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A Conceptual Analysis of Quality in Quality Function Deployment-based Contexts of Higher Education

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Abstract
The purpose of this paper is to assess and evaluate how higher education institutions (HEIs) using Quality Function Deployment draw out the relevancy and potential of the model in shaping their concept of 'Quality' and how that Quality can be assured in higher education institutions' (HEIs') programmes. An intensive literature review was undertaken with the idea of building a repertoire of behaviours that capture what HEIs perceive as QFD, why its migration into higher education has increased over the years and how HEIs are working the QFD model. This critical analysis densifies our potential to read and understand related literature and assess the potential of QFD in higher education. It should also help us evaluate the worth of (dis)encouraging the adoption and diffusion of QFD or its tools within higher education. Conceptualising Quality in terms of the amount of transformation in the knowledge-base, attitudes, skills-set, understanding, belief systems and behaviour of the student should challenge our thinking about designing educative experiences and environments that create a 'fit-for-purpose' graduate. Higher education has globally struggled with the gaps between expected Quality and the Quality offered in their various programmes. This paper show the need for research on how HEIs should close gaps among the voices of their constituencies and on how to align hypothesised, planned, and offered Quality to expected Quality.
Keywords: Quality Function Deployment; Six Sigma roadmaps; Customer Satisfaction Performance

1. Introduction

Quality has been with us since the beginning of the human race. Since then, different models of Quality and quality assurance have been suggested and used in the various disciplines of commerce, manufacturing and services sectors (Franceschini, 2002). Each model apparently has emphasised one or a few aspects of management, operations or technology. Some aspects of each have endured their brush with the gang-aft-agley and roughness of operational reality while others have not survived the tear and wear caused by transformations in technology, changes in paradigmatic frameworks and modes of operation and manufacturing.

Most models are basically monolithic, leaving many disconnects among aspects that really matter in Quality and in quality assurance. Research that has followed these clefts have remained of not much practical value as higher education management have failed to piece together their recommendations and to absorb them neither into their mental models nor into their management practice.

Transformative quality education that is fit-for-purpose cannot be defined by a singular constituency. It can neither be gotten from piece-meal strategies, processes or methodologies. Profound quality-seeking change needs a new philosophy, a new epistemology and methodology supported by appropriate tools for creating conditions for Quality and quality assurance. Let's look at how the QFD model has evolved.

2. Growth and philosophy of QFD

QFD was birthed in Japan around the close of the decade of the 1960s (Akao, 1997). When in 1975, the Computer Research Committee (CRC) was commissioned by the Japanese Society for Quality Control (JSQC) to do research on QFD it took it up to 1987 to produce a comprehensive report. The report showed that companies were using QFD for the same purposes it is being used today. However the levels of efficiency may have improved over the years. I discuss some of the purposes then and their equivalents today. Note that for some what is new may be the lexicon only and for others it may be just a change in the manner they are now being done.

One of the purposes identified by the CRC was the use of QFD in analysing and accumulating market quality information. In today's QFD, the purpose of this procedure ought be to gather data from the customer groups, i.e. everyone with an explicit and implicit stake on the products and services offered by the organisation. However Matorera (2015) noted that Voice of the Customer is being (ab)used as a marketing gimmick by others while others use it appropriately to feedforward into the organisation's management and quality strategies.

The other purpose for which organisations were using QFD was benchmarking competitive products. This purpose corresponds to current QFD's Competitive Satisfaction Performance. The purpose of this effort is to

enhance Customer Satisfaction Performance by ensuring that trending products and services features are identified, learnt, understood and incorporated in the organisation's own products and services. In most cases this purpose is ill-conceived by managements in HEIs who assign this to academics during their sabbaticals. Benchmarking needs training and must be a planned process. Where the academic conceives sabbatical as a holiday away from workplace the chances that such benchmarking degenerates into what Sallis (2012) call educational tourism are high. The third purpose identified by the CRC was that surveyed companies were using QFD for communicating quality-related information to later QFD processes. This procedure within QFD has the purpose of linking or best, of subordinating goals and improvement plans to facts databased from earlier QFD stages like Voice of the Customer, Product Planning Matrix, Customer Satisfaction Performance and Competitive Satisfaction Performance among others. Today Goal Setting and Improvement Ratio are key QFD stages through which most effort for creating change and customer value are framed.

Cutting products and services development time was identified as a reason for which companies were adopting QFD. In extant QFD practice this purpose corresponds to running the Product Planning Matrix. The essence of this is to deploy 'design intent' into the manufacturing process. For excellence purposes this QFD procedure must be informed by or worked out together with Correlation Matrix.

