sector, graduate evaluation and selected demographic characteristics. This enables a programme or faculty with a favourable headline outcome to be examined further in relation to employment quality, qualification-appropriate employment and field-of-study alignment.

These comparisons are intended for institutional monitoring, diagnosis, programme review, resource prioritisation and targeted follow-up. They are not designed to produce public rankings or automatic judgements of programme quality.

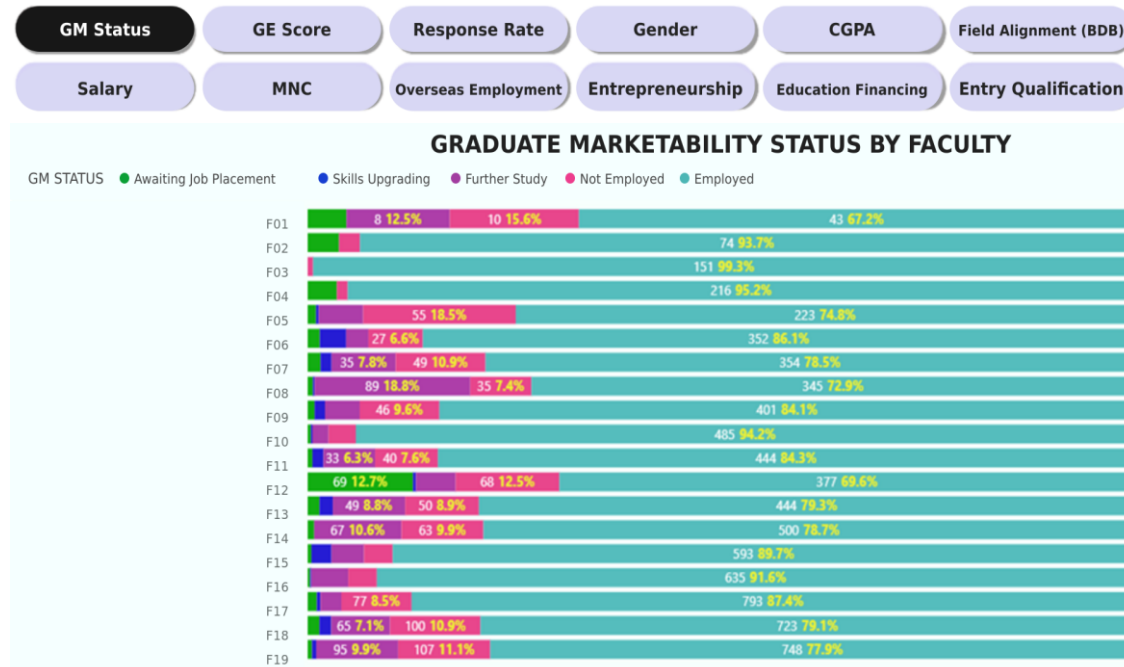


Figure 4. Dashboard navigation and faculty-level comparison of graduate outcome status in the UiTM GE Impact Dashboard. (Source: UiTM GE Impact Dashboard)

Graduate Outcome Analysis

Faculty-level comparisons show how the platform can identify variation among academic units. Rather than interpreting an institutional GE percentage as a uniform outcome, users can examine the distribution of employment and other graduate pathways across faculties. The same interface can be filtered by selected indicators such as salary, BDB, GU, multinational-company employment and other graduate characteristics.

At a more detailed level, Figure 5 demonstrates how users can examine graduate employability outcomes by academic programme. Individual programmes can be compared using respondent counts and outcome measures, allowing leaders to determine whether a faculty-level pattern is broad or driven by a smaller number of programmes. This is particularly useful for large faculties with heterogeneous disciplines or professional pathways. Programme-level analysis also provides a stronger evidence base for curriculum review because it connects graduate outcomes with the specific programme from which graduates originated.

Salary analysis adds an employment-quality dimension. A high employment rate does not necessarily mean that graduates are entering higher-paying or qualification-appropriate work. Salary bands can therefore be examined by programme, sector and employer. Similarly, BDB allows users to identify whether employed graduates perceive their jobs as related to their field of study, while GBSK provides a measure of the extent to which employed graduates enter occupations at an appropriate skill or qualification level.

Graduate Entrepreneurship (GU) provides a separate view of entrepreneurial career pathways. This is important because graduate transition is not limited to conventional salaried employment. By calculating the proportion of employed graduates classified as entrepreneurs and allowing the measure to be filtered by programme and faculty, the dashboard supports monitoring of entrepreneurship outcomes alongside other forms of employment.

