Designing Industry-Relevant Business Programs: A Conceptual Framework Combining Systems Theory, Kano Model, and Quality Function Deployment

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The responsibility on business schools and colleges to prepare learners for the dynamic workplace environment continues to gain prominence. How can leaders of business schools and colleges, pave a path for business faculty to infuse desired industry competencies into the curriculum? The primary purpose of this paper is to address this question and help guide business education in developing industry relevant programs that can fulfill ever-changing industry needs. A conceptual framework combining systems theory, Kano model, and Quality Function Deployment is proposed to develop an end-to-end business program by mapping the input, throughput, output, and feedback. Consequently, the four phases of conceptual framework to design program – stakeholder input, transformation in curriculum design, assurance of learning output, and stakeholder feedback for learner success are established. The conceptual framework offers value for business schools and colleges, to consistently maintain currency and relevancy in the curriculum and hence, ensure learner career readiness.

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I. INTRODUCTION

In a report published by Association to Advance Collegiate Schools of Business (AACSB)- 'A New Vision for Business Education', AACSB stressed the significance and need for business schools to partner with industry and communities to prepare and educate students for the changing workplace. This is a heavy lift for business schools. The research question that we address in this exploratory study is 'what are the structures and processes that will enable business schools to grow and develop the rich space between practice and theory, resulting in outcomes that will meet the needs of the industry?'

In this paper, we propose a novel circular conceptual model with an example for designing an end-to-end industry-relevant program in business education that consists of the following four phases: (1) gather stakeholder competency requirements (SRCs); (2) transform SRCs to program curriculum; (3) intentionally embed Assurance of Learning (AoL) to validate learner competency levels and continuously improve the program; and (4) seek stakeholder feedback on learner competency levels. Our framework is informed by systems

theory (Kast & Rosenzweig, 1972; Katz & Kahn, 1978), which in general, posits that organizations convert external inputs (e.g., community partners, business leaders, alumni) into outputs (e.g., assurance of learning; post-graduation learner success) via throughput (e.g. curriculum design).

The objectives and the unique contribution of this paper are three-fold:

1. To address gaps in existing literature by:
    - providing a framework to gather SRCs which are ascertained by the Kano model of basic, performance, and excitement competencies.
    - highlighting the importance of seeking stakeholder feedback on the competency levels of the learners going through the program curriculum.
    - relating the conceptual model to a program.
2. Use the Quality Function Deployment (QFD) theory to design the throughput in the framework.
3. Develop a four-phase comprehensive end-to-end framework for designing program based on the principle of 'Quality as Fitness for Purposes'.

1.1. Theoretical Underpinnings – Systems Theory Approach

The view of organizations as open social systems that must interact with their environments to survive and grow is known as the systems theory approach. The open-systems approach identifies organizational behavior by mapping the repeated cycles of input, throughput, output, and feedback between an organization and its external environment (Katz & Kahn, 1978). Systems receive input from the environment either as information or in the form of resources. These systems then process the input internally, which is called throughput, and release outputs into the environment to restore equilibrium to the environment. The system then seeks feedback to determine if the output was effective in restoring equilibrium. Thus, the systems approach focuses on the means used to maintain organizational survival, emphasizing long-term goals rather than the short-term goals.

The systems approach is an external standard that measures effectiveness. Effective systems are characterized by a steady state that systems theorists call homeostasis. If an organization can maintain homeostasis, which includes not just survival but also growth, then it is **effective** (Kast & Rosenzweig, 1972; Katz & Kahn, 1978).

Most effective organizations, according to systems theory, adapt to their environments. Environments range from static on one extreme to dynamic on the other. Static environments are relatively stable or predictable and do not have great variation, whereas dynamic environments are in a constant state of flux. Because environments cannot be completely static or constantly changing, organizations have varying levels of dynamic or static environments (Katz & Kahn, 1978).

In our conceptual framework, the changing needs of the industry and the co-creation of existing knowledge, termed as 'stakeholder requirements', can allow colleges of business to be an open system that monitors the requirements and collects information about these variations that are labeled as **input**. The college would then organize and process this information to design and transform curriculum as **throughputs**, which results in assurance of learning representing its **output**. Alignment of continuous curriculum improvements, student learning, and post-graduation success with stakeholder input serve as **feedback mechanism** to maintain homeostasis.

II. LITERATURE REVIEW AND RELEVANT MODELS

A considerable amount of literature has been conducted addressing various elements of program design. Table 1 presents the literature

summary of the different elements of program design. However, based on the literature review, we classify the entire program design process into four important phases that include:

- Stakeholder input for gathering program requirements.
- Curriculum design for programs.
- Assurance of Learning (AoL) to evaluate and improve program quality.
- Stakeholder feedback on program quality.

2.1. Stakeholder inputs

Stakeholder inputs specifically related to designing a program are gathered from stakeholders that include but are not limited to industry partners, employers, accreditation bodies, communities, alumni, students, and faculty. In general, the primary methods of seeking stakeholder opinions and perspectives are questionnaire surveys and focus group interviews (Duke, 2020; El-Sayed, El-Sayed, & Beyerlein., 2010; Newton & Goldsmith, 2011). Most of the studies in literature emphasize the need for obtaining stakeholder opinions and perspectives on program requirements and suggest that the basis for developing a quality program requires incorporation of stakeholder requirements into the program design process (Worthington, Dewancker, LaRush, Lackeyram, & Dawson,. 2017; Eizaguirre, Garcia-Feijoo, & Laka. 2019; Rajeh, Grant, Farsi, & Tekian ,. 2020). For example, El-Sayed et al. (2010) suggested that developing outcomes based on co-ops and internships not only enhances intangible skills, but also improves traditional outcomes among learners. Newton and Goldsmith (2011) used multiple stakeholder inputs to standardize minimum required competencies for construction management programs in Australia. These competency standards allowed programs developed across Australia to maintain quality higher than the minimum required standards. Rajeh, et al. (2020) conducted stakeholder interviews to identify prominent outcomes and develop leadership and management curriculum in medical education. In the same vein, Eizaguirre et al. (2019) conducted extensive interviews of multi-national stakeholders to determine sustainability competencies that need to be embedded in business and management curricula.

Even though, higher emphasis is placed on seeking stakeholders' perspectives in program design, there are two major issues that have been highlighted when seeking stakeholder requirements. First, the perceptions and opinions of different stakeholders can be different and bringing these opinions to consensus can be challenging. For example, Duke (2002) indicated that the students' perceptions and priorities for outcomes varied significantly compared to external stakeholders such as employers and faculty. A study by Newton and Goldsmith (2011) underscored the need for consistency in understanding the outcomes across different stakeholders. To the best of our knowledge, only Henderson and Trede (2017) have addressed this issue. They developed a collaborative governance framework that included university, industry, and student stakeholders to identify and develop outcomes that are meaningful to learners for success in workforce. Second, the literature has not clearly addressed the process of transformation of SRCs to meaningful Program Learning Outcomes (PLOs). In fact, the literature lacks appropriate framework to guide SRCs and transform these SRCs to PLOs. To address these concerns and gaps, we propose the use of Kano model of customer satisfaction.

