Powering HEI Survey System for Data Analytics

Mubarak AlKhatnai[1] and Teay Shawyun[2]

[1]*King Saud University*

[2]*South East Asian Association for Institutional Research*

Abstract

It is a common practice for all HEIs to develop satisfaction perception studies to report the degree of expectations and satisfaction of the HEIs' teaching & learning and administrative & services supports, facilities, learning resources & infrastructures systems. These surveys are designed to meet the quality assurance & accreditation requirements, albeit designed independently by each academic & administrative unit to meet their specific and unique needs. This approach inadvertently provides information specific to a program, course, or unit that potentially is not aligned with the higher levels SMART objectives or provides internal benchmarking for informed decisions on overall and comparative performance. While this has been the practice & norm in surveys, this paper proposes an alternative 5-levels dive-down approach to powering the HEI survey systems for HEI performance analytics. The surveys provide performance metrics for Institutions, Colleges & Programs' (ICP) IQA & Accreditation, Strategic and Operational Planning & management systems. This paper illustrates an HEI case of its six primary surveys, Course Satisfaction (CSS), Student Experience (SES), Faculty & Staff Satisfaction (FSS & SSS), Alumni Satisfaction (ASS), and Employment Market Satisfaction (EMS) Surveys. These surveys can be consolidated to report on 16 KPIs of the 50 IQA KPIs. The KPIs are expanded by construing some generic constructs common across the surveys, processing and extracting their data analytics (DA) independently. This processing is, in addition to other requirements specific to the survey instrument objective, driven by the ICPs' mission, goals, values & SMART Objectives aspirations. The case study illustrated KPI 1.1. Stakeholders' awareness ratings of the Mission Statement and Objectives example are extracted from 3 surveys of SES, FSS & SSS Surveys to provide three sub-sets of KPIs for three stakeholder groups: Students, Faculty, and Staff. The six primary surveys construct measures are construed generically for data analytics delivering ICP and individual performance analytics insights.

Keywords: HEI Survey systems, HEI Data analytics, performance analytics

Introduction

Other than companies' customers, students are perhaps among the most surveyed worldwide. From the Western to the Eastern hemisphere HEIs, the use of student satisfaction surveys, with its origin in student evaluations of course teaching (Ramsden 1991), is an established long tradition in all higher education systems. These have gradually been extended to include student perceptions of the quality of institutional governance & administrations and quality assurance of conditions supporting teaching and learning, such as libraries, student support services, etc., as student feedback to HEI decision-makers. Harvey (2003) defines "feedback" as the "expressed opinions of students about the service they receive as students". This definition includes "perceptions about the learning and teaching, the learning support facilities (such as libraries, computing facilities), the learning environment (lecture rooms, laboratories, social space, and university buildings), support facilities (cafeterias, student accommodation, health facilities, student services) and external aspects of being a student (such as finance, transport infrastructure)". The levels of analysis have also extended from institution-level satisfaction surveys of the entire study experience to individual courses, modules, and study programs.

In today's educational system, most HEIs incorporate feedback to meet IQA (Internal Quality Assurance) & Accreditation, Governmental governing units, and students' & stakeholders' requirements. This feedback is customarily collected at Institutions, Colleges, or Programs (ICP) levels via perception & evaluation surveys. The feedback is used to improve or innovate course teaching & learning, academic & administrative services & supports, facilities & infrastructure, governance, management & societal responsibilities. The student experience is a central tenet of quality assurance and accreditation in higher education. In some HEIs, especially as a requirement for accreditation or norms and practices of Western Education as opposed to the Eastern World Education philosophies and practices, the attention has highlighted the move from student experience to student engagement. The western approach considers students as active partners in the educational process and responsible for their learning and formation (Klemenčič, 2013 & 2015).

These ensure adherence to the ICP-aligned mission, goals, values & SMART Objectives (AlKhatnai and Teay, 2022). As Shah & Nair (2012) noted, the quality assurance and performance-based strive by ICP using the various perception of satisfaction surveys as measures of educational quality can result in increased use of students' & stakeholders' voices. These are used to assess learning and teaching and all educational value-creating & delivery mechanisms & systems outcomes. The Students' and stakeholders' satisfaction and experience surveys have been acclaimed to be a driver of institutional reforms in students' & stakeholders' experience bringing about improvements & innovations (Richardson 2013) and institutional performance (Klemenčič et al. 2015; Kim and Lalancette 2013; McCormick et al. 2013). The performance strives to develop student & stakeholders' evaluation quality culture that enhances feedback and improvement through survey systems in ICPs (Tucker, 2013).

For IQA & Accreditation requirements, student surveys are one of the largest and most frequently used data sources for quality assessment in higher education (Williams 2014). Student survey data supposedly feed into evidence-based ICP's data-driven informed decision-making and are part of the tasks of institutional research. IQA or institutional researchers are requested by HEI

management to create and deliver more and better "intelligence" of the students' experiences and performances (Klemenčič and Brennan 2013; Klemenčič et al. 2015). Much of these data are typically acquired through student, Faculty & staff, and alumni & employment market surveys. Radwin (2009) noted that "…the use of surveys is one of the fastest-growing and most pervasive trends on ICPs". With the advancement of technology and AI (Gardner and Davis 2013), collecting, processing, and providing data and performance analytics from stakeholders is becoming cheaper, faster, and easier to process.

Challenges in HEI Surveys

Tucker's (2014) research in a semester in 2010 from an Australian university noted that student comments provide valuable insights into their experiences. Comments were categorized as either abusive or unprofessional and by the intended target (that is, teacher, unit, resource). 13 of 30,684 observations from 17,855 surveys, 0.04 % of the sample demonstrated abusive comments, with five offensive comments directed at the teacher and eight at teaching and learning experiences. Another 0.15 % of the sample comments were identified as unprofessional. Seven comments were directed at the teacher, and 34 were about units. Tucker's 2014 research suggests that the vast majority of students do not abuse the privilege of giving anonymous feedback and potentially highlights the potential benefits or surprises (Chen & Chen, 2010) of surveys if construed and used appropriately (Lewis, 2001; March 2007; Oliver et al., 2007). Jones et al.'s (2014) research explores relevant legal issues like defamation, breaches of (1) taking reasonable care for an employee's welfare, (2) duty of trust and confidence, breach of the right to privacy, (3) punishing or forcing staff to resign as a consequence of such infringements, non-constructive dismissal and (4) publication of survey results or use to inform employment & development decisions of decision-makers. It includes inherent risks of abuse, indifferent or hostile revengeful attitudes & negatively construed perceptions (Jones et al., 2014). It is resonated by Shah & Nair's (2012) paper on the shift from voluntary to mandatory use of surveys with the results used to assess and reward academic staff performance driven by the introduction of performance-based funding as part of quality assurance arrangements. It highlights potential risks in the construct measures design & development and the translation of the evaluation into positive actions (Hirschberg et al., 2011; Hodges & Stanton, 2007; Alhija & Fresko, 2009). Arthur's semi-structured interviews of academics' use & interpretation of evaluations suggest that the process is complex and is influenced by lecturers' perceptions, beliefs, and feelings. They are linked to concepts of performativity and professionalism with four possible reactions: shame, blame, tame (the students), and reframe (the negative as something positive). It inherently means that the design & development, collation & processing, and synthesizing & analysis of performance data analytics practices should be construed within the context of institutional research.

The widespread and increased use of students' & stakeholders' survey data raises questions about the reliability and validity of the survey data as evidence in decision-making. Its proliferation potentially affects the design & development of the constructs measures and multifarious and highly diverse survey instruments intents. The instrument's validity, as defined by OECD (2013), concerns "whether the surveys measure what they are designed to measure and to provide evidence that supports inferences about the characteristics of individuals being tested" (Porter, 2011). Reliability concerns (Alderman et al., 2012) whether surveys "provide stable and consistent results over repeated measures allowing for results to be replicable across different testing situations". In

addition, significant areas of contention areas of perception surveys include (1) student self-reported information accuracy, respondents' understanding and interpretation consistency of the questions (McCormick and McClenney 2012; Pike 2013), (2) the selection of the standards of educational practice and student behavior implied in the questions (Campbell and Cabrera 2011; Gordon et al. 2008; Porter 2013; Porter et al. 2011), (3) researchers observational biases in just focusing on "issues or areas where they think they will find positive results, or where it is easy to record observations", in so-called 'streetlight effect' coined by Friedman (2010), (4) low response rate, student survey methodology and attempts to find better ways to increase response rates (Porter 2004; Porter and Whitcomb 2004; Porter et al. 2004), and (5) use as survey benchmarks designed to "represent clusters of good educational practices and to provide a starting point for examining specific aspects of student engagement" (Ewell et al. 2011; Kuh 2001; McCormick and McClenney 2012; Pike 2013).

In addition, the process by which the surveys are launched, their timing, and their methodology are critical factors that potentially affect the surveys' intended aims (Abbott et al., 1990). Abbott et al.'s research found that students were more satisfied with interview methods at midterm followed by extended instructor reaction than with traditional approaches for collecting student opinions about instruction (i.e., standardized rating forms administered at the end of a course). It is consistent with reactance and social comparison theories. It is also supported by Alderman et al.'s (2012) findings that while student feedback is valued and used by all Australian universities, some survey practices are idiosyncratic. In most cases, questionnaires lack validity and reliability; data are used inadequately or inappropriately, offering limited potential for cross-sector benchmarking. In addition, their study confirms the need for HEIs to develop an overarching framework for accurate, reliable, multidimensional, and helpful student feedback survey evaluation, technically pursuing sound evaluation practices in the interest of local, national, and international stakeholders. It also shows the increased focus on outcomes and less on resources needed to generate learning, teaching, and research quality. It also relies more on student happiness as a measure of educational quality. It raises the question of whether high student satisfaction would strengthen academic rigor and student attainment of learning outcomes and generic skills that are seen as critical factors in graduate exit standards.

Potentials of data and performance analytics in higher education

Our everyday life consists of episodes of data analysis whereby we make decisions or take actions by thinking, albeit critically and analytically, about what happened last time or what will happen when choosing a particular decision. This data analysis process involves data collection, manipulation, and examination to gain deep insight. On the other hand, data analytics is taking the analyzed data and working on it in a meaningful and helpful way to make well-versed business decisions through human intellects to convert to information and potentially wisdom. DA is important because it helps businesses optimize performance (Campbell and Oblinger, 2007; Wong, 2016). Data Analytics (DA) is nothing but synthesizing and analyzing our past or future actions and making decisions based on them. DA is nothing new in the business world. Some key benefits of data and analytics for positive business strives and ventures include (1) Proactivity & Anticipating the needs of the customer through "customer's voice" and (2) Mitigating risk & fraud through data crunching and depicting scenarios, including cost management (Daniel, 2015; Chaurasia et al., 2018). (3) Delivering relevant products through a better understanding of

customers' inherent needs and requirements, (4) Personalisation & Service through customization and tailoring to meet and excel in customers' expectations, (5) Optimizing & Improving the Customer Experience through learning and sharing across organizational units of the customer as "king".

In the HEIs, four types of data can be used as HEIs success and progress indicators achievement data, demographic data, program data, and perception data, namely the surveys. In the HEI environment, analytics are used to analyze various collected data points to provide insights and make informed decisions about complex education & stakeholders issues (Campbell and Oblinger, 2007). Higher Education DA offers exceptional opportunities to investigate, understand, and model academic and pedagogical processes. It is done through (1) Learning Analytics (LA), which targets levels of educational stakeholders of the micro (Learner) and macro (Faculty), whereas (2) Academic Analytics (AA) benefits the stakeholders at the macro (Institution) and mega (Governance) hierarchy levels (Siemens and Long, 2011; Ifenthaler, 2015). It includes Educational Data Mining (EDM) (Peña-Ayala, 2014), where the output of one may become the input of another (Nguyen et al., 2020; Chatti et al., 2014; Dahlstrom, Brooks and Bichsel, 2014). These address business intelligence and academic & learning analytics changes brought about by global and rapid social changes (Daniel, 2015; Nguyen, Gardner, & Sheridan, 2017). It also addresses performance issues (Daniel, 2015; Nistor and Hernández-Garcíac, 2018) and discovers relationships between student behaviors and contextual factors in the learning environment (Baker and Inventado, 2014). DA in education provides feedback to ICP administrators and can enhance academic & administrative decision-making and organizational resource allocation. These changes and challenges heightened the need for well-established HE data management and analytics in the learning and teaching environment (Siemens and Long, 2011; Greller and Drachsler, 2012; Nguyen, Gardner, and Sheridan, 2017). These education data include academic, educator, demographic, and student information collected from many sources and formats, although the type of data and who can access it varies. Access to robust data empowers people with the information they need to make decisions (Pistilli et al., 2012; Chaurasia et al., 2018). They play an essential role in identifying the resource needs of schools, monitoring standards, and recommending improvement measures. Implementing DA into the HEI business model help reduce costs & improve productivity. It helps identify more efficient ways of doing "academic business in creating & delivering on education value" and storing large amounts of data, analyzing various collected data points to gain insight and make informed decisions about complex issues. Specific areas include academic analytics, business intelligence, and learning analytics. When data is collected efficiently, securely, and ethically by ICPs, it can be used to provide insight on where to invest, allocate & optimize time, money, and resources by (1) evaluating the use of campus buildings, services, facilities, and resources by the stakeholders, (2) monitoring and assessing classes and programs performances by compelling data use to measure student progress, (3) evaluate program & instructional effectiveness, guide curriculum development & resource allocation, promote accountability and, most importantly,(4) safeguard students' learning and success (Pistilli et al., 2012; Dahlstrom et al., 2014; Chaurasia et al., 2018).

