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**BUSINESS EXCELLENCE IN HIGHER EDUCATION USING  
INNOVATION AND BENCHMARKING**

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## **ABSTRACT**

The concept of quality in higher education has been drawing the attention of all the interested parties in this particular sector during the last few decades. An increasingly important topic is whether benchmarking and innovation practices can improve academic excellence. Basing on manifold literature review, this thesis addresses what quality in higher education entails and shows through empirical research how higher education institutions can benefit from the implementation of benchmarking and innovation practices.

To achieve this goal, an aggregate of twenty case studies of universities around the world were analyzed to rest on the assumption that the interrelated concepts of benchmarking and innovation can bring considerable outcomes of enhancement, improvement and transformation in higher education systems. So, the findings of this research indicate, first, benchmarking can improve academic excellence by means of competitiveness, comparison and evaluation; and, second, the contexts for successful innovation in higher education institutions and programmes for the pursuit of academic excellence.

This thesis will suggest that the periodical review and evaluation of institutional processes, as prior to practicing the internal, diagnostic and competitive types of benchmarking along with process performance measurements and questionnaire design, is indeed an approved and reliable technique practiced by universities that strive to be world-class or best-in-class higher education institutions. This project will also point out the significance of surveys on stakeholder needs and satisfaction, as well as evaluations for the improvement of quality, which in turn provide the opportunity of incorporation in ranking processes. Finally, this empirical research will suggest university autonomy, Triple-Helix structures, Problem-based learning, learning through interaction, networking, high-level research, technology transfer and funding resources as the most essential elements of an innovative system that is currently challenged by the changing supply of and demand for higher education.

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## **INTRODUCTION**

While the concept of quality used to be generally accepted in industry, today's global competitive environment enforces universities to operate as businesses in the higher education sector. Since quality improvement has been one of the most important features of higher education institutions, it is of equal importance to understand the role of benchmarking and innovation as a means to continually improving and staying competitive. Universities around the world embrace the interrelated concepts of benchmarking and innovation and develop transformational methods and practices to improve their education.

This thesis summarizes literature review on the central ideas of the concept of quality in higher education and on how quality can be approached in order to gain anticipated results and reach the exceptional. Literature review is also conducted to analyze the philosophy of quality in higher education in terms of its applicability in tertiary institutions and to gain a better understanding of the variables involved in the elements of quality in higher education. Additionally, part of this thesis presents the potential barriers to quality in higher education institutions according to the standpoint of many researchers.

Various authors have underpinned that a culture of quality entails strategic management that involves a number of planning processes for the improvement of quality that leads to excellence. Various literature on academic excellence reveal the linkage of quality assurance to benchmarking, while changes in the academic scene call for substantial transformations due to business and industry demands. The conduction of literature review and empirical research was made to examine the reliability of benchmarking as a successful tool for quality in higher education and to acquire better realization of its applicability by tertiary institutions that already practice it. In other words, this study examines the various viewpoints on the matter of assessment and searches for the particular benchmarking types and tools that lead to successful outcomes.

With transformations being the case in the higher education sector the last few decades, changes in teaching and learning along with technology transfer and globalization strategies could not be excluded from this project. Since a number of

scholars have agreed on the fact that higher education is the newly shaped industry that forces universities to practice innovation due to pressures from globalization, the changing supply of and demand for higher education and changes in higher education funding, this study provides insight into the contexts and practices for successful innovation. Literature review and empirical research indicate the recent developments in the operation of higher education innovation systems which enable higher education institutions to stand up to the predicament of change in the higher education international arena.

In other words, this research on innovation and benchmarking in higher education institutions provides exemplar standpoints and practices for the pursuit of excellence in educational organizations, in order to gain additional knowledge and paradigm on the much discussed topic of quality that can lead to excellence. Thus, this study on business excellence in higher education does not solely base on literature review, but uses this information for the construction of a questionnaire for empirical research.

## **SCOPE OF RESEARCH**

### ***Research Methodology***

This research consists of three phases: (i) the concept of quality at an institutional level; (ii) the implementation of benchmarking for performance improvement; and, (iii) successful innovation in higher education institutions.

The first phase of research started by setting the main questions about quality as fitness for transformational purposes by focusing on the defined objectives and mission of the institution and stressing: (a) the vision, (b) the demand for a knowledge-based society, and (c) the basic values and methodologies that support a quality system. Questions about institutional information provide evidence on the validity and credibility of the research sample. Quality features are presented, analyzed and finally discussed to acquire knowledge on the individual cases of the participating universities.

The second phase of this research study explores quality in higher education as enhancement and improvement, and focuses on the use of benchmarking as a self-improvement tool. The structure and applications of processes that assure quality in higher education institutions are examined. The gathering of data aims to provide: (a) findings on the dissemination of benchmarking; and (b) exemplar attitudes towards the particular types of benchmarking and the verified methods and tools for practicing it.

The third phase of this project explores quality in higher education as innovation performance, which is strongly student centered, and focuses on the challenges for academic institutions that assign the highest standard of academic excellence to their innovative projects. The particular aim is to gain a better understanding of the recent developments in higher education institutions and provide evidence of how innovation can support universities in times of change.

This study builds on 4 main questions, which have guided the effort since the inception phase of the project:

- What is the level of benchmarking use for the enhancement and improvement of quality in academic institutions?

- What are the contexts of successful innovation in higher education institutions?
- What are the major outcomes of benchmarking and innovation in higher education institutions and what are the bottlenecks in achieving them?
- How can benchmarking and innovation bring excellence in higher education institutions?

### ***Population and Sample***

The population of this research consists of 20 universities, involving the participation of Presidents, Vice Presidents, Chancellors, Vice Chancellors, Provosts, Deans, Heads of Departments, Chief Officers, Quality Managers and Policy Advisors. Out of an excessively high effort to communicate about 300 universities through the administration and completion of questionnaires, the researcher collected 200 participations, but selected only 20 universities, whose answered questionnaires marked their quality features and their commitment to excellence.

### ***Data Collection and Instrumentation***

Data collection was accomplished by the administration of questionnaires. The measuring instruments of the survey were questionnaires and a minimum number of collateral papers regarding approaches to quality, supplementary to the completion of questionnaires. The 20 universities were used as case studies in order to conduct inferences regarding selected processes of benchmarking and innovation in higher education institutions. The individual cases of 20 universities were accrued to attribute an overall picture of academic excellence in higher education by means of benchmarking and innovation practices.

This thesis brings together the evidence collected through wide literature review, on a theoretical basis, and extensive research on tertiary institutions around the world, on an empirical basis, and provides an analysis structured along three interconnected themes with significance and implications for the pursuit of excellence in higher education institutions.

# 1. DEMAND FOR QUALITY IN HIGHER EDUCATION

## 1.1 DEFINITIONS OF THE TERM QUALITY

The concept of quality has been defined differently in different contexts, and it is a much used and least understood term (Mishra, 2006). An increasing body of academic literature emphasizes that the word ‘quality’ connotes a wide range of interpretations and entails different things to different people, as its concept is held both by industry and education. Various authors have referred to the much stated words of Pirsig (1974):

“Quality ... you know what it is, yet you don’t know what it is. But that’s self-contradictory. But some things are better than others, that is, they have more quality. But when you try to say what Quality is, apart from the things that have it, it all goes *poof!* There’s nothing to talk about it. But if you can’t say what quality is, how do you know what it is, or how do you know that it even exists? If no one knows what it is, then for all practical purposes, it doesn’t exist at all. But for all practical purposes it really *does* exist... So round and round you go, spinning mental wheels and nowhere finding anyplace to get traction. What the hell is Quality? What is it?” (p. 171)

Trying to express the broad meaning of the term, Juran identifies quality as ‘fitness for use or purpose’, Crosby as ‘conformance to standards’, and Deming as ‘a predictable degree of uniformity and dependability at low cost and suited to market’ (Ali & Shastri, 2010). Vlăsceanu et al. (2004) define quality in higher education as “a multi-dimensional, multi-level, and dynamic concept that relates to the contextual settings of an educational model, to the institutional mission and objectives, as well as to specific standards within a given system, institution, programme, or discipline” (p. 46).

Mishra (2006) realizes the concept of quality as amorphous and contextual and that it may mean anything, from standard to excellence. He claims that both of these meanings are in respect to the values found in individual, institutional and national practice. Thus, he suggests four central ideas around which the whole concept of quality revolves (Mishra, 2006):

- *Quality as absolute* means that “it is given and considered as the highest possible standard” (p. 12). However, in the case of higher education this idea is quite conceptual, as opposed to manufacturing-based products.
- *Quality as relative* suggests that higher education services can be described in relative terms, and measured in terms of certain specifications.
- *Quality as a process* implies that higher education services “must undergo certain processes and conform to the procedural requirements” (p. 13), because quality is an outcome of systems and procedures established for the purpose.
- *Quality as a culture* realizes the importance of organizational quality as transformation, where each member of the educational system is concerned and acknowledges the importance of quality.

## 1.2 KEY TERMS ASSOCIATED TO QUALITY

Quality in higher education includes some widely known and much used terms that stress what the philosophy of quality actually entails. This philosophy includes academic standards, academic quality, quality assurance and quality enhancement. UNESCO-CEPES provide the higher education sector with a concept of each of those terms that equate to the idea of quality as follows (Vlăsceanu et al., 2004):

- *Academic standards* regard an expected level of requirements and conditions that must be attained by HEIs and their programmes in order for them to be accredited or certified. Standards may take a quantitative form and include threshold levels for acceptable quality, or qualitative form and may have different reference points such as inputs, outputs, and processes. They vary by different types of standard setting methods (such as criterion-referenced, minimal competency, or objective setting methods);
- *Academic quality* bases upon specific academic standards and may take meanings depending on: (i) the understandings of various interests of different constituencies or stakeholders in higher education; (ii) its references: inputs, processes, outputs, missions, objectives, etc.; (iii) the attributes or characteristics of the academic world which are worth evaluating; and (iv) the historical period in the development of higher education;

- *Quality assurance* refers to an ongoing, continuous *process* of evaluating (assessing, monitoring, guaranteeing, maintaining, and improving) the quality of a higher education system, institutions, or programmes. Moreover, it focuses on both accountability and improvement, providing information and judgments through well-established criteria.
- *Quality enhancement* regards the deliberate steps taken to bring over continuous quality improvement in the effectiveness of teaching and learning processes.

### 1.3 APPROACHES TO QUALITY

Instead of giving a specific definition to the term, various scholars tend toward it by identifying some of the most common approaches to academic quality. In this sense, we have quality as *exceptionalism, consistency, fitness for purpose, value for money, transformation, enhancement and improvement* (Harvey & Green, 1993):

#### *Quality as exceptional*

This approach to quality means ‘exceeding high standards and passing a required standard’ (Harvey & Green, 1993) and fits for individuals, businesses and institutions because of its broad meaning. The UNESCO Glossary of Basic Terms and Definitions add up to this approach by considering it “a traditional, elitist academic view, according to which only the best standards of excellence (usually meaning a high level of difficulty and of complexity of a programme, the seriousness of the student testing procedures, etc.) are understood as revealing true academic quality” (Vlăsceanu et al., 2004, p. 46).

#### *Quality as consistent*

According to this approach consistency is about establishing a culture of quality by being precise at once and without flaws (Harvey & Green, 1993). However, the establishment of a culture of quality depends on the various requirements set by the academic discipline, which in turn depends on the labour market, society and government (Vlăsceanu et al., 2004).

#### *Quality as fitness for purpose*

This particular approach implies that the provided services meet the expectations of the customers (Harvey & Green, 1993). As a matter of fact, it is “a concept that stresses the need to meet or conform to generally accepted standards such as those

defined by an accreditation or quality assurance body, the focus being on the efficiency of the processes at work in the institution or programme in fulfilling the stated, given objectives and mission” (Vlăsceanu et al., 2004, p. 46).

#### *Quality as value for money*

This approach is about emphasizing the efficiency and effectiveness of the institutional processes. Vlăsceanu et al. (2004) state that “quality is labeled as (i) *a value for money approach* owing to the focus on how the inputs are efficiently used by the processes and mechanisms involved or (ii) *a value-added approach* when results are evaluated in terms of changes obtained through various educational processes” (p. 46).

#### *Quality as transformation*

This is an approach regarding quantitative change (Harvey & Green, 1993). Moreover, it is strongly student centered and “considers quality as a transformational process within which the better a higher education institution is, the better it achieves the goal of empowering students with specific skills, knowledge, and attitudes that enable them to live and work in a knowledge society” (Vlăsceanu et al., 2004, p. 46-47). This approach bases not only on the evidence of the educational yields of students, but also on the validity of student judgments of the teaching quality, and may not necessarily focus on what students want but what really works in terms of educational effectiveness (Gibbs, 2010).

#### *Quality as enhancement and improvement*

Approaching the continuous search for established improvement means that the responsibility of a higher education institution to succeed in the field of institutional autonomy and freedom is stressed, and that “achieving quality is central to the academic ethos and to the idea that academics themselves know best what quality is” (Vlăsceanu et al., 2004, p. 47).

In all respects, quality is relative to “whether one educational context has more or less quality than another, not whether it meets an absolute threshold standard so that it can be seen to be of adequate quality, nor whether it reaches a high threshold and can be viewed as outstanding and of exceptional quality, nor whether a context is perfect, with no defects” (Gibbs, 2010, p. 11). However, common to all of these quality approaches is the integration of the guaranteed establishment of minimal standards and benchmarks, the ability to set the objectives in various contexts and to achieve them with the given input and context variables, the ability to satisfy the

demands of direct and indirect consumers and stakeholders, and the way towards excellence (Van Damme, 2003).

#### 1.4 DIMENSIONS OF QUALITY

The varied contexts of quality in higher education call for a better understanding of the variables involved in the dimensions of educational quality. Gibbs (2010) considers education as ‘a complex business’ and thus, suggests the categorisation of quality dimensions in *presage, process and product variables*. Shedding light upon Gibb’s *3P model*, a brief production of the categorisation is worded as follows.

*Presage variables* are those that are established in the academic context as prior to student learning and teaching, but none of these indicate directly the way that the educational process may be conducted. However, they are sub-categorized in an extra four variables (Gibbs, 2010):

- i. *Funding* is partially predictive of student performance, due to the kind of teachers that an institution can afford. However, it constitutes a remarkable indicator, as the best students choose to be educated by the best-resourced institutions, and this ‘academic ethos’ is in turn indicative of student success;
- ii. *Student-stuff ratios* might be seen to be a more direct indicator than funding, in that: (a) the close contact with teachers is a good predictor of educational outcomes; (b) the volume, quality and timeliness of teachers’ feedback on students’ assignments are also good predictors of educational outcomes; and, (c) the actualization of small classes for the best learning outcome to be achieved;
- iii. *Quality of teaching staff* may be problematic due to teaching conducted by graduate teaching assistants, or ‘adjunct faculty’ that may have portfolio teaching careers associating with numerous institutions, with an office in none of them. Thus, the opportunity to develop a rich and effective learning environment over several years is gone with their lack of commitment to a specific university;
- iv. *Quality of students* is measured by educational outcomes such as grades, psychometric tests of principled reasoning, or career success that explain how well they performed before they entered university. In this case, views diverge as many institutions, which are highly selective on entry, do not need special educational

practices because their students are able enough to engage themselves. Moreover, A-level point scores may tell us nothing about the quality of educational processes.