2.1.1. Kano model of customer satisfaction

In quality theory, the Kano model of customer satisfaction is a product and/or service design theory that classifies product or service attributes based on customer perceptions and their effect on customer satisfaction. These classifications are useful and serve as guiding principles in product and/or service design

decisions since they indicate when "good" is "good enough" and when "more" is "better". Figure 1 presents the Kano model theory of customer satisfaction. In the Kano model, the product and service attributes are classified into: (1) basic; (2) performance; and (3) excitement. Basic attributes are those attributes that do not have any impact on customer satisfaction when present in the product or service. However, if not present in the product or service, the customers are highly dissatisfied. Performance attributes have a linear relationship indicating that more is better. Excitement attributes are not expected by the customer in a product or service. However, when such attributes are provided, they create excitement in customer satisfaction. Over time, the performance attributes shift to become basic attributes, and excitement move towards performance attributes as customers preferences start changing based on their expectations and experiences.

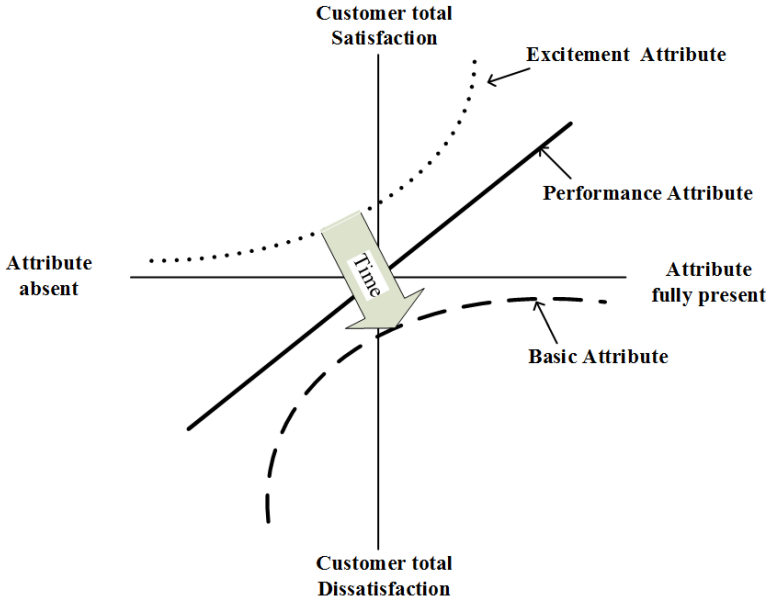

FIGURE 1. KANO MODEL THEORY OF CUSTOMER SATISFACTION (Kano, N., Seraku, N., Takahashi, F., & Tsuji, S., 1984).

The Kano model has been used in several different settings, and in varying contexts. For example, Inman, Inman, and Bushen, (2021) conducted a Kano model survey on long-term care to identify services led to quality-of-life improvement during COVID-19 pandemic and found that providing more attractive and performance services significantly increase patient satisfaction. However, increasing basic essential care does not increase patient satisfaction. Sulaiman, Muhammad, Muhammad, and Sabiu (2021) used the Kano model to investigate the mediating role of customer satisfaction between service quality and customer loyalty in the banking industry and observed that higher service quality will result in increased customer satisfaction and customer loyalty. However, the study indicates that higher customer satisfaction does not necessarily translate to customer loyalty. Even though, several studies have used the Kano model in product or service design, only Ömürgönülşen, Eryiğit, Tektaş, and Soysal (2020) used Kano model in higher education, developing a graduate-level course that meets the requirements of external stakeholders. In contrast to the study by Ömürgönülşen, et al. (2020), our paper focuses on using the Kano

model at program level to determine SRCs and then transform the SRCs to program curriculum.

2.2. Curriculum Design

The process of curriculum design is addressed through: (1) transformation and (2) improvement. The transformation process involves converting stakeholder competency needs, wants, and/or requirements into the program curriculum. The improvement process involves making enhancements to the existing curriculum based on varying stakeholder expectations, market forces, and AoL.

Over the past twenty years, several studies have been conducted to design curriculum by using the transformation or improvement process. Mizikaci (2006) proposed a program evaluation model to improve the curriculum by assessing program quality. Druzhinina, Belkova, Donchenko, Liu, and Morozova (2018) conducted theoretical research to assess curriculum quality and found that the curriculum design is a dynamic process that require up-to-date quality of specialists. Rexeison and Al-Khatib (2009) proposed the importance of study abroad programs in improving experiential learning outcomes. Based on the literature, it is evident that only few studies have provided a framework for the curriculum design process. To the best of our knowledge these are the only two studies that provided a framework to develop a curriculum (Dobson and Tam, 2004 and Tiana, Moya, and Luengo, 2011). Dobson and Tam (2004) proposed a ten-step transformation process to gather SRCs and transform them into a program curriculum. Tiana, et al. (2011) reflected on curriculum design and learner competency development by implementing key competencies in basic education in Spain. Consequently, in this paper, we address this gap by developing a conceptual framework for curriculum transformation – SRCs to PLOs, then to Sub-Competencies (SCs), and finally courses through course learning objectives resulting in a curriculum that can effectively deliver SRCs to learners by using a product or service design theory known as Quality Function Deployment (QFD).

Quality Function Deployment (QFD) is a method that helps to transform customer voice into product or service characteristics. Figure 2 presents the QFD for product or service design, which methodologically integrates customers' needs and wants into both the product and service development process. As shown in Figure 2, QFD consists of sequences of houses that begins with transforming customer requirements to design characteristics, consequently leading to specific components, then to production processes, and finally to quality plan and improvement (Ömürgönülşen et al., 2020; Tontini, 2007).

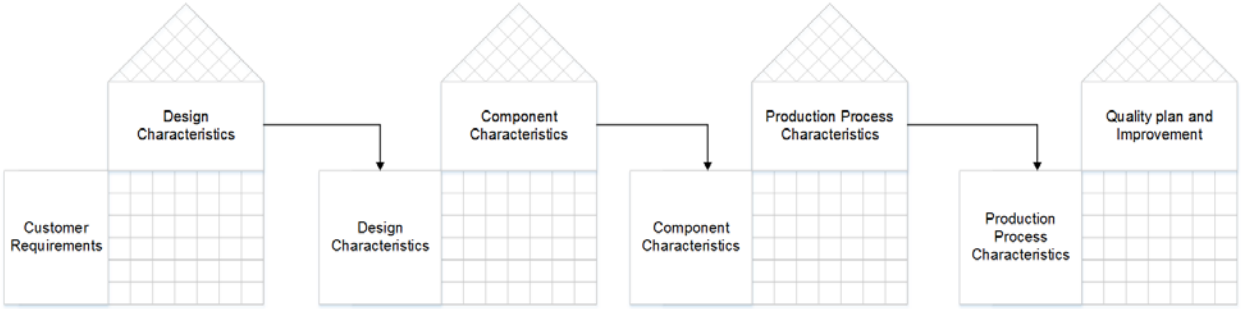

FIGURE 2. QFD FOR PRODUCT OR SERVICE DESIGN.

Several studies have used QFD in higher education research. For example, Assiddiqi and Vanany (2021) used QFD to improve the quality of online student learning by identifying

important attributes that student's value in online modality. Gonzalez, Quesada, Martinez, and Gonzalez-Cordoba (2020) developed a framework combining QFD and benchmarking to integrate study abroad programs in curriculum by considering the competency needs of the students in the programs. Singh and Rawani (2019) used QFD to identify important quality parameters in engineering education and found that job-oriented requirements are the most important parameters and ergonomic-based requirement is the least important parameter for national board of accreditation in India. Even though, several studies are conducted using QFD, none of them focused on transforming SRCs to a program curriculum. Therefore, in this study, we propose using QFD to translate SRCs to program curriculum.