The dashboard also contains dimensions for B40 and graduates with disabilities (OKU), enabling selected graduate outcomes to be disaggregated where the data are available. The purpose of this analysis is not to create separate performance targets for these groups, but to determine whether aggregate institutional results conceal differences in employment or other outcomes.

Employer and sector modules further extend the analysis. The dashboard can identify organisations that recruit UiTM graduates and allows employer lists to be filtered by salary and BDB. Economic-sector analysis shows where graduates are absorbed within the labour market and how salary distributions differ across sectors. These views can be used to identify potential areas for employer engagement and to examine whether programme outputs correspond with relevant industry demand. Figure 6 shows how employment-sector, employer and salary information can be examined together to provide a broader view of employment quality.

Gender	PROGRAMME CODE	ANONYMISED PROGRAMME	NO. EMPLOYED	NO. BDB	NO. FURTHER STUDY GRADUATES	NO. RESPONDENTS	TOTAL GRADUATES	GM SCORE	SCORE
Level of Study	P01	Programme 01	1	1		1	1	100.0%	100.0%
Programme	P02	Programme 02	2	2		2	4	100.0%	100.0%
Field Alignment (BDB)	P03	Programme 03	70	30	7	81	101	96.3%	95.9%
Salary	P04	Programme 04	63	24	15	84	92	94.0%	95.5%
MNC	P05	Programme 05	101	59	25	135	157	93.3%	92.7%
Job Group	P06	Programme 06	11	7		14	16	78.6%	91.7%
Domestic Employment	P07	Programme 07	20	4	103	131	131	96.2%	90.9%
Overseas Employment	P08	Programme 08	111	33	42	173	186	89.6%	87.4%
Entrepreneurship	Total		384	165	194	629	698	93.0%	91.8%
Disability Status (OKU)									
Education Financing									
Entry Qualification									

Figure 5. Example of programme-level graduate employability analysis. Source: UiTM GE Impact Dashboard.

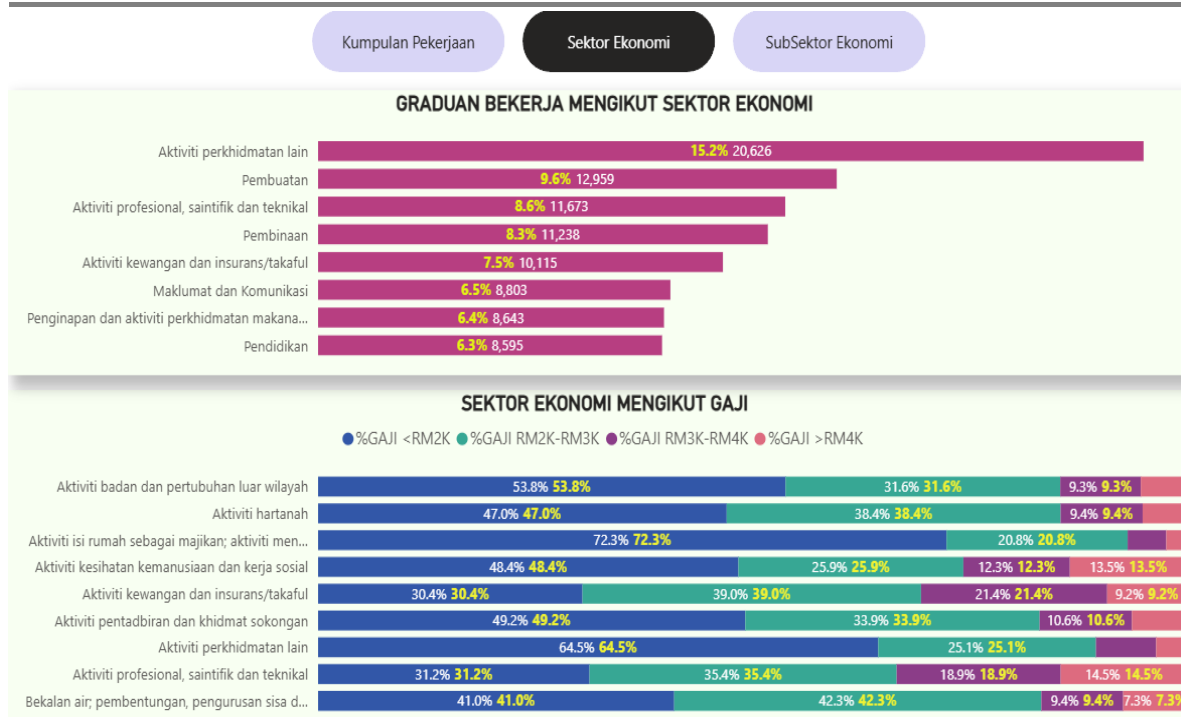


Figure 6. Example of employment-sector distribution and salary analysis. Source: UiTM GE Impact Dashboard. Note. The figure illustrates dashboard structure and visual organisation only, not to be interpreted as substantive findings.