QFD was also used for expanding market share. Doing QFD well still guarantees an expanded market share. This is but different from a market share derived from querilla or ambush marketing. How much market expansion is required can now be set as part of 'Goal Setting' and 'Improvement Ratio'. Approaching the organisation's market share strategy this way builds a shared understanding of what is required by the organisation. This is part of alignment, integration and linking the 'micro' to the 'macro'.

QFD was used for identifying control points for the *gemba* – the exact place where the products and services will be used. This purpose is still very much important in QFD and ought to feed well into Product Planning Matrix. The essence of the procedure is in getting corroboration for Voice of the Customer and gathering first hand data on how products and services are actually used and are actually expected to be used.

QFD was being used for new product development that sets the company apart from competitors. This today is served through QFD's Product Planning Matrix; Goal Setting and Improvement Ratio and Competitive Satisfaction Performance.

QFD was just like now, used for reducing design changes. Midstream design changes were caused normally by Voice of the Customer, Customer Satisfaction Performance data and Competitive Satisfaction Performance data being poorly fed into product design and development. It means organisations were realising that more oftener they were beginning work with incomplete Product Planning Matrices.

Surveyed organisations were also using QFD for reducing costs of development of products and services. Actually this arose from a more facts-based approach to management and production. Today organisations are adopting QFD to achieve this same goal. One of the most potent tool in this pursuit is 'interface mapping' which should identify all activities that are valueless to the customer and get them removed right from individual, team, sector and organisational levels. Today this is attained through the Product Planning Matrix; Goal Setting and Improvement Ratio and Correlation Matrix.

Reducing initial quality problems was another reason for adopting QFD and this continue to motivate adoptions of QFD even today. QFD achieves this by continually deploying intelligence from Voice of the Customer, Customer Satisfaction Performance, Product Planning Matrix, Goal Setting and Improvement Ratio from history and the currency into Product Planning Matrix.

Setting design quality and planned quality was another reason for which organisations were adopting QFD. today this purpose continue to be a prime motivator for adoption of QFD and organisations are achieving it through QFD's Product Planning Matrix; Goal Setting and Improvement Ratio processes (Akao, 1987; Vonderembse and Raghunathan, 1997; Matorera, 2015).

A more profound analysis of the purposes for which organisations were adopting QFD, or its stages was to integrate different Quality-related efforts which then were too fragmented. Bit-by-bit QFD was maturing into a philosophy and a methodology for doing Quality within the perspectives of systems thinking, team-learning, mental modelling and shared vision. In summary, organisations were using QFD mainly for gathering

customers' expectations, wants and needs (Voice of the Customer); for designing and planning offerings (Product Planning Matrix); and for strategic planning (Goal Setting, Improvement Ratio).

Around the 1980s the use of QFD in the services sector gained momentum. Still how much of QFD and how to use the different tools (functionalities) and techniques of QFD differed. This is mainly because QFD was being adopted in organisations that had differing customers and even among the customers were different expectations.

Again organisations already had their extant modes of management, of producing goods and of creating services. Despite the diverse developments, there are aspects that remained at the core of the QFD model. These include the charts, the tables, the matrices and some of the model's stages. But most importantly is that QFD has continued to be understood in terms of three perspectives. I discuss these perspectives below.

3. The three perspectives of QFD

There are three perspectives to QFD: the Quality, the function and the deployment perspectives. I discuss each of the perspectives in the hope that this will increase our appreciation of what the QFD model is. I will use the term quality as an adjective or attribute and Quality as a noun or commodity throughout this paper.

3.1 The Quality perspective

Various authors tend to suggest that a definition of Quality is rather slippery (Harvey and Green, 1993:10), illusive (Riley, 1994), enigmatic (Steyn, 2000) and putative (Welch, 2000). Sallis (2012:x) argue that there continue to be a disconnect between the philosophies of Quality held by quality gurus like Akao, Deming, Juran, Crosby, Ficalora, Cohen, Franceschini and the extant practice of education. There are hot debates on the definition of Quality and some wonder whether it is worthwhile to go out and look for a singular definition of Quality. QFD tends to take a different position with respect to Quality: that Quality is what the Voice of the Customer says it is.

This implies that there cannot be a one-size-fit-all definition of Quality in a world of so many people, goods, cultures, contexts and tastes. Therefore in the context of QFD, Quality is a state of becoming when products and services meet the needs and wants of the person or organisation seeking to acquire or use the products and services in question. By extrapolation, QFD is when the management philosophy and the accompanying methodology of production are such that they interweave to produce products and services that meet or exceed expected customer needs and wants.