*Process variables* characterize whether the teaching and learning processes are marked by educational quality. It is quite reasonable for their wide context to regard a plenty of academic tasks such as (Gibbs, 2010):

- *Class size*, as the bigger the class size, the lower the level of student achievement and engagement;
- *Class contact hours, independent study hours and total hours* at the level of interaction between teachers and students, and the consequences of independent study hours regarding the matter of quantity and quality;
- *Quality of teaching* depending on the teachers' experience and training, the research record, and the assessment by students;
- *Research environment* regarding the generated activity of research in an academic department by the majority of teachers;
- *Level of intellectual challenge* including an up-graded level of curriculum, a deep approach to students' studying, and students' engagement in the educational quality;
- *Formative assessment and feedback*, as a good predictor of learning outcomes and student retention;
- *Reputation*, as a common indicator of judging research quality, although the validity of reputational data have a quite poor reputation;
- *Peer quality rating*, as subjective and global, and "based on different combinations of evidence, with different weighting, in different contexts, by different groups of peers" (p. 36);
- *Quality enhancement process* for external evaluations by accredited bodies, students' evaluation of teaching, and implementation of teaching and learning strategies.

*Product variables* cover the much discussed issue of outcomes of the educational processes. On the whole, they markedly concern: (a) student performance and degree classifications, where most of the possible explanations currently lack data for testing them; (b) student retention and persistence, where social and academic integration has to do with whether they live in or off campus, and with taking time outs to earn

enough in order to continue studying; (c) employability and graduate destinations, including the difficulty of the interpretation of the employability data (Gibbs, 2010).

All in all, what has been stated about quality in this thesis is that it can be considered in terms of: (i) customer satisfaction; (ii) fulfillment of requirements; (iii) application to every product; (iv) profitability; (v) reforming an organization's culture; and, (vi) top leadership commitment.

## **1.5 BARRIERS TO QUALITY IN HIGHER EDUCATION**

According to many experts, there are considerable barriers in the applicability of the concept of Total Quality Management (TQM) in higher education institutions, though this philosophy has been transferred from industry to higher education due to rapidly changing forces that call for quality improvement in the higher education sector. Quality in the business of education is in need of change in the educational processes, as it is becoming important in the world of competitive environment (Venkatraman, 2007). Many researchers have compared industry to education and have pointed out conceptual and substantial obstacles in the implementation of TQM in tertiary institutions.

One important theory around the adequacy of TQM in the higher education sector regards the 'product' that is not visible and tangible in the same sense as a manufactured product (Ünal, 2001). As a matter of fact, quality in higher education lies in the services provided to the customer. Venkatraman (2007) claims that "students are non-standard human beings who are embodied with a range of experiences, emotions and characteristics and hence treating them as products misses the complexities of the learning process as a unique learner" (p. 96). Moreover, R. V. Hogg and M. C. Hogg (1995) claim that "students, like customers, are provided a service; like workers, they are asked to produce research papers, homework problem sets, projects, etc.; and like products, they are 'sold' to business, industry, government and service agencies after graduation" (p. 37).

Another theory adds up to the perception of students as customers, in that faculties hold back from the 'customer is always right' type of scenario and believe that they totally know what the students really need (Ünal, 2001). All these theories can be included in the more general context of "the misinterpretation of TQM philosophy

and the lack of understanding the processes that are different in education as compared to industry” (Venkatraman, 2007, p. 97). Even if the original idea of barriers in higher education TQM implementation regards the intangibility of the various factors for measuring academic processes, there are some common barriers that should draw the attention of the institutions, so that their whole effort for quality will not end in failure (Venkatraman, 2007).

Venkatraman (2007) displays some of the typical obstacles to a successful TQM implementation in higher education as follows:

- Senior management may not be able to set viable corporate vision and not be willing to initiate change and team efforts, or even not support the institutional vision wholeheartedly;
- Middle managers may not fully conceive the impetus for quality improvement and refrain the rest of the academic staff from taking responsibility, due to their impatience for quick results to be derived by a TQM plan;
- Employees or educational professionals may be more devoted to teaching than to TQM and thus, unwilling to adopt its principles due to their high expectations of autonomy and academic freedom; they are usually convinced that TQM adds unnecessary bureaucracy (Sebastianell & Tamini, 1998);
- Curriculum may be poorly designed in relation to learning processes and lead to quality failure, or even be time and effort consuming due to extensive documentation;
- The organization may lack of sufficient funds and resources, and as a matter of fact not yield the expected benefits from a costly TQM plan within a specific time frame;

Brigham (1993) adds up to the concept of barriers the false impression of participation, the obsession with process and the default to include the customer, as the long-term success of TQM hangs on the lessons drawn from industry. Ünal (2001) suggests that higher education institutions that wish to overcome the barriers to quality, or at least minimize the quality gap in the measurable progress, should pay substantial attention to the challenging and motivating role of everyone included in the quality process. Moreover, he points out the existence of sufficient trust between the faculty members and that they should be characterized by high confidence in order to contribute fundamentally, and not ostensibly, to the TQM plan.

Newby (1999) claims that barriers fall into three broad categories: (a) the nature of the management culture in some institutions, regarding the inability to respond creatively to the pace of change which eventually leads to institutional atrophy and decline; (b) the traditional culture of higher education, as the barriers to introducing total quality approaches are more likely to lie in the prevailing culture of higher education and the tendency for organizations to ‘regress’ to the long standing and traditional; and, (c) the heritage of past quality initiatives, meaning that total quality introduces nothing new and that the responsibility for developing and delivering a curriculum is always devolved to course teams.

Westerheijden and Kohoutek (2013) shed more light upon barriers in their sevenfold categorization:

1. Translation of the ESG documents’ statements into national quality assurance policy;
2. Implementation by higher education institutions of national higher education policies;
3. National administration of higher education to the extent that it has consequences for quality of education;
4. Response to the demands of internal and external stakeholders by higher education institutions;
5. Response to the demands from the international scientific and professional educational communities on their area of knowledge;
6. The tensions between academics and the administrative side of higher education institutions;
7. The tensions between central administration and departments.

In all respects, the subject of barriers to quality generally resides in quality management systems and procedures that either support or suspend the quest for quality, the cultural attitudes/values/beliefs that may be backing or desisting, the organizational design that can be reinforcing or restraining, and the management perspectives whose standpoint may be holistic or downsizing.

## 2. STRATEGIC MANAGEMENT IN HIGHER EDUCATION

By definition, Quality Management in higher education is an aggregate of measures taken regularly at an institutional level to assure the quality of the higher education system with an emphasis on improving quality as a whole, which covers all activities that ensure the quality policy and the quality objectives and responsibilities and implements them through quality planning, quality control, quality assurance, and quality improvement mechanisms (Vlăsceanu et al., 2004). Shah and Nair (2014) suggest that “the organization strategy is driven by past, current and projected institutional performance in various areas; resourcing, risks and predictions on the likely future” (p. 147).

The ongoing upheaval in higher education across the world requires institutions recommence their strategic planning and implement effective practices for quality. R. V. Hogg and M. C. Hogg (1995) point out Continuous Quality Improvement (CQI) for higher education development, rather than Total Quality Management for that it sounds too business-like. As a matter of fact, these two expressions are used interchangeably and thus, elements taken from the business sector are used to illustrate the following key concepts in higher education (R. V. Hogg & M. C. Hogg, 1995):

1. *Managers*, as Presidents, Vice-Presidents, Deans, and Department Chairs whose effective decision-making results in the optimization of the total system;
2. *Customers*, as students, alumni, and employers who are active members of quality improvement teams and crucial for measuring customers needs;
3. *Employees*, as maintenance staff, support staff, and student services staff that should be appropriately trained in team-building and team decision-making; projects of “QualiTraining” familiarize education professionals with the quality assurance dimension of education (Muresan, 2009);
4. *Suppliers*, as secondary schools and colleges that cooperate with universities for the transition of students in tertiary education;
5. *Statistics*, as indicators of problematic factors (curriculum, programmes, student learning etc) that after being summarized, lead to improvement of processes.

The profound changes in the higher education context emphasize the necessity of a quality culture realized in the terms of CQI philosophy (Selesho, 2014). Vlăsceanu et

al. (2004) perceive a quality culture as a set of shared, accepted, and integrated patterns of quality included in the organizational cultures and the management systems of institutions, in conjunction with a credible culture of evidence. A culture of quality is one that bases on the constant need for improvement, team work and the participation of the whole academic community in the process making (Kowalkiewicz, 2007). Selesho (2014) suggests that the leadership of tertiary institutions is responsible for the development of the best-in-class policy and strategy, and that strategic management in higher education is a top-down approach to quality culture.

Likewise, a culture of evidence involves data collection and analysis drive efforts for the identification of obstacles in students' learning and the development of programmes that help students graduate (Goomas & Isbell, 2014) . As it relates to institutional quality culture, the culture of evidence is based on clear ethical values, principles, and rules, that require self-evaluation of its learning outcomes and engaging the teaching staff and the administration in a regular collection, selection, and use of relevant performance indicators, in order to inform and prove that it is doing well in specific areas and for the purpose of improving its learning and teaching outcomes (Vlăsceanu et al., 2004).

O'Sullivan (2014) states that strategic management in higher education contains a number of hierarchically linked planning processes that allow long-term goals to be rendered into short-term practices for teams and individuals. That being the case, the hierarchical bottom-up planning process has the three following levels (O'Sullivan, 2014):

1. Strategic planning is a process that includes *formulation* of value analysis, benchmarking, stakeholder analysis, and PEST/SWOT analysis; *implementation* of strategic plans about effective communication, mission and knowledge management; and *control* of strategic plans for ensuring strategic decisions in operational and personal plans;
2. Operational planning is a process of creating objectives for a one-year period and translating higher institutional goals into goals specific for the academic unit, as staffing plans, staff workloads and resource development;

3. Personal planning is a process of setting personal goals for enhancing teaching and research, and creating a balance between the needs of the individual and the needs of the university.

Strategic planning is a prevalent practice for the verification of organizational efficacy at higher education institutions; whereas the acknowledgement of organizational values is an essential part of the planning process (Mueller, 2015). According to Cook (2010) values drive the plan and are an important variable of strategic planning in that they are defined as mores, ways of being, purposes and conduits of collaboration. Correspondingly, Ellis (2010) claimed that organizational values are the principles on which all student affairs organizations are built, guide planning, daily operations, programs, and services. However, the various literature lacks the evidence to support this concept that is frequently mentioned in higher education strategic planning (Mueller, 2015).

As a matter of fact, performance standards are the exemplary levels of mastery that build the expectations for educational outcomes (Vlăsceanu et al., 2004). Measuring the performance of a higher education management system is one of the most difficult tasks carried out by the academic leadership. Even so, quality can be measured either internally through institutional research (O’Sullivan, 2014), or externally by transferring the responsibility of quality assurance to an external body (Selesho, 2014). Volkwein (1999) recognizes information authority, policy analysis, and research as three core values of institutional research, so that institutional effectiveness and accountability is in success. Furthermore, Selesho (2014) suggests that all HEIs should address quality from three reference points: how quality is understood by the institution, how it is perceived universally through accreditation associations, and how it is perceived by the customers.

It is the outside world that now emphasizes inside quality reform and attention to quality assurance in higher education institutions. Selesho (2014) argues that tertiary institutions have not yet developed a well-functioning quality management model for the academic enterprise to grow. Contrariwise, Pawlowski (2007) suggests the Quality Adaptation Model (QAM) as a basic guideline that includes different phases and steps to bring quality approaches into practice and overcome various barriers of quality management. The following figure illustrates all the important phases of the QAM.

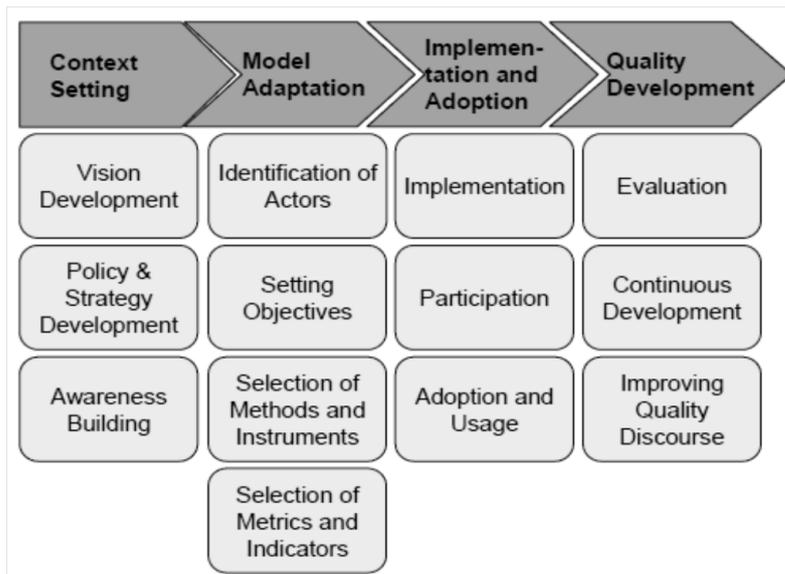


Figure 1: Phases of the Quality Adaptation Model (Pawlowski, 2007)

The university management is required to implement the reference model according to the needs and requirements of the organization for the realization and the broad use of the quality system, by arranging them individually and not performing the steps repeatedly (Pawlowski, 2007).

O’Sullivan (2014) configures the selection of Key Performance Indicators (KPIs) that are appropriate for the purpose of quality, strategy, and performance enhancement as follows:

*Input Drivers:*

- Research Income / Academic FTE ratio
- Registered PhD’s / Academic FTE ratio
- Student Retention Rates
- Student Evaluation Ratings
- Outreach Events (>1/2 day)

*Outputs:*

- Total Publications / Academic FTE ratio
- Total Indexed Publications / Academic FTE ratio
- Total Citations / Academic FTE ratio
- Total Citations / Total in Bibliographic Database ratio
- PhD Completion Rate
- International Students / Total students ratio
- Non-traditional / New Entrants ratio

Without question, there are many other potential indicators and their particular choice is specified according to the foster idea generation for quality, strategy, and performance enhancement of each higher education institution (O'Sullivan, 2014). Various research on quality in higher education point out that whatever the approaches and methods applied by the top management, the development of quality depends on the following general aspects (Mishra, 2006):

- Leadership and commitment of top management plays a significant role in quality improvement;
- Creating an environment for learning and staff development is crucial to do tasks right every time;
- Adopt new philosophies and technologies that can improve the quality;
- Encourage the teamwork and participatory management;
- Develop a communication strategy to report progress and results;
- Recognize the efforts of staff without creating a competitive environment;
- Put appropriate systems and processes in place as per the needs of the stakeholders;
- Encourage quality circles and a culture of quality.

The concept of continuous improvement of higher educational processes and outcomes is a component of the broader quality assurance and enhancement system, which in turn is held by the strategic management of the institution. Vlăsceanu et al. (2004) addresses the process called an 'institutional review' as the final responsibility for the management of quality and standards with regard to an institution as a whole.

### 3. THE CONCEPT OF EXCELLENCE IN HIGHER EDUCATION

Across the world, academic excellence is a much discussed topic among higher education organizations. According to various authors, excellence, like quality, is a rather vague term. Higher education institutions strive to improve academic excellence, through country and institution specific processes (Mishra, 2006). In the European Union, promoting excellence is essential for creating and establishing a knowledge-based society and economy, and for accomplishing the goals of economic growth and job creation (Joosten, 2014).

In *The Concept of Excellence in Higher Education*, within the context of ENQA, Brusoni et al. (2014) suggest that excellence can be: (a) a description of current provision and also a goal or aspiration for institutions, academics and students; (b) describing something that is exceptional, meritocratic, outstanding and exceeding normal expectations; (c) a relative and an absolute concept. They also emphasize that “the concept has no meaning if all are excellent and there is no way of distinguishing the performance of individual institutions and departments” (p.20).