Institutional Performance Trends

Before interpreting the reported trends, two limitations should be noted. First, the SKPG datasets represent successive graduating cohorts rather than the same graduates followed over time. Therefore, year-to-year differences describe changes between cohorts and should not be interpreted as individual career progression or as evidence of a causal effect of the dashboard. Second, programme-level percentages may be sensitive to small graduate or respondent denominators. Such results should consequently be interpreted together with the corresponding counts and relevant programme context. These cautions are particularly important when comparing outcomes across academic units.

Figure 7 demonstrates how the UiTM GE Impact Dashboard converts seven annual SKPG datasets into a common environment for monitoring graduate outcomes across successive cohorts. The dashboard presents the two principal institutional indicators, Graduate Employment (GE) and Graduate Marketability (GM), together with complementary measures of employment quality and graduate pathways.

The figure also displays trends in BDB, graduate entrepreneurship, employment in multinational companies, overseas employment, salary and occupational skill levels. Presenting these indicators together enables management to examine whether improvements in headline employment outcomes are accompanied by positive changes in field-of-study alignment, qualification-appropriate employment, salary and alternative graduate pathways. The dashboard therefore supports a broader interpretation of graduate outcomes than a single employment percentage.

The trend view provides a starting point for further institutional analysis. Users can move from university-level patterns to faculty, campus and programme views to determine whether observed changes are broadly distributed or concentrated in particular academic units. These comparisons support monitoring, diagnosis, programme review, resource prioritisation and targeted follow-up rather than public ranking or automatic judgements of programme quality. The dashboard therefore serves as an evidence base for institutional discussion and management action; it does not establish causal relationships or treat graduate outcomes as direct measures of teaching quality.

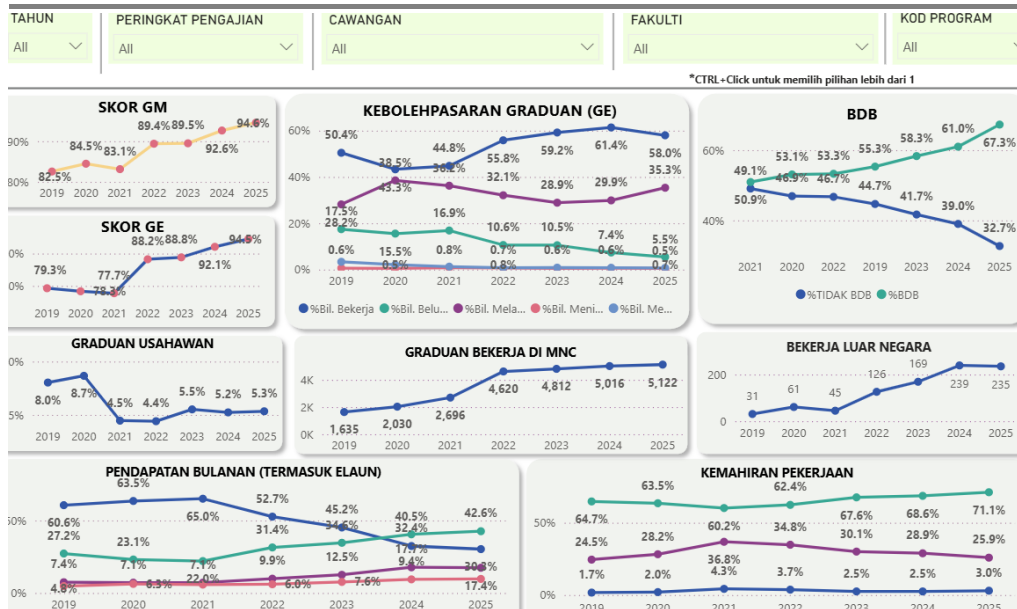


Figure 7. Example of multi-indicator trend monitoring in the UiTM GE Impact Dashboard. Source: UiTM GE Impact Dashboard. *Note. The figure illustrates dashboard structure and visual organisation only, not to be interpreted as substantive findings.*