2.3. Assurance of Learning (AoL)

Assurance of learning (AoL) confirms whether the designed curriculum is delivering the intended competencies to the learners at the desired proficiency level. A significant amount of literature has been conducted related to AoL that include embedding, assessing, and continuously improving the program. Bath, Smith, Stein, and Swann (2004) developed an action learning cycle that not only maps outcomes to the course curriculum but takes a step further to deliberately embed outcome-related curriculum material and activities such that the quality assurance and learning are brought together resulting in both validated and relevant curriculum. Deepwell (2007) argued that the participatory nature of the devised evaluation framework enhanced the program quality as it highlighted deficiencies and called for improvements in pedagogical, technological, cultural, and organizational domains. Rexeison and Al-Khatib (2009) used AoL to evaluate the effectiveness of the study abroad program in improving ethical reasoning, cross-cultural competencies, and environmental attitudes. Tiana, et. al. (2011) reflected on the competency-embedded Spanish education and suggested that intentional embedding of AoL in the curriculum enhanced educational quality. Furthermore, Islam (2019) indicated that AoL is important to convince external stakeholders about the program quality. The literature is well- established in terms of embedding, assessing, and improving program quality. In this paper, we propose using the existing principles of AoL to improve program quality. However, this paper's unique contribution is the use of Kano model categories as well as QFD to embed, assess, and improve the program.

2.4. Stakeholder feedback on program quality

Stakeholder feedback loop involves measuring whether the competencies required by the stakeholders are delivered at the desired levels. In current literature, very few studies have been conducted to seek the feedback on the program quality. These studies are directed towards evaluating whether the programs delivered appropriate competencies rather than learner competency levels. For example, Islam (2019) conducted stakeholder survey and found that external stakeholders such as employers and alumni value AoL and internal stakeholders such as faculty, students, and academic community value program load. Duke (2002) conducted a survey and identified discrepancies in stakeholder competency perceptions and priorities. Druzhinina, et. al. (2018) indicated that designing a quality curriculum is a dynamic process that requires specialist faculty who can adjust to the market needs from time-to-time. To the best of our knowledge, only Belash and Ryzhov (2018) obtained stakeholder feedback on learner competency levels to improve the program quality and proposed a 'Plan Do Check Act' (PDCA) cycle to seek stakeholder feedback that includes current learners, graduating seniors, alumni, and employers on their competency levels. In this paper, we propose seeking stakeholder feedback whether

they are satisfied or dissatisfied with the learner competency levels for different categories of the Kano model. This feedback will allow program designers to improve the curriculum through AoL process.

III. A CIRCULAR CONCEPTUAL FRAMEWORK FOR END-TO-END PROGRAM DESIGN

This paper proposes a circular conceptual framework for end-to-end program design. Figure 3 illustrates the proposed conceptual framework which focuses on designing programs based on the principle of embedding industry-relevant competencies into the program curriculum. More specifically, the conceptual framework enables programs to deliver and inculcate competencies among learners that conforms to the stakeholders' needs, requirements, and/or desires. These competencies are typically relevant to industry and/or workforce. The conceptual framework consists of four consecutive phases that include:

1. Input – the first phase of the program design requires gathering stakeholder's competency requirements;
2. Transformation – the second phase of the program design is the curriculum design phase in which the gathered stakeholder requirements are transformed into program curriculum;
3. Assurance of Learning (AoL) – the third phase of the program design involves embedding, assessing, and improving the program by validating that the learners are able to possess the required competencies at desired proficiency levels; and
4. Stakeholder feedback loop – the last phase involves reporting the learner proficiency for different competencies to the stakeholders to gauge their satisfaction rate and procure their feedback. In addition, post-graduation feedback from employers, graduate program success, alumni, and overall reputation become part of the feedback loop.

It is important to note that the conceptual framework starts with gathering information on their competency requirements from the stakeholders and ends with seeking their feedback from the stakeholders on learner competency levels resulting in a circular framework for program design. The following expounds on each of the phases in detail. The notation used in the conceptual framework are presented in Table 2.

3.1. Input Phase: Stakeholder Competency Requirements

The first-phase of the end-to-end program design requires seeking input from both internal and external stakeholder's on the desired competencies, which can be conducted by focus group studies involving program faculty and industry partners. To gather relevant stakeholder competency requirements (SCRs), Kano model can be employed to classify competencies into different categories. Figure 4 portrays the Kano model as applied to the program requirements in business education such that the learners are equipped with adequate competencies that will conform to the stakeholders' needs, requirements, and/or desires. In Figure 4, the stakeholder's satisfaction rate is compared with the learner functionality such that the underlying phenomenon between stakeholder's expectations of competencies and learner performance is captured for different competency levels.

TABLE 1. LITERATURE SUMMARY OF PROGRAM DESIGN.

Author	Stakeholder inputs	Curriculum design	Assurance of Learning	Stakeholder feedback
Duke (2002)	X			X
Bath et al. (2004)		X	X	
Dopson & Tas (2004)	X	X		
Lomas (2004)			X	
Mizikaci (2006)		X	X	
Deepwell (2007)			X	
Nygaard et al. (2008)		X		
Rexeison Al-Khatib (2009)		X	X	
El-sayed et al. (2010)	X	X		
Newton & Goldsmith (2011)	X			
Tiana et al. (2011)	X	X	X	
Tam et al. (2014)		X	X	
Paolini et al. (2015)			X	X
Henderson and Trede (2017)	X		X	
Worthington et al. (2017)	X		X	
Belash & Ryzhov (2018)			X	X
Druzhinina et al. (2018)		X	X	
Eizaguirre et al. (2019)	X			
Islam (2019)			X	X
Rajeh et al. (2020)	X	X		
Our Paper	X	X	X	X

TABLE 2. DESCRIPTION OF NOTATIONS USED IN THE CIRCULAR CONCEPTUAL FRAMEWORK.

Notations	Description
AoL	Assessment of Learning
HoQ	House of Quality
SCR	Stakeholder Competency Requirements
• BSCR	Basic SCR
• PSCR	Performance SCR
• ESCR	Excitement SCR
PLO	Program Learning Outcomes
• BPLO	Basic PLO
• PPLO	Performance PLO
• EPLO	Excitement PLO
SC	Sub-Competencies
• BSC	Basic SC
• PSC	Performance SC
• ESC	Excitement SC
C	Courses
• BSC	Basic SC
• PSC	Performance SC
• ESC	Excitement SC
CLO	Course Learning Outcomes
I	Introduce
P	Practice
R	Reinforce