Brusoni et al. (2014) provide us with the following framework for the identification of an adequate definition of excellence in higher education, by considering “the use of quantitative and qualitative parameters or the use of objective and subjective indicators” (p. 21).

<b>ELEMENTS THAT CONSTITUTE THE DEFINITION OF EXCELLENCE IN HIGHER EDUCATION</b>				
<b>Ownership and aims</b>	<b>Range</b>	<b>Awarding boundaries</b>	<b>Diversity in the use of values</b>	<b>Use of indicators</b>
Who is defining /measuring excellence?	Excellence is a reality	Excellence is exclusive	There is a universal definition of excellence for each reality	Preference in the use of objective indicators
Why is a definition of excellence promoted?	Excellence is a developmental process Excellence is a horizon	Excellence is inclusive	Different definitions of excellence can be used for the same reality	Preference in the use of subjective indicators

Figure 2: Elements that Constitute the Definition of Excellence in Higher Education (Brusoni et al., 2014)

In general, there are various principles and essential elements adopted by the university management towards improving the overall academic performance. Shukla and Singh (2015) distinguish between macro-level interventions and micro-level parameters. Basing on a variety of studies offered, they suggest that the first macro-level category includes government policies like research funding and its optimum utilization, centers of excellence, university accreditation, resources mobilization, socio-political changes, and geographical distribution of educational institutions, while the micro-level one is linked to the academic faculty's beliefs, attitudes, training facilities, teaching pedagogies, and their perspectives about effective and efficient management.

One of the most important topics rises above the issue of academic excellence and has to be regulated in order for quality, or excellence, to be achieved in higher education institutions is in terms of leadership, academic faculty and human resources in general. The fact is that "there are different human resources models and ways of leadership, for better or for worse" and that "leadership is a highly contingent phenomenon" (Kekäle, 2015, p.1). Moreover, faculty members are considered as the most important and responsible stakeholders in management education, as they are expected to favorably contribute to performance facets like teaching, research, administration and consultancy (Shukla & Singh, 2015).

Another important topic regards the 'best' students' contribution in the concept of excellence in terms of 'ranking' and 'selecting', as they must be challenged by the university to reach even higher levels, and 'rising above oneself' (Joosten, 2014). This appears to be a renewed perspective of Nietzsche's radical theoretical position on the 'self-transcendence', 'self-control' and 'self-styling' of students for the development of a better understanding of excellence in higher education (Joosten, 2014). On top of that, it is no coincidence that tertiary institutions strive for receiving the best learning outcomes possible and good assessments by their students.

Adding up to the concept of excellence, academic research is another essential element that impacts on the continuous improvement and establishment of excellence in higher education institutions. In the UK, the Research Assessment Exercises (RAE), established by the UK University Grants Committee in 1985, constitutes an essential means for rationalising the stratification of universities and the concentration

of research resources, and of maximising research output (Henkel, 1999). Arthur and Cox (2012) suggest the Research Excellence Framework (REF), which is in effect “a renewed version of judging research, notwithstanding the introduction of impact to the assessment criteria” (p. 137).

All in all, the concept of excellence is linked to: (i) the reputation of institutions and the achievements of students; (ii) the social and cultural environments; (iii) the political and economic context; (iv) the fulfillment of a certain standard (fitness for purpose); (v) the proof of being better than anticipated; (vi) exhibiting characteristics that are exceptional; (vii) excelling in input and output; (viii) being competent; and, (ix) the combination of global and local perspectives on excellence; which elements may be measured in terms of added value and students’ achievements (Brusoni et al., 2014).

### **3.1 MODELS OF EXCELLENCE**

Pondering over, it is so clear that assurance, assessment and evaluation are equivalent terms and, whatever the practices and processes included in each and every of them, what really is of importance is that they all aim to excellence. Quality assurance processes are actually models of quality assessment, which models provide institutions with possibilities of putting the theory of quality into practice. Mueller (2014) states that “models give us something to work with when we are determining how to apply research into applied insight, and they provide guidance with respect to using theory effectively in our practical lives” (p. 50-51). Quality in higher education is determined by some of the most popular models like the EFQM Excellence Model, Malcolm Baldrige Criteria, ISO 9000:2000, Capability Maturity Model, Six Sigma, Kano Model and ServQual.

#### ***The Malcolm Baldrige Award***

The Malcolm Baldrige National Quality Award was established by the US Congress in 1987, in order to provide higher education institutions with specific criteria for quality awareness and the for performance of excellence, including seven major categories that regard leadership, strategic planning, student-stakeholder-market focus, measurement, analysis and knowledge management, workforce focus, process management, and results (Arjomandi et al., 2009). This particular model keeps being

updated every year by the National Institute of Standards and Technology, due to the changing landscape in the education market (NIST, 2006).

### ***The EFQM Excellence Model***

The EFQM Excellence Model was formed after the success of the Japanese Deming Prize and the US National Quality Prize, Malcolm Baldrige. This model, was initially called Business Excellence Model, and in 1991 was introduced as the European Quality Award. The EFQM is described as “a practical tool to help organizations establish an appropriate management system by measuring where they are on the path towards Excellence, helping them to understand the gaps, and then stimulating solutions” (EFQM, 2013). It is a non-prescriptive TQM framework based on nine criteria, five of which are called ‘Enablers’ and cover what an organization actually does, and four of which are called ‘Effects’ caused by the category ‘Enablers’ (Saada, 2013). The EFQM model is based on the premise that excellence is achieved through leadership driving the policy and strategy that is delivered through people, partnership, resources, and procedures (Arjomandi et al., 2009).

### ***The ISO 9000:2000***

The ISO 9000:2000 was established in 1990’s by the International Organization for Standardization for the development of international standards in education and training (Mishra, 2006). The standard ISO 9000: 2000 is another series of quality management system ISO 9000 and is based on eight fundamental quality management principles for continuous quality improvement. Kartha (2004) lists as fundamental principles: (a) customer focus; (b) leadership; (c) the involvement of people; (d) process approach; (e) system approach to management; (f) continuous improvement; (g) the actual approach to decision making; and (h) mutually beneficial supplier relationships. Pawlowski (2007) introduced the new quality standard for learning, education and training, ISO/IEC 19796-1, published in 2005, for the development of quality systems and the improvement of processes, products and services of an educational organization. He argued that this model is a more specified version of the existing approaches, in that it focuses on “how actors in educational organizations can use this standard and organize the adoption process” (Pawlowski, 2007, p. 3).

### ***The Capability Maturity Model***

The Capability Maturity Model (CMM) serves mostly organizations that are mature, in that they possess “the ability for managing objective development and maintenance of processes leading to predictable quality outputs and outcomes” (p. 47), and helps organizations that use software to gain control of their processes and achieve excellence in engineering and management (Mishra, 2006). Paulk et al. (1993) recognize maturity levels as *initial*, *repeatable*, *defined*, *managed*, and *optimizing* for the best outcome of the Software Process Maturity possible.

### ***The Six Sigma***

In the 1980’s, Motorola originated the Six Sigma quality assessment model, which in the long run got into academia as a teaching course, and now is applied by higher education institutions in processes of assessment and improvement (Mishra, 2006). According to its philosophy there is “a strong correlation between the level of defects, costs, and customer satisfaction” (Mishra, 2006, p. 50). Moreover, teamwork by people who are trained in this statistical methodology can achieve the reduction of variation and defects in the organization by implementing the five-step systematic process of ‘Define-Measure-Analyze-Improve-Control’ (Mishra, 2006).

### ***The Kano Model***

With customer needs and expectations being to the fore in higher education, no institution should omit to include in their quality agenda some of the most distinguished models for customer satisfaction. The Kano method is a powerful way of classifying the categories of quality attributes, as customer requirements are widely used in various industries and education, and provides a rough picture of customer satisfaction in relation to the level of performance of services (Kano et al., 1984). However, the Kano model has a defect which prevents service providers from the accurate evaluation of the effect of quality characteristics; while the refined model of Kano was presented by Yang and improved further to categorize the qualitative characteristics more accurately for providing more accurate information (Kano et al., 1984).

### ***The ServQual***

The ServQual instrument measures the difference between what is expected by the supply of a service and the perception of the actual supply of the service (Parasuraman et al., 1988). The authors named this example disconfirmation, and made it operational by: Quality of Service (Q) = Perception (P) - Expectation (E). ServQual is in fact a form of research which contains 22 items, every item counts both the perception and the expectation of a specific service features (Tan & Kek, 2004). In education, it has been adapted to form LibQual, a service which is used for measuring the academic quality of library services (Cook & Thompson, 2000).

### ***The Value-based Performance Excellence Model***

Counter to industry, quality that leads to excellence in the education sector depends on some intangible aspects that are measured quite difficultly. This difficulty is signalized by the relation of these aspects to non-financial factors, such as the core organizational values, and thus Bin Ab Hamid (2014) suggests a value-based performance excellence model constituted by six performance criteria, which are *leadership, culture, productivity-focused, employee-focused, stakeholder-focused, and overall performance*. The author identifies six core values for measuring each of the criteria as follows (Bin Ab Hamid, 2014):

- *Leadership* is measured by *truthfulness, trustworthiness, sincerity, sense of direction, commitment and competency*;
- *Organizational Culture* is measured by *citizenship, consultation, caring, trust, respect, and quality*;
- *Productivity* can be measured in terms of *efficiency, collectiveness, non-exploitative, economy of scale, frugality, and timeliness*;
- *Employee focus* associates with *fairness, consultative, mutual trust, acknowledgement, altruism, and empowerment*;
- *Stakeholder focus* regards measuring in terms of *respectfulness, non-discriminatory, mutual interest, responsiveness, social responsibility, and interdependence*;
- *Overall performance* is measured in terms of *profitability, noble values, intellectual capital, market value, stakeholder satisfaction, and reputation*

Concluding this essential topic, Brusoni et al. (2014) report that the meaning of excellence can be found at the level of programmes and institutions, and that excellence can be divided in terms of management, research, teaching, and student performance as follows (Brusoni et al., 2014):

#### A. Excellence in management

Excellence in management addresses European higher education management systems and processes that are characterized by quality and the provision of excellent services to its customers, service users or stakeholders and are under the EFQM excellence model broad criteria and framework. In the United States, the Baldrige model provides HEIs with a seven-part criteria framework as a systematic process for driving and managing change. Moreover, it varies from the EFQM model in that it allows institutions to compare their current practices against established standards in other institutions and other economic sectors.

#### B. Excellence in research

Excellence in research is about ‘assessing the return on the investment’, including bibliometric indicators, external research income, and postgraduate student engagement. The assessment criteria and levels of excellence in the higher education sector regard quality in terms of originality, significance and rigor. There is quality that is recognized nationally, but also quality that is recognized internationally and falls short of the highest standards of excellence, and quality that falls below the standards of nationally recognized work.

#### C. Excellence in teaching

Excellence in teaching depends on valued factors such as the inspirational nature of lectures, the optimum organization of presentations, the successful interaction with students as participants, and on how well the information provided meets the learning objectives of the course. In addition, it is substantially identified in terms of: (a) student satisfaction; and, (b) performance of students in assessment; or generally, in terms of measures of the educational process.

#### D. Excellence in student performance

Excellence in student performance is determined by what is called ‘highly selective entry’, which regards their previous academic performance and their introductory

audition. The main point is that they develop at a professional performance level compared to international standards, they gain technical skill along with academic study and professional development, and they have access to renowned and competent in their own field instructors.

#### **4. QUALITY ASSURANCE & ENHANCEMENT**

Quality assurance is an “all-embracing term referring to an ongoing, continuous process of evaluating (assessing, monitoring, guaranteeing, maintaining, and improving) the quality of a higher education system, institutions, or programmes” (Vlăsceanu et al., 2004, p.48). In this context, Mishra (2006) emphasizes that “quality is assessment in terms of a set of norm-referenced standards” (p. 13).

According to 1999’s Bologna Declaration, the enhancement of quality and the establishment of a common framework for European higher education institutions are basic objectives for quality assurance. In 2001, the European University Association (EUA) constitutes a powerful organization that comes to serve the institutions in the Bologna Process (Unit, 2005). At the same time, EU Ministers decided to assure competitiveness by configuring and implementing the Lisbon Strategy, a program based on a legal framework in order to acquire the title of what is called ‘knowledge society’ (Rodriguez et al., 2010). This particular strategy focused on the necessity of research, innovation and lifelong learning (Esyutina et al., 2013). In 2010, the European Commission formed Europe 2020 Strategy, which practically promoted knowledge-based economy, sustainable development and high-employability (Barroso, 2010).

The European Association for Quality Assurance in Higher Education (ENQA), which constitutes of public authorities, associations of higher education institutions and quality assurance agencies, is complied with the Bologna Process impetus for quality assurance reforms with the adoption of the European Standards and Guidelines for Quality Assurance in Higher Education (ESG) (Unit, 2005; Vukasovic, 2014). ENQA promotes co-operation in the field of quality assurance, and disseminates information and expertise among its members and towards stakeholders in the European Higher Education Area (EHEA) to foster the European dimension of quality assurance (Kettunen, 2011). Accordingly, UNESCO European Centre for

Higher Education (UNESCO-CEPES) acts as ENQA, but with a major focus on Central and Eastern Europe (Unit, 2005).

The ESG adoption focuses mainly on “internal and external evaluation of faculties and universities and external evaluation of quality assurance agencies” (Vukasovic, 2014, p. 46). In the UK, a body called Quality Assurance Agency (QAA) provides HEIs with an advice framework including two documents - one covering quality assurance and employer engagement and a more general code for academic quality and standards in higher education (Quality Assurance Agency, 2008; 2010a).

The fact is that quality assurance in higher education arises as a global incentive for HEIs, and appears to be interrelated with quality enhancement. Mobility programs link EU members with non-EU countries and now offer a number of inter-university courses, scholarships and an ability to study in both EU and non-EU countries (Unit, 2005). The International Association of Universities (IAU) is a worldwide organization with Member Institutions in over 130 countries, which cooperates with a vast network of international, regional and national bodies and provides a wide variety of enhancing services to the international higher education community at large (IAU, 2007).

Quality enhancement is undertaking rapid steps to induce continuous improvement. The US quality assurance agencies are launching initiatives to increase the quality of teaching and learning through the Council for Higher Education Accreditation (CHEA), which is a Washington based association representing US accreditation (El-Khawas, 2014). The previously stated organizations and strategies are closely related to the concept of accountability for quality assurance and have established policies for continuous improvement, in order for faculties and universities to be improved, due to the changing demand for higher education in the international scene. Evaluation seems to be at the forefront of this particular effort. Vukasovic (2013) states that “the value of internal quality assurance promoted through the Bologna Process is taken up first at the policy level and leads to changes in rules and practices for, amongst other, accreditation of programmes, faculties and universities” (p. 46).

Sursock et al. (2010) emphasize six key challenges for the concept of global development in quality assurance including internationalization, lifelong learning, widening participation and access, calls for accountability, and national and international competition. These masterfully pointed out key challenges can be taken

by all HEIs that assume quality assurance as an ongoing process. Pawlowski (2007) identifies processes of transparency and participation as crucial factors of enhancing quality within academic institutions and argues that quality in higher education should not be seen to satisfy quality assurance agencies. All the interested parties of a university must be well-informed and conscious of quality, so that the implementation of internal evaluation for quality leads to sustainable development.

