

Assessment of Data Analytics Maturity and Readiness in the Curriculum Planning for the Second-Year Electronics and Computer Technology Program at Top Link Global College Inc.

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ABSTRACT

The rapid technological evolution of Industry 4.0 necessitates agile, evidence-based curriculum planning in technical-vocational education to mitigate the ongoing skills mismatch. This study assessed the data analytics maturity and organizational readiness of the Electronics and Computer Technology (ECT) program at Top Link Global College Inc., focusing specifically on the curriculum planning processes for second-year students. Employing a descriptive-quantitative research design, a complete enumeration of ten (10) academic administrators and faculty members was surveyed using a structured instrument adapted from the DELTA Plus and Technology Acceptance Model 2 (TAM 2) frameworks. Findings revealed that the department operates in a "Maturing" phase of data analytics (Mean = 3.59) but experiences a severe analytical bottleneck in Data Usage (Mean = 3.10), struggling to transition from historical reporting to predictive analytics. Furthermore, organizational readiness was deemed "Moderately Ready" (Mean = 3.20), critically hindered by inadequate technological infrastructure (Mean = 1.70). This lack of automated infrastructure directly causes the primary operational barrier: severe time constraints and manual workloads for the faculty. To bridge the resulting velocity gap and resolve the operational perception disparities between administrators and teaching staff, the study proposed a localized Data-Driven Decision Support Framework. This framework emphasizes centralized data automation, targeted data literacy for Outcomes-Based Education (OBE) translation, and agile integration protocols to ensure graduates are equipped with the competencies demanded by the modern electronics industry.

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CHAPTER ONE INTRODUCTION

➤ *The Problem and its Background*

Education worldwide is changing quickly because of the Fourth Industrial Revolution, also known as Industry 4.0. This shift involves not just new technologies, but also the merging of biological, physical, and digital fields. Advances in artificial intelligence, robotics, and the Internet of Things (IoT) are turning workplaces into more dynamic, people-focused environments. The regional program "Integrating IR4.0 Competency and 21st Century Skills in TVET" by the Colombo Plan Staff College (2021) notes that these changes have pushed the training and development sector to rethink how technical skills are taught. Still, a global skills mismatch continues to be a major problem.

Even with more investment in Technical and Vocational Education and Training (TVET), there is still a big gap between what schools teach and what today's industries need from workers.

This problem is especially serious and important for the Philippine economy. The Senate Economic Planning Office (SEPO), in its policy brief "Empowering Futures: Enhancing Enterprise-Based Training in the Philippines," points out that the job-skills mismatch is a key reason for underemployment in the country (SEPO, 2024). The brief highlights that fast technological changes are happening faster than schools can adapt. Because of this "velocity gap," many workers, though educated, do not have the advanced skills that modern industries need. SEPO suggests making big changes to training so that what students learn matches what employers are looking for.

These big changes in the world affect how the Electronics and Computer Technology (ECT) program at Top Link Global College Inc. operates. Unlike other subjects that change slowly, electronics and computing move quickly—hardware, programming languages, and diagnostic methods can become outdated in just one year. Because of this, the ECT curriculum needs to be flexible and data-driven, not just reviewed every now and then. Administrators and teachers need tools to analyze student performance, how resources are used, and industry feedback so they can update the curriculum based on evidence. Without a robust system for collecting and analyzing data, the school could end up with a curriculum that looks good on paper but is no longer useful, thereby keeping the skills gap open.

Top Link Global College Inc., based in Cabanatuan City, Nueva Ecija, is leading efforts to prepare students for the workforce. The school has invested heavily in digital tools to support technology-enabled learning. However, just having these tools does not mean decisions are always based on data. Some observations suggest there may be a gap: the ECT department collects a lot of data, from student test scores to lab equipment use, but it is not clear if this information is used to plan the curriculum. Often, the data is kept separate and used mainly for looking back, not for planning ahead.

This means there may be a gap between the school's goal of producing industry-ready graduates and its ability to use advanced analytics to manage academics. If teachers do not have the skills to understand complex data, or if planning is still done by intuition instead of using evidence, the school might not solve the skills gap. This study will look at how ready the Electronics and Computer Technology (ECT) program at Top Link Global College Inc. is to use data analytics. Knowing this starting point is a key step to improving how the curriculum is planned, making sure education management keeps up with the technology being taught.

CHAPTER TWO

LITERATURE REVIEW

This presents the review of related literature and studies, both foreign and local, that are highly relevant to the current research. The synthesized concepts provide a foundation for understanding data analytics maturity, organizational readiness, and the challenges of integrating data-driven decision-making into curriculum planning for technical and engineering programs.

The integration of Information Systems in educational management has shifted administrative paradigms from intuition-based planning to Data-Driven Decision-Making (DDDM). Historically, curriculum planning relied heavily on cyclical reviews and faculty consensus. However, the rapid evolution of Industry 4.0 necessitates a more agile approach. Educational Data Mining (EDM) and learning analytics have emerged as critical tools that allow institutions to harness student data, resource utilization metrics, and industry feedback to optimize academic offerings.

Highlighting this necessary transition, Gaftandzhieva et al. (2023) emphasize that Higher Education Institutions (HEIs) must utilize advanced data analytics tools—including EDM, learning analytics, and business intelligence—to extract actionable insights from educational data. Their research illustrates that these tools enable academic leadership to effectively track student performance, optimize course selection, and even assist placement agencies in identifying probable recruits. However, despite the clear advantages of using these tools to design superior learning systems, decision support systems remain significantly underutilized in higher education management.

This underutilization directly hinders a long-standing goal of educational institutions: labor market alignment (LMA). Cleary and Van Noy (2014) established a foundational framework for this, noting that aligning higher education with employment needs is not a simple administrative task, but a complex endeavor involving numerous stakeholders. They highlighted a historical lack of concrete guidance on how to move from alignment policy to actionable, job-driven strategies. Today, the data-driven approaches discussed by Gaftandzhieva et al. (2023) provide the exact operational mechanisms needed to execute Cleary and Van Noy's LMA framework. By fully adopting EDM, technical institutions can transition from theoretical alignment to continuous, evidence-based curriculum adjustments that ensure graduates are genuinely industry-ready.

To assess an institution's capability to leverage data, maturity models serve as standard diagnostic frameworks. Data maturity is not merely about having software; it is about how deeply data practices are embedded into organizational processes. A prominent standard for evaluating this is the DELTA Plus framework and the Five Stages of Analytics Maturity Model developed by the International Institute for Analytics (IIA). As outlined by Robert Morison, Senior Advisor at the IIA, in his April 2023 publication, the DELTA Plus framework measures maturity across seven core elements: Data, Enterprise, Leadership, Targets, Analysts, Technology, and Analytics Techniques. By assessing these elements, an organization can determine its current standing—ranging from Stage 1 ("Analytical Beginner") to Stage 5 ("Analytical Competitors")—and identify the necessary steps to improve academic planning capabilities.

➤ *Data Availability and Infrastructure:*

Before analytics can be applied, data must be accessible, accurate, and centralized. At the lowest maturity level (Stage 1), organizations suffer from inconsistent, poorly managed data, making substantial analysis difficult. Even as they transition to Stage 2 ("Localized Analytics"), data often remains trapped in departmental, functional, or process silos. For an educational institution to achieve a holistic view of program performance, it must transition from relying on lower-grade departmental data stores to unified enterprise data platforms, such as data warehouses or data lakes, which are critical enablers of analytical scale and flexibility.

➤ *Data Usage:*

Early stages of maturity typically involve descriptive analytics utilizing basic spreadsheets, simple visual analytics, and measures of central tendency. As organizations mature their "Analytics Techniques" under the DELTA Plus model, they move beyond basic spreadsheet extracts and static reporting. They begin implementing diagnostic tools, statistical significance testing, and predictive models, eventually advancing toward prescriptive analytics supported by specialized, high-impact analysis methodologies.

➤ *Frequency of Analysis and Enterprise Integration:*

Mature organizations shift from ad-hoc or annual data reporting to continuous, real-time analytics, enabling agile curriculum adjustments. According to the IIA framework, analytically immature organizations lack an enterprise perspective on data and rely on poorly integrated systems to deliver only local value. Advancing in maturity requires an "Enterprise" approach, shifting from isolated, localized reporting to cross-functional analytics strategies that coordinate resources, establish data standards, and continuously target strategic objectives like curriculum alignment.

Table 1 Delta Plus & Five Stages of Analytics Maturity: A Primer

Table 1 Success Factors	Stage 1: Analytically Impaired	Stage 2: Localized Analytics	Stage 3: Analytical Aspirations	Stage 4: Analytical Companies	Stage 5: Analytical Competitors
Data	Inconsistent, poor quality and organization; difficult to do substantial analysis; no groups with strong data orientation; basic reporting tools and descriptive analytics.	Much data useable, but in functional or process silos; senior executives don't discuss data management; BI and basic analytics tools.	Identifying key data domains and creating data warehouses or data lakes; expansion into unstructured NoSQL data.	Integrated, accurate, common data in central warehouse; data still mainly an IT matter; little unique data: use of unstructured NoSQL data analysis.	Relentless search for new data and metrics; organization separate from IT oversees information; data managed as strategic asset.
Enterprise	No enterprise perspective on data or analytics. Poorly integrated systems.	Islands of data, technology and expertise deliver local value.	Process or business unit focus for analytics. Infrastructure for analytics beginning to coalesce.	Key data, technology and analysts are managed from an enterprise perspective.	Key analytical resources focused on enterprise priorities and differentiation.
Leadership	Little awareness of or interest in analytics.	Local leaders emerge, but have little connection.	Senior leaders recognizing importance of analytical capabilities.	Senior leaders developing analytical plans and building analytical capabilities.	Strong leaders behaving analytically and showing passion for analytical competition.
Targets	No targeting of opportunities.	Multiple disconnected targets, typically not of strategic importance.	Analytical efforts coalescing behind a small set of important targets.	Analytics centered on a few key business domains with explicit and ambitious outcomes.	Analytics integral to the company's distinctive capability and strategy.
Analysts	Few skills, and those are attached to specific functions.	Disconnected pockets of analysts; unmanaged mix of skills.	Analysts recognized as key talent and focused on important business areas.	Highly capable analysts explicitly recruited, deployed and engaged.	World-class professional analysts; cultivation of analytical amateurs across the enterprise.