DISCUSSION

Institutional Outcomes

The 2025 results provide an important institutional context for assessing the value of the dashboard. UiTM recorded 94.5% GE and 94.6% GM, representing further improvement over the outcomes of previous years. These figures should not be interpreted as evidence that the dashboard alone caused the improvement. Graduate outcomes are influenced by labour-market conditions, programme characteristics, graduate behaviour, employer demand and multiple institutional initiatives. But the dashboard provided the university with a structured mechanism for monitoring and comparing graduate outcomes. The university's management can observe the graduate performance systematically, locate gaps within a large academic portfolio and follow the same set of outcome dimensions across successive cohorts. This matters because institutional averages can create a false sense of uniformity. A university may achieve a high GE rate while particular programmes continue to experience weaker salary, BDB, GBSK or entrepreneurship outcomes. The dashboard enables such patterns to be identified and investigated more efficiently. The platform also broadens the way graduate success is discussed internally. GE and GM remain important headline indicators, but the availability of BDB, GBSK, GU, salary, employer and sector information encourages a more multidimensional view of outcomes. This is consistent with recent graduate employability literature that cautions against equating immediate employment status with the wider concept of employability (Moo & Wan, 2023).

Change Management and Organisational Impact

The implementation of the dashboard represents a change in how graduate outcomes are managed at UiTM. Before its introduction, annual tracer data could be reported at institutional level but were not available through a single, convenient environment for systematic review by every faculty, campus and academic programme. The dashboard and its customised report cards provide a structured mechanism for making unit-level graduate outcomes more visible and accessible for institutional discussion. This arrangement supports a shift from centralised reporting towards shared visibility and distributed accountability. Deans, rectors and academic units receive evidence about the outcomes of their graduates and can participate in identifying areas requiring further investigation. The Graduate Employability Unit consequently performs more than a data-compilation function; it coordinates the preparation of evidence, facilitates interpretation and supports follow-up with the relevant academic and campus units.

This institutional arrangement is consistent with the integrated graduate-outcomes governance framework proposed by Murat et al. (2026), which positions graduate employability as a shared institutional responsibility supported by leadership, digital employability intelligence, academic responsiveness, graduate development and industry engagement. In the UiTM case, the dashboard operationalises the digital-intelligence component of this broader governance approach by converting annual tracer data into information that can be used in leadership review, programme discussion and institutional planning.

The formal use of report cards further supports this process. Dashboard findings are translated into concise performance documents that provide a common reference point for engagement with leadership and academic units. This helps direct attention towards specific indicators, programmes or campuses rather than relying on general impressions about graduate performance. The process is consistent with the view that business intelligence generates greater institutional value when it is embedded within a data-driven decision-making culture and connected to organisational action (Alkhwaldi et al., 2025).

Implications for Programme and Curriculum Review

The dashboard provides a feedback mechanism for using graduate outcomes in programme monitoring and curriculum review. Although SKPG data are collected after graduates complete their studies, outcomes from previous cohorts can inform decisions affecting current and subsequent cohorts. Tracer data are therefore treated not only as end-point statistics, but also as evidence for continuous programme reflection.

For example, persistent differences in BDB may prompt a programme to examine whether graduates are entering alternative occupations, whether labour-market demand has changed or whether curriculum content and industry exposure require review. Lower GBSK values may raise questions about the occupational levels at which graduates are entering employment, while salary patterns may encourage further examination of employer segments, professional certification and sector positioning. Strong entrepreneurship outcomes may indicate the need to strengthen or adapt entrepreneurial support rather than relying solely on conventional employment preparation.

These indicators should not be interpreted mechanically. The dashboard identifies patterns and areas requiring attention, but it does not establish the causes of those patterns. Programme-level interpretation should therefore be supported by academic judgement, employer feedback, graduate perspectives, curriculum review and relevant labour-market evidence. The practical value of the dashboard is that it enables leaders and programme teams to ask more focused questions and direct further investigation towards specific indicators or graduate groups.

This capability is particularly important in a university with more than 520 academic programmes. A single institution-wide intervention may not address the different employment pathways associated with different disciplines and campuses. Programme-level evidence enables more targeted responses while retaining consistent definitions and monitoring principles across the university.