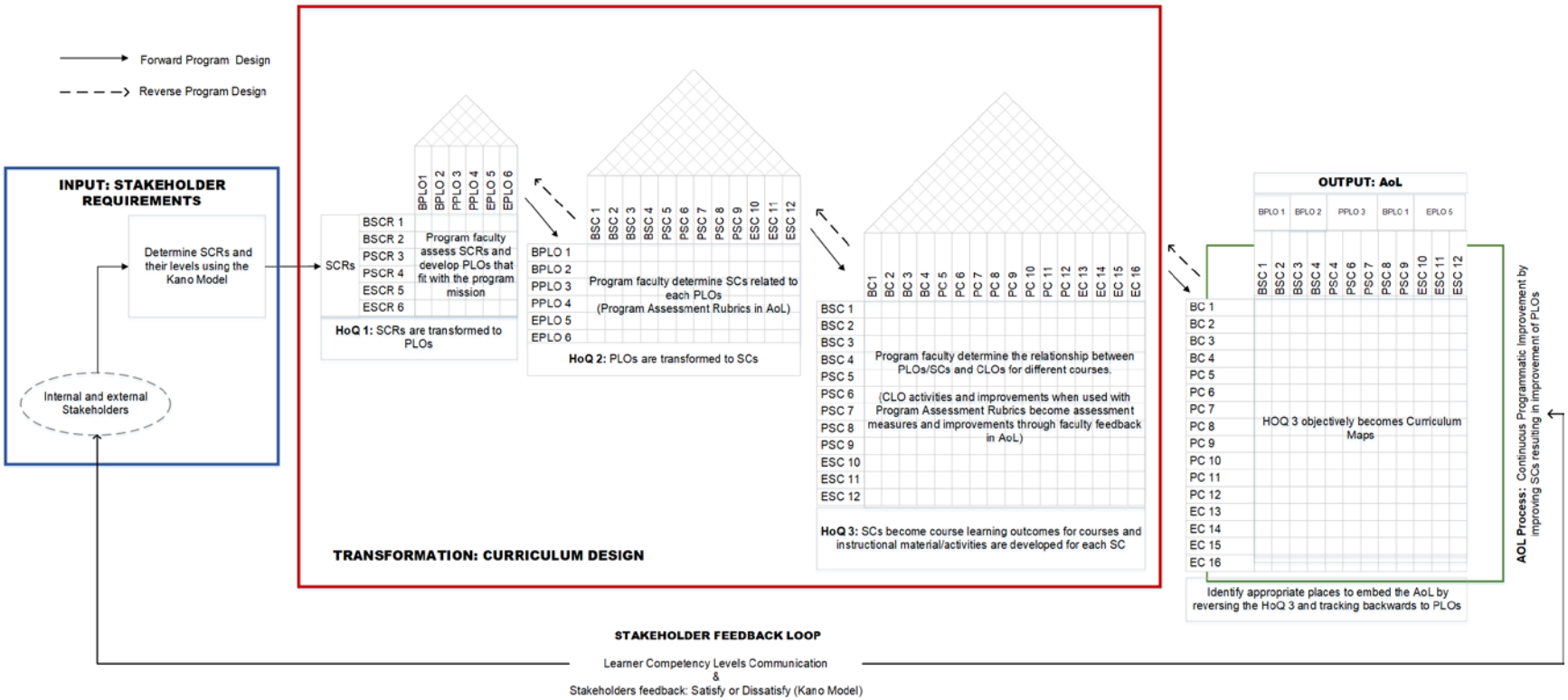

FIGURE 3. CIRCULAR CONCEPTUAL FRAMEWORK FOR END-TO-END INDUSTRY-RELEVANT PROGRAM DESIGN.

Based on the Kano model, competencies can be classified into three categories: (1) Basic; (2) Performance; and (3) Excitement. For example, basic competencies such as written communication, oral presentation, and Microsoft office suite in business programs are essential, and if demonstrated well, have little impact in obtaining, retaining, and advancing careers for learners. However, learners who do not adequately demonstrate the basic competencies often face difficulty in obtaining, retaining, and advancing their careers. *Performance competencies* are the next-level motivational competencies that generate stakeholder satisfaction or dissatisfaction based on the degree of learner functionality. Performance competencies usually improve through experience over time. Stakeholders look for learners to demonstrate performance competencies at certain base levels and at the same time gauge the learner's attitude towards these performance competencies such that the learners can be trained over time. For example, learners are usually trained in their careers for performance competencies such as leadership, management, decision making, cross-cultural, multidisciplinary, applicability and adaptability such that these skills are improved over time through experience. *Excitement competencies* are highest level innovative competencies that are novel to the industry. These competencies if not present in learners have limited effect on stakeholder dissatisfaction, but if present in learners excites and highly satisfies stakeholders resulting in increased chances of obtaining, retaining, and advancing careers for learners. For example, excitement competencies such as artificial intelligence, internet of things, cybersecurity, FINTECH, and sustainability among learners excite stakeholders resulting in learners quickly furthering their careers.

According to the Kano model, over time, the excitement competencies become performance competencies, and the performance competencies become basic competencies, and the new set of excitement competencies make their way into the industry. Therefore, it is important to adjust the program curriculum according to the industry by deliberately seeking timely opinions and feedbacks from both faculty and industry partners. Consequently, in the first phase, we propose faculty collaborating with the industry partners to determine the SCRs and categorizing them into three basic, performance, and excitement competency levels. The identified or determined SCRs are then transformed to PLOs for the program to be relevant to the changing industry needs. It is important to note that industry skill requirements are increasing as well as changing more often in recent years. Therefore, it is important for business schools and their curriculum to be receptive to these competency requirements.

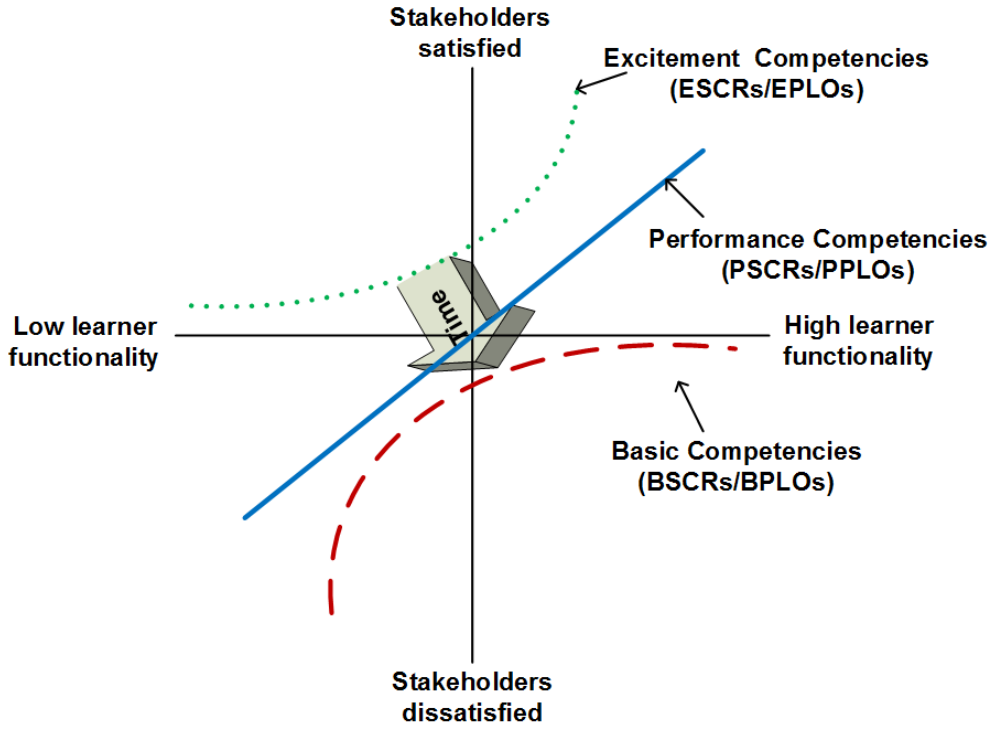

FIGURE 4. STAKEHOLDER'S SATISFACTION RATE VS. LEARNER FUNCTIONALITY FOR DIFFERENT COMPETENCY CATEGORIES USING THE KANO MODEL.