Implementing a robust data analytics framework requires more than acquiring software; it demands high organizational readiness. Evaluating this readiness is crucial for successful systems engineering and management.

➤ *Technological Infrastructure:*

This involves the hardware, software, and networking capabilities required to process and store large datasets securely.

➤ *Human Capital and Data Literacy:*

The effectiveness of any information system relies heavily on its end-users. Faculty and academic administrators must possess the necessary data literacy to interpret dashboards and translate analytics into actionable syllabus updates.

➤ *Process Integration:*

Data tools must be seamlessly integrated into existing curriculum review protocols. If analytics are viewed as a separate, supplementary task rather than a core component of academic planning, adoption will fail.

To understand the behavioral aspects of this integration, the Technology Acceptance Model (TAM) provides a critical theoretical lens. As emphasized by Schorr (2023) in her comprehensive review of TAM's importance for digitalization research, successful technology adoption hinges primarily on two core psychological factors: Perceived Usefulness (PU) and Perceived Ease of Use (PEOU).

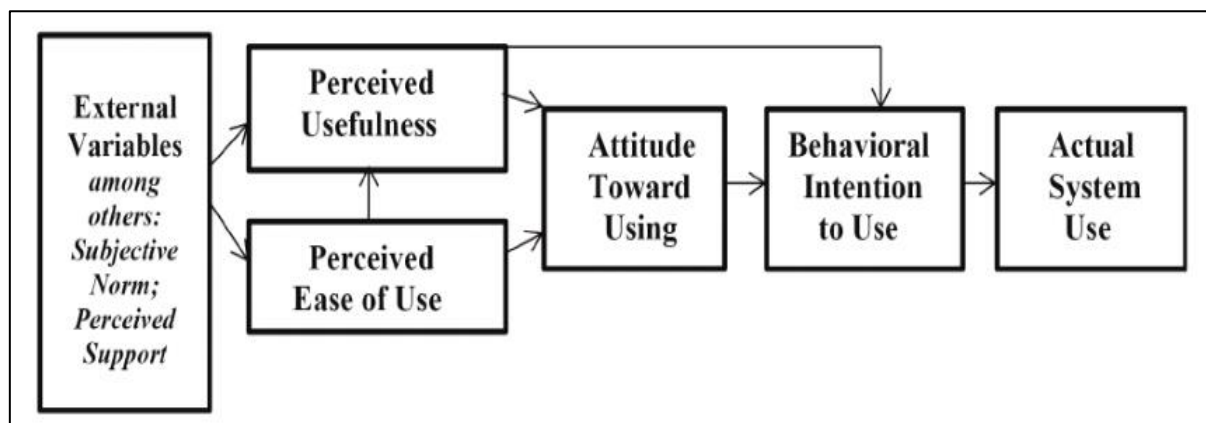


Fig 1 Technology Acceptance Model (TAM2; Davis, Bagozzi, & Warshaw, 1989).

However, because curriculum planning at Top Link Global College Inc. is a collaborative, administrative process rather than an isolated individual choice, this study specifically utilizes the extended Technology Acceptance Model 2 (TAM 2) developed by Venkatesh and Davis (2000). While Schorr's (2023) synthesis confirms that users must perceive data dashboards as easy to navigate and genuinely beneficial, TAM 2 goes further by integrating critical social and organizational variables that dictate workplace adoption.

Specifically, TAM 2 introduces cognitive and social factors such as Subjective Norm (whether faculty feel that academic leadership, such as the Dean or Program Head, expects them to use the data), Job Relevance (whether the analytics actually apply to the specific task of syllabus creation), and Output Quality (the perceived accuracy of the data in reflecting real-world industry demands). When applied to educational administration, TAM2 suggests that even if a school possesses state-of-the-art technological infrastructure, the system will not be utilized if these human and organizational elements are ignored. Therefore, organizational readiness requires proactive change management—ensuring that data tools enhance the educators' existing workflows and are championed by leadership, rather than adding an intimidating administrative burden.

For rapidly changing fields like Electronics and Computer Technology (ECT), the "velocity gap" between industry advancements and curriculum updates is a critical risk. Educational programs are under intense pressure to align with the competencies demanded by modern, IoT-integrated workplaces. Agile curriculum development, supported by continuous data feedback loops from industry partners and alumni performance, is essential to mitigate underemployment and skills mismatches.

In the Philippine context, the government has recognized this necessity for academic agility and industry alignment. The Commission on Higher Education (CHED) issued Memorandum Order No. 101, Series of 2017, which establishes the Policies, Standards, and Guidelines for the Bachelor of Science in Electronics Engineering (BSECE) program. While the Electronics and Computer Technology (ECT) program at Top Link Global College Inc. operates as a technical-vocational track, the BSECE program serves as its closest academic and professional equivalent. Because ECT graduates frequently work alongside electronics engineers in the field—or use the program as a foundational stepping stone toward a full BSECE degree—the technological competencies demanded by the industry apply heavily to both levels.

This CHED directive formally implements the shift to Outcomes-Based Education (OBE) and competency-based standards, establishing the core technical proficiencies expected in the field. Crucially, in recognition of diverse institutional contexts, CMO No. 101 provides ample space for institutions to innovate their curricula and incorporate specialized electives aligned with the rapidly evolving electronics profession. For institutions offering aligned technical programs like ECT, this regulatory framework highlights the critical need for robust data analytics. To effectively exercise this "ample space to innovate" and ensure their ECT graduates meet the rigorous, outcomes-based standards expected in the broader engineering ecosystem, academic administrators cannot rely on guesswork. They must utilize continuous, data-driven feedback—analyzing student learning outcomes, localized industry demands, and technological shifts—to ensure their curriculum innovations accurately bridge the gap between classroom instruction and actual market needs.

Despite the proven benefits of DDDM, educational institutions face significant barriers during implementation. Common challenges include financial constraints in upgrading legacy systems, a lack of specialized training for faculty, and resistance to change rooted in traditional academic cultures. Furthermore, concerns regarding data privacy and the ethical use of student information often slow down the adoption of comprehensive analytics frameworks.

In the Philippine context, recent research highlights these specific friction points. A study by Celeste and Osias (2024) examining the challenges of technology integration in local educational districts revealed that while schools are making strides in communication and instructional integration, they still face diverse obstacles. Interestingly, their findings indicated that while

physical infrastructure and resources were ranked as the lowest challenges, issues regarding equity and access were the highest. To overcome these barriers, their research strongly emphasizes the necessity of targeted, strategic interventions—most notably, the provision of continuous professional development opportunities for teachers.

This directly applies to the implementation of data analytics in technical-vocational and engineering programs. When administrators at institutions like Top Link Global College Inc. attempt to deploy advanced curriculum planning tools without first providing ongoing data literacy training, they risk exacerbating the equity and access gap among their own faculty. As Celeste and Osias (2024) conclude, educational leaders must look beyond the mere acquisition of technology; they must actively develop interventions that support the educators' innovative strategies and commitment, thereby ensuring that data systems genuinely enhance the instructional program rather than creating administrative bottlenecks.

➤ *Conceptual Framework*

This study utilizes the Input-Process-Output (IPO) Model, a fundamental systems engineering approach. It views the current ECT curriculum planning as a system to be diagnosed and improved.

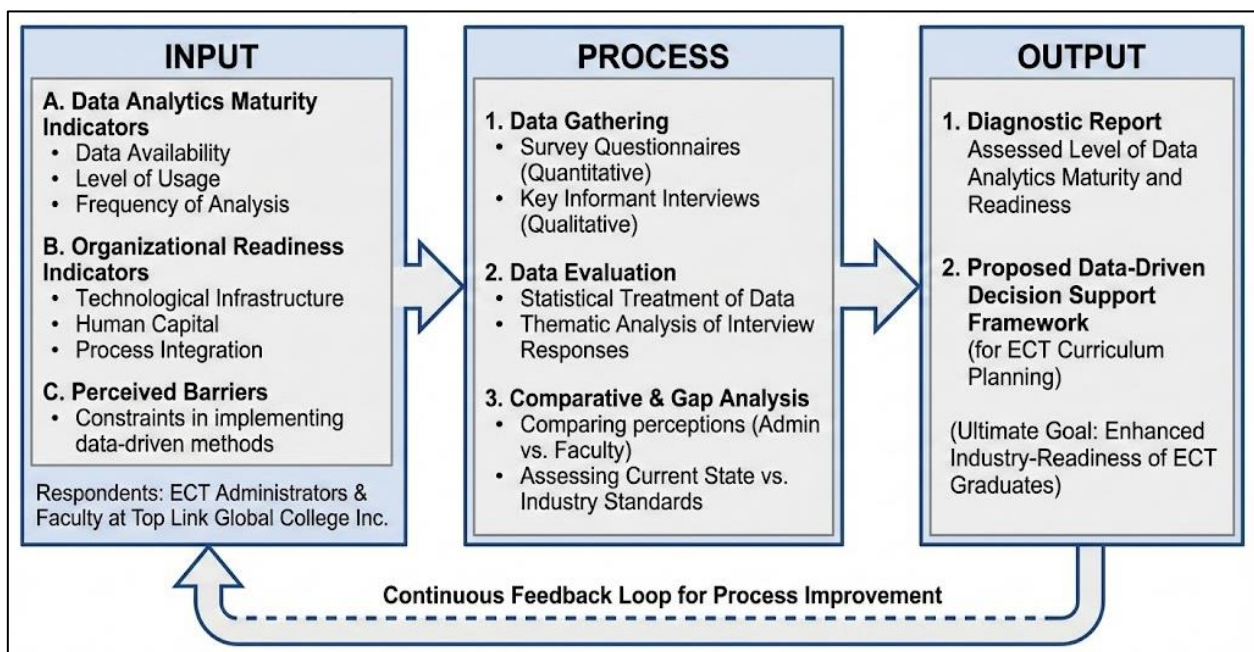


Fig 2 The Conceptual Framework of the Study

➤ *Statement of the Problem*

The study aims to assess the Data Analytics Maturity and Readiness in the curriculum planning of the Electronics and Computer Technology (ECT) program at Top Link Global College Inc. in Cabanatuan City, Nueva Ecija. The findings will serve as the basis for a proposed Data-Driven Decision Support Framework to enhance the industry readiness of ECT graduates. Specifically, this study seeks to answer the following questions:

- *What is the Current Data Analytics Maturity level of the ECT Department in Terms of Curriculum Planning.*
 - ✓ Data Availability
 - ✓ Data Usage
 - ✓ Frequency of Analysis
- *What is the Level of Organizational Readiness of the ECT Department to Adopt Data-Driven Decision-Making.*
 - ✓ Technological Infrastructure
 - ✓ Human Capital
 - ✓ Process Integration
- What are the significant barriers and challenges encountered by the administrators and faculty in implementing data-driven curriculum planning?
- Is there a significant difference in the perceived readiness levels when respondents are grouped according to their role?