DA can be used to support the Faculty to benefit from (1) targeted course offerings through curriculum development, (2) determining and evaluating student learning outcomes and behavior to provide customized & personalized learning, (3) improved faculty performance through students' feedback, and (4) enhanced post-educational employment opportunities and improved

research in the field of education. Educational Data-driven decision-making can transform classroom teaching & learning by improving teacher responsiveness to students, ensuring relevant instruction & pedagogy, and making Faculty more productive. Using DA, the Faculty can better trace and take targeted actions to improve the student learning process & outcomes through personalization and customization (Greller and Drachsler, 2012; Kerr, 2016) via early intervention solutions (Arnold and Pistilli, 2012). Interpreting data allow Faculty to identify the strengths and weaknesses of an entire class or individual students, despite their performance. DA plays a vital role in identifying & addressing education inequalities. Through DA examination, Faculty can identify & develop hypotheses about factors that affect students' learning and ways to improve instruction & pedagogies to assist students' achievements based on their social, cultural & economic backgrounds (Peña-Ayala, 2014; Bharara et al., 2018). DA can provide a snapshot of what students know, what they should know, and what can be done to meet their academic needs and developments. With appropriate DA analysis and interpretation, Faculty can make informed decisions to influence student outcomes positively. It is achieved by better understanding students' learning abilities and challenges. It facilitates an ingrained cultural & psychological process that uses detailed inputs (student information & environmental and operational parameters) to ensure optimal outputs (students' results).

DA covers two aspects of teaching analytics, i.e. (TA) and learning analytics (LA). TA analyzes the teaching design of lesson plans and reflects on how effective that is for the student learning experience. On the other hand, LA collects and measures student & performance data and analyzes the learning experience, the progress of learners, and the contexts in which learning takes place. The learning context can be refined to understand and optimize learning and the environments in which it occurs to make it more effective for the student (Siemens, 2013; Kerr, 2016; Nguyen et al., 2018a). LA is the measurement, collection, analysis, and reporting of data about learners and their contexts to enhance teaching and learning (Nguyen et al., 2020)**.** Faculty use TA & LA to track real-time digital participation, turn up important insights on student engagement, and reach out to students who need support. TA allows the Faculty to measure, monitor, and respond in real-time to a student's understanding of the material of the development & deliveries. LA showing how students learn can help Faculty adapt their teaching styles and address student needs before the final grade is delivered. While LA may not provide the ultimate answer to improving learning, there is potential to help bridge some gaps between education, psychology, and neuroscience by providing deeper insight into student psycho-neuro behavior as they learn in natural educational settings. When Faculty use DA to drive their teaching & learning decisions and plans, they can respond to problems more effectively, improve instruction, construct new teaching methods, and advance students' skillsets development.

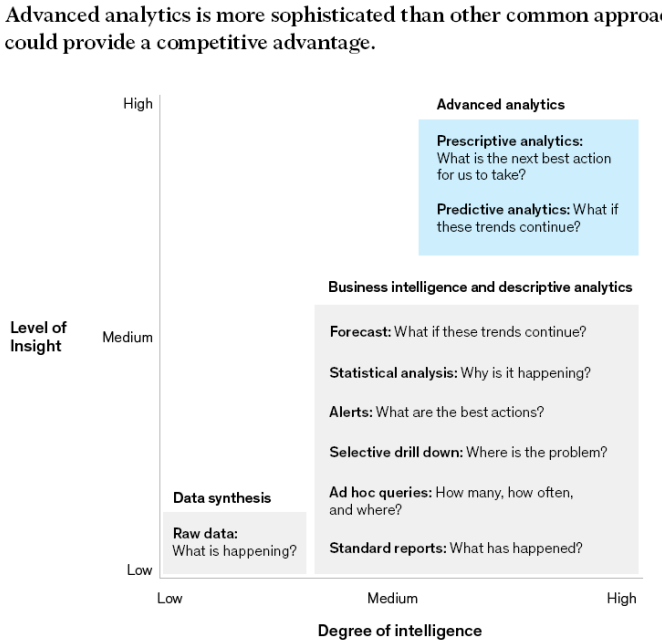

Figure 1: Advanced Analytics using AI (Artificial Intelligence)

Source: Brasca, C., et al., (2022). Using machine learning to improve student success in Higher Education. McKinsey Insights, McKinsey & Company

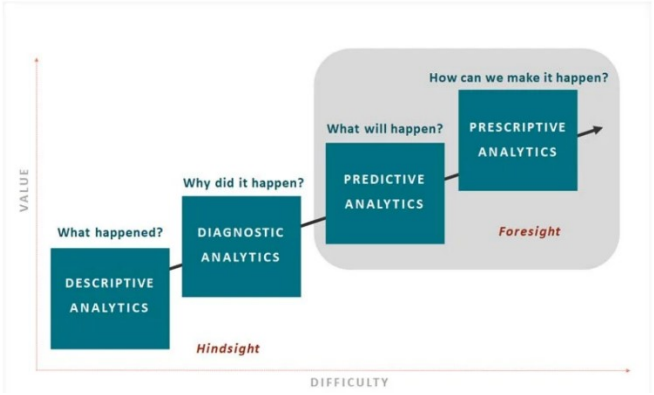

Figure 2: DiMaggio, B., (2021) The Future of Data Analytics in Higher Education is Prescriptive Analytics, retrieved https://www.othot.com/blog/2021-the-future-of-data-analytics-in-higher-education-is-prescriptive-analytics

While DA in HEI is in its infant stage in the eastern sphere HEIs, albeit top tiers HEI, Western Hemisphere HEIs are transiting from the traditional hindsight DA through their IR. Some are moving to advanced analytics techniques into foresight predictive and prescriptive analytics (Figures 1 and 2). It may help HEIs unlock significantly more profound insights into their student populations and identify more nuanced risks than they could achieve through descriptive and diagnostic analytics, which rely on linear, rule-based approaches (Brasca et al., 2022). Foresight advanced analytics uses the power of algorithms to help institutions address unintentional biases

in their existing methods of identifying at-risk students and proactively design tailored interventions to mitigate the majority of identified risks. In this case, the HEI using linear, rule-based approaches, look at indicators like low grades and poor attendance to identify students at risk of dropping out and can reach out to these students by launching initiatives to support them better.

Aims of Paper

The above has highlighted the use & applications of surveys by HEI to understand and provide some insights into the students' perception of needs and expectations and performance of the HEI governance & administration and QA of teaching & learning, facilities, resources & infrastructures, and academic & administrative services & supports. It also discussed the power of the DA as ICP performance metrics for improvements and innovations critical to the student's performance and success as part of the HEI Institutional Research function.

Most HEI has administered surveys as traditionally required perception studies to meet IQA & Accreditation requirements and potentially downplayed their role as key performance metrics to support students' success through DA. To ensure that these critical data are supplied on a semester and annual basis, this paper demonstrates the potential of converting the traditional survey approach into a powerful performance DA system through the use of a case study survey system of a Middle Eastern University over the 2019 to 2021 periods. This empowered DA survey system, i.e., the Performance Analytics Survey System (PASS), is demonstrated through (1) the identification and development of "generic constructs measures" that are common across the six primary surveys of Course Satisfaction (CSS), Student Experience (SES), Faculty & Staff Satisfaction (FSS & SSS), Alumni Satisfaction (ASS) Employment Market Satisfaction (EMS); (2) the use of electronic Strategic Performance Management System (SPMS) to coordinate and consolidate the data collation and processing and the use of IT & AI for EDM for performance DA; and (3) the use of a 5-Levels "Dive-Down" of performance analytics from Institution-Colleges-Programs-Individuals levels to provide dive-down DA to provide more in-depth performance insights.

Powering the Surveys System for Performance Data Analytics

(1) Developing the Surveys System

In any HEI context, within its IQA or Accreditation requirements, qualitative KPIs in the form of surveys are one of the norm practices. These surveys are used to determine the perceptions of its stakeholders of students, staff, Faculty, alumni, and employment market of its "standing in the eyes of the preceptor" of its academic, administrative, governance, services & supports, facilities & infrastructures, goals & outcomes attainments of students. These KPIs come from using six commonly & frequently used surveys, albeit independently of each other. These surveys broadly cover (1) Student experience, (2) Course Satisfaction; (3) Staff Satisfaction; (4) Faculty Satisfaction; (5) Alumni Experience & Satisfaction; and (6) Employment Market Satisfaction. In harnessing the beneficial surveys analytics power, this paper highlights the consolidation of these

surveys into a systematic Performance Analytics Survey System (PASS) approach by ensuring the following:

- ***Survey system objective & purpose*** – In research instrumentation, it is commonly accepted that the aim or purpose of the survey is identified and defined clearly. All the surveys aim to "inform on" critical requirements of academic performance. They cover common areas across the multi- and transdisciplinary aspects of the institution, colleges & programs (ICP) that subscribe to common education pillars of teaching-learning research, administration-governance, and societal responsibility. These are all merged and managed within the teaching-learning-research, administration-governance and societal responsibility, facilities & infrastructure, quality assurance & performance management, and planning systems. It ultimately means that each ICP does not need to "reinvent the wheel" by designing, developing & implementing their surveys, as there are common denominators of academic performance management, measurement, and assessment. These common denominators need to be identified as the "common aims" of the surveys that are generic to the ICP regardless of discipline or specialization, as they are a common attribute of academic performance. Once these higher levels of standard and generic features are determined and guided by the ICP mission, goals & SMART objectives, this serves as the starting point of the generic survey system applied across the ICP.
- ***Standard construct measures across different surveys*** – Based on the common aims of the survey system, generic constructs measures (CM) like University Goals (UG) across critical surveys of (1) Student experience; (2) Staff Satisfaction; (3) Faculty Satisfaction; and (4) Alumni Experience & Satisfaction can be construed generically as standard and comparative measures and analytics (Table 1.1). This paper demonstrates two samples of the Student Experience & Course Satisfaction surveys and their constructs (Tables 1.1 and 1.2). The survey system is shown in the determination of Workforce organizational climate from the Faculty & Staff Satisfaction Surveys in terms of WRe (Work Relationships), WE (Work Environment), WBe (Work Benefits), WD (Work Development) & WBa (Work Balance). These two sets of survey results can be used independently or comparatively to determine the organizational climate of the ICP to provide a more in-depth understanding of these constructs' performance and take action as needed. Another essential generic item is the WF (Work Facilities) & WI (Work Infrastructure), which can be structured generically from the Student Experience, Staff Satisfaction & Faculty Satisfaction surveys (Table 2.2). It allows the "Level 1 Dive-downs" into the specific constructs measures in more detail for more in-depth performance data analytics (Tables 2.1 to 6.2).