A multitude of educational institutions have acquired internal mechanisms for quality assurance and implement self-evaluation procedures for quality enhancement. However, a large number of HEIs around the globe turn to quality assurance agencies to receive external assessment. In this case, the agencies determine the particular quality procedures to be practiced and prepare the guidelines and practicalities of any site visit (Ossiannilsson, 2012). Quality assurance agencies play an operative and effective role in the Bologna Process, specializing in quality assurance and accreditation (Unit, 2005). Ossiannilsson (2012) states that the agencies distinguish between the concept of quality assurance and quality enhancement in that, the first refers to determining which objectives and aims have been accomplished, whereas the second refers to making improvements.

Considering the changing landscape of higher education worldwide, we get the idea that quality assurance agencies are in transition as well. Their changing policies refer to the methods they use for enhancing and ensuring quality, from input measures to adjustments based on learning outcomes, as a variety of stakeholders (including students) play an important role in the quality assurance procedure (Ossiannilsson, 2012). Except for the changing needs of the higher education environment, understanding the criteria and sticking to the best practices calls for the implementation of the following widespread framework of the way quality can be assured (Harman, 1998):

- Self-evaluation;
- Peer review by a panel of experts, usually including at least some external panel members in one or more site visits;
- Analysis of statistical information and/or use of performance indicators or the best practices benchmarking;
- Surveys of students, graduates, employers, professional bodies;
- Testing the knowledge, skills, and competencies of students.

All processes require the use of specific tools and mechanisms, so that appropriateness for purpose is accomplished. Likewise, quality assurance includes the use of quantitative tools (analytical or facilitative) that are in the disposal of HEIs, so that the process is made with careful steps (Mishra, 2006). In practice, there are seven distinct tools that promote the design and realization of the quality assurance process. To be specific, these seven tools are: *process flowchart, graphs, Pareto analysis, fishbone diagram, scatter diagram, check sheets and control charts* (Ishikawa, 1982).

Implementing a process for quality assurance is equivalent to implementing a process that indicates the outcome of higher education teaching and learning. Quality in higher education claims for focus on the customer. Thus, the growing demand for successful graduate attributes is thoroughly connected to assuring quality of the outcomes of learning programmes. According to a study of Australian universities, the processes deployed for assuring learning outcomes correspond to the measurement and evaluation of student learning outcomes against predetermined standards, through the process of mapping graduate attributes into curricula (French et al., 2014). Curriculum mapping accounts for identifying programme gaps and opportunities for graduate attributes, course objectives and assessment to be better graded (Biggs, 2003; Freeman et al., 2008).

Changes in the academic scene mark quality as transformation, and are closely related to ‘transformative learning’ as an ongoing quality assurance process (Cheng, 2014). Transformation in higher education seems to be the basis of empowerment for 21<sup>st</sup> century HEIs. Worldwide, business and industry demands for quality in higher education bring on students’ changing needs for knowledge. Reasonably, the evaluation of teaching performance and the provision of learning resources are key factors for assuring quality that is out-come driven in higher education (Cheng, 2014). However, the concept of transformation should not only be seen as externally forced by the market, but rather be established as a principle within the quality enhancement systems of HEIs.

Generally, approaches to quality assurance are said to be effective when using outcomes for improvement as evidence of internal changes. Internal processes regarding teaching and learning reveal the nature of the changes in response to the push for quality, and focus on improving student attainment, changing the curriculum and evaluating how their graduates fare in the labour market or on licensing examinations (El-Khawas, 2014). Student attainments constitute important criteria of

assuring quality in a higher education institution. In the United States, for instance, the Council for Higher Education Accreditation (CHEA) has sponsored an award, titled *Outstanding Institutional Practice in Student Learning Outcomes*, regarding institution-wide and programme-level actions of internal improvement (CHEA, 2013). However, Vucasovic (2014) suggests that “institutionalisation of a comprehensive and systematic approach to internal quality assurance of higher education institutions inspired by the Bologna Process has regulative, normative and cultural-cognitive dimensions” (p. 44). Considerably, institutions implement quality assurance processes enacted by organizations and agencies that are government driven. These processes that are part of a society’s culture on higher education may be distinct or alternative.

Over the past decade, all developed societies and some of the developing ones strive for continuous improvement in higher education institutions, organizations and agencies. The subject of quality assurance is described as a process that never stops and is never-ending. Deming (1986) relates it to the satisfaction of the needs of the consumer, present and future’ and conveys his theory of continuous improvement into a cycle, the widely known Deming or P-D-C-A cycle. The four original steps of the cycle are (Temponi, 2005):

1. P (plan), as the gathering of data to identify and define areas that need improvements and find ways to achieve them; identifying the stakeholders as part of the quality process is highly essential;
2. D (do), as the actions taken for the implementation of the designed plan;
3. C (check), as the analysis of the results to detect whether they agree with the original goals and what was actually achieved;
4. A (act), as a check step including actions of the plan on a full scale or conducting further planning and improvement by restarting the process with the first step of the cycle.

However, the step ‘Check’ was later replaced with ‘Study’, as Deming wanted to put emphasis on the process of learning, rather than just inspecting (Neave, 1990).

The essentiality of identifying all the interested and involved parties of the quality assurance processes lies into the concept of continuous development of a ‘culture of quality’ in HEIs. Kettunen (2008) found the stakeholder map which “identifies the most important stakeholders from which to get feedback so as to improve stakeholder

relationships”, which also is a useful tool to “monitor the performance of organizations towards the achievement of strategic and operational objectives” (p. 57). Mishra (2006) recommended, through the formation of an ‘internal quality assurance cell’, the commitment of all important stakeholders, and found the functional competencies of academic and non-academic staff to be critical for continuous improvement in HEIs. Accordingly, Deming’s production model can be applied to higher education by determining key factors, such as the identification of stakeholders, inputs and outputs, and processes, as depicted in the following figure (Ünal, 2001).

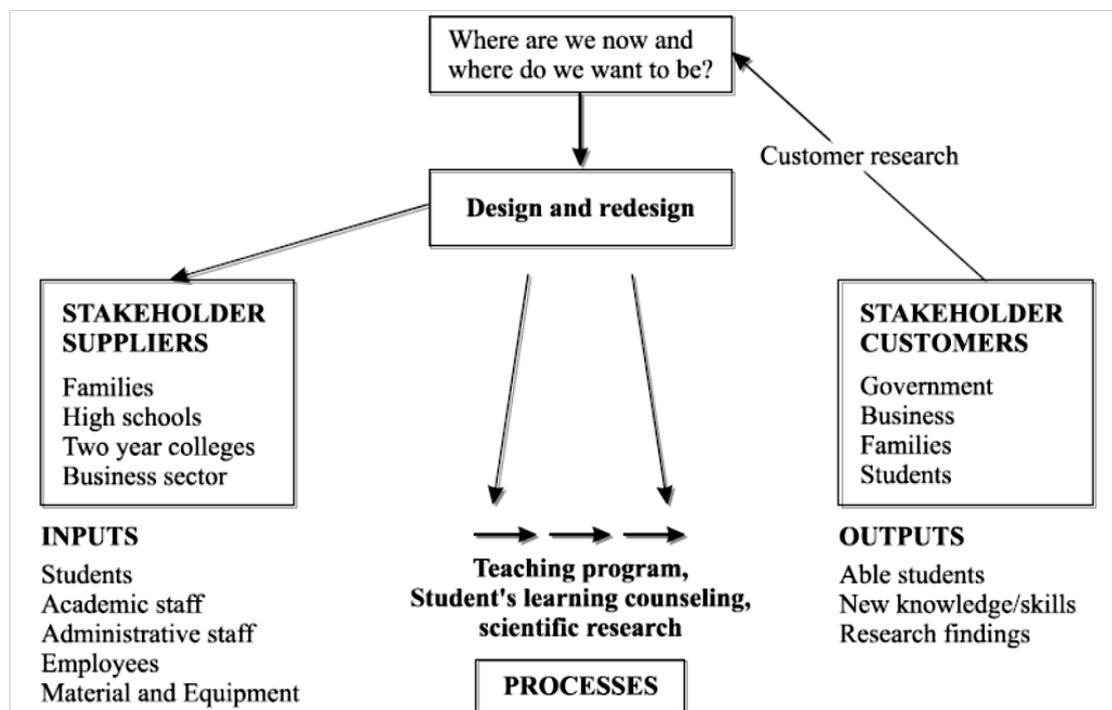


Figure 3: Higher Education System ‘The University’ (Ünal, 2001).

Various literature suggest the conduction of quality assurance processes on the basis of internal and external audits. The auditing is a hallmark on the effectiveness of processes that tertiary institutions implement to gain ground in the arena of continuous improvement. External audits are conducted by quality assurance agencies in order for quality assurance systems to get enhanced and quality of education to get attested by the external environment (Shah, 2013). Mishra (2006) states that External Quality Monitoring (EQM) performs quality assurance processes with legitimacy and

objectivity, which are core values for assessing higher education in tertiary institutions.

The audit report is made available to the institution, first in draft and then in its final, official form, and contains the description of the method of the audit, the findings, the conclusions of the auditors, and various appendices listing the questions asked (Vlăsceanu et al., 2004). Most literature views external audits as ineffective and non-contributive to institutional and student learning improvement, and considers this kind of quality exercise as costly and bureaucratic (Shah, 2013). Moreover, many tertiary institutions see external monitoring as invasive, and consider their autonomy and academic freedom threatened by quality assurance agencies (Mishra, 2006). However, an opposing view is that external and internal audits interact mutually, as the results and suggestions of the external auditing modify the design and implementation of the internal (Kettunen, 2011).

The UNESCO European Centre for Higher Education (UNESCO-CEPES) defines three main modes for the provision of internal audit within higher education: (i) in-house teams employed as staff members by the respective institutions; (ii) audit consortia (which may provide services to a number of clients both within and outside the sector); and (iii) accountancy firms that undertake internal audits (Vlăsceanu et al., 2004). Internal audits are more like self-evaluation processes because they are performed by academic groups, and are part of the university's strategic management.

Kettunen (2011) suggests that continuous improvement is about updating the existing processes and implementing an integrated system of process descriptions for the diffusion of information on system reforms. Controlling where we are now and setting goals for where we want to be in the future, is a basic input for sustainable development. Thus, external and internal process audits provide tertiary institutions with valuable results in order for customers to experience an education worthy of the name (Talbot et al., 2013).

According to Mishra (2006), self-assessment can bring real and sustainable quality. Thus, an institution or academic programme must be subject to self-study by the faculty, the administrators, and the staff in order to be able to later report the set of standards and criteria to the accrediting body (Vlăsceanu et al., 2004). Apart from the auditing processes, an additional way of enhancing quality and achieving continuous improvement is adapting benchmarking in higher education.

## 5. BENCHMARKING

### 5.1 DEFINITIONS

The changing landscape in higher education and the growing demand for quality in institutions and programmes have brought forward competitiveness, comparison and evaluation. Thus, benchmarking is established as one of the most successful processes of assessment and improvement. Various authors refer to the term by providing us with more or less specific definitions.

Blackstock et al. (2012) define benchmarking as “the process of self-evaluation and self-improvement through the systematic and collaborative comparison of practice and performance with similar organizations in order to identify strengths and weaknesses, to learn to adapt and to set new targets to improve performance” (p. 8). Lutfullayev (2007) identifies benchmarking as “the process used in management by which organizations compare and evaluate various aspects of their processes and performances in relation to the best practices of leading organizations in same class” (p. 2).

Vlăsceanu et al. (2004) in the UNESCO-CEPES Glossary for Basic Terms and Definitions, characterize benchmarking as “a standardized method for collecting and reporting critical operational data in a way that enables relevant comparisons among the performances of different organizations or programmes, usually with a view to establishing good practice, diagnosing problems in performance, and identifying areas of strength” (p. 25). They add up to the term by stating that it can also be defined as: (a) a diagnostic instrument; (b) a self-improvement tool (a quality assurance tool) allowing organizations and programmes to compare themselves with others regarding some aspects of performance, with a view to finding ways to improve current performance; (c) an open and collaborative evaluation of services and processes with the aim of learning from good practices; (d) a method of teaching an institution how to improve; (e) an on-going, systematically oriented process of continuously comparing and measuring the work processes of one organization with those of others by bringing an external focus on internal activities (Vlăsceanu et al., 2004, p. 25)

The American Productivity and Quality Center (1993) defines benchmarking as “the practice of being humble enough to admit that someone else is better at

something, and being wise enough to learn how to match and even surpass them at it” (p. 8).

All in all, benchmarking can be viewed as a methodology of study or improvement and as an opportunity to learn best practices, identify, establish and achieve exceptional standards, as long as the top management is committed to it and views the process of comparing and competing as an ongoing one. Moreover, benchmarking is highly related to what is called ‘good performance’ which is determined by levels of expertise including basic, standard, good and excellent performance (Blackstock et al., 2012).

Vlăsceanu et al. (2004) refer to the historical development of benchmarking in the higher education sector. They identify the United States as the first country to introduce benchmarking processes in the early 1990’s and, also, establish NACUBO (National Association of Colleges and University Business Officers) Benchmarking Project for a long period of time. They also mention that benchmarking came to the forefront as a quality assurance tool in the UK, after the 1997 Dearing Committee Report which included: (a) The History 2000 Project, led by Paul Hyland (School of Historical and Cultural Studies, Bath College of Higher Education); (b) The RMCS (Royal Military College of Science) Programme at Cranfield University (example of *benchmarking in libraries*); (c) The Higher Education Funding Council for Higher Education (HEFCHE) Value for Money Studies (VfM), launched in 1993; (d) The Commonwealth University International Benchmarking Club, launched in 1996, by CHEMS (Commonwealth Higher Education Management Service), as an example of international benchmarking (Vlăsceanu et al., 2004).

## **5.2 TYPES OF BENCHMARKING**

The logic of benchmarking is sound and easy to follow as stability cannot bring improvement. Various authors suggest that continuous improvement and excellence can be achieved by higher education institutions that are empowered to take deliberate steps by using the benchmarking tool for optimization of their processes and programmes. One basic step is to choose a benchmark and the type of benchmarking that is going to be practiced.

Typifying the concept of benchmarking in four broad categories, we recognize *internal*, *competitive*, *functional* and *generic* as the most common types. *Internal benchmarking* allows institutions to compare between themselves and similar operations within their own organization; *competitive benchmarking*, as the word implies, allows comparisons to be made among competitors; *functional benchmarking*, regards comparing similar functions within the higher education sector; and, finally, *generic benchmarking* is about making comparisons that are independent of a particular sector, industry or functions (Vlăsceanu et al., 2004).

The classification of benchmarking types is characterized variation, as many authors have contributed in enlisting some of the broad types into more specified categories. UNESCO-CEPES (2007) identifies *internal*, *external competitive*, *functional* (comparing institutional processes), *trans-institutional* (across multiple institutions), *implicit* (quasi-benchmarking looking at the production and publication of data/performance indicators), *generic* (looking at basic practice process or services) and *process-based benchmarking* (looking at processes by which results are achieved).

Vlăsceanu et al. (2004) agree upon three basic types of benchmarking: (a) *strategic benchmarking*, which focuses on what is done and on the strategies the organizations use to compete; (b) *operational benchmarking*, where the focus is on how things are done, on how well other organizations perform, and on how they achieve performance; and (c) *data-based benchmarking*, which is a statistical type that examines the comparison of data-based scores and conventional performance indicators. They also state that “benchmarking may be either *vertical*, aiming at quantifying the costs, workloads, and learning productivity of a predefined programme area, or *horizontal*, looking at the costs of outcomes of a single process that cuts across more than one programme area” (Vlăsceanu et al., 2004, p. 26).