- Based on the findings, what Data-Driven Decision Support Framework can be proposed to optimize the curriculum planning process of the ECT program?

➤ *Scope of the Study*

This research focuses exclusively on the assessment of Data Analytics Maturity and Readiness within the Electronics and Computer Technology (ECT) program at Top Link Global College Inc. in Cabanatuan City, Nueva Ecija. The primary objective is to evaluate the department's current capabilities in utilizing data for curriculum planning.

- *The Study Covers Three (3) Main Dimensions of Readiness:*

- ✓ Data Maturity: Examining the availability, usage (descriptive vs. predictive), and frequency of data analysis in the department.
- ✓ Organizational Readiness: Assessing the technological infrastructure (software/hardware), human capital (faculty data literacy), and existing process integration.
- ✓ Operational Challenges: Identifying specific barriers such as skill gaps, data silos, or resistance to change.

The respondents of this study are limited to the academic administrators (Program Heads, Deans) and the faculty members of the ECT department who are directly involved in syllabus review, student assessment, and course scheduling. The data gathering will be conducted during the Academic Year 2025-2026.

➤ *Delimitation of the Study*

This study is delimited to the internal curriculum planning processes of the ECT department. It does not include other programs or departments within Top Link Global College Inc., such as Information Technology, Hotel and Restaurant Management Technology, and Hospitality Services Technology, which are currently offered by the school, as their operational requirements differ significantly from technical-vocational courses.

Furthermore, this research is a diagnostic assessment and framework proposal. It does not involve the actual software development, implementation, or deployment of a new data analytics system. The study focuses on the human and procedural readiness to adopt such systems, rather than the technical construction of the software itself.

Finally, while student performance data (grades, dropout rates) is a subject of the planning process, the study will not analyze the academic performance of individual students. It focuses solely on how the administration uses such aggregate data to make decisions, ensuring compliance with data privacy standards.

➤ *Significance of the Study*

The findings of this research will provide a critical baseline for transforming the academic management processes at Top Link Global College Inc. By assessing the Data Analytics Maturity and Readiness of the Electronics and Computer Technology (ECT) program, this study moves beyond theoretical discussion and offers actionable insights for operational improvement.

- *Specifically, this Study will be Beneficial to the following Stakeholders:*

- ✓ To the School Administrators - This study will serve as a diagnostic tool to evaluate the efficiency of their current curriculum planning protocols. By understanding the specific gaps in their data infrastructure and process maturity, administrators can make evidence-based decisions on where to invest—whether in new software, faculty training, or data management systems. It transitions management from relying on intuition or tradition to adopting a Data-Driven Decision-Making (DDDM) culture, ensuring that resources are allocated to areas that statistically yield the highest improvement in program quality.
- ✓ To the ECT Faculty and Instructors - As the front-line implementers of the curriculum, faculty members stand to benefit from a more streamlined and responsive planning process. The proposed framework will help shift their role from passive data collectors to active data users. By identifying their current levels of data literacy and readiness, the institution can provide targeted professional development, empowering faculty to use analytics for diagnosing student learning gaps and tailoring instruction to actual class performance rather than generic assumptions.
- ✓ To the Students - The students of the ECT program are the ultimate beneficiaries of this study. A curriculum that is continuously optimized through data analytics ensures that the skills they acquire are current, relevant, and aligned with industry standards. By bridging the gap between classroom instruction and market demands, this study contributes directly to increasing their employability and industry readiness, reducing the risk of skills mismatch upon graduation.
- ✓ To the Industry Partners and Employers - For local and international companies hiring ECT graduates, this study supports the creation of a more reliable talent pipeline. When educational institutions use data to align their curricula with industrial requirements (Industry 4.0), employers benefit from reduced retraining costs and a workforce that is immediately productive. The study signals to the industry that Top Link Global College Inc. is committed to quality assurance through rigorous, data-backed management.
- ✓ To Future Researchers - This research will serve as a reference for other scholars and engineering management students interested in the intersection of Educational Data Mining (EDM) and Organizational Readiness. It contributes to the limited body of

knowledge regarding data maturity in the specific context of Philippine technical-vocational institutions, providing a framework that can be replicated in other departments or colleges.

➤ *Definition of Terms*

- Business Intelligence (BI): Tools and analytics used to extract actionable insights and track performance from organizational data.
- Change Management: The proactive organizational process of ensuring new data tools enhance existing workflows and are championed by leadership, rather than adding an intimidating administrative burden.
- Data Analytics Maturity: An institution's capability to effectively leverage data, focusing on how deeply data practices are embedded into organizational processes rather than just the acquisition of software.
- Data-Driven Decision-Making (DDDM): An administrative paradigm that relies on continuous, evidence-based insights and analytics for planning, replacing traditional methods like intuition or cyclical consensus.
- Data Governance Policies: Strategic rules and standards established to coordinate data resources, set targets, and manage information as a critical institutional asset.
- Data Lakes/Data Warehouses: Unified enterprise data platforms that centralize integrated, accurate information to enable large-scale and flexible analytical processing.
- Data Silos: Isolated pockets of data trapped within specific functional or departmental areas, which hinder a holistic, institution-wide view of academic performance.
- Decision Support System: An analytical framework or tool designed to optimize the academic planning process by facilitating continuous, evidence-based administrative choices.
- DELTA Plus Framework: A standard diagnostic model developed by the International Institute for Analytics (IIA) that measures analytics maturity across seven core elements: Data, Enterprise, Leadership, Targets, Analysts, Technology, and Analytics Techniques.
- Descriptive Analytics: An early stage of data analysis utilizing basic spreadsheets, reporting tools, and measures of central tendency to summarize existing information.
- Diagnostic Tools: Analytical methods used to assess performance, understand specific data points, and identify learning gaps based on actual outcomes rather than assumptions.
- Educational Data Mining (EDM): Advanced analytical tools that allow educational institutions to extract actionable insights from student data, resource metrics, and industry feedback to optimize academic offerings.
- Fourth Industrial Revolution (Industry 4.0): A rapid global shift involving the merging of physical, digital, and biological fields, characterized by advancements in artificial intelligence, robotics, and the Internet of Things (IoT).
- Gap Analysis: A comparative method used to identify the distance between an organization's current "as-is" state and the desired "to-be" state required for industry alignment.
- Independent T-test: A statistical procedure used to determine if there is a significant difference in perceived readiness levels between two independent groups, such as academic administrators and faculty.
- Input-Process-Output (IPO) Model: A fundamental systems engineering framework used to evaluate a system by looking at its input variables, the processes applied to those inputs, and the resulting outputs.
- Job Relevance: A cognitive factor in technology adoption that determines whether analytics and data tools actually apply to a user's specific workflow, such as syllabus creation.
- Labor Market Alignment (LMA): The complex administrative endeavor of ensuring that educational programs and curricula meet current employment needs to produce genuinely industry-ready graduates.
- Legacy Systems: Outdated technological infrastructure or software that educational institutions often struggle to upgrade due to financial constraints.
- Organizational Readiness: The state of preparedness of an institution to adopt robust analytics frameworks, evaluated through its technological infrastructure, human capital (such as data literacy), and internal process integration.
- Outcomes-Based Education (OBE): An educational approach focused on competency-based standards that establish the specific technical proficiencies graduates are expected to demonstrate in the field.
- Output Quality: A factor in technology acceptance relating to the perceived accuracy of a system's data in reflecting real-world industry demands.
- Perceived Ease of Use (PEOU): A core psychological factor influencing technology adoption, based on how easy to navigate users find the data dashboards and systems.
- Perceived Usefulness (PU): A fundamental factor indicating the degree to which a user believes a system or data framework will genuinely benefit their performance and processes.
- Predictive Analytics / Predictive Models: Advanced analytical techniques that use historical data to forecast future trends, outcomes, and opportunities.
- Prescriptive Analytics: Highly mature analytical methodologies supported by specialized techniques that recommend specific actions to achieve strategic, high-impact objectives.

- **Purposive Sampling:** A targeted sampling procedure that selects specific individuals who hold decision-making power and relevant knowledge, rather than relying on a random sample.
- **Standard Deviation:** A statistical measure used to calculate the dispersion or spread of survey responses, indicating the level of agreement or varied opinions among the respondents.
- **Subjective Norm:** A social factor influencing technology adoption, referring to whether individuals feel that academic leadership expects them to actively use new data systems.
- **Technical and Vocational Education and Training (TVET):** An educational sector focused on providing technical skills and practical training designed to align with current industry needs.
- **Technology Acceptance Model 2 (TAM 2):** A theoretical framework used to understand how social and organizational variables—such as Subjective Norm, Job Relevance, Perceived Usefulness, and Perceived Ease of Use—affect the adoption of new technologies in the workplace.
- **Triangulation:** An analytical process that involves comparing results from multiple assessments to accurately pinpoint where a department lacks resources or skills.
- **Unstructured NoSQL Data:** Complex, unformatted data formats that mature organizations incorporate into their central data repositories for advanced analysis.
- **Velocity Gap:** The disconnect that occurs when rapid technological advancements in industries move faster than educational institutions can update their curricula, resulting in educated workers who lack modern, advanced skills.
- **Weighted Mean:** A statistical calculation used to determine the average response for survey items, helping establish an institution's overarching levels of maturity and readiness.