Williams (2010:196) say that quality ''is a construction responding to the principle of situated action, in which different well-aligned functions exist within certain settings and contexts''. A model that claims to do justice on Quality must therefore be sufficiently clear about its conceptualization of Quality as about who ought to have the prerogative of defining the qualities making up that Quality. Below I discuss what various authors have called imperatives of quality (Sallis, 2012), dimensions of quality (Ramirez, 2013), frameworks of quality (Harvey and Green, 1993) and approaches to quality (Garvin, 1984).

Sallis (2012:3-5) give four imperatives of Quality: moral; professional; competitive; and accountability. I examine these in the light of Quality as understood in QFD contexts.

The moral imperative is driven by the institutional desire for legitimisation by gubernatorial institutions, the students, society and other stakeholders. The institution feels a moral obligation to be in good standing with its environment and doing quality is more of a feeling of social responsibility coming from within it (Sciarelli, 2002). This is exercised through what Bevington and Samson (2012) called the Best Practice Principle of *being up front*. The institution then strives for superior quality as a matter of meeting such claims and of wanting to be associated with the successes of its graduates. Consequently, meeting Quality standards becomes part of the institution 'walking its talk'.

The professional imperative relates to the organisation feeling that it has to advance the exigencies of their mandates and disciplines. Once the organisational members define or see themselves as professionals or their practice as a profession they buy the desire to meet certain standards of behaviour and rendition. In higher education this can include attempts to offer high quality curricular and instruction that meets expectations of students, industry and society, particularly the professional bodies.

The competitive imperative realises the existence of numerous other providers and numerous other channels of offering the same programmes, courses, products and services. Customer Satisfaction Performance becomes of

paramount concern because of its implication on the growth, stagnation or demise of the institution. Thus, either driven by fear or by want, the institution is likely to pay special attention to its quality performativity.

The accountability imperative presses on HEIs to proffer curricular that meet the needs of their disciplines, their defined niches and students to the satisfaction of the corresponding customers and the polity and other stakeholders. This point of view takes accountability not as something to be done to please those with power but to meet the needs and wants of the customer. The most disappointing issue is the absence of reliable and valid metrics with which to measure performance along the four vectors or imperatives.

The disconnects between the 'vectors of performance' or these imperatives and precise metrics or yardsticks is well ventilated in literature. Kohoutek (2009) talk of a disconnect among policy-makers, higher education institutions and students with regard expectations and the design and operation of accountability programmes. This point is corroborated by Sharabi (2010) who allege that HR managers disconnect themselves from the processes that are at the core of Customer Satisfaction Performance. Management theorists and practitioners had earlier observed that the above disconnects derive from a major yet common disconnect between strategy and operations on the ground (Roberts and MacLennan, 2005) and between internal governance systems and external governance mechanisms (Vagneur, 2008). Despite these disconnects various authors have tried to define Quality in the hope that their definitions would impact on the behaviours of institutions, the polity and shapers of policy.

Garvin (1984) talk of four approaches to quality: transcendental; product-based; user-based; manufacturing-based and value-based.

The idea in transcendental Quality is about achieving excellence and the highest standards that surpass the current. This view of quality was reiterated by Harvey and Green (1993) but it went under attack by Rowley (1997). It was further disqualified by Matorera (2015) as insufficient in defining Quality. He relegated 'excellence' to a condition necessary for quality performance.

Matorera concur with Ficalora and Cohen (2009) that every stage of QFD should be optimised. It is however doubtful whether Harvey and Green took the term optimum for excellence.

Product-based Quality gives the provider institution and the lecturer the prerogative to define Quality and to include in the products, services and instructional process whatever attributes they think make up Quality. The danger with this practice is that curricular ends up reflecting on the 'Voice of the Academic' and sidelining the concerns of other stakeholders. Even in QFD, the Voice of Employee is important in determining the attributes that will feature in the products and services but this is done in combination with other voices and through the relevant Six Sigma roadmaps.

This attribute-based analysis of Quality has lead to the use of mathematical-statistical treatment of Quality. Parasuraman et al (1988/1991/1994) and Carman (1990) validated the ServQual model which is fundamentally mathematical-statistical.

The ServPerf was equally validated by Cronin and Taylor (1994) Teas (1994) and Parasuraman et al (1994). The ServQual technique was later modified and used as EduQuali technique by Narang (2012:361) who say that a value greater than 1 means that expectations have been exceeded while a value less than 1 should be interpreted as inferring that expectations were not fulfilled.

$$\text{EduQUALi} = \sum_{j=i}^{k} (\text{Pij} - \text{Eij})$$

where: EduQUAL = perceived education quality of student 'i'

k = number of education attributes/items

P = perception of student 'i' with respect to performance of an attribute 'j' of institution

E = education quality expectations of student 'i' for an attribute 'j'.