3.2. Transformation Phase: Curriculum Design

Once the SCRs and their levels -Basic SCR (BSCR), Performance SCR (PSCR), and Excitement SCR (ESCR) are determined, the second phase of the program design, the transformation phase, requires planning and developing program curriculum by effectively transforming SCRs into a collection of program courses that deliver these SCRs to the learners. To do this, we propose a *subjective* and *simplified* use of Quality Function Deployment (QFD) that involve a sequence of quality houses (HoQ) beginning with SCRs, which leads to PLOs, then to SCs and finally, to program courses (C) through course learning outcomes (CLOs).

In Figure 4, the transformation phase, which is also the curriculum design phase, starts with the program faculty assessing the SCRs and developing PLOs that are within the scope of the program mission. In this process, the faculty first screen the SCRs and determine the best set of SCRs that fit with the program mission. Then, the faculty transform SCRs into PLOs consisting of Basic PLOs (BPLOs), Performance PLOs (PPLOs), and Excitement PLOs (EPLOs). Finally, faculty subjectively develop the first house of quality (HoQ1) in which a relationship between SCRs and PLOs are established. These relationships can be as simple as "relationship exist" or "do not exist" such that appropriate PLOs are tied to SRCs and can be useful during program evaluation process such that the gaps between SRCs and PLOs can be reduced. In addition, the relationship between different PLOs to improve one another can be established.

Once the PLOs and their Kano model category levels are determined and established, faculty identify the SCs associated with each PLO and its categories. SCs are traits or behaviors that learners will demonstrate with respect to each PLO. More specifically, Basic SCs (BSCs) are identified in relation to BPLOs,

Performance SCs (PSCs) are identified in relation to PPLOs, and Excitement SCs (ESCs) are identified in relation to EPLOs. Then, the faculty develop a second house of quality (HoQ2) to establish relationship between PLOs and SCs. This relationship between the SCs and PLOs help to develop program assessment rubrics that will be helpful for program quality evaluation from time to time.

Once the best set of SCs are determined, program faculty determine the relationship between SCs and course-learning outcomes (CLOs) for different courses such that the existence of a course in a program is objectively justified. The third house of quality (HoQ3) is designed by developing a relationship that helps to translate BSCs to CLOs for basic or foundational courses, PSCs to next-level performance courses, and ESCs to highly specialized dedicated courses. This Kano model classification is necessary such that basic competencies are embedded rigorously across the entire curriculum such that learners practice several times before graduation and achieve desired level of competency. Similarly, performance competencies are also embedded in several courses such that learners improve the competencies over time and excitement competencies are typically embedded in high-level discipline-specific courses such that learners are exposed to new industry competencies. The faculty then design instructional material and course activities related to each CLO in different courses. In addition, program assessment rubrics are embedded in multiple courses along with assessment activities such that learners' performance on PLOs are assessed as well as improved. As the curriculum goes through multiple cycles of learners, faculty adjust and improve the curriculum such that a mature curriculum that is efficient and effective in delivering PLOs and SRCs is obtained. At this stage, it becomes important to validate whether the developed program and its curriculum are inculcating required competencies to the learners as intended or required by the stakeholders. This is answered by the next phase, which is Assurance of Learning (AoL) process.

3.3. Output Phase: Assurance of Learning (AoL)

As the designed curriculum is delivered to the learners, the program matures over time as the program faculty develop, streamline, and fit appropriate instructional material, environment, and activities in courses to effectively deliver required sub-competencies to the learners. In addition, several strategic, tactical, and operational resources are put in place to support the delivery of these SCs and PLOs such as support from college leadership by promoting a culture of assessment by including it as a criterion in program evaluations; faculty training and resources; administrative support; service opportunities, etc. Consequently, it is important to develop an Assurance of Learning (AoL) process that allows program designers to evaluate whether the competencies required by the stakeholders are acquired by the learners at the desired proficiency levels. To do this, it is important to first develop curriculum maps by reverse-engineering the transformation or curriculum design phase and developing relationships between courses (through CLOs), SCs, and PLOs. In this stage, the introduction, practice, and reinforcement (assessment) of each PLO through different SCs are also identified.

HoQ2 that connects PLOs with SCs helps to develop a rubric for each PLO that can be used to validate whether learners are achieving the desired level of competency for each PLO. HoQ3 connects SCs with courses through CLOs helps to identify the signature activities that can serve as assessment measures in AoL. The designed rubrics are embedded in different signature activities across multiple areas of the program curriculum, allowing faculty to provide timely feedback and help

learners improve over the course of the curriculum. In addition, the signature activities and the embedded program assessment rubrics help the faculty identify learner deficiencies at the source and develop intervention strategies. The assessment strategies for different Kano model categories are different. For basic PLOs, which is an essential skill, most of the learners' performance across different curriculum courses should be above a certain minimum proficiency level. This means the assessment for basic can be conducted anywhere in the curriculum, except at the introductory courses and the student proficiency should be above the minimum proficiency level. For performance PLOs, the learner proficiency level should improve over the course of the curriculum. This means the assessment for performance outcomes should be conducted at least at two places in the form of formative and summative assessment such that improvement over the duration of the curriculum can be evaluated. For excitement PLOs, learner proficiency levels can be lower than basic and performance categories because the outcomes are relatively new to the industry and the curriculum providing these competencies typically tends to be smaller. In addition, assessment can be conducted once at the end of the curriculum.

3.4. Feedback Phase: Stakeholder feedback loop

As the AoL strives to improve the program quality, the results of the AoL are reviewed by both program faculty and industry partners to gauge whether the stakeholders are satisfied or not satisfied with the proficiency levels demonstrated by the learners for required competencies. The satisfaction of the stakeholders can be obtained by seeking the employer's feedback about the learner's performance in workplace or stakeholders' feedback for whom learners do experiential learning or consulting projects, or by allowing practitioners teach courses in the program from time-to-time and seek their feedback on learner's competency levels. Feedback can also be garnered from the employers who have hired college graduates and alumni to develop programmatic improvements based on external benchmarks. The process of reporting the AoL results on learner proficiency to both internal and external stakeholders and obtaining the feedback helps reduce the gap between internal stakeholders such as program faculty and external stakeholders such as industry partners resulting in a program that fulfills its purpose or goals, i.e., to meet the stakeholder needs, expectations, and requirements. In addition, this continuous feedback loop also informs the program faculty of any new excitement competencies that can be introduced in the program.

IV. CASE STUDY EXAMPLE

In this section, we demonstrate the use of circular conceptual framework to develop a Master of Business Administration program (MBA) with concentration in Healthcare Administration. Each of the four consecutive phases are explicated below.

4.1. Input phase

In this phase, an industry focus group of C-level executives from the healthcare industry sector was conducted to determine the stakeholder competency requirements. Based on preliminary discussion with faculty, the goal was to develop a program that would provide necessary competencies to healthcare professional (preferably) who seek or intend to become administers in healthcare sector. We did not share the three competency levels before we asked the industry group the following questions:

> **Question 1:** What are the essential competencies that are minimally expected of the administrators (Notes: to determine **Basic SCRs**)

Question 2: What are the competencies that are preferred? (Notes: to determine **Performance SCRs**)
Question 3: What are competencies that will trigger an immediate hire? (Notes: to determine **Excitement SCRs**)

The responses to the questions from industry focus group were categorized based on our knowledge of the three competency levels and represent the stakeholder competency requirements (SRCs). They are shown in Table 3.