Table 1.1 Constructs Measures for Student Experience Instrumentation

	STUDENT EXPERIENCE DIMENSIONS
UG	**UNIVERSITY GOALS**
UG1	I am aware of the University's mission and goals
UG2	I use University mission and goals to guide my study performance at the University
USS	**UNIVERSITY SUPPORT SERVICES**
USS1	Staffs provide administrative service supports when needed
USS2	Staffs are professional in their administrative services provided
USS3	Staffs are knowledgeable in providing guidance to complete an administrative activity
USS4	Provide academic counseling services when needed
USS5	Provide career counseling services when needed
USS6	Provide spaces for spiritual development
USS7	Safeguard my student's rights
USS8	Respect my ideas to improve on the students' experience with the university
UI	**UNIVERSITY INFRASTRUCTURE/ FACILITIES**
UI 1.1	Library and media center has up-to-date material
UI 1.2	Library and media center has copy & print facilities
UI 1.3	Library and media center's climate for study supports my learning
UI 1.4	Digital library's website is user friendly
UI 1.5	Library skill training is provided
UI 1.6	Learning resources is accessible
UI2	I am satisfied with classroom facilities (e.g., lighting, cleanliness, upkeep, maintenance)
UI 3.1	Generally, Information Technology is secure
UI 3.2	Generally, Information Technology is maintained
UI 3.3	Generally, Information Technology is accessible
UI 3.4	Information Technology has up-to-date software
UI 3.5	Generally, I am satisfied with the information technology hardware
UI 3.6	Generally, I am satisfied with the web-based resources (e.g. institutional website, networking, interactivity)
UI4	I am satisfied with State-of-art of the technologies used in my class activities
UI5	I am satisfied with Food catering services
UI6	I am satisfied with the Parking facilities
UI7	I am satisfied with Supporting academic facilities (laboratories, research space, workspace for group discussions)
UE	**UNIVERSITY ENRICHMENT**
UE1	The University offers activities that further my social self-development (student club, athletics, extra-curricular activities that are in addition to academic work)
UE2	The University offers activities that further my ethical self-development
UE3	The University offers Community Service work experience
UE4	The University offers opportunities to participate in international experiences (e.g., practicum, seminar, or conference abroad)
US	**UNIVERSITY OVERALL SATISFACTION**
US1	I am satisfied with the quality of services of the university.
US2	I have a sense of belongingness with the University.
US3	The university experience has contributed to my overall development
US 4	I am satisfied with the university policies defined in Policies Handbooks (e.g., Student Handbook, Program Handbook, Student Rights Handbook)

Table 1.2 Constructs Measures for Course Satisfaction Instrumentation as per KPI 4.12.5 (EEC-SEAA S4.2)

Key Performance Indicators	Survey Source	Attributes Components	
4.12.5 EEC-SEAA S4.2 – Students' overall rating on the quality of their courses	• Course Satisfaction Survey	**CDM**	**COURSE DIMENSIONS**
		CG	**COURSE GOALS:**
		CG1	Course Objectives are stated at the beginning of the term
		CG2	Course Objectives are achieved at the end of the term
		CG3	Course Objectives bring about the intended improvements
		CW	**COURSE WORK**
		CW1	The actual learning tasks/assignments meet the Course Objectives
		CW2	The amount of work I am expected to do to achieve the Course Objectives
		CW3	Time allocated to complete learning task/assignment is suitable for the amount of work done
		CI	**COURSE INITIATIVE**
		CI1	I can plan my learning tasks/assignments according to my work pace
		CI2	I can solve my problems related to my learning tasks/assignments
		CE	**COURSE LEARNING ENVIRONMENT**
		CE1	Learning Environment facilitates in completing learning activities.
		CE2	I enjoy learning together with my friends in this course
		CE3	I am satisfied with the overall learning resources (e.g. course materials, books, learning aids) provided to support my learning activities
		CD	**COURSE DELIVERY**
		CD1	Course Instructor has knowledge of the course contents
		CD2	Course Instructor has skills in communicating across difficult topics in an easy to understanding way
		CD3	Course Instructor uses most recent development in the area in his/her course.
		CD4	Course Instructor encourages to explore the content of the course beyond what is required of the requirements of the textbooks
		CD5	Course Instructor treat students with respect, even when there are differences of opinion
		CA	**COURSE ASSESSMENT**
		CA1	Different variety of assessments was employed in the course
		CA2	Grades assigned is based on my performance in the course
		CO	**COURSE OUTCOMES**
		CO1	Course outcomes are accomplished at the end of the course
		CO 2	Now I have understating of basic knowledge required of this course
		CO 3	I have ability to apply the knowledge gained from the course
		CO4	I have ability to formulate solutions to a problem
		CO5	The course has developed my analytical skills.
		CO6	The course has developed my critical thinking skills
		CO7	The course has developed my communications skills
		CO8	The course has developed my skill to work in a Team.
		OS	**OVERALL, I am satisfied with this course as ……**
		OS1	I get new knowledge that contributes to my overall development
		OS2	I get new skills that contributes to my overall development
		OS3	The course contributed to my overall development

- ***KPIs as performance indicators metric***s have been the norm and performance management practices. Still, if construed appropriately with a common aim in mind of the PASS and appending common and generic constructs measures design and development,

they can serve as robust performance metrics and data analytics. Historically, each survey instrument has been used independently as KPIs specific to its design to determine what it intended to measure as effective independent measures. The 6 KPIs can be expanded into 16 Case Study system KPIs with a common purpose and standard construct measures. It should inform the management and administrators of its 52 Operational IQA & Strategic ICP performance metrics to determine the ICP performance, with the samples as demonstrated (Tables 2.1 to 6.2). It means that the entire composite of Strategic and Operational KPIs meets both the IQA & Accreditation, including reporting on Institution & Collegial Strategic KPIs. Additionally, this would mean that the IQA KPIs subscribe to the Institutional Strategic KPIs performance management and measurement, thus aligning the IQA operations with the Strategic operations designated in the Strategic Plans.

(2) Performance Data Analytics Dive-downs

The primary purposes of the PASS are to ensure that (1) generic construct measures can be identified and developed to allow for common attributes measurement across the six sets of surveys and (2) specific qualitative KPIs can be aligned and aggregated to support performance management across the ICP, (3) detailed dive down from the institution to the collegial to the programmatic, and even down to the individual faculty level can be determined of their performance, (4) the dive downs can allow for comparatives across the colleges in the institution, the programs within the college, the courses within the programs based on levels or clusters, and the courses handled by each specific instructor to determine the comparative performances, and (5) the performance as individualistic "one-off snapshot" or "longitudinal holistic purveys" be taken as positive "areas for improvements" rather than the negatively construed "punishable remedies". While it can be argued that each college, program, and that individual instructor is unique. Within its specialization, we cannot ignore the fact that the pillars of educators are generic. Within the generic aspect, it needs to be construed, identified, and developed as common and comparative construct measures. Developed and used positively with an open mind towards "improvements", the PASS is a powerful mechanism for diving deep down into performance metrics data analytics with a positive attitude towards "opportunities for improvements".

Development of Dive-Down Analytics of KPI from Surveys Construct Measures of Survey Instruments

As noted previously, a qualitative KPI can be construed from different survey constructs measures. The construct measures designed as "statements of measures" in a survey are designed and developed as proxy measures of a specific construct measure. It is illustrated by KPI 1.6.2 of University goals commonly used as awareness statements and perusal as guidance for actions within the ICP. As shown in Table 2.1, the university goals perception evaluation is determined through 2 construct measures reports that are generically constructed across the 3 Student

Experience surveys and Faculty & Staff Satisfaction Surveys. This approach to the design and development of such constructs allows for (1) specific measures of "University Goals" for each of the survey intent and (2) comparatives across the three groups of stakeholders at a specific point in time or across a longitudinal period. This approach allows for an in-depth analysis of the KPIs' performance based on a "root analysis" of the individual statement construct, providing a better understanding of specific performance that leads to opportunities for improvements or commendations to improve the previous performance.

Table 2.1: Dive-Down Analytics for KPI 1.6.2 University Goals from 3 Surveys Constructs Measures

Dive Down of Constructs Measure for KPI 1.6.2 University Goal (UG) from 3 Surveys		
Source of Survey	1.6.2	EEC-SEAA S1.1 – Stakeholders' awareness ratings of the Mission Statement and Objectives
Student Experience – UG University Goals	SES	STUDENT EXPERIENCE DIMENSIONS
	UG1	I am aware of the University's mission and goals
	UG2	I use University mission and goals to guide my study performance at the University
Faculty Satisfaction – WUG University Goals	FSS	FACULTY SATISFACTION DIMENSIONS
	WUG1	I am aware of the University's mission and goals
	WUG2	I use the University mission and goals to guide my work performance at the University
Staff Satisfaction – WUG University Goals	SSS	STAFF SATISFACTION DIMENSIONS
	WUG1	I am aware of the University's mission and goals
	WUG2	I use the University mission and goals to guide my work performance at the University

Table 2.2: Dive-Down Analytics for KPI 7.6.5 Work Facilities from 3 Surveys Constructs Measures

Dive Down of Constructs Measure for KPI 7.6.5 WF (Work Facilities) & UI (Infrastructures) from 3 Surveys		
Source of Survey	7.6.5	EEC-SEAA S7.3 – Stakeholder evaluation of Websites; e-learning services; Hardware and software; Accessibility; Learning and Teaching; Assessment and service; Web-based electronic data management system or electronic resources
Faculty Satisfaction – WF (Work Facilities) & UI (Infrastructures)	WF	WORK FACILITIES: In general, I am happy with the ……
	WF1	Facilities in the department provided to support my work
	WF2	Institutional infrastructure /facilities (learning resources, digital library, IT services, web services) provided
Staff Satisfaction – WF (Work Facilities) & UI (Infrastructures)	WF	WORK FACILITIES: In general, I am happy with the ……
	WF1	Facilities in the department provided to support my work
	WF2	Institutional infrastructure/facilities (learning resources, digital library, IT services, web services) provided
Student Experience – WF (Work Facilities) & UI (Infrastructures)	WF	WORK FACILITIES: In general, I am happy with the ……
	WF1	Facilities provided to support my work
	WF2	Institutional infrastructure / facilities provided
	UI	UNIVERSITY INFRASTRUCTURE/ FACILITIES:
	UI 3.1	Generally, Information Technology is secure
	UI 3.2	Generally, Information Technology is maintained
	UI 3.3	Generally, Information Technology is accessible
	UI 3.4	Information Technology has up-to-date software
	UI 3.5	Generally, I am satisfied with the information technology hardware
	UI 3.6	Generally, I am satisfied with the web-based resources (e.g. institutional website, networking, interactivity)

Another often surveyed qualitative KPI is the perceptions of the work facilities and infrastructure by its different stakeholders' groups, students, Faculty, and staff in support of their core activities requirements and expectations. In the KPI 7.6.5 work facilities (WF), similar constructs measures statements can be used for each of the three stakeholder groups, which allows for comparative or identification of the status, up-keep, or availability of crucial work supports (Tabel 2.2). For students' WF, it can be dived down further as another sub-KPI of specific Infrastructure of UI. This approach allows for a richer and more discrete set of operands measurements ranging from UI 3.1 to 3.6, better identifying whichever area is an opportunity for improvement.

Another often required but subtle qualitative KPI is the Organization Climate, within which the faculty and staff work to provide their value-added academic & administrative services & support to the students. Again, similar construct measures of WI (Work Initiative), WRe (Work

Relationships), WE (Work Environment), WBe (Work Benefits) & WBa (Work Balance) can be designed and construed as the primary measure for KPI 2.9.2 Organization Climate (Table 2.3). The benefit of this dive-down approach is three-fold to (1) determine the overall faculty and staff Organization Climate as a whole and (2) dive down into each component of WI, WRe, WE. WBe, & WBa to determine and identify whichever area contributes to or destroys the central Organization Climate of the Faculty and staff, and (3) report WI, WRe, WE. WBe, & WBa construct measures independently for a better and more in-depth understanding of each sub-component of the Organization climate separate dive-down or as a whole. These construct measures can be designed similarly across the two survey instruments of faculty & staff satisfaction surveys to allow for comparatives.