However these Qualitometric techniques: the ServQual, the ServPerf and the EduQuali have survived but not without their share of criticism. Despite the shortcomings, their efforts to measure Quality in terms of the score the end-user awards each of the service's attributes is welcome.

User-based Quality is Quality as desired by the end-user. This conception of Quality fits well with the Harvey and Green's (1993) definition of Quality as 'fitness for purpose' which is also the central tenet of QFD. Seeing Quality as fitness for purpose echoes well with most innovative teachers and students (Lomas, 2002).

Manufacturing-based Quality is hinged on the presence of antecedents to which the whole process of curriculum design, delivery and assessment must be based. This approach is not at variance with QFD because in QFD there are procedures, processes and standards that need be followed. The issue of interest here is the relevance of the procedures, processes and standards to the needs of the customer. This can only happen when these procedures, processes and standards were derived from processed Voice of the Customer and Customer Satisfaction Performance metrics (Matorera, 2015). In the model of Harvey and Green (1993) this should be equivalent to Quality as consistence. Lomas (2002) tend to have taken the term 'consistency' too literally when he argues that the idea in education is not to create 'same-minded' graduates.

Value-based Quality approximates the concept of Quality defined in terms of the value given to the products and services by those acquiring or using them. If performance matters more than the cost then the customer may find value in the products and services with high performance rating than in the cheaper and low performance products and services. Customers generally evaluate the cost of education in economic terms (opportunities forgone) than in narrower financial terms (value for money).

Other views about Quality are described by Ramirez. Ramirez (2013) identifies four dimensions of Quality but falls short of their analysis: political; symbolic; systemic; collegiality. I discuss these dimensions and examine their perspectives within QFD.

The political dimension of Quality refers to the need of the institution to respond to the various exigencies and expectations generated by intra-institutional and extra-institutional stakeholders (Skolnik, 2010). These may relate to issues of legitimacy, to what is Quality and to how it is attained and sustained. While the institution may hear and listen to the voices of the internal and external stakeholders it may be at sixies and sevens about the assessment, evaluation and translation of those voices into Customer Satisfaction Performance of the institution. Harvey and Green (1993), Berger (2000), Bolman and Deal (2008) and others discuss these issues to a much greater profundity. In QFD the multiplicity of market voices is recognised. Consequently the solution is one of allocating each to either Voice of Employee, Voice of Market, Voice of Business or Voice of the Customer.

The symbolic dimension of Quality places focus on cultural, interpretive and performative aspects of organisational practices (Berger and Milem, 2000; Bolman and Deal, 2008). Quality, like most other social concepts, is not apolitical nor is it without cultural connotations. While the symbolic dimension is difficult to isolate, it remains embedded in the voices of the various constituents and within the determinants of service quality. Franceschini (2002:147-148) give ten such determinants: access; security; courtesy; tangibles; reliability; credibility; competence; responsiveness; communication; and understanding the customer.

The systemic dimension of Quality assumes that changes in higher education are triggered by changes in the external environment. Thus Quality management becomes the institution's efforts to scan the environment and determine the issues that are trending and design them into the educational programmes and curricular. QFD takes two integrative stances with the systemic dimension. The first is its advocacy for a clear understanding of the hierarchy of customers and a prioritisation of their needs and wants. From here niche-focused, segmentation strategies can be adopted. Such strategies improve curriculum alignment with Customer Satisfaction Performance and saves lots of resources by focusing only on validated customer requirements and only on processes and infrastructure that seeks to meet those validated needs and wants. The second is that QFD opens a conduit through which the external environment (Voice of the External Customer; Voice of Business; Voice of Market) can be catered for, further to the QFD processes of defining Target Values from different sources. The greatest challenge QFD poses to the systemic perspective is that it internalises quality assurance, taking the focus away from external quality mechanisms (EQMs). QFD integrates the various voices through four Six Sigma roadmaps and escalates those voices into organisational products and services strategies as well as organisational leadership and management pillars.

The roadmaps relating to the systemic dimension of Quality are: MFSS (Marketing for Six Sigma), SSPD (Six Sigma Process Design), DFSS (Design for Six Sigma) and TFSS (Technology for Six Sigma). These four Six Sigma roadmaps mark the distinction between shallow, sloganeering about quality from deep-focused pragmatic approaches to Quality. Execution of the four roadmaps or functionalities is the 'seal of distinctiveness' that puts QFD far ahead of all other models thus making it a game changer in terms of Quality.