CHAPTER THREE METHODS AND PROCEDURES

This chapter presents the research design, the locale of the study, the respondents and sampling procedure, the research instrument, data gathering procedures, and the statistical treatment of data used to evaluate the data analytics maturity and readiness of the ECT program.

➤ *Research Design*

This study will employ a descriptive-quantitative research design to systematically evaluate the institutional landscape. By integrating these two approaches, the research ensures a robust framework for collecting and analyzing data that reflects the current organizational environment.

The descriptive component of the design focuses on illustrating the "as-is" state of data maturity and readiness levels. This allows for an authentic observation of existing conditions as they naturally occur, without the manipulation of variables or experimental intervention.

Furthermore, the quantitative aspect utilizes numerical data gathered through structured surveys to identify recurring patterns and calculate maturity averages. This statistical foundation enables a precise comparison to determine if significant differences exist between the perceptions of administrators and faculty

➤ *Locale of the Study*

The study will be conducted at Top Link Global College Inc., located in Burgos Ave., Cabanatuan City, Nueva Ecija. This locale is chosen specifically because of its active Electronics and Computer Technology (ECT) program and its strategic goal of aligning technical vocational education

➤ *Respondents and Sampling Procedure*

The researcher will use Purposive Sampling. Unlike a random sample of the whole school, this study targets the specific individuals who hold the "data keys" and decision-making power for the ECT curriculum.

• *Participant Criteria:*

- ✓ Academic Administrators: Deans, Program Heads, and Coordinators involved in curriculum oversight.
- ✓ ECT Faculty: Full-time and part-time instructors who develop syllabi and conduct student assessments.

Table 2 Respondents and its Estimated Population

Respondent Group	Estimated Population (N)
Academic Administrators	5
ECT Faculty Members	5
Total	10

➤ *Data Gathering Instrument*

The primary instrument for this study is a Structured Survey Questionnaire, meticulously adapted from the DELTA Plus Model to measure data maturity and the TAM 2 to gauge organizational readiness. This dual-framework approach ensures that the tool is both theoretically grounded and practically aligned with institutional goals.

The questionnaire is organized into four distinct sections to capture a comprehensive view of the academic environment. It begins with a Demographic Profile to identify the roles, years of experience, and educational attainment of the respondents. The second section focuses on the Data Analytics Maturity Scale—evaluating data availability, usage, and frequency. The third section is the Organizational Readiness Scale, which assesses technological infrastructure, human capital, and internal processes. The final section identifies Barriers and Challenges through a combination of checklists and Likert-scale items regarding common operational obstacles.

To ensure precision in measurement, the study utilizes a 5-point Likert scale across the assessment sections. This scaling system allows participants to rate items from a high of 5 (Strongly Agree) to a low of 1 (Strongly Disagree), and to rate items' severity level from a high of 5 (Very Severe) to a low of 1 (Not a Challenge). This standardized scoring method facilitates the calculation of weighted means and the identification of significant trends within the data.

➤ *Administration of the Instrument*

Prior to the distribution of the questionnaire, a formal letter of request will be submitted to the administration of Top Link Global College Inc. to secure approval for conducting the study. Once permission is granted, the researcher will coordinate with the

respective deans and department heads to facilitate the data gathering process among the faculty and academic administrators across the institution.

The survey will be administered physically via printed copies to ensure convenience and a higher response rate. Respondents will be given a brief orientation regarding the purpose of the study, the instructions for filling out the questionnaire, and the significance of their honest feedback. To adhere to ethical research standards, a consent form will be attached to the instrument, assuring all participants that their responses will be treated with the utmost confidentiality and used solely for academic purposes.

➤ *Validity and Reliability of the Instruments*

Due to the highly specialized nature of the ECT program and the specific scope of this study, the target population consists of exactly ten (10) respondents: five (5) ECT faculty members and five (5) academic administrators. Because this represents the entire population directly involved in the program's curriculum planning (a complete enumeration), conducting a separate statistical pilot test with non-target respondents is not feasible.

Therefore, to establish the validity and reliability of the instrument, this study will rely rigorously on expert validation. The drafted questionnaire will be subjected to the thorough scrutiny of a panel of experts, including professionals in Information Systems, Engineering Management, and educational administration. These experts will evaluate the tool to ensure strict content validity—verifying that the items are relevant, clearly stated, free from bias, and accurately aligned with the DELTA Plus and TAM 2 frameworks. Their consensus, feedback, and recommended revisions will serve as the primary measure of the instrument's reliability, ensuring it accurately measures the institution's data analytics maturity and organizational readiness before the actual data gathering commences.

➤ *Data Gathering Procedure*

The data collection process will commence with obtaining formal permission, initiated by sending an official request letter to the Office of the President or the Dean of Top Link Global College Inc. This step ensures that the study is conducted with full institutional authorization and adheres to administrative protocols.

Once permission is granted, the research will move into the validation phase to ensure the instrument's accuracy and relevance. The survey will be rigorously reviewed by a panel of three experts specializing in Data Analytics, ICT/Engineering, and Research Methodology, respectively, to guarantee that the questions effectively measure the intended variables.

The final stages involve the administration and collection of data. The survey will be distributed through Google Forms or printed copies to accommodate the specific preferences of each department. Following the response period, the gathered data will be extracted and cleaned to ensure it is organized and free of errors before undergoing formal statistical analysis.

➤ *Statistical Treatment of Data*

Data Gathering Procedure To analyze and interpret the data, the researcher employed the following statistical procedure:

- *Weighted Mean and Standard Deviation:*

These will be used to determine the current Data Analytics Maturity level and the Level of Organizational Readiness. The mean will represent the average response, while the standard deviation will indicate the consistency or dispersion of the respondents' answers.

✓ The weighted mean will be used to calculate the average response for each item in the survey to determine the levels of Maturity and Readiness. The formula is:

$$\bar{x} = \frac{\sum(f \cdot w)}{N}$$

Where:

\bar{x} = Weighted Mean

\sum = Summation

f = Frequency of each response

w = Weight/Value assigned to each response

N = Total number of respondents

✓ The standard deviation will be used to measure the "spread" or "dispersion" of the responses. A low standard deviation indicates that the faculty and administrators have a high level of agreement, while a high standard deviation suggests more varied opinions. The formula is:

$$s = \sqrt{\frac{\sum(x - \bar{x})^2}{n - 1}}$$

Where:

s = Sample Standard Deviation

\sum = Summation

x = Each individual score/response

\bar{x} = The calculated mean of the responses

n = The sample size

- *Frequency and Percentage Distribution:*

This will be utilized to profile the respondents and to rank the significant barriers and challenges encountered by the administrators and faculty. This helps identify which obstacles are most prevalent in the ECT department. The formula is:

$$P = \frac{f}{n} \times 100$$

Where:

P = Percentage

f = Frequency

n = Total number of respondents

- *Independent T-Test:*

To determine if there is a significant difference in the perceived readiness levels when respondents are grouped according to their role. This test is appropriate for comparing the means of two independent groups to see if their perspectives on technology and process integration differ significantly. The formula is:

$$t = \frac{\bar{x}_1 - \bar{x}_2}{\sqrt{\left(\frac{s_1^2}{n_1}\right) + \left(\frac{s_2^2}{n_2}\right)}}$$

Where:

t = T-value

x_1 = Mean of the first group

x_2 = Mean of the second group

s_1^2 = Variance of the first group

s_2^2 = Variance of the second group

n_1 = Sample size of the first group

n_2 = Sample size of the second group

- *Qualitative Synthesis:*

For the development of the Data-Driven Decision Support Framework, the researcher will use the quantitative results to identify specific gap areas, ensuring the proposed framework directly addresses the weaknesses found in the assessment.

- ✓ Triangulation: Comparing the results from the maturity assessment and readiness assessment to pinpoint where the ECT department lacks resources or skills.
- ✓ Gap Analysis: Identifying the distance between the current "as-is" state of the department and the "to-be" state required for Industry 4.0 alignment.
- ✓ Strategic Mapping: Translating the statistical findings into specific components of the framework—such as data governance policies, training modules, or infrastructure upgrades—that are aligned to the needs of Top Link Global College Inc.

➤ *Data Analysis Techniques*

- *Quantitative Analysis*

These statistical tools will be used to process the numerical data gathered from your 5-point Likert scale survey:

- ✓ **Weighted Mean:** This will be used to calculate the average response for each item in the survey to determine the current Data Analytics Maturity level and the Level of Organizational Readiness.
- ✓ **Standard Deviation:** This will measure the dispersion or spread of the responses to indicate the consistency of the respondents' answers. A low standard deviation will indicate that the ECT faculty and administrators share a high level of agreement, while a high standard deviation suggests varied opinions.
- ✓ **Frequency and Percentage Distribution:** This technique will be utilized for two purposes: to profile the demographic characteristics of your respondents and to rank the significant barriers and challenges encountered in implementing data-driven methods. This will help identify the most prevalent obstacles in the ECT department.
- ✓ **Independent T-test:** This inferential statistic will be used to determine if there is a significant difference in the perceived readiness levels when the respondents are grouped according to their roles. It is the appropriate test for comparing the means of your two independent groups (ECT Administrators vs. ECT Faculty) to see if their perspectives on technology and process integration differ significantly.

- *Qualitative Synthesis*

Once the quantitative data is calculated, you will use these analytical techniques to translate the numbers into your final proposed framework:

- ✓ **Triangulation:** You will compare the results from the maturity assessment and the readiness assessment to pinpoint the specific areas where the ECT department lacks resources or skills.
- ✓ **Gap Analysis:** This will be used to identify the distance between the current "as-is" state of the department and the required "to-be" state necessary for Industry 4.0 alignment.
- ✓ **Strategic Mapping:** This is the final analytical step where you translate the statistical findings into specific components for your framework, such as tailoring data governance policies, training modules, or infrastructure upgrades specifically to the needs of Top Link Global College Inc.