Table 2.3: Dive-Down Analytics for KPI 2.9.2 Organization Climate from 2 Surveys Constructs Measures

Dive Down of Constructs Measure for KPI 2.9.2 Organization Climate from 2 Surveys		
Source of Survey	2.9.2	Evaluation of Organization Climate (Means average and Level achieved based on survey)
Faculty Satisfaction – WI (Work Initiative) WRe (Work Relationships) WE (Work Environment) WBe (Work Benefits) & WBa (Work Balance)	**WI**	**WORK INITIATIVE: I have the opportunity to ….. related to my academic and research work**
	WI1	Make decisions
	WI2	Solve problems
	WRe	**WORK RELATIONSHIPS: I am respected by my ……..**
	WRe1	Fellow faculty in my department
	WRe2	Immediate supervisor
	WRe3	Other administrators
	WE	**WORK ENVIRONMENT: In general, the faculty members of my department ……**
	WE1	Cooperate towards the accomplishment of the department mission
	WE2	Treat each other with respect, even when there are differences of opinion
	WE3	Can adapt to changes in the work environment (e.g., new situations, people, ideas)
	WBe	**WORK BENEFITS: In general, I am satisfied with the ……**
	WB1	Compensation (salary and other monetary benefits) for the work accomplished
	WB2	Benefits (insurance, medical and retirements) for my overall well being
	WBa	**WORK BALANCE: In general, I can ……**
	WB1	Balance my work and social life
	WB2	Manage stress resulting from my work
Staff Satisfaction – WF WRe (Work Relationships) WE (Work Environment) WBe (Work Benefits) WD (Work Development) & WBa (Work Balance)	**WRe**	**WORK RELATIONSHIPS: I am respected by my ……..**
	WRe1	Fellow co-workers in my work unit
	WRe2	Immediate supervisor
	WRe3	Other administrators
	WE	**WORK ENVIRONMENT: In general, the members of my work unit ……..**
	WE1	Know how to perform their job responsibilities
	WE2	Work hard to accomplish the unit goals
	WE3	Enjoy working together
	WE4	Treat each other with respect, even when there are differences of opinion
	WE5	Adapt to changes in the work environment (e.g., new situations, people, ideas)
	WE6	Cooperate with each other most of the time
	WBe	**WORK BENEFITS: In general, I am satisfied with the ……**
	WB1	Compensation (salary and other monetary benefits) for the work accomplished
	WB2	Benefits (insurance, medical and retirements) for my overall well being
	WD	**WORK DEVELOPMENT: In general, I feel that I ……**
	WD1	Am given the opportunity to progress in my job
	WD2	Have the opportunity to attend developmental trainings or seminars
	WBa	**WORK BALANCE: In general, I am able to ……**
	WB1	Balance my work and social life
	WB2	Manage stress resulting from my work

A mandatory survey instrument is a course satisfaction survey launched within an IQA or Accreditation system to determine the mid-course and post-course students' satisfaction. Each topical area can serve the use of specific construct measures like CG Course Goals, CW Course Work, CI Course Initiative, CE Course Learning Environment, CD Course Delivery, CA Course Assessment, CO Course Outcomes & OS Overall Satisfaction (Table 2.4) as individual construct measure components. It can provide an in-depth perspective of potential performance issues individually or a holistic picture of the overall performance. The design and logic of the constructs measures for the whole KPI 4.12.7 Course Satisfaction Survey are again three-fold, as discoursed earlier for KPI 2.9.2 Organization Climate (Table 2.3). It can be determined and reported

separately as individual construct measures to identify a specific improvement opportunity or as a full KPI measure.

Table 2.4 Dive-Down Analytics for KPI 4.12.7 from Course Satisfaction Constructs Measures

Dive Down of Constructs Measure for KPI 4.12.7 Course Satisfaction Survey		
Source of Survey	4.12.7	EEC-SEAA S4.2 – Students overall rating on the quality of their courses
Course Satisfaction –		COURSE DIMENSIONS
CG Course Goals	CG	COURSE GOALS:
CW Course Work	CG1	Course Objectives are stated at the beginning of the term
CI Course Initiative	CG2	Course Objectives are achieved at the end of the term
CE Course Learning Environment	CG3	Course Objectives bring about the intended improvements
CD Course Delivery	CW	COURSE WORK:
CA Course Assessment	CW1	The actual learning tasks/assignments meet the Course Objectives
CO Course Outcomes	CW2	The amount of work I am expected to do to achieve the Course Objectives
OS Overall Satisfaction	CW3	Time allocated to complete learning task/assignment is suitable for the amount of work done
	CI	COURSE INITIATIVE:
	CI1	I can plan my learning tasks/assignments according to my work pace
	CI2	I can solve my problems related to my learning tasks/assignments
	CE	COURSE LEARNING ENVIRONMENT:
	CE1	Learning Environment facilitates in completing learning activities.
	CE2	I enjoy learning together with my friends in this course
	CE3	I am satisfied with the overall learning resources (e.g., course materials, books, learning aids) provided to support my learning activities
	CD	COURSE DELIVERY:
	CD1	Course Instructor has knowledge of the course contents
	CD2	Course Instructor has skills in communicating across difficult topics in an easy to understand manner
	CD3	Course Instructor uses most recent development in the area in his/her course.
	CD4	Course Instructor encourages to explore the content of the course beyond what is required of the textbook's requirements
	CD5	Course Instructor treat students with respect, even when there are differences of opinion
	CA	COURSE ASSESSMENT:
	CA1	Different variety of assessment was employed in the course
	CA2	Grades assigned is based on my performance in the course
	CO	COURSE OUTCOMES:
	CO1	Course outcomes are accomplished at the end of the course
	CO 2	Now I have understating of basic knowledge required of this course
	CO 3	I have ability to apply the knowledge gained from the course
	CO4	I have ability to formulate solutions to a problem
	CO5	The course has developed my analytical skills.
	CO6	The course has developed my critical thinking skills
	CO7	The course has developed my communications skills
	CO8	The course has developed my skill to work in a Team.
	OS	OVERALL, I am satisfied with this course as ……
	OS1	I get new knowledge that contributes to my overall development
	OS2	I get new skills that contributes to my overall development
	OS3	The course contributed to my overall development

Dive-Down Performance Analytics of KPI from Surveys Construct Measures of Survey Instruments

Most ICPs have taken survey instruments as requirements of IQA or Accreditation System. If designed, developed, and construed with care, the dive-down constructs measures of the qualitative KPIs can provide better holistic or specific performance metrics and the potential cause of KPI based on its specific construct measures. This paper illustrates how the typical survey system can be transformed into a powerful performance data analytics system. It is demonstrated by the PASS, based on the (1) construct measures components of a KPI and (2) its dive-down capacity to identify specific areas that provide a better understanding of the opportunities for improvements based on the performance data across the ICP and individual instructors of performance management.

The proposed ***Dive-Down Performance Analytics of the KPI*** system is designed to provide different types of dive-down performance analytics as needed by the ICP in key comparative areas of:

(1) ***Dive-down analytics specific to unit's requirements*** – In this case, depending on the unit itself, be it the institution, college, program, and individual Faculty, the dive-down aspect of the constructs measures can report on (a) a specific KPI holistically, (b) specific

construct measure components of each KPI to better identify areas for improvements or strengthening, and (c) potentially leading to additional in-depth "root-cause" or "cause-effect" analytical tools. It represents a powerful ICP mechanism for addressing potential areas of weak performance or improvement opportunities.

(2) ***Level 1 to Level 5 dive-down comparative performance analytics*** – This approach has been greatly ignored on the argument that each college or program cannot be compared as they are uniquely specific to their specialization. While valid, this type of argument ignores the basic academic mission, which is fundamentally highly similar across and serves highly parallel strategic alignment of the mission, values, goals, and SMART objectives across the ICP. These cover highly similar systems of (a) teaching, learning & research, (b) IQA & accreditation, (c) governance, administration, and planning, (d) financial, human resources, facilities & infrastructure; and (societal responsibilities, all of which are the pillars of all ICP regardless of specialization. These commonalities are used to create generic systems to serve the ICP and are aligned to the mission, goals, and SMART Objectives that are more similar than dissimilar across the ICP. These 5 Levels are construed as performance analytics comparative (a) Level 1 across Colleges within the University (Tables 3.1, 4.1, and 5.1 and 7.1); (b) Level 2 across programs within a Specific College (Tables 3.2, 4.2, 5.2 and 7.2); (c) Level 3 across courses within a program (Table 6.1); (d) Level 4 across sections of the same course (Table 6.2); and (e) Level 5 across courses of a single instructor (Table 6.3).

(3) ***Trend analysis of performance data analytics*** – A beneficial feature of the PASS is the provision of "directional arrows" of performance analytics and its comparatives based on rules that can be set up to determine the operational range of good to poor and trending performance. The five main "directional arrows" with specific colors can provide an easy-to-grasp picture of potentially weak performance areas, positively or negatively trending, or potential areas of strengths or improvement opportunities. It is all based on the actual performance data portrayed in these "directional areas" based on defined rules & range of performance parameters. These key “directional arrows” are designated as {Direction & Coloring of Symbols: ⇑ "increased good" ≥ 85; ⇗ "trending up" < 85 and ≥ 70; ⇒ "average" < 70 and ≥ 55; ⇘ "trending down" ⇓ < 55 and ≥ 40; "decreasing problematic" performance < 40 } that are self-explanatory.

(4) ***Longitudinal performance data analytics*** – The performance trend analytics are aimed at a longitudinal analysis over a comparative period that can be performed and identified for specific constructs measures and specific units of analytics to discover its performance trends. This type of longitudinal periodic relative is beneficial to determine a particular period performance that can be meaningless if they are not looked at across a period over semesters or academic years of the KPI, construct measures as a group, or independently. It is a powerful approach to determine the ICP performance based on KPIs or construct measures across a trend period.

Discussion of Dive-Down Performance Analytics from Surveys Construct Measures

(1) Staff and Faculty Satisfaction Index

In any organization, human capital is the critical driver of performance execution and delivery of organizational aspirations. The key drivers of the ICP are the staff and Faculty. They work within their organizational climate and environment. They are represented by constructs measures of WI (Work Initiative), WRe (Work Relationships), WE (Work Environment), WBe (Work Benefits) & WBa (Work Balance). The constructs can be designed and construed as the primary measure for KPI 2.9.2 Organization Climate (Table 2.3). Complementing them with the WUG Goals and WR (Work Responsibilities) completes the entire Faculty, and Staff Satisfaction Surveys construct measures components (Tables 3.1 and 4.1).

Looking at the Staff Satisfaction individually, it appears that the overall staff satisfaction of the Level 1 performance analytics of the institution and its colleges reveals more "red and decreasing trends" across most of the colleges, highlighting that Colleges 1, 2, and 3 have more troubling trends than Colleges 4, 5 and 6 (Table 3.1). Reviewing College 4, and looking at the Level 2 performance analytics across Programs 1 to 6, inevitably shows that College 4 has an overall more positive trend performance as contributed by 3 of its programs 4, 5, and 6 that have consistently much positive staff satisfaction outlook. Deeper dive-down analytics at the Level 1 Institution & Colleges performance indicated that poorer performance areas and potential areas of improvement are in WRe, WF, WD & WL. In contrast, for Colleges 1, 2, and 3, there are more additional performance issues in WB & WE. The College 4 Level 2 performance analytics (Table 3.2) shows that Programs 1, 2 & 3 staff satisfaction is much more troublesome than Programs 4, 5 & 6 in critical areas of WF & WD. Programs 1 & 2 have more issues in AY 2021 than in their previous years' performance in most aspects of the organization climate.

Table 3.1: Level 1 Performance Analytics Comparatives from Staff Satisfaction Constructs Measures across Colleges within University

Staff Satisfaction Survey Comparatives across Colleges with University

	University			College 1			College 2			College 3			College 4			College 5			College 6		
Attibutes	2019	2020	2021	2019	2020	2021	2019	2020	2021	2019	2020	2021	2019	2020	2021	2019	2020	2021	2019	2020	2021
WUG Goals	↓3.37	↓3.24	↓3.35	↘3.56	↓3.38	↓3.24	↓3.24	↓3.38	↓3.24	↓3.35	↓3.38	↓3.24	↓3.24	↓3.27	↓3.35	↓3.46	↓3.45	↘3.55	↑3.90	↑3.87	↘3.55
WR Responsibility	↗3.74	↗3.72	↗3.79	↘3.54	↘3.48	↘3.47	↘3.53	↘3.48	↘3.47	↘3.53	↘3.48	↘3.47	↓3.34	↘3.52	↘3.43	↗3.74	↓3.38	↓3.24	↗3.82	↗3.72	↑3.89
WRe Relationship	↓3.38	↓3.24	↗3.82	↗3.77	↓3.23	↓3.27	↓3.35	↓3.23	↓3.27	↓3.35	↓3.23	↓3.27	↓3.38	↓3.27	↘3.52	↓3.38	↓3.33	↘3.42	↓3.37	↓3.24	↓3.32
WE Environment	↘3.55	↘3.43	↓3.25	↓3.01	↓2.94	↓2.85	↓2.72	↓2.98	↓2.83	↓2.77	↓2.67	↓2.74	→3.60	→3.65	↘3.55	↘3.54	↘3.55	↘3.55	↘3.47	↘3.45	↓3.35
WF Facilities	↓3.38	↓3.24	↗3.82	↑4.10	↓3.38	↓3.27	↓3.35	↓3.38	↓3.27	↓3.35	↓3.38	↓3.27	↓3.38	↓3.24	↓3.23	↓3.15	↓3.24	↓3.32	↓3.38	↓3.23	↓3.15
WB Benefits	↗3.76	↗3.87	↓3.23	↓3.15	↓3.22	↓3.23	↓3.23	↓3.12	↓3.23	↓3.23	↓3.15	↓3.12	↗3.76	↘3.47	↓3.35	↓3.38	↗3.75	↘3.44	↗3.76	↓3.35	↓3.38
WD Development	↓3.38	↓3.24	↓3.35	↓3.38	↓3.38	↓3.17	↓3.25	↓3.38	↓3.27	↓3.35	↓3.38	↓3.27	↓3.38	↓3.24	↓3.27	↓3.34	↓3.15	↘3.47	↓3.23	↓3.15	↗3.82
WL Leadership	↓3.37	↓3.25	↘3.58	↘3.56	↓3.38	↓3.24	↓3.23	↓3.15	↓3.24	↓3.25	↓3.34	↓3.24	↘3.41	↓3.27	↘3.43	↓3.35	↓3.38	↘3.55	↓3.35	↓3.38	↘3.55
WB Balance	↘3.39	↓3.24	↘3.42	↘3.56	↓3.38	↓3.24	↓3.35	↓3.38	↓3.24	↓3.35	↓3.37	↓3.24	↘3.42	↓3.23	↓3.37	→3.67	↗3.87	↘3.55	↓3.38	↘3.47	↘3.45
OS Overall	**↘3.39**	**↓3.38**	**↘3.42**	**↘3.59**	**↓3.24**	**↘3.42**	**↓3.35**	**↓3.24**	**↘3.42**	**↘3.39**	**↓3.24**	**↘3.41**	**↘3.39**	**↓3.37**	**↘3.42**	**↘3.39**	**↓3.24**	**↘3.42**	**↘3.47**	**↘3.44**	**↘3.53**