Jackson and Lund (2000) categorize benchmarking types with regard to the following processes:

- Implicit or explicit;
- Independent or collaborative;
- Internal or external focused;
- Vertical or horizontal which is focused on the whole process;

- Quantitative and qualitative approach;
- Input-process-output focused.

Achtemeier and Simpson (2005) recognize: (a) *process benchmarking*, which is about identifying the problem area within one's institution, identifying another institution with impeccable performance in the same area, and sending a team of experts of the area to learn from the exemplar institution their success formula that brings outstanding results; (b) *metric benchmarking*, which means comparing data of selected performance indicators among several institutions (Smith, Armstrong, & Brown, 1999); and, (c) *goals and milestones*, which represent another way to understand benchmarking by identifying internal targets to establish a process, without any external point of reference for measurement (Zairi 1996).

Yarrow and Prabu (1999) add up to the variety of benchmarking types by recognizing *diagnostic benchmarking*, which is more akin to the examination of an institution's well-being in that it helps to identify the practices that need change and the nature and extend of performance improvements to be followed. The Consortium for Excellence in Higher Education (2003) identifies *international benchmarking* along with *strategic, performance or competitive, process, functional* and *generic, external, and internal good practice benchmarking* (as shown in figure 4). *International benchmarking* can be determined nationally and internationally and includes "a mix of all these approaches and organizational learning that is best done when it is carried out within a spirit or partnership and collaboration that enable both parties to learn from each other" (Lutfullayev, 2007, p. 5).

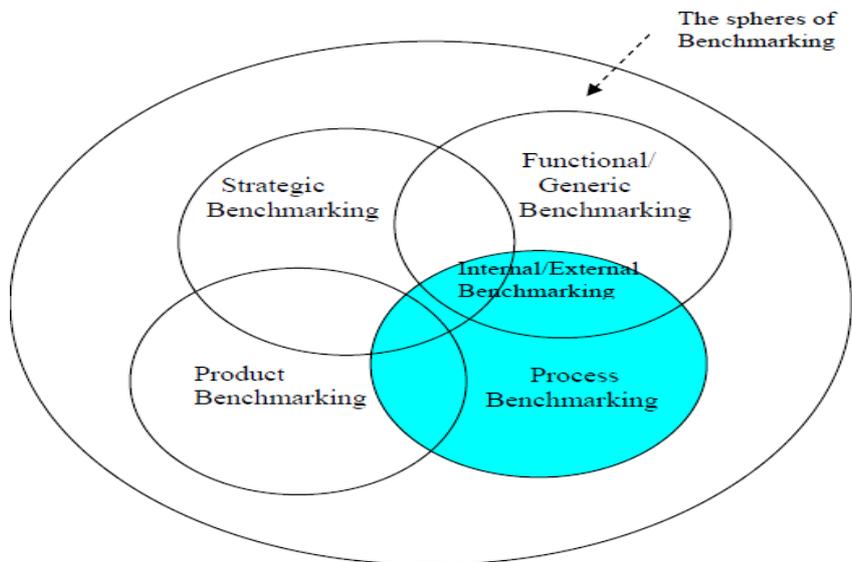


Figure 4: Relationships between the Different Types of Benchmarking  
(Benchmarking Methods and Experiences, 2003, p. 8)

### 5.3 BENCHMARKING AND ‘QUALITY METRICS’ FOR EXCELLENCE

Considering benchmarking as a tool for measuring quality that is linked to excellence, the need for quantifiable factors and performance indicators is highly essential in order for the process end up in substantial results for higher education institutions. Brusoni et al. (2014) provide institutions with a guide to the recognition of excellence, connoting that those who compete for excellence must make sure that they meet the following eleven criteria:

- i. *Powerful and progressive strategic management and governance*, in that they are expected to be fully committed to excellence, define and maintain goals for excellence, possess self-knowledge of strengths and weaknesses, and be willing to reach the highest standards;
- ii. *High standards of academic achievement*, relates to the institution’s students and staff, and mostly focuses on the students’ ability to apply their knowledge in practical situations;
- iii. *A strong track record in student destinations*, as institutions measure their level of achievement by detecting how their graduates do in labour markets and if they succeed in professional occupations;

- iv. *An exceptional student experience*, regards the existence of exceptional teaching and learning, support, and learning resources with a focus pedagogy developed in innovative ways;
- v. *Positive stakeholder satisfaction*, as the perceived performance of institutions is evaluated through feedback from stakeholders;
- vi. *High levels of student satisfaction*, as excellence can be viewed on the basis of the services provided and the quality of the learning experience;
- vii. *Commitment to research and academic development*, where research output and academic staff engagement (through individual studies and participation in the wider subject community) are the most important measures;
- viii. *Support for social, economic and cultural development*, which recognizes higher education institutions “as a ‘social good’ fostering intellectual and technical skills development and promoting the equity, inclusion and citizenship” (p. 31);
- ix. *Recognition of the social benefit of education*, means demonstrating commitment to social and cultural inclusion and widening the participation to competent and motivated people;
- x. *Commitment to internationalization*, means promoting a global perspective and being competent beyond country boundaries;
- xi. *Promotion of equity and academic freedom* means that all institutions should be committed to the value of enquiry and the pursuit of knowledge, despite the political restraints and regulations or other interventions.

#### **5.4 BENCHMARKING AND RANKING**

The increased demand for higher education all over the world calls for supply of more information on institutions and their educational programmes. Ranking and league tables are a useful instrument for supplying information to consumers, interested parties and policy-makers and, also, an established technique for displaying comparisons of organizations in terms of their performance (Vlăsceanu et al., 2004).

The process of ranking requires three basic steps. It starts with the collection of data from existing data sources, site visits, studies, and institutional research; the following step is to collect the type and quantity of variables selected from the information gathered, and to standardize and weight the indicators from the selected

variables; and, finally, the calculations are conducted and comparisons are made so that institutions are sorted into 'ranking order' (Vlăsceanu et al., 2004).

League tables can be considered in terms of commercialization as they are produced by newspapers, magazines, professional societies, non-governmental organizations and governmental agencies (Dill & Soo, 2003). Stensaker and Kehm (2009) assert that commercial purposes drive the publication of most rankings by companies. In the United States, the best-known rankings are conducted by newspapers and magazines such as *Atlantic Monthly*, *Money*, *U.S. News*, *World Report*, *Business Week*, and *The Financial Times*, *The Wall Street Journal* and *Washington Monthly*, while in other Anglo-Saxon countries, *The Good Universities Guide* in Australia, *The Maclean's Guide to Canadian Universities* in Canada, and in the UK, *The Times Good University Guide* and *The Guardian University Guide* are comparable ranking actors (Dill & Soo, 2003).

Assessment, criteria, evaluation and performance standards are viewed as reliable data and methodology that provide quality outcomes for universities. In descending the international scene, Bergseth et al. (2014) report that "the most common international ranking concept applied is to assess and compare the quality of entire institutions and present the results as rankings, in so-called league tables" and that, regardless of the ranking system applied, ranking actors must recognize the supply of good guidance to stakeholders, prospective students, politicians and the general public as common objectives (p. 331). Apart from the usefulness of ranking as an instrument for public information, Vlăsceanu et al. (2004) identify it as "an additional incentive to quality improvement" (p. 52).

Vlăsceanu et al. (2004) also state that ranking indicators or criteria usually take into account scientific, pedagogic, administrative, and socio-economic aspects, such as student/staff ratio, A-level points (held by first-year students), teaching and research (as marks received in teaching and research assessments by individual departments), library and computer spending, dropout rate, satisfaction, study conditions and employment perspectives. However, a few are the rankings based on results from specific quality assessments, evaluations or accreditations undertaken by the public sector (Bergseth et al., 2014).

Considering the popularity of rankings worldwide, the main idea is linked to benchmarking and the acceptance of being compared to others in the sector. Ranking contributes to the improvement of institutions and programmes as universities are alerted to get better and better through processes of assessment and evaluation in order to elevate in the global ranking and gain reputation in the international scene. All universities that aspire to become renowned and attract more consumers should be conscious of rankings and thus, establish benchmarking processes.

## **6. INNOVATION**

### **6.1 THE CHANGING LANDSCAPE IN HIGHER EDUCATION**

The current and future higher education landscape is overwhelmed with enormous changes including social, political and economic pressures experienced by universities around the globe (Shah & Nair, 2013). The last few decades, higher education is in shift under the imperatives of internationalisation and globalisation. The growing importance of development and competitiveness, the growing demand on the part of the productive sector and the population, and the modulation of a dynamic of adaptation and change, as an answer to the challenges of the environment in higher education, constitute the essential factors that drive the change in the international scene (Mendivil, 2002).

Brennan et al. (2014) identify internationalisation in higher education as a process which introduces new dimensions and improves institutional quality and delivery of education. They also state that internationalisation strategies are filtered and contextualised by the specific types of the universities, the way that they are embedded nationally and their dependence on the type of education and programmes, and their normative and cultural insights. Finally, they point out that all higher education institutions concerned with internationalisation are subject to processes of comparability of qualifications acquired within the different national systems, to the internationalisation of the curriculum, and to reference themselves against the supposedly 'best' and 'world class' universities (Brennan et al., 2014).

Shah and Nair (2013) state that 21<sup>st</sup> century universities have become reconciled with the new challenges in the higher education sector. They also distinguish between internal and external imperatives of change in the operating environments. In particular, the changes that are result of internal drivers include:

- i. change in university leadership and ongoing restructures to improve the core business;
- ii. ageing workforce and the difficulty of recruiting and retaining academic leaders (Hugo, 2005; Bosetti & Walker, 2009);
- iii. financial constraints on universities (Brown, 2011b); and

iv. slow change process in institutions inherited by traditional public sector management style and institutional governance structures and decision making process.

On the other hand, the external imperatives of change include:

- i. governments cutting expenditure (Brown, 2011a, b; Mouwen, 1997) and aiming to increase productivity and efficiency (Rolfe, 2003);
- ii. growth of students in higher education (OECD, 2009);
- iii. competition between different kinds of providers (Shah & Nair, 2011a); and
- iv. the changing needs and expectations of students and other university stakeholders Fullan & Scott, 2009; Filippakou & Tapper, 2008; Middlehurst, 2001; Gross-Stein, 2007).

One of the most innovative methods of internationalisation in higher education is the World Café, an example of reflective practice, that encourages all the interested parties (students and staff) to express their point of view about a particular topic within a relaxed and comfortable setting (Brown & Isaacs, 2005). Moreover, the growing demand for higher education has brought a number of transformations witnessed by universities that are eager to the pursuit of excellence. Mendivil (2002) indicates some of the aspects that stand out on the international agenda of change in higher education systems (p. 353-354):

- growth in enrolments in all levels and models of the system;
- diversification in the types of institutions, functions and sources of funding;
- growing presence of private investments in the higher education supply, consolidation of a sector of for-profit educational services, or profit and corporative models;
- decentralisation, regionalisation and internationalisation of the public and private sector supply;
- regulating and co-ordinating bodies;
- formulation of strategic planning, evaluation and accountancy, accreditation and certification of programmes and institutions;
- updating of the structures and management bodies of university governance, normative reforms, new models of distribution of resources in the institutions;

- consultancy and dialogue between the institutions and interest groups, disciplinary organizations and other representatives of civil society;
- tools to ensure academic quality;
- curricular flexibility;
- educational models based on learning and the acquisition of professional competences (Duke, 1992);
- strategic alliances between universities, corporations and the public sector;
- tools to gather and process the needs of the labour market and the interests and requests of the students;
- distance forms of learning, remote tutorials, certification of competences, virtual universities, on-line courses, course material;
- curricular models to upgrade knowledge and competences.

However, Jiang (2008) argues that although the process of internationalisation in higher education can bring benefits, all this increasing competitiveness in the global market has mutated the pursuing of this agenda in a more commercialized and market-orientated rationale. In fact, universities may sidetrack from their traditional core values and principles or even lose their national identity, when striving to become part of globalised education. Thus, it is the top management's responsibility to set strategic objectives that include the essential thresholds for maintaining their idiosyncrasy as higher education institutions with a national identity.

The dilemma, according to Aziz and Abdullah (2014), is that as countries strive for increasing the provision, quality and visibility of educational systems, they are at risk of losing sight of the core values and functions of higher education systems. They also emphasize the requirement of strategic policies in providing opening access to variety of people and mechanisms, in order to upgrade the level of domestic consumption and international export (Aziz & Abdullah, 2014). Chen and Barnett (2000) claim that the unfortunate reality resides in that higher education systems are located either at the central or peripheral global landscape in terms of international student recruitment. Moreover, Marginson (2007) and Salmi (2009) state that the proliferation of ranking has a high effect on the operations and resource allocation of higher education systems, and Scott (2013) stresses that rankings lead higher education institutions to drive enrolment, teaching and research as activities centralized to the enhancement of their position in the league tables.

## 6.2 REASONS FOR INNOVATION IN HIGHER EDUCATION

The key word closely related to innovation in higher education is educational change. This implies ‘doing new things’ and ‘doing existing things better’, in other words, moving beyond higher education and looking into the components, functions, and relationships that compose it, or even with a more dynamic approach looking into not only at innovation within the elements, but also at the interaction within and among the elements (Brennan et al., 2014).

Mulgan and Abdo (2010) state that ‘a truly global industry’ has taken shape and believe that the future of higher education lies: (a) in greater pluralism, with the deliberate cultivation of diverse models; (b) in greater specialization, with universities identifying a few areas in which they will excel; and, (c) in better integration, with institutions and individuals sharing knowledge more effectively but also integrating more effectively with the world outside. Moreover, they track the reasons why higher education institutions need to innovate:

- i. they become more global and more local;
- ii. they evolve both technologies and ‘face to face’ interactions;
- iii. they become part of all stages of life;
- iv. they reduce and/or cut costs;
- v. they lower barriers to participation (open access to higher education).

The concept of innovation in higher education can be found in policy recommendations related to: (a) the change of teaching and learning; (b) technology and student performance; and, (c) globalisation strategies (Brennan et al., 2014). To be more specific, Brennan et al. (2014) provide a detailed analysis of the three essential kinds of policy recommendations that regard some of the most important reasons for innovation as follows:

- *The change of teaching and learning* requires:
  - an institutional culture to innovation that stimulates openness and minimizes resistance to change;
  - incentives and rewards for staff;
  - a potential of new technologies;
  - a cross-institutional collaboration to improve student choice and quality;
  - adequate measures for the skills and development of the teaching staff;
  - reviews of the existing organizational boundaries and linkages.

- *Technology and student performance* require:
  - identifying the needs of learners;
  - the access of learners to relevant technology and their necessary skills to handle it;
  - a successful introduction of learning analytics in order to support students;
  - appropriate processes, tools and support activities to utilize the rich data generated through analytics;
  - clarifying the roles of actors;
  - a collective understanding of the roles and relationships between the actors;
  - clear lines of management responsibility and information to assess performance;
  - supportive relationships and trust between the relevant actors.
- *The globalisation strategies* require:
  - a balance among commercial, educational and reputational considerations;
  - addressing crucial factors such as student mobility and placements, qualification recognition, funding implications, curriculum and pedagogic implications, and labour market linkages;
  - needs for different actors, meaning national and international students, quality assurance agencies, academic and support staff, employers, and sponsoring bodies;
  - linkages between 'home' staff and staff of other campuses;
  - the knowledge of how much to export from the 'home' institution;
  - the knowledge of how much to import from international activities to reshape 'home' institution;
  - satisfying the different national regulatory and quality assurance regimes.