3.1.1 Using Six Sigma roadmaps to escalate Voice of the Customer into total Quality strategies

MFSS (Marketing for Six Sigma), SSPD (Six Sigma Process Design), DFSS (Design for Six Sigma) and TFSS (Technology for Six Sigma) are four Six Sigma roadmaps that can be used to escalate Voice of the Customer into institutional management strategies, and products and services strategies.

Marketing for Six Sigma (MFSS)

MFSS combines the Voice of Business and Voice of Market. This is one of the things real Quality must be missing: the combined voice of industry, peer reviewers, the Quality Assurance agents, and Professional bodies talking from the same vision of quality enhancement and about broad-based strategies as well as specific advisements to specific institutions.

Six Sigma Process Design (SSPD)

SSPD combines the Voice of the Customer and Voice of Employee. While lecturers have lots of talk with their students the interest in QFD is the much of that talk that is escalated to institutional strategies. If students pass the 'voice' to their professors we want to know how much room and clout the professoriate have to push the voice into the infrastructures of the organisation's management.

Design for Six Sigma (DFSS)

DFSS combines the Voice of the Customer and Voice of Business. This linkage has a critical value in QFD as well as in defining Quality that creates 'fitness for purpose' by the end of the day. Most students go through their courses without an inkling of the terrain in which they will operate. The industrial attachments most institutions require may not be serving the intended purpose if the industry treats the students as sources of cheap labour more than as learners.

Technology for Six Sigma (TFSS).

TFSS combines the Voice of Employee and Voice of Market. The word technology should not be treated literally as referring to technical gadgets but as referring to modes of operation as well. Science and technology seem to be trending well in the provision of gadgets that improve learning and teaching with lots of students becoming ubiquitous learners (Cochrane, 2014).

The four Six Sigma roadmaps are depicted in Figure 1 below.

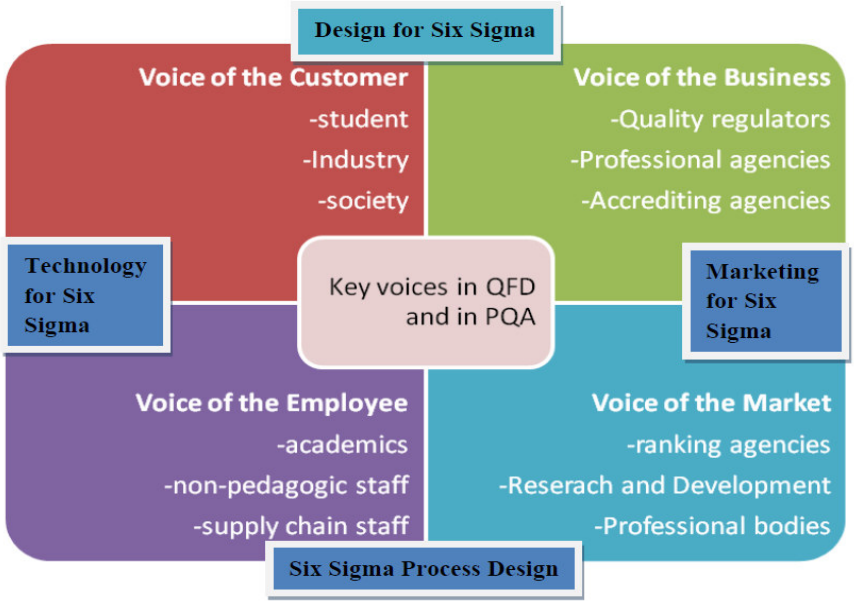

Figure 1: Six Sigma Roadmaps and their relation to Voice of the Customer (Ficalora and Cohen, 2009)

Figure 1 show how each voice combines with two other voices. Each voice is sandwiched. This Six Sigma strategy within QFD ensures an unparalleled approach of ensuring the compactness of a QFD approach to Customer Satisfaction Performance.

Harvey and Green (1993) provide a framework or model of Quality that define it in terms of value for money; excellence; consistence; transformation and fitness for purpose. I won't repeat my explications of the rest except to mention that transformation is the most wished for kind of Quality among academics and students (Lomas 2002; Matorera 2015). This is mainly with students and academics who understand the instructional process as both a process and an outcome. And it being about change and transformation of the student by adding value to them through increasing their knowledge base; changing their attitudes; expanding their understanding; transforming their belief systems and behaviours. I have called this KASUBB by taking the first letter of knowledge, attitude, understanding, belief, behaviour. Apparently Harvey and Green treated 'excellence', 'consistence' and 'value-for-money' and 'transformation' as outcomes or deliverables of a process of seeking Quality. Instead they fit well as conditions or variables within the processes of creating Quality (fitness for a customer's purpose) as an outcome or deliverable of the process. In this perspective we would talk of excellence of the process, consistence of the process/resources, cost-effectiveness (efficiency) of the options, and the amount of change (transformation) that will be experienced with each of the vectors / attributes (example KASUBB). Then all these culminate in a determination of the fitness of the graduate to some purpose defined by the graduate, Industry, and society.