Note: Direction & Coloring of Symbols ⇑ "increased good" ↗ "trending up" ⇒ "average" ↘ "trending down" ⇓ "decreasing problematic" performance

Table 3.2: Level 2 Performance Analytics Comparatives from Staff Satisfaction Constructs Measures across Programs within College 4

Staff Satisfaction Survey Comparatives across Programs within College 4

	College 4			Program 1			Program 2			Program 3			Program 4			Program 5			Program 6		
Attibutes	2019	2020	2021	2019	2020	2021	2019	2020	2021	2019	2020	2021	2019	2020	2021	2019	2020	2021	2019	2020	2021
WUG Goals	↓3.24	↘3.27	↘3.35	→3.56	↘3.38	↓3.24	↘3.26	↘3.28	↓3.24	↘3.45	↘3.38	↓3.24	↘3.43	↘3.25	↘3.27	↘3.37	↘3.27	↘3.45	↑3.90	↗3.87	→3.55
WR Responsibility	↘3.34	→3.52	↘3.43	→3.56	↘3.38	↓3.24	↘3.44	↘3.28	↓3.24	↘3.35	↘3.34	↓3.24	↘3.41	↓3.24	↘3.32	↘3.42	→3.52	→3.55	↘3.37	→3.47	↘3.45
WRe Relationship	↘3.38	↘3.27	→3.52	→3.67	→3.48	→3.47	→3.53	→3.48	→3.47	→3.53	→3.48	→3.47	↗3.74	↗3.72	↑3.89	↗3.74	↘3.38	↓3.24	↗3.82	↗3.72	↗3.69
WE Environment	→3.60	→3.65	→3.55	↗3.77	↓3.23	↘3.27	↘3.35	↓3.24	↘3.27	↘3.34	↓3.23	↘3.26	↘3.38	↘3.27	↗3.82	↘3.38	↘3.33	↘3.42	↘3.37	↓3.24	↓3.21
WF Facilities	↘3.38	↓3.24	↓3.23	↘3.32	↓2.98	↓2.86	↓2.77	↓2.98	↓2.89	↓2.77	↓2.68	↓2.78	→3.60	↘3.33	↘3.42	↘3.37	→3.55	→3.55	→3.47	↘3.45	↘3.35
WB Benefits	↗3.76	→3.47	↘3.35	↑4.10	↘3.38	↘3.27	↘3.35	↘3.38	↘3.27	↘3.35	↘3.38	↘3.27	↘3.38	↓3.24	↘3.42	↘3.38	↓3.24	↘3.32	↘3.38	↓3.24	↓3.23
WD Development	↘3.38	↓3.24	↘3.27	↗3.76	↓3.22	↓3.23	↓3.23	↓3.12	↓3.23	↓3.23	↓3.15	↓3.12	↗3.76	↗3.87	↗3.88	→3.58	↗3.75	↗3.87	↗3.76	↗3.87	↗3.78
WL Leadership	↘3.41	↘3.27	↘3.43	↗3.77	↘3.35	↓3.17	↘3.25	↘3.38	↘3.27	↘3.36	↘3.38	↘3.27	↘3.38	↓3.24	↗3.82	↗3.74	↗3.72	↑3.89	↘3.38	↓3.24	↗3.82
WB Balance	↘3.42	↓3.23	↘3.37	→3.56	↘3.38	↓3.24	↓3.24	↘3.37	↓3.24	↘3.35	↘3.34	↓3.24	↘3.41	↘3.27	→3.52	↘3.40	↘3.37	→3.55	↘3.44	↘3.45	→3.55
OS Overall	**↘3.39**	**↘3.37**	**↘3.42**	**↘3.38**	**↓3.24**	**↗3.82**	**↗3.82**	**↘3.38**	**↘3.27**	**↘3.35**	**↘3.38**	**↘3.27**	**↘3.35**	**↘3.38**	**↘3.27**	**→3.54**	**→3.56**	**→3.55**	**↗3.82**	**↗3.72**	**→3.59**

Note: Direction & Coloring of Symbols ⇑ "increased good" ↗ "trending up" ⇒ "average" ↘ "trending down" ⇓ "decreasing problematic" performance

Table 4.1: Level 1 Performance Analytics Comparatives from Faculty Satisfaction Constructs Measures across Colleges within University

Faculty Satisfaction Survey Comparatives across Colleges with University

	University			College 1			College 2			College 3			College 4			College 5			College 6		
Attibutes	2019	2020	2021	2019	2020	2021	2019	2020	2021	2019	2020	2021	2019	2020	2021	2019	2020	2021	2019	2020	2021
WUG Goals	↘3.38	↘3.27	↗3.82	↗3.82	↓3.24	↘3.27	↘3.35	↓3.24	↘3.27	↘3.35	↓3.24	↘3.27	↘3.38	→3.54	↗3.82	↑3.92	↗3.85	→3.57	↑3.92	↗3.85	→3.57
WR Responsibility	↘3.37	↓3.24	↗3.72	→3.56	↘3.38	↓3.24	↓3.24	↘3.38	↓3.24	↘3.35	↘3.38	↓3.24	↘3.41	↘3.27	↗3.82	↑3.90	↗3.87	→3.55	↑3.90	↗3.87	→3.55
WI Initiative	↗3.88	↑3.94	↗3.82	↗3.75	↓3.23	↘3.27	↘3.35	↘3.38	↘3.27	↓3.24	↘3.38	↘3.27	↗3.88	↑3.94	↗3.88	↗3.76	↗3.87	↗3.78	↗3.88	↑3.94	↗3.88
WRe Relationships	→3.58	↘3.45	→3.47	↗3.82	↘3.27	→3.56	↘3.38	↘3.27	→3.56	↘3.38	↘3.27	→3.56	→3.58	↘3.45	→3.47	↘3.38	↓3.24	→3.62	→3.58	→3.55	→3.67
WE Environment	↗3.74	↗3.72	↗3.79	↑4.07	→3.48	→3.47	→3.53	→3.48	→3.47	→3.53	→3.48	→3.47	↗3.74	↗3.72	↑3.89	↗3.74	↘3.38	↓3.24	↗3.82	↗3.72	↑3.89
WF Facilities	↘3.38	↓3.24	↗3.82	↗3.77	↓3.23	↘3.27	↘3.35	↓3.23	↘3.27	↘3.35	↓3.23	↘3.27	↘3.38	↘3.27	↗3.82	↘3.38	↘3.33	↘3.42	↘3.37	↓3.24	↘3.41
WD Development	↗3.70	→3.65	→3.25	↗3.87	↓2.98	↓2.86	↓2.77	↓2.98	↓2.89	↓2.77	↓2.68	↓2.78	→3.60	→3.65	→3.55	→3.54	→3.55	→3.55	↘3.47	↘3.45	↘3.35
WB Benefits	↘3.38	↓3.24	↗3.82	↑4.10	↘3.38	↘3.27	↘3.35	↘3.38	↘3.27	↘3.35	↘3.38	↘3.27	↘3.38	↓3.24	↗3.82	↘3.38	↓3.24	↘3.32	↘3.38	↓3.24	↓3.23
WL Leadership	↗3.76	↗3.87	↗3.78	↗3.76	↓3.22	↓3.23	↓3.23	↓3.12	↓3.23	↓3.23	↓3.15	↓3.12	↗3.76	↗3.87	↗3.88	→3.58	↗3.75	↗3.87	↗3.76	↗3.87	↗3.78
WO Outcomes	↘3.38	↓3.24	↗3.82	↗3.77	↘3.38	↓3.17	↘3.25	↘3.38	↘3.27	↘3.35	↘3.38	↘3.27	↘3.38	↓3.24	↗3.82	↗3.74	↗3.72	↑3.89	↘3.38	↓3.24	↗3.82
WB Balance	↘3.33	↗3.78	↗3.77	→3.66	→3.57	↓3.15	↘3.26	→3.57	↓3.15	↘3.26	→3.57	↓3.15	↘3.33	↗3.88	↗3.77	↘3.33	↗3.78	↗3.77	↘3.33	↗3.78	↗3.77
OS Overall	**↘3.38**	**↓3.24**	**↗3.82**	**↗3.82**	**↘3.38**	**↘3.27**	**↘3.35**	**↘3.38**	**↘3.27**	**↘3.35**	**↘3.38**	**↘3.27**	**↘3.38**	**↗3.69**	**↗3.88**	**↘3.38**	**↓3.24**	**↗3.82**	**↘3.38**	**↓3.24**	**↗3.82**

Note: Direction & Coloring of Symbols ⇑ "increased good" ↗ "trending up" ⇒ "average" ↘ "trending down" ⇓ "decreasing problematic" performance

Faculty Satisfaction has highly similar constructs measures with Staff Satisfaction, with the exception that WI (Work Initiative) and WO (Work Outcomes) are not used in the Staff Satisfaction (Table 4.1). On the comparatives side of the Faculty & Staff (Tables 3.1 & 4.1), it appears that the Faculty is much more optimistic about the Organization Climate than the staff. They have a similar issue: Faculty of Colleges 1, 2 & 3 have more complex trending performance analytics than Colleges 4, 5 & 6. Dive-down analytics potentially show that WD & WL are difficult trending areas that need to be addressed. The performance analytics clearly show that Colleges 1, 2 & 3 potentially have more issues regarding the Organization Climate construct measures for both Staff and Faculty, but with more issues regarding the staff than the Faculty (Tables 3.1 & 4.1).

At the College Level 2 performance analytics of Faculty Satisfaction (Table 4.2), the overall College 4 shows positive trending Organization Climate performance. The programs' comparative shows that Programs 3 & 4 have relatively much lower trending outlooks in the past three years but a looming worsening issue in AY 2021 compared to Programs 1, 2, 5 & 6.

Table 4.2: Level 2 Performance Analytics Comparatives from Faculty Satisfaction Constructs Measures across Programs within College 4

Faculty Satisfaction Survey Comparatives across Programs within College 4

	College 4			Program 1			Program 2			Program 3			Program 4			Program 5			Program 6		
Attibutes	2019	2020	2021	2019	2020	2021	2019	2020	2021	2019	2020	2021	2019	2020	2021	2019	2020	2021	2019	2020	2021
WUG Goals	3.38	3.54	3.82	3.38	3.27	3.82	3.82	4.11	4.06	3.35	3.24	3.27	3.35	3.38	3.27	3.82	4.11	4.06	3.92	3.85	3.57
WR Responsibility	3.41	3.27	3.82	3.38	3.24	3.72	4.10	4.01	4.15	3.35	3.38	3.24	3.35	3.27	3.35	3.77	3.98	3.97	3.90	3.87	3.55
WI Initiative	3.88	3.94	3.88	3.88	3.94	3.88	3.75	3.98	3.97	3.35	3.38	3.27	3.41	3.35	3.27	3.77	3.87	3.97	3.88	3.94	3.88
WRe Relationships	3.58	3.45	3.47	3.58	3.75	3.87	3.82	4.11	4.06	3.38	3.27	3.56	3.57	3.38	3.24	3.82	4.11	4.06	3.58	3.75	3.87
WE Environment	3.74	3.72	3.89	3.74	3.72	3.89	4.07	4.05	4.15	3.53	3.48	3.47	3.43	3.48	3.47	4.10	3.96	4.15	3.74	3.72	3.89
WF Facilities	3.38	3.27	3.82	3.38	3.24	3.82	3.77	3.98	3.97	3.35	3.23	3.27	3.35	3.38	3.27	3.77	3.98	3.97	3.38	3.24	3.82
WD Development	3.60	3.65	3.55	3.90	3.85	3.55	3.87	4.10	4.05	2.77	2.98	2.89	2.77	2.98	2.88	4.10	4.20	4.05	3.90	3.85	3.55
WB Benefits	3.38	3.24	3.82	3.38	3.24	3.82	4.10	3.89	4.01	3.35	3.38	3.27	3.35	3.38	3.24	3.77	3.98	3.97	3.38	3.24	3.82
WL Leadership	3.76	3.87	3.88	3.76	3.87	3.78	3.76	3.89	3.87	3.23	3.22	3.23	3.23	3.22	3.25	4.10	3.89	4.07	3.76	3.87	3.78
WO Outcomes	3.38	3.24	3.82	3.38	3.24	3.82	3.77	3.98	3.97	3.35	3.38	3.27	3.35	3.38	3.27	3.82	4.11	4.06	3.38	3.24	3.82
WB Balance	3.33	3.88	3.77	3.33	3.78	3.77	3.66	3.52	3.69	3.26	3.57	3.15	3.26	3.57	3.25	3.66	3.52	3.59	3.33	3.78	3.77
OS Overall	**3.38**	**3.69**	**3.88**	**3.38**	**3.24**	**3.82**	**3.82**	**4.11**	**4.06**	**3.35**	**3.38**	**3.27**	**3.35**	**3.38**	**3.27**	**3.77**	**3.89**	**4.07**	**3.38**	**3.24**	**3.82**