All in all, higher education institutions need to innovate in order to be competitive in the global market of higher education, and this can only be achieved through continuous improvement of the particular areas that include the innovation processes, the knowledge and competency, and the organizational support.

### 6.3 SUCCESSFUL INNOVATION FRAMEWORK IN HIGHER EDUCATION

#### *Contexts for successful innovation*

A number of scholars have agreed on the main challenges taken by higher education institutions that include pressures from globalization, the changing supply and demand for higher education, and changes in higher education funding for the development and implementation of innovative practices. Brennan et al. (2014) identify: (i) the interplay between national/regional and institutional function; (ii) the various factors regarding various institutional features; and, (iii) the level of autonomy over financial resources as the most important contexts for successful innovation. They also explain that universities implement either bottom-up or top-down/state-driven practices and approaches to innovation, leading to wider ranging relationships and processes, and longer timescales for implementation (Brennan et al., 2014).

In higher education systems, the contexts of innovation are three and include components, relationships and factors that facilitate their successful implementation by higher education institutions as developed by Brennan et al. (2014):

- A. The organizational context of innovation includes the academic freedom and autonomy of universities and a governance structure made of people with individual enthusiasm and persistence; moreover, this context implies that innovations are closely related to the local institutional context and the institutional mission.
- B. The systemic context of innovation is composed of differentiation and diversification, national/regional characteristics, economic characteristics, and student population characteristics; this implies that a university must be part of the globalised world, compete for the best students, for internationalised students, and for international benchmarks.
- C. The wider context of innovation comprises the changing nature of societies, knowledge production, the changing role of the state, relationships with the civic society, and information and communication technology.

Addressing the topic soundly, the new trend in higher education calls for the competence for or complement of traditional providers with 'new providers' in the supply of educational services, with the last term referring to a sector of businesses

and corporations which is now present, but not part of the traditional private sector, and is mainly for profit and also is of both public and private organizations that offer higher education through electronic means and provide support and complementary services (Mendivil, 2002). Essentially, the concept of 'new providers' includes entrepreneurial and virtual higher education, IT technology, and corporate universities (Mendivil, 2002).

### ***Academic freedom, university autonomy and knowledge-based economy***

The concept of academic freedom is closely linked to the concept of university autonomy, as academic freedom connotes a substantial level of independence and intellectual freedom along with the origin of the resources needed (De la Fuente, 2002). Since the 1950's, the IAU aims to give expression to the obligation of universities to promote the principle of academic freedom through teaching and research, acquire academic autonomy to uphold values common to humanity, and meet the expectations of a world society where frontiers are rapidly dissolving (Van Ginkel, 2002). According to the Bologna Observatory, universities must be independent and autonomous to ensure that higher education and research systems are subject to an ongoing adaptation to the changing needs of the internal and external environments in the higher education sector (Van Ginkel, 2002).

Mendivil (2002) refers that the presence of 'new providers' in the higher education market challenge the principle of academic freedom of the universities. According to his analysis, this particular issue regards: first, academics who are losing control of the very contents of teaching, due to the extensive use of educational means and material (such as software, Internet etc.), while the desirable objective is to obtain an adequate and evident balance; second, the search for alliances and the establishment of consortia in the use of resources which creates the need to take into account the diversity of capacities and combine strengths in the spirit of academic freedom; and, third, the problems of intellectual property and loyalties which come to the fore in the new modulations made in higher education services (Mendivil, 2002).

Academic freedom and the freedom of expression are included in the knowledge era of universities, and in their efforts to maintain their role as keepers and producers of knowledge within the context of rapid and deep-rooted social and economic changes (Burton-Jones, 1999). The concept of knowledge-based economy (KBE) was founded in the 1960's, and represents a new form of governance with strong socio-

political effects and outcomes (Burke, 2000). In the past decades, there is an observed shift towards the KBE, as universities all over the world positively respond to the new emerging needs of society and economy by focusing more on knowledge transfer and skills development (Bano & Taylor, 2015). A knowledge-based economy is constituted of three levels: (a) the level of the data where information is exchanged in (e.g., economic) relations; (b) the level of (e.g., institutional) structures operating selectively (here specific meaning can be codified and selectively exchanged); and, (c) the level at which configurations of meaning-exchanges can be knowledge-based to varying extents (Leydesdorff, 2006).

Governments are increasingly paying their attention to marked improvement of universities and specific development through research and innovation, and universities have been forced to re-think their role in the new knowledge era (Bano & Taylor, 2015), and confront financial difficulties through the diversification of financial sources and mid- to long-term strategic alliances (Van Ginkel, 2002). According to Van Ginkel (2002), these can be achieved only by mobilizing academia, meaning the people working and learning in the universities. Moreover, he claims that whatever the measures taken, they should have a time limit (say, five years) placed upon them, and they should also “build on and complement the existing, long-established order, through the creation of contemporary, task-oriented groups” (Van Ginkel, 2002, p. 349).

### ***The triple-helix model***

The triple-helix model of innovation, which is highly related to knowledge-based economy, has emerged as a set of ideas regarding the roles and inter-relationships of industry, government and universities (Etzkowitz & Leydesdorff, 2001). Industry that is driven and developed by science, and the growth of new firms stimulated by academic research point out that university is “becoming a primary institution...that in some circumstances replaces industry and government in the lead role as Innovation Organiser” (Etzkowitz, 2007, p.4). This model allows for interactions between functions and institutions and is not specified in terms of domains (e.g., national systems) or specific functions (e.g., knowledge production), as its sub-dynamics can be viewed from different perspectives (Leydesdorff, 2006).

This model is differentiated horizontally, as different coordination mechanisms operate upon one another, and vertically, as the information is structured semantically and the structures can develop along trajectories, while the trajectories are embedded in regimes that emerge from configurations among structures and trajectories (Leydesdorff, 2006). Moreover, the horizontal differentiation bases on differences among the codes of communication in the coordination systems, while the vertical differentiation corresponds with the distinction between institutional and functional dynamics (Luhmann, 1995a).

The Triple Helix approach combines the definition of innovation systems as institutional units of analysis with the definition of innovations as reconstructions of emerging perspectives in communication, and also enables HEIs to include the dynamics of the market (Leydesdorff, 2006). It focuses primarily on specifying the different mechanisms for structural selection, given that the three helices (industry, government, and universities) are sufficiently complex to understand the social reproduction of the dynamics of innovation (Leydesdorff, 2009; Lewontin, 2000). Finally, its abstract and analytical character provides explanation of a KBE as a new regime of operations, because this model substantiates and operationalizes the general notion of a knowledge-based economy as a self-organizing system (Krugman, 1996).

### ***On-line education***

New dimensions in higher education have re-shaped teaching and learning in terms of numerous technological developments. Apart from the traditional way of knowledge delivery, e-learning is an alternative way of providing education to learners at a distance (Coen et al., 2004). By definition, e-learning refers to the use of internet technology for the delivery of a wide range of solutions that enhance knowledge creation and improve institutional performance (Rosenberg, 2001).

Historically, the use of online learning is tracked back in 1988 when the British Open University offered DT200 (*An Introduction to Information Technology: Social and Technological Issues*) to over 1,500 off-campus students (Bates, 2004). Special software programs such as Virtual Classroom or CoSy were developed for the communication between students and teachers, but the big breakthrough came with the development of the World Wide Web in economically advanced countries (Bates, 2004). In 1996, the University of British Columbia offered its first Web-based course delivered entirely over the internet to students at distance (Bates, 2004).

In the last decade, the provision of distance education has significantly changed due to a wide range of technologies that have increased, which explains the fact that many universities and colleges suggest that “the learning outcomes of students using technology at a distance are similar to the learning outcomes of students who participate in conventional classroom instruction” (Phillips & Merisotis, 1999, p. 16-17). Online education has added new options of teaching and a wide variety of new courses in the curriculum of higher education institutions, which has effected positively and increased enrolment due to the fall of regional boundaries and the new communication technologies that have increased the accessibility of people all over the world (Kulkarni, 2013).

Phillips and Merisotis (1999) identify the use of computer-mediated learning, two-way interactive video, and a variety of other technologies by colleges and universities that are forging ahead to provide learning at a distance, and the substantial investments made in new technologies of teaching that have radically changed the significance of distance education. Apart from distance learning, Bates (2004) refers to the integration of the Web into classroom teaching and identifies WebCT and Blackboard software platforms for hybrid, blended, mixed mode and distributed learning into face-to-face classrooms that allow for online learning. Lin et al. (2011) state that “the vast majority of organizations have only just started to search for ways to construct and maintain e-learning environments” (p. 46). The Open University of Catalonia in Spain, the Athabasca University in Canada, and the University of Phoenix Online in the USA provide over 20,000 students each with fully online courses (Bates, 2004). Bates and Pool (2003) have described these developments graphically:

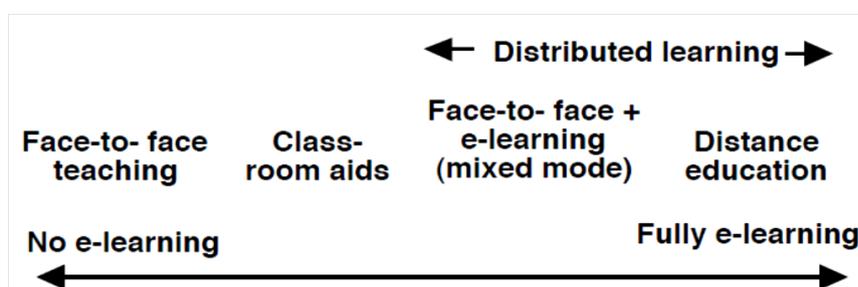


Figure 5: The Continuum of e-learning in formal education (Bates & Pool, 2003)

Brennan et al. (2014) view the concept of online education as one of the innovative practices that higher education institutions implement by relying on various technological advancements, in order to increase student engagement, improve learning outcomes, diversify choice of subjects, and increase flexibility in terms of delivery. They also categorize the delivery of on-line education in three particular forms: (a) an *adjunct model*, with the use of Information Communication Technology (ICT) to enhance traditional face-to-face or distance learning; (b) a *mixed model*, according to which a significant portion of the course is offered on-line; and, (c) a completely *on-line mode*, in which ICT is the primary teaching medium (Brennan et al., 2014).

E-learning is identified with conveniences for both students (off-campus learning, lack of strict demand on times, flexible studying timescales) and professors (the preparation involved can be less taxing than lecturing on-campus) which is one of the main reasons why it has become so popular (Kulkarni, 2013). However, universities must address some critical success factors in order to be able to improve their quality and ensure successful competitive performance in e-learning.

Soong et al. (2001) state that the main critical success factors of e-learning are:

- a. human factor meaning the instructors (motivational skills, investment of time and effort);
- b. technical competency of instructors and students;
- c. constructivist reasoning of instructors and students;
- d. high level of collaboration; and,
- e. sufficiently supported technical infrastructure.

Other critical success factors are academic acceptance (communication between educationalists and technologists, evaluation and connection of good practices) both within the institution and from other institution's experiences (Mcperson & Nunes, 2006), content structure (with focus on the learning materials, rather than the system usability) (Lin et al., 2011), and costs and maintenance (Salmeron, 2009). Costs are distinguished in: (i) delivery factors (learning context, student characteristics and instructional management characteristics) (Lee & Owens, 2001); and, (ii) university support (Lin et al., 2011).

Concluding only some of the high points in the vast concept of e-learning, there is a wide range from electronic books and learning materials, podcasting, blended learning to full on-line delivery of courses (Brennan et al., 2014), which helps in the

reduction of knowledge and skill gap across the globe and in the establishment of equalities in socio-economic and technological achievements (Mishra, 2008).

### ***The e-learning concept***

The eLearning Initiative and Action Plan, has led the European Commission to acquire valuable experience in encouraging cooperation, networking and the exchange of good practice on a European level (Åström, 2008). E-learning has become very popular in European higher education due to the fact that it essentially supports lifelong learning and internationalisation. Moreover, *The eLearning programme* is about realising the vision of enabling technology to serve lifelong learning, and its objective is that Information and Communication Technologies (ICT) can be effectively integrated in education and training systems in Europe (Åström, 2008).

More specifically, the focus of the programme is on “a set of actions in high priority areas, which were chosen for their strategic relevance to the modernisation of Europe’s education and training systems” basing on the following four lines of action (Åström, 2008, p. 18):

- a. Promoting digital literacy;
- b. European virtual campuses;
- c. e-Twinning of schools in Europe and the promotion of teacher training;
- d. Transversal actions for the promotion of e-learning in Europe.

The quality of e-learning is not exempt from assessment. This is evidenced by the extended E-xcellence project, undertaken under the auspices of EADTU and co-funded by the European Commission eLearning programme, which aims “to supplement existing systems of quality assurance on e-learning specific issues, by focusing on parameters of quality assurance that govern e-learning” (Åström, 2008, p. 19). The priority elements of innovative higher education that need to be improved are accessibility, flexibility, interactiveness and personalization, and one basic tool of improvement is best practices benchmarking in the field of e-learning (Ubachs & Mulder, 2012).

### ***MOOCs***

Massive on-line courses (MOOCs) are free, open access and scalable on-line courses that provide capital on high volume student classes and encourage peer learning networks, in place of more conventional synchronous learning and academic

construction (Universities, 2013). In online pedagogy, MOOCs are recent phenomena beginning in 2008, when Stephen Downes and George Siemens created the first *Massive Open Online Course* (Downes, 2013).

MOOC's as an innovative phenomena are evolving rapidly and are distinguished between: (a) *constructivist MOOCs* (cMOOCs) that emphasize creation, creativity, autonomy, and social networked learning; and, (b) *more traditional MOOCs* (xMOOCs) that emphasize a more traditional approach through video presentations, short quizzes and testing (Siemens, 2012). The cMOOC approach, includes a prevalent interest in “building collective capabilities of the whole network” and concepts of reward and personal status, while students are provided with the opportunity to develop their peer assessment skills (O’Toole, 2013, p. 5).

This innovative way of teaching and learning has come to shake all the former conventional and traditional approaches. MOOCs’ effect on traditional structures has brought to the fore challenges regarding the important themes of sustainability, pedagogy, quality and completion rates, and assessment and credit (Jordan, 2013; Yuan, 2013). Given that MOOCs are an open and free form of educating and learning, Kedem (2012) points out the skepticism about the generation of revenues. There also have been criticisms about the pedagogic models implemented (Angrymath, 2012; Thrun, 2013) and the development of appropriate quality mechanisms (Edinburgh, 2013). However, the provision of revenues streams is being attempted and launched through key partnerships (Coursera, 2013).

Despite a great number of literature reviews that favorably compare online or distance learning with classroom-based instruction (Kulkarni, 2013), MOOC learning outcomes are much in doubt with little evidence to show for them (Miller, 2015). According to Allen and Seaman (2013), in 2012, 77% of academic leaders tended to accept that online has similar or better outcomes than face-to-face learning which represents an increase of almost 40% since 2003. However, “there is still a real need for pedagogical research on MOOCs” (Miller, 2015, p. 104).

### ***Blended Learning***

Blended learning is the one that combines digital instruction with live, responsible teachers, and promises to improve student outcomes dramatically (Impact, 2013). Giving a more specific definition to the term, it is the effective integration of traditional face-to-face instruction and on-line learning approaches, which can be

implemented as a transformative solution to problems with students learning and to organizational and institutional needs within higher education (De George-Walker & Keefe, 2010). It is also viewed as a solution to increasing class size and student dissatisfaction with learning (Garrison & Vaughan, 2013). Moreover, blended learning has a positive impact on participants due to its flexibility, reflection, interpersonal and team-work skill development, and motivation (Garrison & Kanuka, 2004). Finally, it is marked by increase in efficiency and provision of convenience for students and academic faculty, as well as the desire to give access to more students (Brennan et al., 2014).