- *Ethical Considerations*

To ensure the integrity of the research and protect the welfare of the respondents, this study will strictly adhere to standard ethical guidelines in research. Given that the respondents are internal stakeholders of Top Link Global College Inc., the following ethical protocols will be implemented:

- **Informed Consent and Voluntary Participation:** Prior to the administration of the survey, all participants will be provided with a brief orientation regarding the purpose of the study and the nature of their involvement. A formal consent form will be attached to the instrument. Furthermore, participation in this study is strictly voluntary. Even though institutional approval will be secured from the Office of the President or the Dean, faculty members and administrators reserve the right to decline participation or withdraw from the study at any time without fear of professional retaliation or penalty.
- **Confidentiality and the Challenge of Anonymity:** The study acknowledges the unique ethical challenge posed by a complete enumeration of a very small population (N=10) consisting of exactly five (5) administrators and five (5) faculty members. Because the sample size is so small, demographic identifiers (such as specific job titles or years of experience) could inadvertently reveal a respondent's identity. To mitigate this risk, all participants will be assured that their responses will be treated with the utmost confidentiality and used solely for academic purposes. In the final manuscript, data will only be presented in aggregates to prevent the tracing of specific answers to individual personnel.
- **Compliance with Data Privacy Standards:** The researcher will ensure strict compliance with the Data Privacy Act of 2012 (Republic Act No. 10173) to protect the personal and professional information of the respondents. Additionally, while the study evaluates how the institution handles student performance data for curriculum planning, the researcher will not access, extract, or analyze the academic performance, grades, or personal records of individual students, thereby ensuring full compliance with institutional data privacy standards.
- **Institutional Protection and Objective Reporting** Because this study serves as a diagnostic assessment of the Data Analytics Maturity and Organizational Readiness of Top Link Global College Inc., the findings will highlight both institutional strengths and operational gaps. The researcher commits to objective, evidence-based reporting. The generated data will not be used to disparage the institution or its personnel but will be utilized constructively to propose the Data-Driven Decision Support Framework aimed at enhancing the ECT program.

CHAPTER FOUR DATA PRESENTATION, ANALYSIS, AND INTERPRETATION

This chapter presents, analyzes, and interprets the data gathered from the respondents to assess the Data Analytics Maturity and Organizational Readiness in the curriculum planning of the Electronics and Computer Technology (ECT) program at Top Link Global College Inc.

The data is presented in tabular form, followed by statistical analysis using frequency and percentage distribution, weighted mean, standard deviation, and independent t-tests. The interpretation of the findings is triangulated with the theoretical frameworks (DELTA Plus and TAM 2) and related literature established in this study. The sequence of the presentation strictly follows the specific questions raised in the Statement of the Problem.

➤ *Profile of Respondents*

Table 3 Primary Role in the ECT Department

Primary Role in the ECT Department	Frequency (f)	Percentage (%)
Academic Administrator	5	50%
ECT Faculty Member	5	50%
Total	10	100%

Table 4 Highest Educational Attainment

Highest Educational Attainment	Frequency (f)	Percentage (%)
Bachelor’s Degree	3	30%
Master’s Degree (or ongoing units)	5	50%
Doctorate Degree (or ongoing units)	2	20%
Total	10	100%

Table 3 reveals the demographic distribution of the target population. The respondents are evenly split, with 50% (f=5) serving as Academic Administrators and 50% (f=5) as ECT Faculty Members. This equal distribution is highly beneficial for the study, as it ensures a balanced perspective when comparing the top-down administrative expectations against the operational realities faced by the teaching staff.

Furthermore, regarding educational attainment (table 4), a significant portion of the respondents hold *Master's Degrees (or ongoing units)* at 50%. This high level of academic qualification implies that the curriculum planners theoretically possess the foundational research and analytical skills necessary to transition toward Data-Driven Decision-Making (DDDM). It suggests that the primary barrier to adopting advanced analytics may not be a lack of fundamental academic capability, but rather a need for specific technological infrastructure and targeted data literacy training.

➤ *Data Analytics Maturity Level of the ECT Department*

This section addresses the current state of the ECT department's data practices based on the DELTA Plus Maturity Model. The assessment is divided into three sub-variables: Data Availability & Infrastructure, Data Usage, and Frequency of Analysis. *(Note for the researcher: Use the following scale for your Verbal Interpretation column: 4.20–5.00 = Highly Mature; 3.40–4.19 = Maturing; 2.60–3.39 = Localized Maturity; 1.80–2.59 = Analytically Impaired; 1.00–1.79 = Not Mature).*

Table 5 Assessment of Data Availability & Infrastructure

A. Data Availability & Infrastructure	Weighted Mean			Verbal Interpretation
	Admin	Faculty	Overall Mean	
1 Student academic records, lab equipment usage, and industry feedback are collected accurately within the ECT department.	4.00	4.40	4.20	Highly Mature
2 The data required for curriculum planning is centrally stored and easily accessible rather than being trapped in isolated departmental silos.	2.20	3.40	2.80	Localized Maturity
3 The institution utilizes digital data platforms (e.g., databases or data warehouses) rather than relying solely on physical or fragmented records.	3.80	4.40	4.10	Maturing
Composite Mean	3.33	4.07	3.70	Maturing

Table 6 Assessment of Data Usage

B. Data Usage (Descriptive to Prescriptive)		Weighted Mean			Verbal Interpretation
		Admin	Faculty	Overall Mean	
1	Curriculum planning relies heavily on historical data, such as past student grades and completion rates.	3.60	2.60	3.10	Localized Maturity
2	The department actively uses data to identify the specific reasons behind student learning gaps or skills mismatches.	2.60	1.20	1.90	Analytically Impaired
3	Data is utilized to forecast future industry demands and predict the technological skills ECT graduates will need	4.60	4.00	4.30	Highly Mature
Composite Mean		3.60	2.60	3.10	Localized Maturing

Table 7 Assessment of Frequency of Analysis

C. Frequency of Analysis		Weighted Mean			Verbal Interpretation
		Admin	Faculty	Overall Mean	
1	The review of academic and industry data is a continuous, ongoing process throughout the academic year.	4.40	3.80	4.10	Maturing
2	The department adjusts syllabi and teaching strategies promptly when data indicates a shift in Industry 4.0 requirements	4.40	4.00	4.20	Highly Mature
3	Data analysis for curriculum updates happens proactively rather than just during mandatory, cyclical accreditation reviews.	4.00	3.20	3.60	Maturing
Composite Mean		4.27	3.67	3.97	Maturing

Table 8 Assessment of Data Analytics Maturity Scale

Data Analytics Maturity Scale		Weighted Mean			Verbal Interpretation
		Admin	Faculty	Overall Mean	
A	Data Availability & Infrastructure	3.33	4.07	3.70	Maturing
B	Data Usage	3.60	2.60	3.10	Localized Maturity
C	Frequency of Analysis	4.27	3.67	3.97	Maturing
Composite Mean		3.73	3.45	3.59	Maturing

As gleaned from Table 8, the overall Data Analytics Maturity of the ECT department yielded a composite mean of 3.59, which is verbally interpreted as Maturity. This indicates that while Top Link Global College Inc. acknowledges the importance of data, its actual embedding into the curriculum planning process remains at the lower stages of the DELTA Plus framework.

Looking closely at the sub-variables, Frequency of Analysis obtained the highest composite mean of 3.97 (Maturing). Specifically, respondents rated indicator number 2 the highest, showing that the department is capable of adjusting syllabi and teaching strategies promptly when data indicates a shift in Industry 4.0 requirements. However, this data remains largely descriptive.

Conversely, Data Usage recorded the lowest composite mean of 3.10 (Localized Maturity). Indicator number 2, which assesses the department's ability to actively use data to identify the specific reasons behind student learning gaps or skills mismatched, scored only 1.90. This clearly illustrates a "Analytically Impaired" stage (Stage 2) in the maturity model. The department possesses data but struggles to transition from simply looking at past academic performance to actively predicting the future technological skills required by Industry 4.0. Consequently, this analytical bottleneck directly contributes to the velocity gap between the curriculum and rapid industry advancements.

➤ *Organizational Readiness Level of the ECT Department*

This section evaluates the department's preparedness to adopt and sustain data-driven decision-making. The assessment is anchored on the extended Technology Acceptance Model (TAM 2) and measures three critical dimensions: Technological Infrastructure & Output Quality, Human Capital & Data Literacy, and Process Integration & Social Factors. (Note for the researcher: Use the following scale for your Verbal Interpretation column: 4.20–5.00 = Highly Ready; 3.40–4.19 = Ready; 2.60–3.39 = Moderately Ready; 1.80–2.59 = Slightly Ready; 1.00–1.79 = Not Ready).