Note: Direction & Coloring of Symbols ⇑ "increased good" ⇗ "trending up" ⇒ "average" ⇘ "trending down" ⇓ "decreasing problematic" performance

(2) Student Experience Survey

The Student Experience Survey construct measures depict a similar rationale in the performance analytics application. It is to identify and determine the Level 1 performance of institutions & Colleges. Level 2 Colleges & Programs performance can be applied to all the qualitative KPIs and Dive-down analytics to determine potential areas of weakness and opportunities for improvements. In the case of the Student Experience, as compared to the university, Colleges 1 & 5 are potentially problematic colleges in creating and delivering on high;y satisfying student experiences in all aspects of assessment (Table 5.1).

Table 5.1: Level 1 Performance Analytics Comparatives from Student Experience Constructs Measures across Colleges within University

Student Experience Survey Comparatives across Colleges with University

	University			College 1			College 2			College 3			College 4			College 5			College 6		
Attibutes	2019	2020	2021	2019	2020	2021	2019	2020	2021	2019	2020	2021	2019	2020	2021	2019	2020	2021	2019	2020	2021
WUG Goals	3.76	3.87	3.78	3.23	3.22	3.25	3.76	3.87	4.01	3.76	3.87	3.78	4.10	3.89	4.15	3.23	3.22	3.23	4.10	3.89	4.17
USS Services	3.88	3.94	3.88	3.33	3.38	3.27	3.88	3.94	3.88	3.88	3.94	3.88	3.77	3.98	3.97	3.35	3.38	3.27	3.77	3.98	3.97
UI Infrastructure	3.74	3.72	3.89	3.53	3.48	3.47	3.74	3.72	3.78	3.74	3.72	3.89	4.07	4.20	4.15	3.53	3.48	3.47	4.10	4.20	4.15
UE Enrichment	3.69	3.83	3.99	3.26	3.57	3.25	3.69	3.83	3.99	3.69	3.83	3.99	3.86	3.77	3.98	3.26	3.57	3.25	3.86	3.77	3.98
US Ov Satisfaction	3.75	3.66	3.76	3.26	3.44	3.28	3.72	3.61	3.75	3.74	3.62	3.84	4.05	4.14	4.15	3.26	3.44	3.28	4.11	4.15	4.04
Ov. Student Exp.	3.77	3.76	3.88	3.26	3.44	3.28	3.77	3.66	3.88	3.77	3.66	3.88	4.10	4.12	4.17	3.26	3.44	3.28	4.10	4.06	4.07

Note: Direction & Coloring of Symbols ⇑ "increased good" ⇗ "trending up" ⇒ "average" ⇘ "trending down" ⇓ "decreasing problematic" performance

Though College 4 Level 1 performance analytics at institutional comparison is relatively positive, Level 2 College and programs performance analytics indicate that Programs 3 & 6 are potentially problematic programs with exceedingly lower and down-trending performance analytics compared to other programs within College 4 (Table 5.1). It shows that these higher levels and dive-down performance analysis based on the analytics can provide a better performance picture to nip the issues in the bud, specific to poorer-performing units. In addition, it can identify the "root cause" or the application of "cause-effect" for better understanding and to address problem areas.

Table 5.2: Level 2 Performance Analytics Comparatives from Student Experience Constructs Measures across Programs within College 4

Student Experience Survey Comparatives across Programs within College 4

	College 4			Program 1			Program 2			Program 3			Program 4			Program 5			Program 6		
Attibutes	2019	2020	2021	2019	2020	2021	2019	2020	2021	2019	2020	2021	2019	2020	2021	2019	2020	2021	2019	2020	2021
WUG Goals	⇑4.10	⇒3.89	⇑4.15	⇒3.76	⇒3.87	⇒3.78	⇑4.10	⇒3.79	⇑4.15	⇓3.23	⇓3.22	⇓3.23	⇒3.76	⇒3.87	⇒3.78	⇑4.10	⇒3.89	⇑4.17	⇓3.23	⇓3.22	⇓3.25
USS Services	⇒3.77	⇗3.98	⇗3.97	⇘3.68	⇗3.94	⇘3.72	⇒3.77	⇗3.98	⇗3.97	⇓3.35	⇓3.38	⇓3.27	⇒3.88	⇗3.94	⇒3.88	⇒3.77	⇗3.98	⇗3.97	⇓3.33	⇓3.38	⇓3.27
UI Infrastructure	⇑4.07	⇑4.20	⇑4.15	⇘3.74	⇘3.72	⇒3.89	⇑4.07	⇑4.20	⇑4.15	⇓3.53	⇓3.48	⇓3.47	⇘3.74	⇘3.72	⇒3.89	⇑4.10	⇑4.20	⇑4.15	⇓3.53	⇓3.48	⇓3.47
UE Enrichment	⇒3.86	⇒3.77	⇗3.98	⇘3.69	⇒3.83	⇒3.79	⇒3.86	⇒3.77	⇗3.98	⇓3.26	⇓3.57	⇓3.25	⇘3.69	⇒3.83	⇒3.79	⇒3.86	⇒3.77	⇗3.98	⇓3.26	⇓3.57	⇓3.25
US Ov Satisfaction	⇗4.05	⇑4.14	⇑4.15	⇓3.57	⇓3.60	⇒3.88	⇑4.10	⇑4.12	⇑4.06	⇓3.26	⇓3.34	⇓3.33	⇒3.77	⇓3.56	⇒3.88	⇑4.10	⇑4.12	⇑4.07	⇓3.26	⇓3.24	⇓3.38
Ov. Student Exp.	**⇑4.10**	**⇑4.12**	**⇑4.17**	**⇒3.77**	**⇒3.76**	**⇒3.88**	**⇑4.11**	**⇑4.13**	**⇑4.17**	**⇓3.26**	**⇓3.44**	**⇓3.28**	**⇒3.77**	**⇓3.66**	**⇒3.89**	**⇗4.01**	**⇑4.10**	**⇑4.14**	**⇓3.26**	**⇓3.44**	**⇓3.28**

Note: Direction & Coloring of Symbols ⇑ "increased good" ⇗ "trending up" ⇒ "average" ⇘ "trending down" ⇓ "decreasing problematic" performance

(3) Course Satisfaction Survey

The Course Satisfaction Survey, being a rather mandatory survey in most ICPs, is typically taken pre- & post-course to provide for the overall course performance analytics for each course in each semester. If used conscientiously, it is a robust set of performance assessments of a course based on key constructs of CG, CW, CI, CE, CD, CA, CO, OS & Overall Course Satisfaction. As demonstrated in the Level 3 Program and Courses performance analytics, it can provide an overall perspective as to which course is not performing well, which in this case are Courses 103 & 104, especially with more negative and pooer performance in AY 2021 (Table 6.1).

Table 6.1: Level 3 Performance Analytics Comparatives from Course Satisfaction Constructs Measures across Courses within Program 4

Course Satisfaction Survey Comparatives across Level 1 Courses in Program 4

	Program 4			Course 101			Course 102			Course 103			Course 104			Course 105			Course 106		
Attibutes	2019	2020	2021	2019	2020	2021	2019	2020	2021	2019	2020	2021	2019	2020	2021	2019	2020	2021	2019	2020	2021
CG Goals	⇗3.90	⇗3.85	⇘3.55	⇗3.90	⇗3.85	⇘3.55	⇑4.11	⇑4.20	⇑4.05	⇓2.77	⇓2.98	⇓2.89	⇓2.77	⇓2.98	⇓2.88	⇑4.10	⇑4.20	⇑4.15	⇗3.90	⇗3.85	⇘3.55
CW Work	⇓3.33	⇗3.88	⇒3.77	⇓3.33	⇗3.88	⇒3.77	⇒3.66	⇘3.52	⇒3.69	⇓3.26	⇒3.57	⇓3.15	⇓3.26	⇒3.57	⇘3.25	⇒3.66	⇘3.52	⇒3.59	⇓3.33	⇗3.88	⇒3.77
CI Initiative	⇒3.76	⇗3.87	⇑4.01	⇒3.76	⇗3.87	⇗3.78	⇑4.10	⇗3.89	⇑4.15	⇓3.23	⇓3.22	⇓3.23	⇓3.23	⇓3.22	⇓3.25	⇑4.10	⇗3.89	⇑4.17	⇒3.76	⇗3.87	⇗3.78
CE Learning Env.	⇗3.88	⇗3.94	⇗3.88	⇗3.88	⇗3.94	⇗3.88	⇒3.77	⇗3.98	⇗3.97	⇘3.35	⇘3.38	⇓3.27	⇓3.33	⇘3.38	⇓3.27	⇒3.77	⇗3.98	⇗3.97	⇗3.88	⇗3.94	⇗3.88
CD Delivery	⇒3.58	⇒3.75	⇑4.08	⇒3.58	⇒3.75	⇗3.87	⇗3.82	⇑4.11	⇑4.06	⇘3.38	⇓3.27	⇒3.56	⇒3.57	⇘3.38	⇓3.27	⇗3.82	⇑4.11	⇑4.06	⇒3.58	⇒3.75	⇗3.87
CA Assessment	⇒3.74	⇒3.72	⇗3.89	⇒3.74	⇒3.72	⇗3.89	⇑4.07	⇑4.20	⇑4.15	⇘3.53	⇘3.48	⇘3.47	3..53	⇘3.48	⇘3.47	⇑4.10	⇑4.20	⇑4.15	⇒3.74	⇒3.72	⇗3.89
CO Outcomes	⇒3.69	⇗3.83	⇑3.99	⇒3.69	⇗3.83	⇑3.99	⇗3.86	⇒3.77	⇗3.98	⇓3.26	⇒3.57	⇓3.25	⇓3.26	⇒3.57	⇓3.25	⇗3.86	⇒3.77	⇗3.98	⇒3.69	⇗3.83	⇑3.99
OS Overall Satis.	⇒3.77	⇒3.66	⇗3.88	⇒3.77	⇒3.66	⇗3.88	⇑4.10	⇑4.10	⇑4.17	⇓3.26	⇘3.44	⇓3.28	⇓3.26	⇘3.44	⇓3.28	⇑4.10	⇑4.10	⇑4.07	⇒3.77	⇒3.66	⇗3.88
Ov. Course Satis.	**⇘3.53**	**⇗3.86**	**⇗3.94**	**⇘3.53**	**⇗3.86**	**⇗3.94**	**⇗3.89**	**⇑3.99**	**⇑4.05**	**⇓3.26**	**⇘3.47**	**⇓3.28**	**⇓3.26**	**⇘3.47**	**⇓3.28**	**⇗3.89**	**⇑3.99**	**⇑4.15**	**⇘3.53**	**⇗3.86**	**⇗3.94**

Note: Direction & Coloring of Symbols ⇑ "increased good" ⇗ "trending up" ⇒ "average" ⇘ "trending down" ⇓ "decreasing problematic" performance

Table 6.2: Level 4 Performance Analytics Comparatives from Course Satisfaction Constructs Measures across Sections within Course 101