Garrison and Kanuka (2004) approach the implementation of blended learning in higher education institutions by the following essential steps:

1. The creation of a formal approach to policy and operations which support blended learning;
2. A strategic and operational planning by universities;
3. The correct assessment of resources;
4. The scheduling of courses;
5. The provision of support to faculty and student participants.

### ***Learning Analytics and Academic Analytics***

The use of Learning Analytics (Discourse, Social Learning, and Disposition Analytics), which includes the use of data, learner-produced data, statistical analysis models, and explanatory and predictive models, is highly important for discovering information and social connections, for predicting and advising people's learning, and for gaining insights and acting on complex issues (Brennan et al., 2014). Business and commerce are underpinned by the Learning Analytics techniques which provide consciousness on customer data, identification of behaviours, recommendations and support on advertising strategies (Brennan et al., 2014). In higher education, this particular theory is put into practice by using online learning platforms, such as Blackboard and MOOCs that indicate the kind of data needed for feedback through continuous experimentation and detailed ground-work (Brennan et al., 2014). Learning Analytics purvey higher education institutions with more business approaches that include greater consumer choice and diversity, and render the relationships between key actors with the possibility to change due to the changing

supply of and demand for higher education and current changes in higher education funding (Brennan et al., 2014).

Similarly, Academic Analytics regard the application of business tools and practices in higher education at an institutional level, and provide opportunities for quality in teaching and learning, and institutions as a whole (Brennan et al., 2014):

- a. *students* are provided with potentiality for grater individualization, choice and diversity in that, they reflect on their learning and the learning of others, and with the ability to adapt content and facilitate learning at their own pace;
- b. *teachers* are provided with a much clearer example of student engagement and performance in large online systems, with large online forums of postings and clear ideas about the instructional practice and course design, and with the ability to track the individual performance;
- c. *institutions* can monitor student performance in terms of dropout and progression rates, evaluate their courses and improve outcomes for students, implement processes that enable the use of Learning Analytics, and face difficulties regarding budget cuts and global competition;
- d. *commercial organizations* constitute key stakeholders or for-profit higher education institutions in processes that emphasize and increase employability, have shaped their culture around modeling techniques for performance and are now developing analytic features, such as Blackboard Analytics and Student Success Stories (Blackboard, 2013; Ellis, 2012);
- e. *government and regional organizations* are also interested in Academic Analytics and are highly concerned with educational performance and general improvement measures.

Learning Analytics, Blackboard, FutureLearn (UK), the eAdvisor, the OpenHPI, and the Leuphana-ThinkTank (Germany) are a good illustration of the e-Learning concept in higher education across the globe (Brennan et al., 2014). They are provided by higher education institutions that are interested in better using the increasing volumes of students and tracking student performance without students' physical presence. The eAdvisor, for instance, focuses on the interaction between the student and the academic advisor, tracks student progress and finds solutions for the students in case of going of track, facilitates the allocation of university facilities and instructors, and also facilitates the transfer of student records (Brennan et al., 2014).

However, these innovation initiatives currently meet challenges of implementation due to insufficient infrastructures, traditional mindsets and lack of specific assessment and evaluation. Brennan et al. (2014) suggest that “the success of technology-enabled innovative practices aimed to improve student performance does not depend on a particular regulatory or political context that favours the development of such initiatives, but it is rather related to the strength of institutional support given to what usually starts as a bottom up endeavour bringing together different institutional stakeholders, enhanced by top-down incentives provided via funding arrangement to subsidize small-scale experimentation before being scaled and implemented more widely within the institute” (p. 67) .

### ***Problem-based learning***

Innovation in higher education does not solely include transformations in teaching and learning through the use of online technology. Traditional forms of education include innovations that are not dependent on the employment of technology (Brennan et al., 2014). Though, modernization of the higher education concept can be realized through the creation of a comfortable learning environment where “the effectiveness of high-quality education is achieved by activation of a student himself” (Anisimova & Krasnova, 2015, p. 186). The focus is on problem-based learning (PBL) which may rely less on technology but rather constitutes an innovative interactive method of teaching and learning.

Problem-based learning is a special form of cognitive activity according to which the student is not just definitely informed but also “capable to acquire practical skills and abilities, to absorb the gained knowledge, arrange them in logical chain, organize them, make them an organic part of world outlook, personal feeling” (Anisimova & Krasnova, 2015, p. 186). By definition, PBL constitutes “a variety of enquiry-based learning that uses real-world problems and centers of learning through solving these complex problems to promote knowledge, acquisition and collaborative learning” (Brennan et al., 2014, p. 44). Historically, in the 1960’s, PBL was first developed at McMaster Medical School for the mastery of critical problem solving by students (Brennan et al., 2014).

Notably, innovative interactive forms of teaching including PBL are appealing to the majority of universities identified with a culture of quality that is anthropocentric

or student-centered. This particular fact lies in the advantages of interactive forms of teaching being widespread in the higher education sector (Anisimova & Krasnova, 2015, p. 186-187):

- activization of active-cognitive and cogitative activities of students;
- involvement of students in the educational process, acquisition of new material by not as passive listeners but as active participants;
- development of analysis skills and critical thinking;
- increase of motivation for studying a discipline;
- creation of favorable atmosphere at studies;
- development of communicative competences of students;
- reduction of a share of traditional class work and increase of volume of a student's self-guided work;
- development of skills of mastering modern technical devices and technologies of information processing;
- formation and development of ability to find information independently and to determine a level of its reliability, etc.

It is common knowledge that everything modern and newly developed is unfortunately under the dictates of the already established or, in other words, the fixed way of doing things. In regard with PBL, this innovative method of teaching and learning is primarily challenged by changes in supply of and demand for higher education (Brennan et al., 2014). Major and Palmer (2001) agree that challenges for innovative methods in traditional education include the optimization of its efficiency and effectiveness and that PBL courses cover about 80% of the same curriculum compared to a conventional course in the same amount of time – and assessment procedures, as traditional methods (e.g. examinations) may not be appropriate for newer course structures. Zuberi (2011) states that problems in PBL “range from the variable understanding of PBL, scarcity of resources, and amount of resistance encountered to the educational level of entering students” (p. 123).

PBL is a whole concept and not a teaching modality and, thus, may be totally changed by different norms, beliefs, values and external factors such as (Zuberi, 2011, p. 123-124):

- Student selection, either graduate entry or school leavers, must take into consideration criteria other than academic achievement;

- Younger students may need more structure initially;
- Class size, especially the small group size with five to six students for individualized attention;
- Development and sequencing of the PBL cases, and designing their complexity to match the level of the students in that stage of the curriculum;
- PBL curriculum focusing only on the first 2-years rather than the whole curriculum;
- Development of resources around the cases and for the curriculum, including lectures, study guides, and virtual resources;
- Faculty and student understanding of the concepts;
- Faculty selection of generalist PBL tutors (expert vs. non-expert);
- Faculty training and continued support;
- Resource identification and development, including finances.

Added to the above, PBL approaches can be costly not only financially, but also in relation to time and effort on preparation, teaching and assessment (Brennan et al., 2014).

Universities need to overcome these bottlenecks in order to acquire successful outcomes of innovative methods of teaching and learning. Brennan et al. (2014) suggest solutions to the problems already mentioned (p. 53-54) at:

- a. an individual level, a more cooperative and horizontal relationship between the direct actors (academics and students), where students provide more inputs to tasks traditionally performed by academics, while academics take part more directly of the learning experience of students by coaching and mentoring, rather than lecturing only;
- b. an institutional level, increased cooperation in all of the practices examined among direct and indirect actors, including voluntary cooperation among higher education institutions, cooperation among higher education institutions initiated by the government, and voluntary cooperation among higher education institutions and private companies.

## **7. RESEARCH ANALYSIS**

### **7.1 FEATURES OF QUALITY ANALYSIS**

#### ***Research Methodology***

In this section, the methodology used in the survey is highlighted and unpacked for the essentiality of vision in higher education institutions and for their ability to challenge society's need for knowledge. The purpose of using the qualitative research method is to describe how deputies in higher education institutions perceive the concept of quality at an institutional level. Quantitative data were also gathered to spy out the land of how universities around the globe operate a quality system and what are the particular methodologies and tools that they use. The research strategy is idiographic, involving the study or explication of individual cases or events.

#### ***Results of the Survey***

##### **➤ *Vision***

Setting the vision in higher education institutions is one of the basic principles that guide successful operation over the years and support the quality of the purpose and goal of higher education. The universities that were surveyed maintain a reasonable level of organization and accountability, and thus were able to contribute in this survey.

*Q1A: What is the university's vision?*

All the participants proved that they are conscious of quality in their institutions by stating their vision, as illustrated in table 1.

PARTICIPANT	VISION
<b>Tufts University</b>	Being an innovative, all inclusive, student-centered university devoted to excellence in creating, preserving, disseminating and applying knowledge and ideas that will result in a large impact on challenges of society.
<b>New York University</b>	Seeks to take academic and cultural advantage of its location and to embrace diversity among faculty, staff, and students to ensure a wide range of perspectives, including international perspectives in the educational experience.
<b>Maastricht University</b>	Seeks to be leader in learning and the most international and student based research university, focused on problem-based learning.
<b>Handels University</b>	Seeks to develop and disseminate knowledge of highest international standard.
<b>Georgetown University</b>	Aims to develop leaders – continue providing significant fraction of the US Federal Government officials; but also educate leaders in medicine, law and international business.
<b>Aalto University</b>	Strengthening the Finnish innovation system by way of integrating expertise in science and technology, business and economics as well as art and design.
<b>Purdue University</b>	Seeks to deliver higher education at the highest proven value.
<b>Penn State University</b>	Visualizes transforming community and students into global leaders.
<b>Olin College of Engineering</b>	Aims to lead the transformation of undergraduate engineering learning experience to educate the next generation of innovators who want to be the world.
<b>University of Birmingham</b>	Being a leading global institution that makes a difference to its city and region as well as being recognized around the world for its pedagogy and research.
<b>University of Sheffield</b>	Being recognised as providing world-class research and education across a wide range of disciplines.
<b>University of Zurich</b>	Strives to uphold the highest quality in all its activities and to secure and improve quality, as it regularly monitors and evaluates its performance, and to continue positioning itself among the world's foremost universities by attracting the best researchers and students and by setting priorities in research and teaching.
<b>Vrije University of Amsterdam</b>	To acquire not only a greater depth of knowledge, but also a wider one. Students, researchers, and PhD candidates and employees are asked and expected to look further than their own interests and their own field, and further than what is familiar.

<b>University of Gothenburg</b>	Continue securing that the university has the required autonomy and that it is able to respond to all of the changes around higher education, in order to clearly define a line of action for the future – to be an independent knowledge producer.
<b>University of Eastern Finland</b>	Seeks to find interdisciplinary solutions to global challenges.
<b>University of Aberdeen</b>	In process of developing a new Strategic Plan (2015-2020) that will include a new vision and mission statements.
<b>Swinburne University of Technology</b>	Being Australia’s leading university for science, technology and innovation.
<b>University of Colorado Boulder</b>	Strives to be a leading model of the new flagship university of the 21 <sup>st</sup> century through excellence in learning and discovery in a global context by setting new standards in education, research, scholarship and creative work that will benefit Colorado, the country and the world.
<b>University of St.Gallen</b>	As one of Europe’s leading business universities, it is recognised globally as a place for thought leadership on current economic, business, and societal matters and for the development of talent to integrate a variety of perspectives and act entrepreneurially and responsibly.
<b>University of Amsterdam</b>	As a broad, research intensive institution rooted in the history of Amsterdam and an internationally oriented academic community, it succeeds in competing with leading universities in the Netherlands and around the world, by developing and transferring academic knowledge as a rich cultural resource and foundation for sustainable progress.

**Table 1:** Vision for Quality in Higher Education

➤ *Challenging the need for knowledge*

Since tertiary education matters to a country’s future and people, Q5 in Part A of this survey invited the participants to report their standpoints of responding to societal challenges for knowledge.

*Q5A: Can this university challenge society’s need for knowledge? If yes, in what way?*

The participants stated their views on this edgy issue, as illustrated in table 2.

**RESPONDENT****CHALLENGE****Tufts University**

The Strategic Plan calls for the university to engage in research both within and between the schools (interdisciplinary) that will have profound impact on society. The university is particularly strong in the areas of health science and nutrition.

**New York University**

As a research university with access to cutting-edge thinking and the ability to move across disciplines, its structure and mission statement reinforce the idea that scholarship and industry indeed facilitate and communicate knowledge in new ways. It has the ability not only to meet society's need for knowledge, but also shape it.

**Maastricht University**

Responding to societal challenges is a core element of the institution's current strategic programme which involves interdisciplinary research themes: Quality of Life, Europe in Globalizing World, Learning and Innovation.

**Handels University**

The university challenges society's need for knowledge through its independence.

**Georgetown University**

The university provides students with a world-class learning experience focused on educating the whole person through exposure to different faiths, cultures and beliefs. Students are challenged to engage in the world and become men and women in the service of others, especially the most vulnerable and disadvantaged members of the community.

**Aalto University**

All activities are guided by integrity-honesty, equality, impartiality, and respect for others. The unique profile of the university enables new combinations of science and art, and technology, business and design. Employees with passion create new and courage for open-minded cross boundary thinking to create a better world.

**Purdue University**

The university is seeking to acquire excellence along four broad initiatives: Affordability, Accessibility, STEM leadership, world-changing research, and transformative education.

**Penn State University**

The university translates society's need for knowledge into products and services – through the open laboratory framework – by blurring boundaries between industry and academia.

**Olin College of Engineering**

Students and faculty have a wealth of opportunities to translate invention and innovation into practical solutions that make a difference in people's lives. From working on an internationally minded project to driving an issue of global significance, these projects have real-world applications that directly benefit people around the world.

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<b>University of Birmingham</b>	The university is pursuing independent research and ensuring that this is translated into significant impact in local, national and global society.
<b>University of Sheffield</b>	The university maintains its role in societal challenges through the implementation of specific strategies for Research, Innovation and Knowledge Exchange (basically, dealing with seeking the greatest impact for the university's research activities), and Learning and Teaching.
<b>University of Zurich</b>	The academic excellence of the university brings benefits to both the public and the private sectors not only in Zurich, but throughout Switzerland. Knowledge is shared in a variety of ways, in addition to granting the general public access to its twelve museums and many of its libraries. It makes findings from cutting-edge research available to the public in accessible and engaging lecture series and panel discussions.
<b>Vrije University of Amsterdam</b>	The university has adopted four societal themes to meet today's and tomorrow's societal challenges: Governance for Society, Science for Sustainability, Connected World, Human Health, and Life Sciences.
<b>University of Gothenburg</b>	Researchers of the university in various disciplines are contributing to solutions of both regional and global problems. The university is responsible for lifelong learning and for promoting the general level of knowledge in society. It is engaged in close cooperation with the surrounding society, in work for sustainable development and is an active and appreciated provider of knowledge.
<b>University of Eastern Finland</b>	The university is offering pharmacy, medical, dentistry education, and teachers education – the very much needed in the society – and is also the only university in Finland offering education in Orthodox theology.
<b>University of Aberdeen</b>	The university seeks to add to the knowledge of world and of society.
<b>Swinburne University of Technology</b>	The university is outward focused, highly engaged with industry – aiming to produce the most career-ready graduates and research that are excellent and relevant to industry.
<b>University of Colorado Boulder</b>	By continuously reviewing, assessing, and renewing its curricula, offerings, research and creative work the university stays current in its support of society's needs for education, research output, technology and knowledge transfer, innovations, business and industry start-ups, and peer-reviewed archival journal publications.