TABLE 3. SCRs GATHERED FROM INDUSTRY FOCUS GROUP

Question 1: Basic SCRs	Question 2: Performance SCRs	Question 3: Excitement SCRs
• Analytics • Ethics • Communication • Legal and Compliance	• Management • Interdisciplinary • Systems thinking • Business development	• Leadership • Applicability and adaptability • Solution-based approach • Working with diverse generations

4.2. Transformation phase

Once the SCRs are obtained from the industry stakeholders, a committee of faculty members evaluated these SCRs and developed program curriculum that involves translating SCRs to PLOs to SCs and finally to courses. Figures 5-7 present the use of QFD to transform basic, performance, and excitement SCRs to program courses, respectively. In each of the figures, faculty first determined the PLOs from SCRs that were within the scope of the program mission. Then SCs related to each PLO were determined and consequently courses relevant to SCs and PLOs were identified. The SCs and PLOs were embedded into the courses through CLOs. The following presents some important insights when transforming SCRs to program curriculum:

1. Since basic SCRs are essential, those competencies were embedded in both the general as well as healthcare discipline courses. For example, in Figure 5, Analytics SCR resulted in courses on Data Analytics and Management, as well as Healthcare Informatics and Data Analytics.
2. Different SCRs were combined by program faculty to form a holistic PLO. For example, in Figure 6, management and interdisciplinary SCRs are combined to form interdisciplinary PLO leading to interdisciplinary sub-competencies. However, since the industry partners stated that management is an important competency, management principles were embedded in all the courses such as accounting management, management information systems, marketing management etc. resulting in all courses being interdisciplinary in nature as well as having management emphasis.
3. Intangible SCRs such as solution-based approach, applicability and adaptability, and working with diverse generations were embedded into the courses through experiential learning and consulting projects.

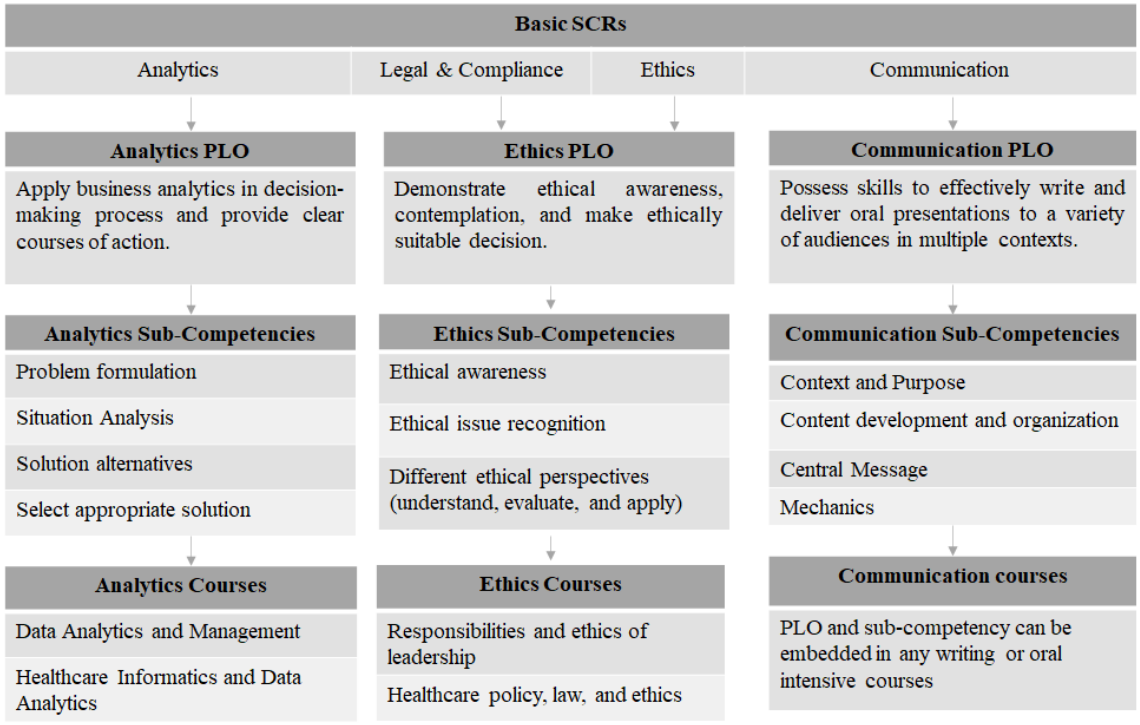

FIGURE 5. TRANSFORMING BASIC SRCS TO COURSES USING QFD.