Course Satisfaction Survey Comparatives across Course 101 Sections 1 to 6

	Course 101			Section 1			Section 2			Section 3			Section 4			Section 5			Section 6		
Attibutes	2019	2020	2021	2019	2020	2021	2019	2020	2021	2019	2020	2021	2019	2020	2021	2019	2020	2021	2019	2020	2021
CG Goals	⇗3.90	⇗3.85	⇘3.55	⇘3.26	⇒3.67	⇘3.25	⇓2.77	⇓2.98	⇓2.88	⇗3.89	⇑4.15	⇑4.02	⇘3.33	⇗3.88	⇗3.77	⇑4.25	⇑4.30	⇑4.33	⇑4.10	⇑4.20	⇑4.15
CW Work	⇘3.33	⇗3.88	⇒3.77	⇒3.48	⇘3.26	⇒3.44	⇘3.26	⇒3.57	⇘3.25	⇗3.75	⇗3.76	⇗3.88	⇒3.43	⇒3.62	⇒3.52	⇒3.66	⇒3.52	⇗3.99	⇒3.66	⇒3.52	⇓3.59
CI Initiative	⇗3.76	⇗3.87	⇗3.78	⇘3.26	⇒3.75	⇘3.38	⇘3.23	⇘3.22	⇘3.25	⇗3.72	⇒3.52	⇗3.99	⇘3.26	⇒3.67	⇘3.25	⇒3.66	⇒3.52	⇑4.09	⇑4.10	⇗3.89	⇑4.15
CE Learning Env.	⇗3.88	⇗3.94	⇗3.88	⇓2.77	⇓2.87	⇓2.76	⇘3.33	⇘3.38	⇘3.27	⇗3.83	⇒3.52	⇑4.09	⇘3.35	⇒3.52	⇘3.22	⇑4.10	⇑4.20	⇑4.15	⇗3.77	⇗3.98	⇒3.97
CD Delivery	⇒3.58	⇗3.75	⇗3.87	⇓2.88	⇓2.86	⇓2.79	⇓2.87	⇓2.77	⇓2.92	⇘3.33	⇗3.88	⇗3.77	⇒3.66	⇒3.52	⇒3.59	⇒3.66	⇒3.52	⇗3.89	⇗3.82	⇑4.11	⇑4.06
CA Assessment	⇗3.74	⇗3.72	⇗3.89	⇘3.33	⇒3.48	⇗3.77	⇘3.24	⇘3.15	⇒3.47	⇒3.53	⇗3.86	⇗3.84	⇒3.57	⇗3.75	⇒3.56	⇗3.98	⇗3.97	⇑4.11	⇑4.10	⇑4.20	⇑4.15
CO Outcomes	⇒3.69	⇗3.83	⇑3.99	⇓2.98	⇓2.86	⇓2.83	⇒3.26	⇒3.57	⇘3.25	⇘3.33	⇗3.88	⇗3.77	⇒3.26	⇒3.57	⇘3.25	⇑4.10	⇑4.20	⇑4.15	⇗3.86	⇗3.77	⇒3.98
OS Overall Satis.	⇗3.77	⇒3.66	⇗3.88	⇘3.26	⇒3.44	⇒3.66	⇘3.26	⇒3.44	⇘3.28	⇗3.62	⇒3.52	⇗3.99	⇒3.66	⇒3.52	⇒3.59	⇗3.86	⇗3.77	⇗3.98	⇑4.10	⇑4.10	⇑4.17
Ov. Course Satis.	**⇒3.53**	**⇗3.86**	**⇒3.94**	**⇒3.53**	**⇒3.48**	**⇒3.57**	**⇘3.26**	**⇘3.25**	**⇘3.26**	**⇒3.46**	**⇒3.52**	**⇗3.87**	**⇒3.55**	**⇒3.66**	**⇒3.46**	**⇑4.10**	**⇑4.20**	**⇑4.15**	**⇗3.89**	**⇗3.99**	**⇑4.15**

Note: Direction & Coloring of Symbols ⇑ "increased good" ⇗ "trending up" ⇒ "average" ⇘ "trending down" ⇓ "decreasing problematic" performance

Another perspective can be developed from the performance analytics of the Level 4 Sections within a Course comparative. For Course 101, it is highly evident that Sections 1 & 2 are potential problematic areas, which can be attributable to CG & CD for Section 2, and CE, CD, and CO for Section 1. It can allow the instructor to handle those Sections in critical areas that are lower and trending poorly over the last three years to address specific performance areas.

Table 6.3: Level 5 Performance Analytics Comparatives from Course Satisfaction Constructs Measures across all courses of 1 Instructor

Course Satisfaction Survey Comparatives across different Courses of 1 Instructor

	All Cses			C 101 S1			C 101 S2			C 101 S3			C 205			C 302			C 401		
Attibutes	2019	2020	2021	2019	2020	2021	2019	2020	2021	2019	2020	2021	2019	2020	2021	2019	2020	2021	2019	2020	2021
CG Goals	⇒3.63	↗3.76	⇑3.88	↓3.43	↘3.52	↓3.37	↓3.43	↘3.52	↓3.37	↓3.43	↘3.52	↓3.37	↓3.23	↓3.22	↓3.25	↓3.44	↘3.47	↘3.53	⇒3.63	↗3.76	⇑3.87
CW Work	↓3.43	⇑3.88	⇑3.87	↓3.26	↓3.37	↓3.25	↓3.25	↓3.28	↓3.27	↓3.43	↘3.52	↓3.37	↓3.25	↓3.28	↓3.27	↓3.23	↓3.22	↓3.25	↓3.43	↗3.72	↗3.75
CI Initiative	⇒3.63	↗3.76	⇑3.95	↓3.43	↘3.52	↓3.37	↓3.23	↓3.32	↓3.35	↓3.23	↓3.22	↓3.25	↓3.26	↓3.27	↓3.25	↘3.47	⇒3.63	↗3.75	↘3.54	↘3.58	↗3.77
CE Learning Env.	⇒3.63	↗3.72	↗3.75	↓3.23	↓3.12	↓3.25	↓3.43	↘3.52	↓3.37	↓3.25	↓3.28	↓3.27	↓3.43	↘3.52	↓3.37	↓3.13	⇑3.88	⇑3.87	⇒3.63	↗3.76	⇑3.87
CD Delivery	↓3.33	⇑3.88	⇑3.97	↓3.34	↓3.27	↓3.25	↓3.26	↓3.17	↓3.25	↘3.53	↘3.58	⇒3.67	↘3.53	⇑3.86	↗3.84	↘3.57	↗3.75	↘3.56	⇒3.66	⇑3.88	⇑3.94
CA Assessment	↘3.53	⇑3.86	⇑3.96	↓3.23	↓3.32	↓3.31	↓3.43	↘3.52	↗3.75	↓3.43	↘3.52	↓3.37	↓3.33	⇑3.88	↗3.77	⇒3.63	↗3.76	⇑3.87	↓3.43	↘3.58	↗3.75
CO Outcomes	⇒3.63	↗3.76	⇑3.87	↓3.22	↓3.42	↓3.10	↓3.23	↓3.22	↓3.25	↘3.53	⇑3.86	↘3.57	↓3.43	↓3.42	↘3.57	↘3.50	↗3.77	⇒3.67	↘3.47	↗3.74	↗3.82
OS Overall Satis.	↗3.79	↗3.80	↗3.82	↓3.13	↓3.22	↓3.25	↓3.32	↘3.58	↓3.37	↓3.33	↘3.58	↘3.47	↓3.43	↘3.52	↓3.34	↘3.57	↘3.47	↗3.75	↓3.43	⇒3.69	↗3.83
Ov. Course Satis.	**↗3.76**	**⇑3.88**	**⇑3.98**	**↓3.25**	**↓3.28**	**↓3.27**	**↓3.32**	**↘3.48**	**↘3.47**	**↓3.43**	**↘3.52**	**↓3.37**	**↓3.43**	**↘3.57**	**⇒3.68**	**⇒3.63**	**↗3.76**	**⇑3.87**	**↘3.53**	**↗3.81**	**⇑3.85**

Note: Direction & Coloring of Symbols ⇑ "increased good" ↗ "trending up" ⇒ "average" ↘ "trending down" ⇓ "decreasing problematic" performance

A more specific Level 5 Performance Analytics of the performance of all the courses handled by an instructor (Table 6.3) can provide rich information on an instructor's teaching & learning academic performance. In this case, compared to all courses in the program, this specific instructor is not doing well in having lower-level courses like the First Year C 101 S1, S2 & S3, and Second Year C 205. This instructor is doing quite well in the Third & Fourth Year Courses like C 302 & C 401. This type of performance analytics can potentially point to the assignment of courses that are not within the scope of the instructor's knowledge & skills or not appropriate to the types of students, like entry levels students as compared to higher levels students that the instructor can handle. On the other hand, it can also signify that the instructor is a consistently poor performer compared to their peers and whether the developmental efforts over the AY 2019 – 2021 are not in place or not contributing to the instructor's improvements.

The Course Satisfaction, used in tandem and complement the Staff & Faculty, and Student Experience Surveys, can be used as a "cause-effect" analytical approach. It allows for a more in-depth performance analysis at Levels 1 to 5 as deemed necessary or adequate to inform better-informed decision-making based on performance analytics.

(4) Dive-down performance analytics of KPI

Another often required KPI is the understanding & use of the University Goals, mainly the mission and critical goals of the ICP, to guide the ICP in all academic and administrative strategic & operational directions, actions & activities. Two highly similar construct measures of Goals (UG1 & UG2) across the Student Experience (SES), Faculty & Staff Satisfaction (FSS & SSS), are used to illustrate the KPI 1.6.2 University Goals Performance analytics (Tables 7.1 & 7.2). The Level

1 performance analytics across colleges within the university (Table 7.1) shows Colleges 1, 2 & 5 SES's University Goals performance faring negatively compared to Colleges 3, 4 & 6. Colleges 1, 3 &5 are not coping well in FSS, with Colleges 1, 2, 3 & 4 not performing well in SSS. The dive down itself of the University Goals shows which of the constructs measures contribute to the poorer trending performance, especially in College 1, which does not fare well in all the SES, FSS & SSS compared to the other colleges. In addition, Colleges 2, 3 & 5 do not report positively trending University Goals understanding and utilization in 2 out of the three surveys. It demonstrates that, used independently or holistically in comparison, the performance analytics of the University Goals can point to areas for improvements across the colleges of its students, Faculty, or staff to address potential issues and take remedial actions as appropriate.

Table 7.1: Level 1 Dive Down Construct Measures of KPI 1.6.2 (University Goals) across Colleges within the University

Level 1 Dive Down Analytics of KPI 1.6.2 UG University Goals across Colleges with University

	University			College 1			College 2			College 3			College 4			College 5			College 6		
Attibutes	2019	2020	2021	2019	2020	2021	2019	2020	2021	2019	2020	2021	2019	2020	2021	2019	2020	2021	2019	2020	2021
SES Goals	3.76	3.87	3.78	3.23	3.22	3.25	3.23	3.33	3.16	3.76	3.87	3.78	3.88	3.79	3.84	3.23	3.22	3.23	4.10	3.89	4.17
SES UG1	3.68	3.24	3.82	3.47	3.38	3.17	3.25	3.38	3.27	3.35	3.38	3.27	3.78	3.74	3.82	3.54	3.32	3.39	3.98	3.64	3.82
SES UG2	3.73	3.78	3.77	3.66	3.57	3.15	3.26	3.28	3.15	3.26	3.57	3.15	3.83	3.88	3.77	3.33	3.48	3.27	3.93	3.78	3.77
FSS Goals	3.38	3.54	3.82	3.38	3.27	3.42	3.82	4.11	4.06	3.35	3.24	3.27	3.35	3.38	3.27	3.82	3.88	4.06	3.92	3.85	3.87
FSS UG1	3.37	3.25	3.68	3.56	3.38	3.24	3.73	4.05	3.94	3.25	3.34	3.24	3.41	3.27	3.43	3.75	3.98	3.95	3.75	3.78	3.75
FSS UG2	3.33	3.78	3.77	3.66	3.47	3.15	3.76	3.87	3.85	3.26	3.57	3.15	3.33	3.38	3.47	3.63	3.78	3.97	3.63	3.68	3.67
SSS Goals	3.37	3.24	3.35	3.56	3.38	3.24	3.24	3.38	3.24	3.35	3.38	3.24	3.24	3.27	3.35	3.46	3.45	3.55	3.90	3.87	3.55
SSS UG1	3.37	3.25	3.58	3.46	3.28	3.14	3.23	3.15	3.24	3.25	3.34	3.24	3.41	3.27	3.43	3.35	3.38	3.55	3.35	3.38	3.55
SSS UG2	3.39	3.24	3.42	3.36	3.18	3.04	3.35	3.38	3.24	3.35	3.37	3.24	3.42	3.23	3.37	3.67	3.87	3.55	3.38	3.47	3.45

Note: Direction & Coloring of Symbols ⇑ "increased good" ⇗ "trending up" ⇒ "average" ⇘ "trending down" ⇓ "decreasing problematic" performance

Table 7.2: Level 2 Dive Down Construct Measures of KPI 1.6.2 (University Goals) across Programs within College 4