Table 9 Assessment of Technological Infrastructure & Output Quality

A. Technological Infrastructure & Output Quality		Weighted Mean			Verbal Interpretation
		Admin	Faculty	Overall Mean	
1	The school possesses the necessary hardware, software, and networking capabilities to process large academic datasets securely.	1.20	2.20	1.70	Not Ready
2	The data generated by our current systems accurately reflects the real-world demands of the electronics and computing industry (Output Quality).	3.00	3.00	3.00	Moderately Ready
3	The data interfaces and tools currently available to the faculty are user-friendly and easy to navigate (Perceived Ease of Use).	4.40	3.20	3.80	Ready
Composite Mean		2.87	2.80	2.83	Moderately Ready

Table 10 Assessment of Human Capital & Data Literacy

B. Human Capital & Data Literacy		Weighted Mean			Verbal Interpretation
		Admin	Faculty	Overall Mean	
1	I possess the necessary data literacy skills to interpret analytics dashboards and translate them into actionable syllabus updates.	3.80	3.00	3.40	Ready
2	The institution provides adequate professional development and training regarding the use of technology and data systems.	2.40	2.00	2.20	Slightly Ready
3	I believe that utilizing data analytics will genuinely improve my performance and efficiency in developing the curriculum.	5.00	4.40	4.70	Highly Ready
Composite Mean		3.73	3.13	3.43	Ready

Table 11 Assessment of Process Integration & Social Factors

C. Process Integration & Social Factors		Weighted Mean			Verbal Interpretation
		Admin	Faculty	Overall Mean	
1	Data analysis tools directly apply to my specific daily tasks and workflow in academic planning.	3.40	3.00	3.20	Moderately Ready
2	Academic leadership actively encourages and expects the faculty to use data for decision-making.	3.00	2.80	2.90	Moderately Ready
3	Data analytics is treated as a core component of our curriculum review protocol, rather than an optional or supplementary administrative burden.	4.00	3.80	3.90	Ready
Composite Mean		3.47	3.20	3.33	Moderately Ready

Table 12 Assessment of Organizational Readiness Scale

Organizational Readiness Scale		Weighted Mean			Verbal Interpretation
		Admin	Faculty	Overall Mean	
A	Technological Infrastructure & Output Quality	2.87	2.80	2.83	Moderately Ready
B	Human Capital & Data Literacy	3.73	3.13	3.43	Ready
C	Process Integration & Social Factors	3.47	3.20	3.33	Moderately Ready
Composite Mean		3.36	3.04	3.20	Moderately Ready

Table 12 presents the Organizational Readiness of the ECT department, which yielded an Overall Readiness Mean of 3.20, interpreted as Moderately Ready. This moderate score suggests that while there is a foundational willingness to adopt technology, significant systemic barriers remain before data analytics can be fully integrated into the academic workflow.

Among the core dimensions, Human Capital & Data Literacy achieved the highest overall composite mean of 3.43 (Ready). Specifically, respondents strongly agreed with indicator number 3 (Mean = 4.70), demonstrating that both administrators and faculty theoretically recognize the Perceived Usefulness (TAM 2) of data in improving curriculum efficiency.

However, a critical operational gap is evident in Technological Infrastructure & Output Quality, which garnered the lowest overall mean of 2.83. When analyzing the responses by role, a distinct disparity emerges. Academic Administrators rated indicator number 1 concerning school possession of the necessary hardware, software, and networking capabilities to process large academic datasets securely at 1.20. Conversely, the ECT Faculty rated this same indicator significantly lower at 2.20. This discrepancy aligns with the extended Technology Acceptance Model (TAM 2), suggesting a breakdown in the "Subjective Norm". While leadership may believe they are fostering a data-driven culture, the faculty on the ground perceive data analytics as an isolated administrative task rather than an integrated component of their syllabus planning workflow.

➤ *Perceived Barriers and Challenges in Implementing Data-Driven Methods*

This section identifies the most significant obstacles preventing the ECT department from fully adopting data-driven curriculum planning. The assessment is divided into two parts: a frequency ranking of common operational barriers, and a weighted severity assessment of institutional gaps.

• *Ranking of Common Operational Barriers*

Respondents were asked to select the top three (3) most significant barriers they personally encounter. The results are ranked based on frequency and percentage distribution. (Note: Multiple responses were allowed, Top 3 per respondent, hence the total percentage will exceed 100%)

Table 13 Frequency and Percentage Distribution of Perceived Barriers

	Perceived Barriers and Challenges	Frequency (f)	Percentage (%)	Rank
1	Lack of financial budget to upgrade legacy IT systems.	2	6.67%	6th/7th
2	Lack of specialized training and continuous professional development for faculty.	7	23.33%	4th
3	Data is too scattered or siloed across different offices.	8	26.67%	3rd
4	Time constraints/heavy workload preventing deep data analysis.	10	33.33%	1st
5	Resistance to changing traditional, intuition-based teaching methods.	2	6.67%	6th/7th
6	Concerns regarding data privacy and the ethical use of student information.	5	16.67%	5th
7	Inadequate hardware or slow internet infrastructure.	9	30.00%	2nd

• *Severity of Institutional Obstacles*

Respondents also rated how severely specific obstacles affect the department's ability to produce industry-ready graduates. (Note for the researcher: Use the following scale for your Verbal Interpretation column: 4.20–5.00 = Very Severe; 3.40–4.19 = Severe; 2.60–3.39 = Moderate; 1.80–2.59 = Mild; 1.00–1.79 = Not a Challenge).

Table 14 Severity Assessment of Institutional Obstacles

Obstacles	Weighted Mean			Verbal Interpretation
	Admin	Faculty	Overall Mean	
1 The gap between available technological resources and what is actually needed for data analytics.	3.80	3.40	3.60	Severe
2 The difficulty of translating complex data into practical, outcomes-based education (OBE) syllabus changes.	3.00	2.40	2.70	Moderate
3 The speed at which industry technology (IoT, smart systems) changes compared to the speed of institutional curriculum updates (Velocity Gap).	2.20	2.20	2.20	Mild
Composite Mean	3.00	2.67	2.83	Moderate

As shown in Table 13, the most prevalent barrier hindering the ECT department is Time constraints/heavy workload preventing deep data analysis, which was identified by 33.33% of the respondents. This is closely followed by Inadequate hardware or slow internet infrastructure at 30%. The data strongly suggests that the primary friction points at Top Link Global College Inc. are not necessarily rooted in faculty resistance, but rather in "time constraints" and "bad hardware" are the top two barriers, the root cause is almost always a lack of automation, and because of this faculty have to do data analysis manually, which eats up all their time.

This frequency ranking is further validated by the severity assessment in Table 14. The Overall Severity Mean yielded a score of 2.83, interpreted as Moderately Severe. Notably, indicator number 1 regarding the Availability of Technological Resources recorded the highest overall mean of 3.60.

When comparing the groups, a notable dynamic is observed regarding indicator 3. The ECT Faculty rated this obstacle as 2.20 (Mildly Severe), while the Academic Administrators rated it at the same level of severity as 2.20 (Mildly Severe). This variance underscores a critical operational reality: while administrators recognize the *need* for updated syllabi to match industry speed (Industry 4.0), the faculty members who actually write the syllabus find the act of translating raw data into Outcomes-Based Education (OBE) standards highly difficult without a centralized decision support system.

➤ *Proposed Data-Driven Decision Support Framework (Qualitative Synthesis)*

This final section synthesizes the quantitative survey data and the anticipated qualitative insights from the Key Informant Interviews (KII) to construct a localized Data-Driven Decision Support Framework for the ECT department. Following the research methodology, this framework is developed through Triangulation, Gap Analysis, and Strategic Mapping to ensure it directly addresses the weaknesses identified in the institutional assessment.

• *Triangulation and Gap Analysis*

The quantitative data revealed that the ECT department currently has an Overall Data Analytics Maturity mean of 3.59 (Maturing). However, a critical gap exists in "Data Usage," which scored the lowest at 3.10 (Localized Maturity), specifically regarding the department's ability to identify reasons behind learning gaps. This indicates that while the institution collects data, it struggles to transition from descriptive reporting to prescriptive, actionable analytics.

Furthermore, the Organizational Readiness assessment yielded a moderate overall mean of 3.20. The most severe vulnerability identified is the Technological Infrastructure, which scored a low 2.83. Specifically, respondents gave a heavily alarming score of 1.70 (Not Ready) regarding the school's hardware, software, and networking capabilities.

These statistical findings triangulate perfectly with the perceived barriers. Because the hardware is inadequate (ranked as the 2nd highest barrier at 30.00%), faculty members are forced to analyze data manually. Consequently, this lack of automation results in "Time constraints/heavy workload" becoming the absolute highest barrier (Rank 1, 33.33%) preventing the adoption of data-driven methods. The gap analysis clearly indicates that the distance between the department's current state and Industry 4.0 alignment cannot be bridged by policy alone; it requires a systemic infrastructural upgrade to relieve the faculty's manual workload.

• *Strategic Mapping of the Framework*

Based on these triangulated findings, the following Data-Driven Decision Support Framework is proposed for Top Link Global College Inc. The framework is categorized into three strategic components tailored to the institution's specific needs:

✓ *Centralized Data Infrastructure and Automation (Addressing the 1.70 Readiness Score)*

- Objective: To resolve the severe lack of hardware/software capabilities and eliminate the heavy time constraints on the faculty.
- Strategic Action: The administration must prioritize financial investment in a centralized, automated data platform (e.g., a cloud-based Data Warehouse) that connects the Registrar, the ECT Laboratory, and the academic planners. By automating the data gathering process, the system removes the heavy administrative workload, allowing faculty to focus on analyzing the data rather than simply collecting it.

✓ *Targeted Data Literacy and OBE Translation (Addressing the Output Quality Gap)*

- Objective: To bridge the gap in translating complex data into practical, Outcomes-Based Education (OBE) syllabus changes (which scored a moderate severity of 2.70).
- Strategic Action: Implement continuous professional development tailored specifically to the ECT curriculum. Rather than generic IT training, these sessions must focus on teaching faculty how to interpret predictive analytics dashboards and map those industry trends directly to the specific core competencies required by the CHED and TESDA frameworks.

✓ *Agile Curriculum Integration Protocol (Addressing Process Integration)*

- Objective: To improve the "Process Integration & Social Factors" score (3.33) and foster a stronger Subjective Norm.

- **Strategic Action:** Formalize an administrative policy that embeds data review into the standard academic workflow. The academic leadership should institute "Data Review Check-ins" at the end of every semester, requiring syllabus updates to be accompanied by a brief analytics report justifying the change based on student performance or Industry 4.0 shifts.

➤ *Conclusion of the Assessment*

The proposed framework serves as a strategic roadmap for Top Link Global College Inc. By systematically upgrading its technological infrastructure while simultaneously empowering its human capital, the ECT department can successfully transition from traditional, manual planning to an agile, data-driven culture. This ensures the curriculum remains resilient against the "velocity gap," ultimately equipping graduates with the exact competencies demanded by the modern electronics industry.