Plugging perspectives of each model into those of others I propose a new epistemology of Quality; a Quality that is built on the foundations of the Voices of the (various) Customers. From these various voices should be erected the four Six Sigma roadmaps.

Each of the Six Sigma roadmaps is designed to reduce and eliminate failure modes thus incessantly increasing Customer Satisfaction Performance. The better so, if the institution defines the student, industry and society as the customers for its graduates. Abiding by the four Six Sigma roadmaps ensures greater transformation of the students as:

(a) DFSS ensure a learning organisation (institution) that is market-oriented and responsive with strategies, facilities and curricular that are designed for enhanced transformation of the students (KASUBB) and its generic capacity for Customer Satisfaction Performance.

(b) SSPD ensure an agile and lean organisation that is structurally, functionally and processually integrated, aligned and sufficiently compact to deliver exceptional Customer Satisfaction Performance.

(c) MFSS ensure a market-driven organisation that creates an identity of self that resonates with the wide society and pursue trends within education and its trade and is not hesitant about being a trend setter itself even if it is with 'small' issues.

(d) TFSS ensure a technology-buttressed institution that strives to reduce failure modes, increase its speed, effectiveness and efficiency by deploying appropriate technologies in everything it does without being a crazy techno-maniac.

All in all, the four Six Sigma roadmaps enhance the institution's ability to transform the students and enhance their fitness for purpose. Figure 2 summarises this argument. It shows the various links and combinations among the voices that matter in quality assurance.

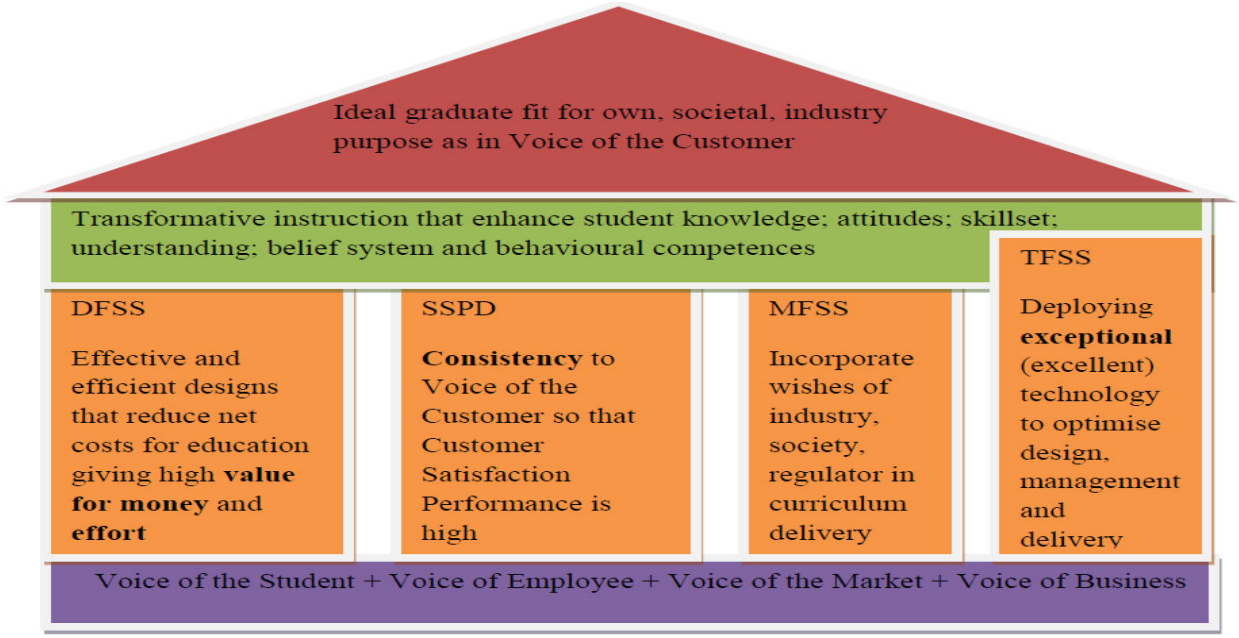

Figure 2: A holistic model of Quality on the basis of Voice of the Customer, DFSS, MFSS, SSPD, TFSS, transformative education and fitness for purpose

Those who have argued against the applicability of QFD to education have argued that education is a multi-stakeholder facet and who should be the 'customer'. QFD accepts every such stakeholder as a customer and proffers each a space in Voice of the Customer and in the translation or escalation of such voices (needs and wants) into institutional management and Quality strategies.