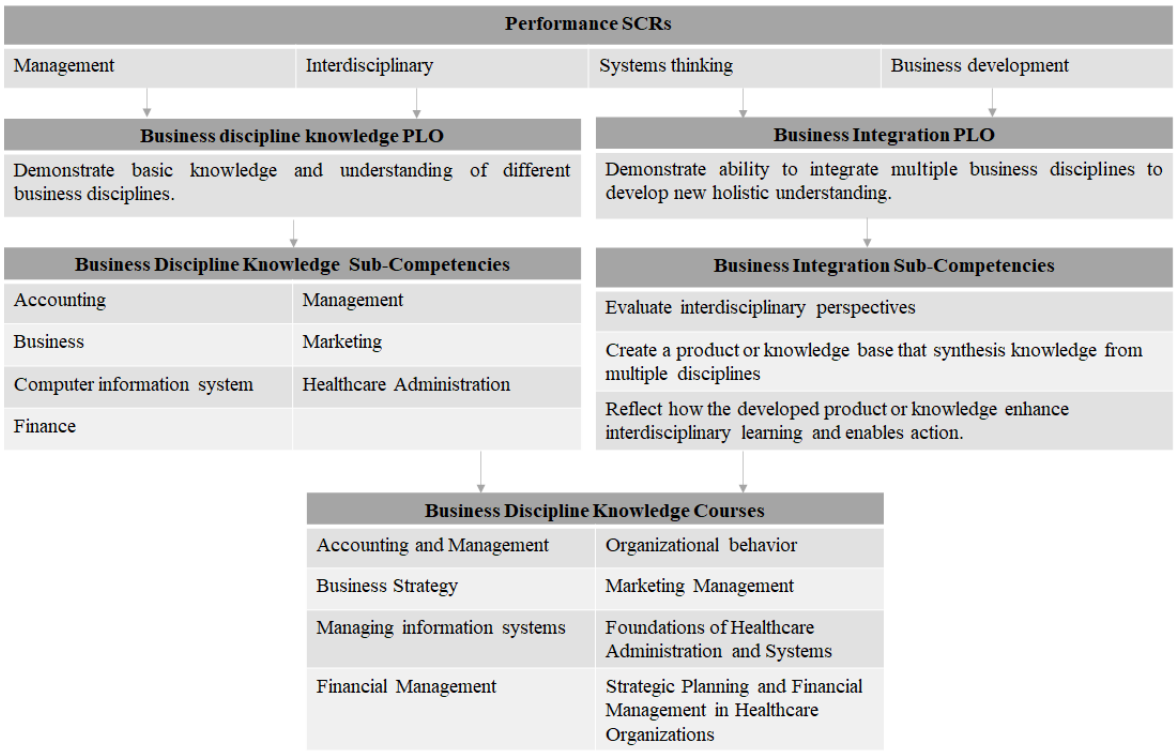

FIGURE 6. TRANSFORMING PERFORMANCE SRCS TO COURSES USING QFD

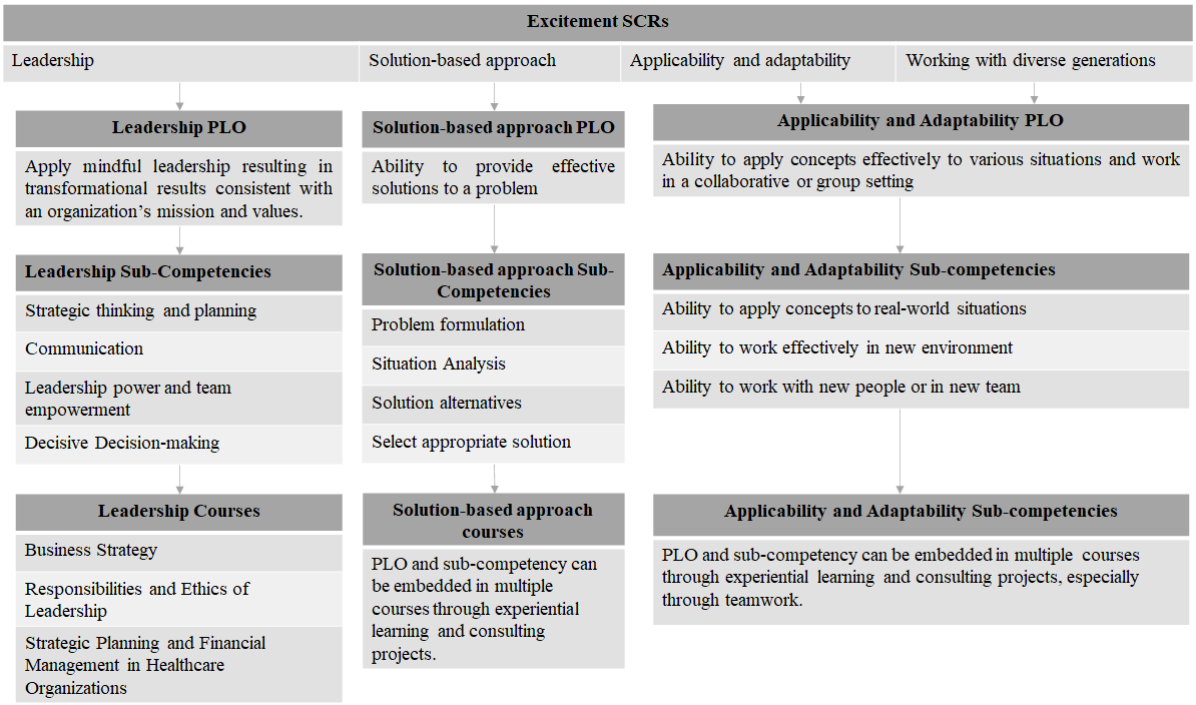

FIGURE 7. TRANSFORMING EXCITEMENT SRCS TO COURSES USING QFD.

In summary, the outcome of this transformation phase led to the development of the curriculum for the MBA program with a focus on Healthcare Administration. The business core curriculum courses include: (1) Accounting and Management; (2) Managing Information systems; (3) Financial Management; (4) Business strategy (5) Data Analytics and Management; (6) Marketing Management; (7) Organizational Behavior; (8) Responsibilities and Ethics of leadership. The healthcare administration courses include: (1) Foundations of Healthcare Administration and Systems; (2) Strategic Planning and Financial Management in Healthcare Organizations; (3) Healthcare Policy, Law, and Ethics; and (4) Healthcare Informatics and Data Analytics.

4.3. Assurance of Learning (AoL)

Once the program curriculum was designed using transformation phase, faculty reverse engineered the conceptual framework to identify the relationship between CLOs and SCs of different PLOs. Figure 8 shows an example of relationship between multiple analytics course CLOs and SCs of Analytics PLO. It is to be noted that this step is obtained from HoQ3 of QFD in transformation phase. Based on HoQ 2 of QFD in transformation phase, a rubric relating SCs with PLOs was determined and embedded in courses that directly related to SCs of PLOs. Figure 9 shows the example of the analytics rubrics embedded in analytics course for assessment of activities. Once assessment activities are identified and relevant rubrics were embedded, faculty developed a curriculum map relating PLOs and courses where each of the PLO is introduced, practiced, and reinforced (assessment). This led to curriculum maps as shown in Figure 10. Over time, as these program outcomes become mature and reach targets, they become norm for the program, faculty will assess new outcomes that are of secondary importance. In Figure 10, it is also to be noted that basic and performance outcomes are assessed across the program. This is because basic competencies (analytics, ethics, communication) are ingrained in the curriculum as they are essential and performance

competency (business integration) is embedded in a way that the improvement can be tracked and monitored. In addition, it can be observed that excitement competency (adaptability) is integrated in a smaller number of courses as these skills are emerging needs of the healthcare industry, which are not essential, but make learner readily hirable. As the program is offered several times, assessments are performed for different outcomes in different courses and the results of the learner performance are obtained.

CLOs	Analytics PLO			
	Analytics SCs			
	Problem formulation	Situation Analysis	Solution Alternatives	Select Appropriate solution
Data Analytics and Management Course CLOs				
Gather relevant data, conduct data analytics, and make reasonable connections between quantitative analysis and real-world problems	X			
Show substantial understanding of the real problems; conduct data analytics using correct methods; and draw reasonable conclusions with sufficient explanation and elaboration.		X		
Propose multiple solution alternatives and use advanced techniques to conduct thorough and insightful analysis, and interpret the results correctly with detailed and useful information.			X	
Make better business decisions by using advanced techniques in data analytics.				X
Healthcare Informatics and Data Analytics CLOs				
Gain an understanding of how managers use health analytics to formulate and solve business problems and to support managerial decision making.	X			
Design data models that integrate patient data from multiple sources to create comprehensive, patient-centered views of data		X		
Design an analytical strategies to frame a potential issue and solutions relevant to the health improvement of patient populations			X	
Apply analytical results to facilitate decision-making.				X

FIGURE 8. EXAMPLE SHOWING RELATIONSHIP BETWEEN MULTIPLE ANALYTICS COURSE CLOs AND SCs OF ANALYTICS PLO BASED ON HoQ3 OF QFD

Analytics PLO Sub-Competencies	Exceeds expectations 5	Meets expectations 3	Needs Improvement 1
Problem Definition: • **Identify and understand the problem**	Correctly identifies problem and • Articulates the problem with appropriate reasoning	• Correctly identifies the problem, or recognizes and articulates need or opportunity • Identifies the scope of the problem and appropriate success criteria	• Incorrectly identifies problem or fails to recognize the need or opportunity • Unable to identify the scope of the problem or success criteria
Situation Analysis: • **Gather information to understand the situation** • **Identify and interpret symptoms** • **Determine possible causes**	• Creative and thoughtful approach and/or original methodology for securing data • Applies most appropriate models, tools, and techniques in understanding the situation • Strong understanding of situation demonstrated through explanations • Comprehensive analysis of problem causes and solution •	• Secures data as needed to assess situation/identify possible issues • Basic application of some models, tools, or techniques in understanding the situation • Correctly distinguishes between causes and symptoms of problem	• Fails to gather data or gathers incomplete data • Does not use appropriate models, tools, or techniques in understanding the situation • Need improved understanding and insights into situation Cannot distinguish between symptoms and causes
Solution Alternatives: • **Identify and evaluate feasible ways of addressing the situation**	• Identifies most of the viable alternatives • Creative and thoughtful approach to selection of technology or decision-making process • Clearly superior use of technology to evaluate alternatives.	• Identifies some viable solutions or alternatives. • Selects appropriate technology or decision-making process • Able to use technology to correctly evaluate alternatives	• Identifies no alternatives, one obvious alternative or infeasible alternatives Unable to use technology in problem solving or selects inefficient/ineffective tool
Select appropriate solution: • **Selects the appropriate alternative** • **Provides support for decision**	• Superior analysis and discussion of pros/cons of available alternatives vis a vis success criteria • Selects the optimal solution with adequate reasoning.	• Explains the pros/cons of each alternative vis a vis the success criteria • Selects a good solution	• Does not evaluate alternatives or does so incorrectly • Does not evaluate criteria with respect to success criteria • Selects a sub-optimal solution