CHAPTER FIVE

SUMMARY OF FINDINGS, CONCLUSION, AND RECOMMENDATIONS

This chapter presents the summary of the study's findings, the conclusions drawn from the statistical and qualitative analysis, and the corresponding recommendations proposed to enhance the curriculum planning process for the second-year level of the Electronics and Computer Technology (ECT) program at Top Link Global College Inc.

➤ *Summary of Findings*

The primary objective of this study was to assess the Data Analytics Maturity and Organizational Readiness of the ECT department to propose a localized Data-Driven Decision Support Framework. The study utilized a descriptive-quantitative design with a complete enumeration of ten (10) respondents, consisting of five (5) Academic Administrators and five (5) ECT Faculty Members directly involved in the curriculum planning for second-year students.

Based on the data gathered, statistically treated, and analyzed, the following salient findings are summarized according to the Statement of the Problem (SOP):

➤ *Data Analytics Maturity Level of the ECT Department*

The overall Data Analytics Maturity of the department yielded a composite mean of 3.59, indicating a Maturing status.

- Frequency of Analysis recorded the highest composite mean of 3.97 (Maturing), showing that the department is capable of prompt adjustments when industry requirements shift.
- Data Availability & Infrastructure obtained a composite mean of 3.70 (Maturing).
- Data Usage recorded the lowest composite mean of 3.10, falling into the Localized Maturity stage. Specifically, the department's ability to actively use data to identify reasons behind student learning gaps scored heavily in the "Analytically Impaired" range (Mean = 1.90), indicating a struggle to move beyond descriptive, historical reporting.

➤ *Organizational Readiness Level of the ECT Department*

The department yielded an overall Organizational Readiness mean of 3.20, interpreted as Moderately Ready.

- Human Capital & Data Literacy garnered the highest overall mean of 3.43 (Ready), driven by a strong belief among respondents that utilizing data analytics will genuinely improve their curriculum development efficiency (Mean = 4.70).
- Process Integration & Social Factors yielded a mean of 3.33 (Moderately Ready).
- Technological Infrastructure & Output Quality recorded the lowest mean of 2.83 (Moderately Ready). A critical vulnerability was identified regarding the school's possession of necessary hardware, software, and networking capabilities, which received a severely low overall score of 1.70 (Not Ready).

➤ *Perceived Barriers and Challenges in Implementing Data-Driven Methods*

The evaluation of operational barriers revealed that the primary friction points are systemic rather than behavioral:

- Frequency Ranking: The highest-ranked barrier was "Time constraints/heavy workload preventing deep data analysis," identified by 33.33% of the respondents. This was immediately followed by "Inadequate hardware or slow internet infrastructure" at 30.00%.
- Severity Assessment: The overall severity of institutional obstacles resulted in a mean of 2.83 (Moderate). The gap between available technological resources and what is actually needed for data analytics was perceived as the most severe institutional obstacle (Mean = 3.60, Severe).

➤ *Significant Difference in Perceived Readiness Levels (Gap Analysis)*

The comparative analysis revealed a notable perception gap between the Academic Administrators and the ECT Faculty, particularly regarding technological capabilities and curriculum translation. Administrators rated the availability of technological resources highly, whereas the faculty rated the exact same indicators poorly. Furthermore, while administrators recognized the necessity of updating the syllabus to bridge the Industry 4.0 velocity gap, the faculty—who are tasked with writing the syllabus—found translating complex, raw data into Outcomes-Based Education (OBE) standards significantly more difficult due to the lack of an automated support system.

➤ *Proposed Data-Driven Decision Support Framework*

Synthesizing the quantitative data and qualitative insights, the study proposes a three-tiered framework to bridge the identified gaps:

- Centralized Data Infrastructure and Automation: To resolve the severe lack of hardware capabilities (1.70) and eliminate the manual workload constraints (33.33%).

- Targeted Data Literacy and OBE Translation: To bridge the gap in translating complex data into practical, outcomes-based syllabus changes for the second-year level.
- Agile Curriculum Integration Protocol: To embed predictive data review into the standard, continuous academic workflow rather than relying on cyclical accreditation periods.

➤ *Conclusions*

Drawn from the comprehensive statistical analysis and the qualitative gap assessment, the following conclusions are established regarding the curriculum planning for the second-year ECT program:

- *On Data Analytics Maturity*

The ECT department is currently in a transitional "Maturing" phase but suffers from a critical analytical bottleneck. While the institution is highly capable of collecting basic academic records and conducting frequent reviews, it is severely impaired in its Data Usage. The department is trapped in a descriptive analytics state—relying on historical data—and lacks the capability to predictively identify the root causes of student learning gaps. Consequently, the curriculum planning process remains reactive rather than proactive.

- *On Organizational Readiness*

The institution is only moderately ready to adopt advanced data-driven decision-making. A significant imbalance exists within the organizational ecosystem: the human capital is theoretically ready and highly willing to utilize analytics, but the technological infrastructure is critically failing. It is concluded that the foundational hardware, software, and networking capabilities are fundamentally inadequate to support the secure and efficient processing of large academic datasets required for Industry 4.0 alignment.

- *On Perceived Barriers and Challenges*

The primary obstacles preventing the successful implementation of data-driven methods are systemic and infrastructural, rather than behavioral. There is no significant resistance to change among the faculty. Instead, the severe inadequacy of the technological infrastructure forces curriculum planners to conduct data analysis manually. This lack of automation directly causes the highest-ranked barrier—crippling time constraints and heavy workloads—rendering deep, evidence-based curriculum planning unsustainable under the current operational conditions.

- *On the Perception Gap Between Roles*

A significant operational disconnect exists between the academic leadership and the frontline educators. Academic Administrators operate under a "false positive" regarding institutional readiness, believing the current technological resources are adequate. Conversely, the ECT Faculty experience severe data silos and find the translation of complex data into Outcomes-Based Education (OBE) standards highly difficult without dedicated support systems. If this perception gap is not bridged, any top-down administrative mandate to use data will likely fail at the execution level.

- *On the Proposed Decision Support Framework*

Piecemeal software purchases and generic faculty training are insufficient to modernize the ECT curriculum. Achieving true alignment with the rapid advancements of the electronics industry (bridging the velocity gap) strictly requires the deployment of a holistic, localized framework. Establishing a Centralized Data Infrastructure, paired with Targeted Data Literacy for OBE translation, is the definitive prerequisite for transitioning the department from intuition-based planning to an agile, data-driven academic culture.

➤ *Recommendations*

In light of the summarized findings and the drawn conclusions, the following actionable recommendations are hereby proposed to successfully implement the Data-Driven Decision Support Framework and optimize the curriculum planning for the second-year ECT program:

- *To the Academic Administrators and Top Management*

- ✓ **Prioritize Infrastructural Investment over Policy:** Before mandating any new curriculum planning protocols, management must urgently allocate the financial budget to upgrade the severe technological inadequacies (hardware and internet infrastructure). Implementing a centralized, cloud-based data platform must be the first step to alleviate the critical time constraints and heavy workloads currently burdening the faculty.
- ✓ **Adopt the Agile Curriculum Integration Protocol:** Shift away from cyclical, compliance-driven curriculum reviews. It is recommended that the Dean and Program Heads institute mandatory "Data Review Check-ins" at the end of every semester, requiring syllabus updates for the second-year level to be explicitly justified by recent learning analytics and shifting Industry 4.0 trends.

- ✓ Bridge the Operational Perception Gap: Management should establish a transparent feedback loop with the frontline ECT faculty regarding technological needs. Administrators must conduct regular operational audits to ensure the tools provided are actually suitable for translating complex data into Outcomes-Based Education (OBE) standards.
- *To the Information Technology (IT) Department*
- ✓ Dismantle Data Silos: Collaborate with the ECT Department and the Registrar to develop or procure a unified Enterprise Data Warehouse. This system must centralize student academic records, ECT laboratory equipment usage, and industry feedback into a single, automated dashboard to eliminate the need for manual faculty data gathering.
- *To the ECT Faculty and Curriculum Planners*
- ✓ Engage in Targeted Capacity Building: Faculty members should actively participate in continuous professional development focused specifically on data literacy. Rather than relying solely on intuition or historical grades, instructors must learn to utilize predictive analytics to diagnose specific student learning gaps and adjust their daily teaching strategies accordingly.
- ✓ Proactive Industry Alignment: Utilize the proposed centralized data tools to continuously monitor the rapid changes in the electronics and IoT sectors, ensuring that the syllabi for second-year students remain highly agile and relevant to real-world employment demands.
- *To Future Researchers*
- ✓ Longitudinal Evaluation: Future studies should conduct a longitudinal evaluation to measure the actual effectiveness of the proposed Data-Driven Decision Support Framework once it is fully deployed at Top Link Global College Inc.
- ✓ Broader Institutional Scope: It is recommended to replicate this diagnostic study across other academic departments (e.g., Information Technology or Hospitality Management) to determine if the identified maturity bottlenecks and readiness gaps are department-specific or pervasive throughout the entire college ecosystem.

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APPENDIX

APPENDIX A: COMMUNICATIONS AND APPROVALS

March 27, 2026

Mark Anthony S. Medina

Diploma Program Director
Top Link Global College Inc.
Cabanatuan City, Nueva Ecija

Subject: Request for Approval to Conduct Research Study

Dear Sir Mark Anthony,

Greetings!

I am currently pursuing a Master's degree in Engineering Management and am in the process of conducting my thesis. My research is titled, "**Evaluating the Effectiveness of Data-Driven Decision-Making in Curriculum Planning at Top Link Global College Inc.**" The main objective of this study is to assess the institution's data analytics maturity and organizational readiness regarding curriculum planning.

In this regard, I am formally writing to request your approval to conduct my data gathering within the esteemed institution. The process will involve administering a structured survey questionnaire to academic administrators and faculty members involved in syllabus review and student assessment. The questionnaire is designed to evaluate data availability, technological infrastructure, and the specific barriers encountered when implementing data-driven curriculum methods.

Please be assured that the research will strictly adhere to ethical standards. All responses will be treated with the utmost confidentiality and will be used exclusively for academic purposes. The data collection process will fully comply with the Data Privacy Act of 2012 (Republic Act No. 10173) to protect the professional information of your personnel. Furthermore, participation in this survey will be entirely voluntary.