3.2 The function perspective in QFD

The function perspective of QFD refers to the totality of personal and impersonal infrastructures that have an influence on the ultimate quality of products and services provided by the organisation. The personal elements include students, stakeholders, staff and those in the related supply chains. The impersonal aspects include physical resources and processes and the interfaces among them. Physical resources include buildings, technical gadgets, materials, etc. All processes from person-to-person, person-to-system and system-to-system processes are of critical importance to quality performance.

The relational aspects of an organisation that influence quality performance include the de facto structure-structure, structure-function and function-function relationships further to those in the processual interfaces. These also include the derivational relationships between vision-mission-goals-objectives-activities. Disconnects among some of these elements are the main causes of poor quality performance. Disconnects among policy-strategy-values-regulations are equally to blame for poor quality performance. Most quality assurance schemes tend to put lots of focus on issues that fall within the function perspective of QFD. This action is incomplete in the sense that real Quality arises from the correct deployment of the functions and their strategy-operational alignment.

3.3 The deployment perspective in QFD

The deployment perspective focuses on how effort, commitment, power, expertise, visions and missions are created and diffused throughout the organisation. Definitely there are effective and ineffective ways of deploying the above facets. QFD would find it difficult to permeate through bureaucratic infrastructures of management. Most attempts to adopt QFD tools can meet short-term success which later fades as bureaucratic practices continue to resist and erode such early successes.

Deployment of QFD practices and tools can also meet resistance where organisational staff lack the skills and knowledge to work the different QFD tools and techniques. Bevington and Samson (2012) discuss 14 Best Practice Principles (BPPs) that facilitate the deployment of quality performance throughout the organisation. These principles fall into two main categories: The family of BPPs that focus on the organisation's goal infrastructure and its decomposing and deployment throughout the sectors, functions, teams and individuals

throughout the organisation. The second family focus on facilitating the organisation as it deploys and drives Quality-seeking changes across the whole organisation.

Table 1: Excellence Principles classified into those facilitating goal deployment and those facilitating change deployment (Bevington and Samson, 2012).

Best Practice Principles relating to goal-objectives & other correlations deployment		Best Practice Principles relating to creating, deploying and calcifying change	
1	Being up front	1	Being disciplined
2	Embracing change	2	Being time-based
3	Gaining alignment	3	Desire to be out front
4	Measuring and reporting	4	Creating customer value
5	Establishing a learning culture	5	Ensuring integration of effort
6	Relating the micro to the macro	6	Creating strategic capabilities
7	Resourcing for the medium term		
8	Supporting distributed leadership		

3.3.1 Best Practice Principles that facilitate integration, alignment and strategic bundling

There are eight Best Practice Principles (BPPs) that particularly facilitate integration, alignment and thus organisational strategic bundling. Strategic bundling ensures that whatever is happening and is made to happen throughout the organisation is vertically, horizontally and diagonally harmonised with the organisation's goal infrastructure and objectives network.

Being up front

This is about being honest with all stakeholders and self (Sciarelli, 2002). The institution and the individuals in it too must be open and admit to their shortcomings. Being up front is about personal mastery skills. Overmarketing or overselling of products and services (e. g. programmes and courses) may be found annoying by students, industry and society as they interact with graduates and their works or at other moments of truth.

Embracing change

Organisations good at implementing change thrive on the 20-80 rules. They spent 20% of their effort on strategy planning, strategic planning and putting up project infrastructures then they deploy 80% of their effort in strategic implementation of the strategy (Bevington and Samson, 2012). The lack of balance between formulation and implementation has been heavily criticised by most successful and forward-looking leader and managers.

Gaining alignment

This is about seeking alignment between policy and strategy; resources and objectives; Key Performance Indicators (KPIs) and Behaviour Competence Indicators (BCIs); and removing all the noise in the form of duplicated roles, worthless assignments; power-wielding dictates and requirements that have no positive implications on Customer Satisfaction Performance. Interface mapping, strategic categorisation and cartography should leave the institution focusing on only those things that add value to Customer Satisfaction Performance.