Transferability and Practical Implementation

The UiTM case has practical relevance for higher education institutions that already participate in national or institutional graduate-tracer studies. The approach does not require the creation of a new survey. Instead, it demonstrates how existing annual datasets can be cleaned, harmonised and connected to the institution's organisational structure within a common business-intelligence environment.

The transferable element is not the specific visual design of the UiTM dashboard. Institutions differ in their size, programme structures, indicators, reporting requirements and governance arrangements. The more general implementation model consists of four connected components: harmonised tracer data, interactive analysis, unit-level reporting and structured management follow-up. A dashboard that ends with visualisation may improve access to information, but its practical value is strengthened when outputs are incorporated into programme, faculty and leadership review.

The case also demonstrates that predictive modelling is not a prerequisite for useful institutional business intelligence. Descriptive and diagnostic analytics can provide substantial value when the data are sufficiently

comprehensive, indicator definitions are transparent, filters reflect management questions and the results are connected to appropriate institutional responses. This offers a practical pathway for institutions that possess large tracer datasets but do not yet require, or do not have sufficient data quality for, predictive modelling.

Limitations and Future Development

Several limitations define the scope of this study. First, the seven annual SKPG datasets comprise repeated cross-sectional cohorts and do not track the same graduates over time. The dashboard therefore describes differences between successive graduating cohorts rather than individual career progression. Year-to-year changes may reflect differences in cohort composition, programme characteristics, labour-market conditions, economic circumstances and institutional initiatives.

Second, SKPG questionnaires and reporting definitions are reviewed periodically, and some questionnaire items, response categories and classification rules may change between cohorts. Although the changes are generally limited, the revised GE definition introduced in 2024 represents an important definitional change from the earlier use of GM to describe the employment outcome. Cohort-specific definitions were therefore retained during data preparation, but residual non-comparability may remain for selected indicators. Cross-year comparisons should consequently be interpreted as descriptive rather than perfectly equivalent measurements.

Third, several indicators, including BDB and Graduate Evaluation, are based on graduates' self-reported responses. These measures may be influenced by differences in interpretation, recall, response behaviour and perceptions of employment or educational experience. Fourth, programme-level results may be sensitive to small graduate or respondent denominators. Percentages based on small groups should therefore be interpreted together with the relevant counts and programme context rather than treated as definitive evidence of performance.

Fifth, this study documents dashboard development and institutional application but does not isolate the causal effect of dashboard use on GE, GM or other graduate outcomes. Observed changes may also result from academic interventions, labour-market conditions, economic circumstances, cohort composition or other institutional factors. The dashboard should therefore be understood as a monitoring and decision-support mechanism rather than an intervention whose independent effect has been established.

Finally, the study does not provide a formal evaluation of dashboard usability, adoption or decision impact. Future research could examine user experience through structured usability testing, stakeholder interviews, usage analytics and follow-up studies of how dashboard evidence influences programme review, management decisions and subsequent graduate outcomes.

CONCLUSION

This study documented the development and institutional application of the UiTM Graduate Employability Impact Dashboard, a Power BI platform integrating seven annual SKPG cohorts from 2019 to 2025. The dashboard was developed to consolidate fragmented graduate-tracer data and support systematic analysis across more than 500 academic programmes, 27 faculties and 35 campuses. The dashboard displays multidimensional graduate outcomes, including Graduate Employment (GE), Graduate Marketability (GM), qualification-appropriate skilled employment (GBSK), field-of-study alignment (BDB), Graduate Entrepreneurship (GU), salary, employer profiles, employment sectors, graduate evaluation and selected graduate characteristics. It provides year-trend analysis and interactive comparisons by programme, faculty, campus and level of study. By presenting these indicators within a common and consistent analytical environment, the dashboard supports evidence-informed institutional decision-making. Its outputs can be used to identify patterns, examine programme-level differences, inform curriculum and programme review, prepare faculty and campus report cards, and guide targeted institutional follow-up. The dashboard therefore functions as a practical decision-support mechanism that connects graduate-tracer evidence with continuous institutional monitoring and improvement.

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Ethics And Data Governance

This study used secondary SKPG data obtained through institutional channels with permission from UiTM-ICAN for research and publication. The datasets contained no direct personal identifiers, and records were anonymised and analysed only in aggregated form. Confidential programme- and faculty-level information is not publicly disclosed, and the underlying data are not available for redistribution. Reproduction, external use or further disclosure of dashboard images or institutional results requires prior written permission from UiTM-ICAN.

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