Level 2 Dive Down Analytics of KPI 1.6.2 UG University Goals across Programs within College 4

	College 4			Program 1			Program 2			Program 3			Program 4			Program 5			Program 6		
Attibutes	2019	2020	2021	2019	2020	2021	2019	2020	2021	2019	2020	2021	2019	2020	2021	2019	2020	2021	2019	2020	2021
SES Goals	3.88	3.79	3.84	3.76	3.87	3.78	4.10	3.79	4.15	3.23	3.22	3.23	3.76	3.87	3.78	4.10	3.89	4.17	3.23	3.22	3.25
SES UG1	3.78	3.74	3.82	3.69	3.83	3.79	3.86	3.77	3.98	3.26	3.57	3.25	3.69	3.83	3.79	3.86	3.77	3.98	3.26	3.57	3.25
SES UG2	3.83	3.88	3.77	3.57	3.60	3.88	4.10	4.12	4.06	3.26	3.34	3.33	3.77	3.56	3.88	4.10	4.12	4.07	3.26	3.24	3.38
FSS Goals	3.35	3.38	3.27	3.38	3.27	3.82	3.82	4.11	4.06	3.35	3.24	3.27	3.35	3.38	3.27	3.82	4.11	4.06	3.25	3.36	3.25
FSS UG1	3.41	3.27	3.43	3.38	3.24	3.82	3.77	3.98	3.97	3.35	3.38	3.27	3.35	3.38	3.27	3.82	4.11	4.06	3.38	3.24	3.31
FSS UG2	3.33	3.38	3.47	3.33	3.78	3.77	3.66	3.52	3.69	3.26	3.57	3.15	3.26	3.57	3.25	3.66	3.52	3.59	3.33	3.78	3.18
SSS Goals	3.24	3.27	3.35	3.56	3.38	3.24	3.26	3.28	3.24	3.45	3.38	3.24	3.43	3.25	3.27	3.37	3.27	3.45	3.90	3.56	3.55
SSS UG1	3.41	3.27	3.43	3.56	3.38	3.24	3.24	3.37	3.24	3.35	3.34	3.24	3.41	3.27	3.52	3.40	3.37	3.55	3.44	3.45	3.55
SSS UG2	3.42	3.23	3.37	3.38	3.24	3.82	3.82	3.38	3.27	3.35	3.38	3.27	3.35	3.38	3.27	3.54	3.56	3.55	3.82	3.72	3.59

Note: Direction & Coloring of Symbols ⇑ "increased good" ⇗ "trending up" ⇒ "average" ⇘ "trending down" ⇓ "decreasing problematic" performance

The Level 2 Dive-down performance analytics of College 4 and its programs (Table 7.2) highlights more negative and downward trending performance in the FSS & SSS University Goals understanding & utilization than the SES. While Programs 2 & 5 are faring better than the other programs in the FSS, the SSS shows highly poor and negatively trending performance for most programs.

Implications

While there exist multifarious implications from developing and using a set of surveys independently albeit collectively for informed decisions, as discoursed previously, three sets of prerequisites need to be developed and put in place before embarking on the potentially highly beneficial PASS. Even though each survey can independently provide a specific measure, the PASS has demonstrated a strong justification that re-positioning all the surveys and mutually aligning them can improve performance management through DA. These three sets of implied provisions of the PASS are:

- ***Empowering Performance Analytics through a strategically aligned surveys system*** (Teay, 2022) – The bottom line is the first essential step in designing and developing highly similar constructs measures that are the critical base of the survey systems. There are highly common generics across all ICPs in critical areas of teaching, learning & research, governance, administration and planning, IQA & accreditation, academic & administrative services & support facilities infrastructure & systems, and societal responsibilities. It should not be ignored. Failing to capitalize on the standard generics of the ICP mission, goals, and potential performance metrics from the SMART objectives can lead to diverse, uncoordinated, and unrelated duplications of these generic educational value activities. As such, all the critical qualitative surveys should be designed, developed, and aligned in tandem with each other to report on critical qualitative KPIs for comparatives and dive-down analyses. Recognizing this crucial step of the strategically aligned PASS contributes to the identification and development of performance analytics that can be used longitudinally or one-off analytics or comparatives across the Levels 1 to 5 dive-downs as necessary or as appropriate.
- ***Enabling the Performance Analytics system through Information Technology & Analytics Tools*** – Once the strategic and aligned PASS is designed and developed, the next crucial step is developing a high-powered IT-based performance management system. This system is central to the Planning, IQA & Accreditation that subscribes to the information-quality-planning trio for its DA empowerment through Planning and Quality Management Dimensional alignment in HEI (Teay, 2019) via an integrated electronic IQA system for performance management (Teay, 2019, 2021). The system should be complemented by Educational Data Mining (EDM) (Peña-Ayala, 2014; Nguyen et al., 2020; Chatti et al., 2014; Dahlstrom, Brooks, and Bichsel, 2014) through AI-enabled analytic tools or a more simplified statistical package. These should allow for dive-down analytics based on the data collected & collated, and processed within the SPMS to be used by all stakeholders for performance data analytics processing and reporting based on needs.
- ***Equipping Human capital with positive mindsets and analytical skills towards utilization and interpretational skills*** (Teay 2022) – While the empowered survey system and its enabling IT & AI are the hardware & software of the performance analytics system, it is the human capital capacity and capability that either help the ICP to move forward its

performance management capacity and capability or extinguish its drive towards success based on informed decision making through its performance analytics. It starts with organizational culture and mindset that positively embrace a performance management culture and analytics skillsets. Without this essential step imbued in the ICP organizational culture and a positive attitude towards looking at issues as "opportunities for improvements" rather than "weaknesses or negatively oriented retributions", the ICP is destined for mediocre performances.

Recommendations

Most ICPs' primary focus for the design and development of surveys is mainly on meeting the IQA & Accreditation requirements rather than seeing them as instruments for strengthening or discovering opportunities for improvement. This paper has propounded the re-design and re-development of the surveys into the PASS that produce & provide performance analytics to enable and support data-driven informed decisions. In the design and development of the PASS, it is critical in:

(1) ***Positioning Survey System within higher-order SPMS and Institutional Research Framework*** – The design and development of the critical survey instruments of SES, FSS, SSS, CSS, and ASS should be strategically aligned and guided by the ICP mission goals & SMART Objectives. It is because the performance metrics or KPIs are used as key performance measures of the performance management of the ICP. As such, the PASS should be placed within the higher-order SPMS of the Institution, which permeates the general performance management system at all levels of the ICP, to be used by all units as the main SPMS to process and produce aligned performance metrics. In the design and development of the SPMS, it should serve the primary purpose of the higher oreder Instituional Research framework as proposed by the newer Association of Institutional Research (2017) simplication of the IR farmework as (a) Identifying information needs of relevant stakeholders and their decision support needs by anticipating questions through reviewing of data, information, research & policy studies of all types of interanl & external stakeholders, (b) Establishing IR technical tasks to collect, analyze, interpret, and report data and information by understanding data availability to answer pressing questions about student access and success and institutional operations and the process by which previously unavailable data are collected and incorporating applied research methods & data analysis to provide information & performance analytics for data-driven informed decision making and interpretation of results ouypits & outcomes, (c) Planning and evaluating to include operational, budgetary, and strategic planning in which institutional research collaborates with other units at the ICP, state, governmental or related stakeholders & organizations, (d) Serving as stewards of data and information through an institution-wide data strategy and system, and most importantly (e) Educating information producers, users, and consumers as they are the human capitals critical to understanding & utilzation of the performance analytics relevant to their actions or decision making.

(2) ***Design & Development of Survey Instruments Strategic & Operational Alignment*** – Often forgotten is the primary purpose of the survey itself, and its construct measures design & development to ensure that it "measures what it is supposed to measure". They

are based on the aligned strategic mission, goals, and SMART Objectives as the defining & delimited parameters. In addition, rather than reinventing the wheel, highly similar constructs can be designed and developed to meet highly similar objectives across a few survey instruments. It provides the basis of comparatives & dive-down performance analytics across different Levels 1 to 5 depending on the case analytics requirements. The survey instruments' strategic and operational alignment is defined and guided by the strategic alignment of the mission, goals, values, and SMART Objectives as the critical component for strategic alignment across the ICP (Teay, 2022).

(3) ***Integrated SPMS's quality-information-planning troika*** (Teay, 2019) – Unfortunately, in most HEIs, the ICP quality & performance, information, and planning management systems are designed and developed independently of each other silos to meet specific needs. The system development should be through a holistic systems approach. They are highly related and interdependent systems. The system dynamics that all systems are made up of smaller related sub-subsystems are also interdependent. They all move towards the same strategic direction to accomplish the same mission, goals & SMART objectives of "Acting Locally and Thinking Globally through integrating organizational learning into system dynamics" (Senge and Sterman, 1990). The quality-information-planning troika methodology can be used to discover the critical areas of interrelatedness and interdependencies when developing the SPMS. It is highly critical for an electronic integrated SPMS to work in tandem to accomplish the aspired purpose of quality assurance, strategic & operational planning & its executions, and information management. They are ultimately the base of the ICP performance metrics and performance analytics pursuits.

(4) ***ICP Human-Information-Organization Capital Strategic Assets*** – The bottom line of all successful organizations is the foundation of the human-information-organization capital sets. These are unique to and are the organization's core competencies to mitigate the implementation of eIQA and advanced analytics imperilments and imperatives of its Human-Information-Organization Capital Strategic Assets development and management (Teay, 2021 and 2022). As noted earlier, there should be a positive extant ICP Organizational Culture and Mindsets as a data-driven organization. It should place the performance analytics as to the core requirements of informed decision making and the openness to recognize "opportunities for improvements" instead of an adverse and perverse perception that they are analytics to "find fault or weakness, and used as cause for punishments or retributions". It includes the human capital capacity and capabilities of the "users" to understand & utilize the information. It is achieved through critical and analytical skill sets. The aim is to "discover" the information as opportunities for improvements" as opposed to treating them as "KPIs to meet requirements" or "white elephant pieces to showcase performance without openness to innovations or improvements". It undermines improvements or innovations to issues and problems solutions. In addition, there is the human capital as "providers" who are the IT & AI tech-based talents who create & deliver information & analytics that can be understood and used by the "users" group.

In conclusion, the information as performance analytics, created and delivered to its electronic base, is only as good as the human capital of the users and providers. Another forgotten stakeholder is the "evaluators," i.e., the students, alumni, and employment market, who are so used to being "forced" to take surveys like FSS, CSS, ASS, and EMSS, all of which are taken lightly and as a "burden" and waste of time. A powerful institutional communication strategy is to ensure total

"positivity" awareness and understanding by all stakeholders of (1) users of the information and performance analytics, (2) technical providers of the PASS and its process, and (3) assessors of the surveys' aims & purpose, its beneficial feedback, and not as "just doing it as requested.

Conclusion

This paper has attempted to demonstrate that the typical plethora of surveys independently designed and developed to meet a specific purpose can be powered into a powerful performance analytics survey system (PASS) that brings about data-driven informed decisions. This is done through the illustrated key steps of (a) identifying and defining the fundamental guiding principles, primarily found in the mission, goals & SMART Objectives used to design and develop the survey instruments, (b) the design and development of constructs measures that are highly similar across the various survey instruments being identified and developed to ensure that they "measure what they are supposed to measure" and to ensure that they report on specific and generic performance metrics beyond the typical required KPIs, (c) the performance analytics allows for comparatives within and across groups of Level 1 across colleges in institutions, Level 2 across programs within a college, Level 3 across courses in a program, or a specific year or course groups, Level 4 across sections within a single course, and Level 5 all courses of a single instructor, (d) for more in-depth performance analytics across longitudinal studies periods of various dive-downs or within specific constructs, (e) with the bottom line, that the performance analytics are used to create a data-driven informed decision making culture to identify opportunities for improvements.

It also highlights that the powering of the PASS for performance analytics is contingent on the need to (a) create a data-driven, informed decision-making organization with an organizational culture of positive mindsets for improvements and innovations, (b) the need for an SPMS as the critical performance management system for all levels of the ICP, and that it is an integrated electronic system that capitalizes on the IT & AI tools to produce the performance analytics that is based on the firmly integrated and interdependent quality-information-planning troika, (c) the existence of a set of competent and proficient human capital as users and providers to fully understand and utilize the performance analytics proficiently and effectively to strengthen the ICP operations.

In conclusion, while performance analytics can be a boon, it can also be a bane to the ICP if the ICP does not fully realize the potential of the need for improvements and innovations for the future of its unit establishment success. As such, the ICP needs to determine its future to improve its student and societal outputs and outcomes. The choice of being a performance analytics "boon or bane" is in the hands of each ICP itself.

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