Measuring and reporting

Best-practice institutions are characterised by a robust link between their key performance indicators (KPIs) and the behavioural competence indicators (BCIs) of its workforce. They should measure and report on institutional strategy and positioning, institutional goals, operational goals, sector goals, stakeholder inclusion, and stakeholder participation (Bevington and Samson, 2012).

Establishing a learning culture

This principle facilitates the deployment of quality in that it is about creating an organisation structured around the idea that it should be set up to enable learning, to share knowledge, to seek knowledge, and to create opportunities to create new knowledge (Pearce and Robinson, 2009). In learning institutions everybody behaves like a 'node' or distributor through which intricate networks of personal relationships are continually coordinated to bring together relevant know-how and successful action (Pearce and Robinson, 2009).

Relating the micro to the macro

This BPP helps in the deployment of quality in that each individual, each team, and each sector understands the part of the organisational objectives network that belongs to it and how that should feed into the organisational goal infrastructure. It is more about understanding how each should input into quality at the institutional level.

Resourcing for the medium-term

This principle facilitates Quality deployment in that the institution is able to effectively balance current tactical, short-term operational and medium-term development and growth issues and requirements.

Supporting distributed leadership

The quintessence of this principle is having the concerns of the top management or the institutional goal infrastructure trickle down the institutional design and institutional objectives network right to the shop-floor.

The next family of BPPs focus on creation and deployment and calcification of change that buttress Customer Satisfaction Performance through superior quality performance.

3.3.2 Best Practice Principles that facilitate creation, deployment and the calcification change

I have identified six BPPs that should help the organisation initiate, create support for change, deploy and calcify change across the organisation. Working out the six principles should help the organisation in mapping a concise atlas of change and continuous improvement. The atlas should show where each quality functionality stands at present, where it must go, the bearing and the amount and speed of transformation relative to self as relative to all other changes intended across the organisation. This is the pragmatism of systems thinking, of an organisation as an organic adaptive entity and of managing perfomativity risks as an interdependent field.

Being disciplined

This principle plugs in well with the discipline of systems thinking (Senge 2012). It helps deploy Quality in that it fosters ''up-to-date knowledge management of functional and interfacing activities, business processes, procedures and policies'' say Bevington and Samson (2012:137).

Being time-based

This BPP facilitates Quality deployment by advocating for the removal of what Anderson (2006) call 'ritualism', Newton (2000) refer to as 'feeding the beast' and Bevington and Samson (2012) refer to as 'noise'. Doing this would serve resources thus making Quality costless (Crosby, 1979) the whole institution faster and agile in creating, managing and delivering value to its customers.

Desire to be out front

Quality is deployed in that the institution strives to be the best in the park with respect to standards and practices. This manifests through individual, team and sector efforts to be outstanding in curriculum design, teaching, research output, quality of facilities, etc.

Creating customer value

This principle facilitates deployment of Quality by ensuring that core activities are reconfigured to drive the creation of customer value as well as institutional value. This is achieved by ensuring that all business operations can be assessed for their compliance with Customer Satisfaction Performance standards and metrics.

Ensuring integration of effort

This is about deploying quality by enabling process analysis by cross-functional personnel. They must spot noise, lags and mismatches. Once these are identified, strategic techniques like Theory of Constraint, Failure Mode Evaluation and Analysis (FMEA) can be applied so that Customer Satisfaction Performance can be enhanced. Removing unnecessary policy requirements, dictated works, ritualised routines helps in the integration of efforts that are designed to create real customer value. It leaves time and saves effort that would be ploughed into creating skills, facilities, linkages that enhance the strategic capability of the organisation.

Creating strategic capabilities

In this principle, staff documents fully the organisation's current repository of functional and institution-wide capabilities and the model of their future desired states just as in Strategic Gap Analysis. Thinking out and modelling change vectors for each aspect creates the organisation's body of strategic capabilities. Other processes like training, coaching, mentoring etc can now be brought in to create the identified strategic capabilities.

4. Conclusion

QFD offers a new philosophy, methodology and tools for thinking about and pursuing Quality in higher education. Traditionally the prerogative to design curricular has rested with HEIs' academics or management. However, QFD show that Quality should be derived from the voices of the various customers merged and escalated into policies, regulations and practices that influence the content of transformative instruction that improve the knowledge, attitudes, skillsets, understanding, belief systems and behaviours (KASUBB) of students in ways that make them fit for purposes desired by the student, society and industry.

Future research could focus on developing models for the adoption and use of QFD-based models in higher education. Other areas of research could focus on the content and processes of assimilating voices of students, Industry, academics, and Quality Assurance agencies in shaping higher education policy.

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