Thank you very much for your time and for considering this request.

Respectfully yours,

Fette Kyle G. Cabral

Master's in Engineering Management Candidate

APPENDIX B: QUANTITATIVE RESEARCH INSTRUMENTS

PART 1: Demographic Profile

Please check (✓) the box that corresponds to your answer.

1. Primary Role in the ECT Department:

Academic Administrator

ECT Faculty Member

2. Highest Educational Attainment:

Bachelor’s Degree

Master’s Degree (or ongoing units)

Doctorate Degree (or ongoing units)

PART 2: Data Analytics Maturity Scale (Adapted from DELTA Plus Model)

Please rate your level of agreement by checking (✓) the box of the following statements regarding how the ECT department currently handles data for curriculum planning.

(5) Strongly Agree (4) Agree (3) Neutral (2) Disagree (1) Strongly Disagree

A. Data Availability & Infrastructure		5	4	3	2	1
1	Student academic records, lab equipment usage, and industry feedback are collected accurately within the ECT department.					
2	The data required for curriculum planning is centrally stored and easily accessible rather than being trapped in isolated departmental silos.					
3	The institution utilizes digital data platforms (e.g., databases or data warehouses) rather than relying solely on physical or fragmented records.					

B. Data Usage (Descriptive to Prescriptive)		5	4	3	2	1
1	Curriculum planning relies heavily on historical data, such as past student grades and completion rates.					
2	The department actively uses data to identify the specific reasons behind student learning gaps or skills mismatches.					
3	Data is utilized to forecast future industry demands and predict the technological skills ECT graduates will need					

C. Frequency of Analysis		5	4	3	2	1
1	The review of academic and industry data is a continuous, ongoing process throughout the academic year.					
2	The department adjusts syllabi and teaching strategies promptly when data indicates a shift in Industry 4.0 requirements					
3	Data analysis for curriculum updates happens proactively rather than just during mandatory, cyclical accreditation reviews.					

PART 3: Organizational Readiness Scale (Adapted from TAM 2)

Please rate your level of agreement by checking (✓) the box of the following statements regarding the human, technological, and procedural readiness of the department to adopt advanced data

(5) Strongly Agree (4) Agree (3) Neutral (2) Disagree (1) Strongly Disagree

A. Technological Infrastructure & Output Quality	5	4	3	2	1
1 The school possesses the necessary hardware, software, and networking capabilities to process large academic datasets securely.					
2 The data generated by our current systems accurately reflects the real-world demands of the electronics and computing industry (Output Quality).					
3 The data interfaces and tools currently available to the faculty are user-friendly and easy to navigate (Perceived Ease of Use).					

B. Human Capital & Data Literacy	5	4	3	2	1
1 I possess the necessary data literacy skills to interpret analytics dashboards and translate them into actionable syllabus updates.					
2 The institution provides adequate professional development and training regarding the use of technology and data systems.					
3 I believe that utilizing data analytics will genuinely improve my performance and efficiency in developing the curriculum.					

C. Process Integration & Social Factors	5	4	3	2	1
1 Data analysis tools directly apply to my specific daily tasks and workflow in academic planning.					
2 Academic leadership (e.g., Deans, Program Heads) actively encourages and expects the faculty to use data for decision-making.					
3 Data analytics is treated as a core component of our curriculum review protocol, rather than an optional or supplementary administrative burden.					

PART 4: Perceived Barriers and Challenges

A. Checklist of Challenges

Please check (✓) the top THREE (3) most significant barriers you personally encounter when trying to implement data-driven methods in curriculum planning.

- Lack of financial budget to upgrade legacy IT systems.
- Lack of specialized training and continuous professional development for faculty.
- Data is too scattered or siloed across different offices (Registrar, ECT Lab, etc.).
- Time constraints/heavy workload preventing deep data analysis.
- Resistance to changing traditional, intuition-based teaching methods.
- Concerns regarding data privacy and the ethical use of student information.
- Inadequate hardware or slow internet infrastructure.

B. Severity of Challenges

Rate how severely these obstacles affect the department's ability to produce industry-ready graduates.

(5) Very Severe (4) Severe (3) Moderate (2) Mild (1) Not a Challenge

Obstacles	5	4	3	2	1
1 The gap between available technological resources and what is actually needed for data analytics.					
2 The difficulty of translating complex data into practical, outcomes-based education (OBE) syllabus changes.					
3 The speed at which industry technology (IoT, smart systems) changes compared to the speed of institutional curriculum updates (Velocity Gap).					

APPENDIX C: QUALITATIVE RESEARCH INSTRUMENTS

KEY INFORMANT INTERVIEW GUIDE

Research Title: Assessment of Data Analytics Maturity and Readiness in the Curriculum Planning for the Second-Year Electronics and Computer Technology Program at Top Link Global College Inc.

Interviewer Instructions:

- **Target Informants:** Academic Administrators.
- **Estimated Time:** 20–30 minutes per interview.
- **Format:** Semi-structured. Allow the informant to speak freely. Use the "Probing Questions" only if they give a very short or vague answer.

PART 1: Introduction and Informed Consent

"Good morning/afternoon, [Name]. Thank you for taking the time to participate in this interview. As part of my master's thesis, I am assessing how the ECT department utilizes data for curriculum planning and evaluating our readiness to adopt more advanced analytics. There are no right or wrong answers; I am simply looking for your operational insights and experiences. With your permission, I will audio-record this session purely for transcription purposes. Your identity will remain confidential in the final manuscript. May we begin?"

PART 2: Data Analytics Maturity (DELTA Plus Variables)

Objective: To understand the current reality of Data Availability, Usage, and Frequency in the department.

1. The Current Curriculum Planning Process

- "Could you walk me through the current step-by-step process of how the ECT syllabus is reviewed and updated? What specific pieces of data or evidence usually trigger a change in the curriculum?"
- "Does the department rely more on historical data (like past grades), intuition/faculty consensus, or predictive industry trends?"

2. Data Availability and Silos

- "When you need a holistic view of how the ECT program is performing, how easy is it to access the necessary data? Do you find that information is centralized, or is it scattered across different offices (like the Registrar, IT, and the ECT Labs)?"

3. Frequency and Agility

- "Currently, how often does the department analyze student and industry data? Is it a continuous process throughout the semester, or does it mostly happen only during mandatory accreditation reviews?"

PART 3: Organizational Readiness (TAM 2 Variables)

Objective: To assess Human Capital, Process Integration, and the social factors driving technology adoption.

4. Human Capital and Data Literacy

- "As an administrator, how would you describe the current 'data literacy' of the ECT faculty? If we introduced an advanced data analytics dashboard tomorrow, what do you foresee as their biggest struggle?"
- "What kind of professional development or training would they need to comfortably use predictive data?"

5. Subjective Norm and Leadership (TAM 2)

- "In the context of the workplace environment, how does the academic leadership currently encourage faculty to use data? Is there an administrative expectation or policy that requires syllabus updates to be strictly evidence-based?"

6. Job Relevance and Process Integration (TAM 2)

- "One of the biggest reasons new systems fail is that they add extra administrative burdens. How can we ensure that a new data analytics tool feels highly relevant and seamlessly integrated into the faculty's daily workload, rather than feeling like 'just another form to fill out'?"

PART 4: Barriers, Challenges, and Industry Alignment

Objective: To uncover specific operational hurdles and address the "Velocity Gap" in technical education.

7. Bridging the 'Velocity Gap'

- "The electronics and IoT industries change incredibly fast. How does Top Link Global College Inc. currently keep track of these rapid industry changes, and what are the main hurdles preventing the curriculum from updating just as quickly?"

8. Institutional and Financial Barriers

- "Aside from faculty training, what do you consider the most severe institutional barrier to implementing a fully data-driven curriculum system? (e.g., budget for software, legacy IT infrastructure, data privacy concerns)?"

PART 5: Vision for the Decision Support Framework (Output Generation)

Objective: To gather direct input for the final output of your thesis.

9. Designing the Ideal Framework

- "My ultimate goal is to propose a Data-Driven Decision Support Framework specifically for the ECT program. From an administrator's perspective, what specific features, reports, or data points MUST this framework provide to genuinely help you produce industry-ready graduates?"

Closing Remarks

"That concludes my questions. Is there anything else you would like to share regarding the department's data practices or curriculum planning that we haven't covered today? Thank you very much for your time and invaluable insights, [Name]."

APPENDIX D: ETHICAL CONSIDERATIONS

Research Title: Assessment of Data Analytics Maturity and Readiness in the Curriculum Planning for the Second-Year Electronics and Computer Technology Program at Top Link Global College Inc.

Researcher: Fette Kyle G. Cabral

Degree Program: Master in Engineering Management

Institution: Nueva Ecija University of Science and Technology

You are invited to participate in a research study aiming to assess the data analytics maturity and organizational readiness of the Electronics and Computer Technology (ECT) program at Top Link Global College Inc. The insights gathered from this survey will be used to design a Data-Driven Decision Support Framework to optimize curriculum planning and enhance the industry readiness of ECT graduates.

Your participation in this study is strictly voluntary. You may choose not to participate, or you may withdraw from the study at any time without any penalty, professional retaliation, or loss of benefits to which you are otherwise entitled.

Given the highly specific nature of this study, we recognize the importance of your privacy. All information you provide will be treated with the utmost confidentiality in strict compliance with the Data Privacy Act of 2012 (Republic Act No. 10173). Your name and specific demographic identifiers will not be linked to your individual responses. To further protect your anonymity, all survey data will be processed and reported entirely in aggregates (group averages) in the final research manuscript.

The data collected from this survey will be used **solely for academic purposes** to fulfill the requirements of the researcher's Master's thesis. It will not be used to evaluate your professional performance or disparage the institution.

If you have any questions, concerns, or require further clarification regarding this research or your rights as a participant, please feel free to contact the researcher at fk.cabral17@gmail.com or 09165412547.

Signature over Printed Name of the Participant

Date: _____