FIGURE 9. EXAMPLE RUBRIC FOR ANALYTICS PLO TO BE EMBEDDED IN ANALYTICS COURSES DERIVED BASED ON HoQ2 OF QFD

Course	Outcome				
	Analytics	Ethics	Communication	Business Integration	Leadership
Accounting and Management	I			I	
Managing Information Systems		I	I	P	
Financial Management	P			P/A	
Data Analytics and Management	P/A			P	
Marketing Management			P/A	P	
Organizational Behavior		P/A	P	P/A	P
Responsibilities and Ethics of Leadership		R/A	P/A		
Business Strategy	R/A	R/A	R/A	R/A	R/A
Foundations of Healthcare Administration and Systems		P	P	P	I
Strategic Planning and Financial Management in Healthcare Organizations	R/A		R/A	R/A	R/A
Healthcare Policy, Law, and Ethics		R/A	P		
Healthcare Informatics and Data Analytics	R/A			P	

I – Introduced, P – Practiced, R – Reinforced, A- Assess

FIGURE 10. CURRICULUM MAP BASED ON REVERSE HoQ3 and TRACKING BACKWARDS TO PLOs IN HoQ2 OF QFD.

4.4. STAKEHOLDER FEEDBACK LOOP

While there are several ways to seek stakeholder feedback, a few ways that we have already started gathering feedback are by:

(1) hiring industry practitioners as adjunct faculty in certain higher-level courses to gauge their feedback on learner performance. In this approach, the assessment ratings of business core faculty and industry practitioner assessment ratings on different PLOs are compared through interrater reliability such that gaps in internal stakeholders and external stakeholders are identified and closed through consensual development of program improvement strategies.

(2) conducting employer survey in which we first ask the learners whether their employers can be contacted for feedback. If the learners agree, we conduct a brief survey to gather feedback from the employers on learner performance and seek suggestions that can help us improve the program curriculum.

(3) learner preparedness for careers in healthcare sector, i.e., learners' ability to obtain administrative jobs in healthcare or advance their careers as administrators in healthcare area. This approach specifically and tangibly helps us to assess program goal by calibrating the magnitude of our healthcare administration program's ability to provide discipline-specific jobs.

V. DISCUSSION

Programs in business education are forced to be highly dynamic in nature. This is evident from several business education programs scaffolding their curricula to develop stackable certificates and/or micro-credentials that lead to degree programs. This approach is necessary to react to ever-changing industry needs. The dynamic nature of the programs can be of two categories: (1) value dynamism; and (2) non-value dynamism.

5.1 Value Dynamism

As suggested by the Kano model, over time, basic competencies become norms, performance competencies become basic competencies, and excitement competencies become performance competencies, and new competencies make their way into the market. Consequently, it is important and desirable for the programs to adjust to these increasingly rapid market or industry changes and deliberately modify the program curriculum by embedding new relevant competencies into the program curriculum. These actions create value and growth in the program and therefore, are called *value dynamism*.

Utilizing the proposed conceptual framework for comprehensive program development, business programs have the capacity to make informed decisions by: (1) establishing or modifying PLOs in accordance with the SRCs, and (2) determining suitable or modified program curriculum to deliver the PLOs proficiently and effectively to learners. Based on these PLOs and curriculum decisions, various strategies can be formulated, including faculty recruitment, designing stackable certificates and micro-credentials leading to degree programs, and student success initiatives such as experiential learning, tutoring centers, and/or supplemental instruction models. Furthermore, assessment procedures, whether centralized, decentralized, or a combination of both, can be devised and altered over time to keep pace with curriculum changes and to achieve a level of maturity.

Given that the conceptual framework establishes the program's parameters and aligns PLOs and curriculum with SRCs, and regularly seeks input from stakeholders, it serves to prevent any deviation from the program's scope. Additionally, it aids in effectively setting benchmarks for student outcomes and continuously enhances them until stakeholders'

express satisfaction, ultimately contributing to an elevated standard of program quality.

5.2 Non-value Dynamism

As the program curriculum is offered overtime, faculty, staff, and administration transitions are inevitable. With these transitions, the scope of the curriculum may change and if the curriculum goals are not communicated effectively and periodically within the college, it may result in the program not delivering the intended competencies. This non-value-added dynamic nature of the program can result in programs that have reduced program quality, retention rate, enrollment, and eventually sun setting of the program. Hence, it is important that the program goals and objectives are clearly and effectively communicated and discussed, periodically, especially with new faculty coming on board as well as existing faculty such that program scope is well-established.

For already existing programs that have gone through several iterations of curriculum changes, the conceptual framework can be done to evaluate the alignments and misalignments between (1) SRCs and PLOs; (2) PLOs and SCs; and (3) SCs and Courses. In addition, curriculum changes due to market forces and stakeholder expectations can be worked backward from AoL to the transformation phase by identifying which SCs are impacted by the changes and how they impact the PLOs and the respective SRCs. If the impact of misalignment is high, a mitigation strategy should be developed such that those SCs are delivered to maintain the required competency level. It is also important to note that all the alignments in the evaluation process can be attributed to the value dynamism phenomenon and all misalignments in the program can be attributed to the non-value dynamism phenomenon that occurred over the course of the program's life. Consequently, the goal is to reduce non-value dynamism and increase value dynamism.

5.3 Limitations and Assumptions

The comprehensive framework proposed above has its limitations with respect to available resources and college priorities. However, not every program has to start from phase 1 but some may. As indicated above, changes can be incrementally addressed at varying phases starting with identifying misalignment of the curriculum with industry requirements or reviewing continuous improvement strategies to address changing market needs.

Additionally, there may be other constraints with regards to the size of the college with respect to the number of faculty and/or faculty buy-in and commitment to assessment, in addition, to time commitment. Recruiting faculty in the assessment process may require colleges to provide incentives or integration to the annual evaluation rubric, to not only participate in the process but to stay current and to integrate and teach to the stakeholder requirements.

For this framework to work, managing external partnerships is one of the key components. College and program leadership play a key role in expanding networks to periodically engage with relevant stakeholders.

VI. CONCLUSION

For business colleges to grow and sustain, it is imperative that they be agile to stay current with industry practices. Using a systems approach, Kano model, and Quality Function Deployment, this paper addresses the gaps in the existing literature by proposing a novel circular conceptual framework that integrates four phases of program design- input, transformation, output, and feedback. This is a dynamic process that requires college leadership and faculty to be intentional, with a commitment of time and resources. We, as a college, are scaling this model with existing graduate certificate programs.

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