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<b>University of St.Gallen</b>	The university focuses on high-class teaching, regional roots and international research, and is well equipped for the competition for the best heads. Its interlinked markets and intercultural challenges prepare students for the challenges of global competition. Its international presence and culture of cooperation attracts excellent teachers and researchers to be able to offer solutions to topical issues of social and economic significance.
<b>University of Amsterdam</b>	The outside world is not represented in the Board structure but comes in through each academic's relations within his/her field. There is much co-operation with the city and with other institutions of higher education in the city, headed by the Amsterdam Economic Board. Around the Science Faculty and the Medicine faculty, there are Business Parks. Through IXA (Innovation Exchange Amsterdam) and the Amsterdam Centre for Entrepreneurship, the university helps linking academics to business development.

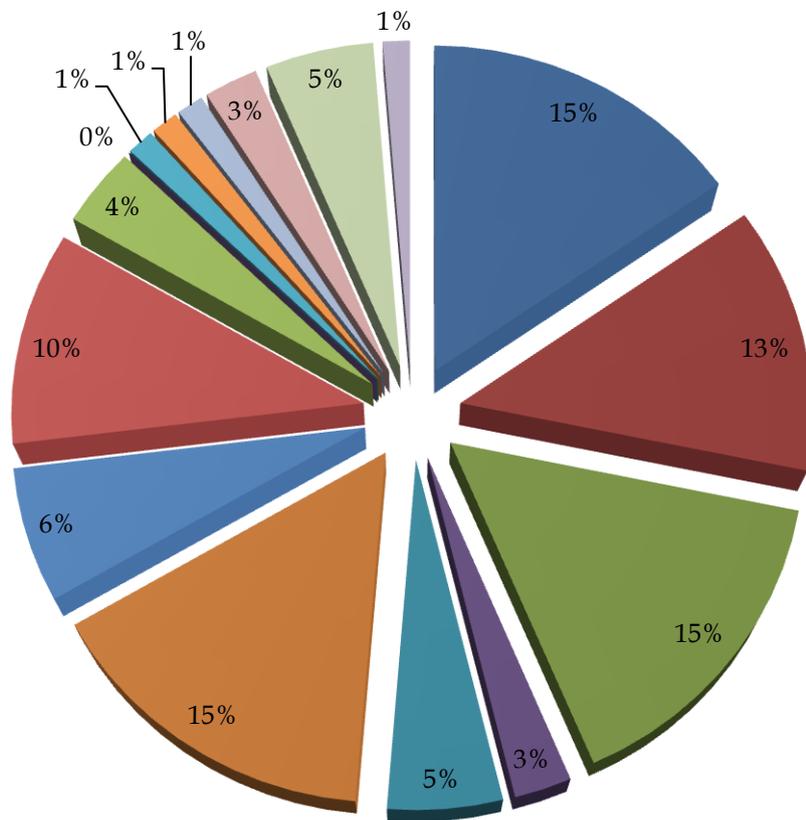
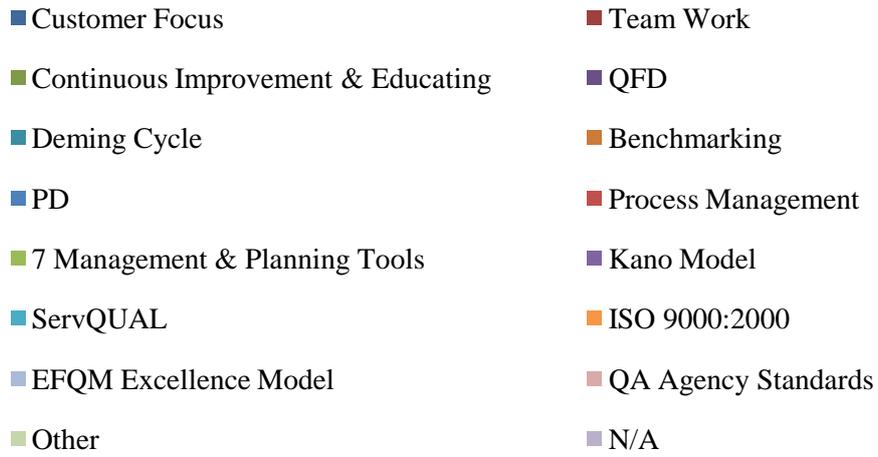
**Table 2:** Universities in the Service of Society

➤ *Operating a quality system in higher education institutions*

The participating universities granted invaluable data on the basic values, methodologies, and tools that support their quality systems by answering Q7 in Part A of this project. Figure 1 illustrates the supporting methodologies and tools of quality systems in higher education institutions internationally.

*Q7A: Does this university operate a quality system? If yes, state the basic values, methodologies and tools that support it.*

*Customer Focus – Team Work – Continuous Improvement & Educating – Quality Function Deployment (QFD) – Deming Cycle – Benchmarking – Policy Deployment (PD) – Process Management – Kano Model – 7 Management & Planning Tools – ServQual – ISO 9000:2000 – EFQM Excellence Model – Other*



**Figure 1:** Basic Tools and Methodologies Used by HEIs

## 7.2 BENCHMARKING ANALYSIS

### *Research Methodology*

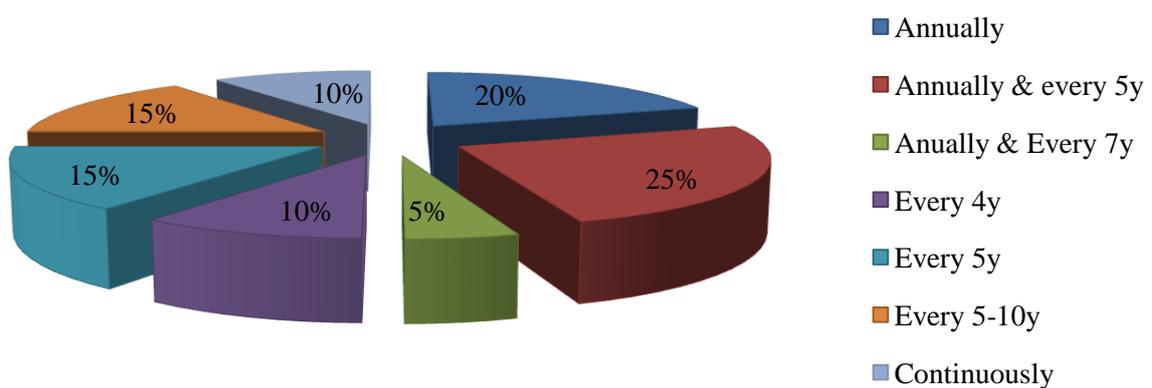
In this section, this exploratory survey aims to point out the structure and applications of quality assurance, by providing evidence for understanding the implementation of benchmarking as a competing tool for quality in higher education institutions. This second phase of the project also uses a mixed method approach, including both qualitative and quantitative analysis. Given the openness of some questions, quantitative analysis was achieved by codification of the answers in numerical data attributed in a statistical way, by the use of relevant approaches and techniques (charts, graphs etc).

### *Results of the Survey*

#### ➤ *Strategic objectives*

Getting into the analysis, Q1 in Part B of the questionnaire regards the frequency of setting strategic objectives. The amount of the universities that were surveyed provided their insight on the particular topic, as illustrated in figure 2.

*Q1B: How often does this university set objectives?*

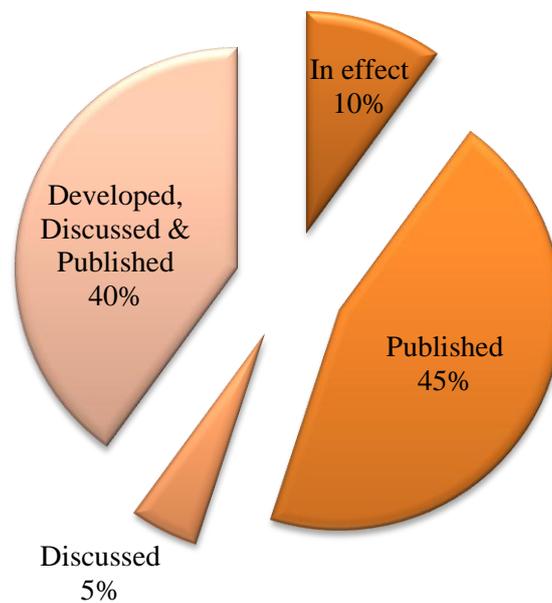


**Figure 2:** Objectives Set by HEIs

➤ *Dissemination of strategic goals*

This project also explores the transparency of strategic and generic goals and objectives, as an indication of mutual trust and interest among the interested parties of an institution. The participants stated their viewpoints on how transparency can be achieved by answering Q2 in Part B, as given in figure 3.

*Q2B: Is there transparency of strategic and generic objectives? If yes, in what ways?*

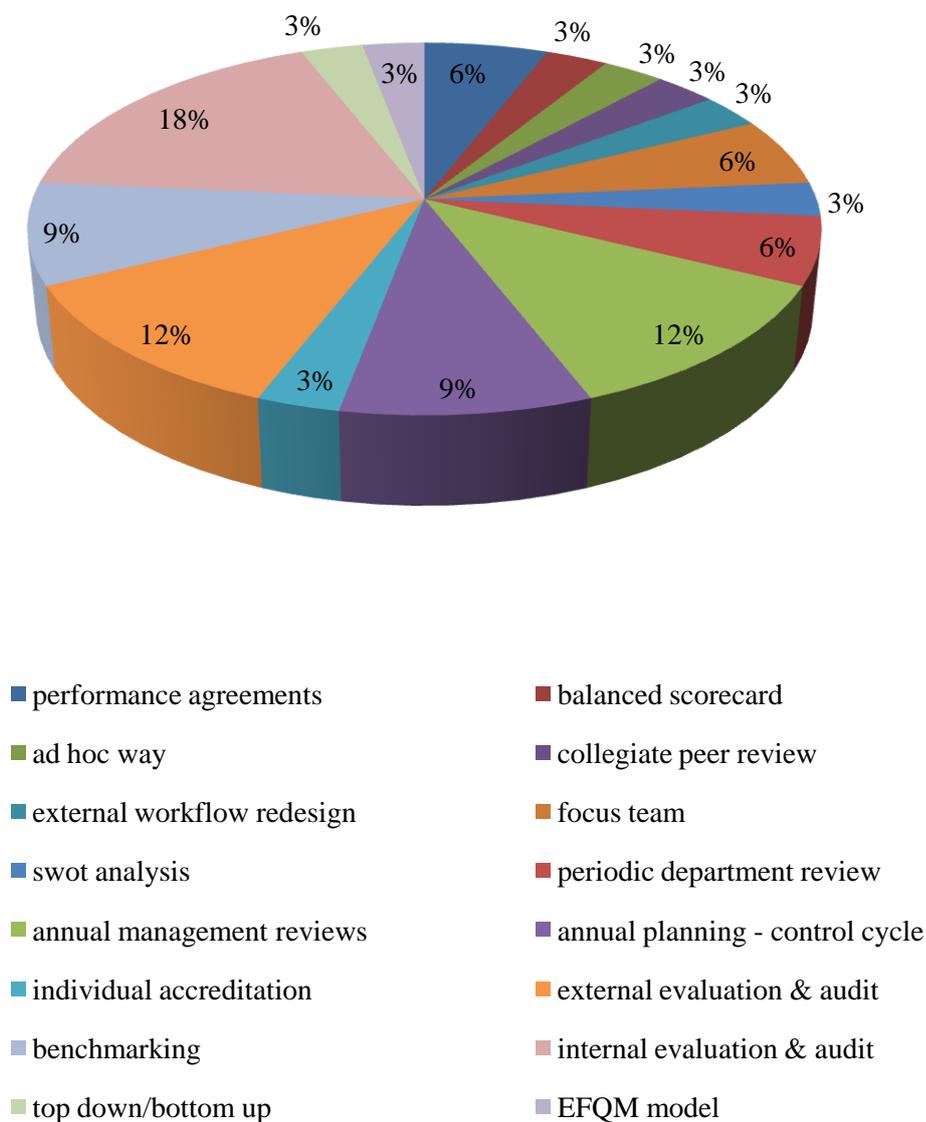


**Figure 3:** Transparency of Objectives in HEIs

➤ *Analysis of institutional processes*

A variety of approaches or models are used for the analysis of institutional processes, including benchmarking. Q3 in Part B of this survey, asked the participants to provide their particular tools for analyzing their institutional processes. Their standpoints are presented in figure 4, as follows.

*Q3B: What approach or model do you use in analyzing your institution's processes?*



**Figure 4:** Analysis of Institutional Processes

➤ *Customer needs*

Proceeding with the analysis of data, Q4 in Part B of this project provides evidence of how universities elicit their customers' needs and the particular procedures they use to manage this task, as a prior step to practicing benchmarking.

*Q4B: Do you have a methodology specifically for eliciting, documenting and validating customers' needs and expectations? If yes, name it.*

From all participants, 11 out of 20 stated the following methodologies on eliciting, validating and documenting customers' needs and expectations correspondingly. The respondents reported their ability to gain insight through:

- direct feedback, given the small size of the institution;
- a range of institutional, national and international surveys;
- a selected topics approach;
- the establishment of focus groups and working committees;
- annual surveys and award fees;
- a beginning college survey indicative of the needs for higher education;
- frequent feedback evaluations with the use of questionnaires and related technologies;
- student satisfaction surveys (generic content);
- student satisfaction surveys on key interests regarding the function of teaching and learning;
- a Division of Educational Development, which is committed to observing and evaluating national and international trends in university-level teaching and defining strategies and focal points;
- a widely used National Student Survey, a biannual survey among graduates and employees, and a distinct subject and curriculum evaluation tool (the UvA Q);

With the above being the most specified and concrete of the findings, 3 participating members provided vague responses, such as: (a) through various procedures; (b) through a development action; and, (c) through several processes, methods and procedures. Additionally, 3 participants reported no systematic methodology or specific methodology, whereas 3 out of 20 decided to provide no information.

➤ *Customer satisfaction*

Keeping students satisfied with the provided teaching, learning, and support services is crucial for an institution’s sustainability and development.

*Q5B: Do you have a methodology or tool for taking into account customers’ satisfaction with the institution’s services? If yes, name it.*

All participants reported how they measure the satisfaction of their customers with their education services, as illustrated in table 3.

<b>PARTICIPANT</b>	<b>CUSTOMER SATISFACTION METRICS</b>
<b>Tufts University</b>	<ul style="list-style-type: none"> <li>• use of survey instruments and development of metrics to measure compliance with various Service Level Agreements (SLAs), customer satisfaction, and error rates</li> </ul>
<b>New York University</b>	<ul style="list-style-type: none"> <li>• parent and staff surveys, along with student and graduate evaluation surveys</li> </ul>
<b>Maastricht University</b>	<ul style="list-style-type: none"> <li>• establishment of internal and external assessments</li> </ul>
<b>Handels University</b>	<ul style="list-style-type: none"> <li>• alumni surveys are of high importance in the process of evaluating the provision of educational services</li> </ul>
<b>Georgetown University</b>	<ul style="list-style-type: none"> <li>• annual surveys of student customers and award fees</li> <li>• federal customers provide different input on the ability to meet their objectives through award fees</li> </ul>
<b>Aalto University</b>	<ul style="list-style-type: none"> <li>• use of webropol as a tool for surveys on customer satisfaction</li> </ul>
<b>Purdue University</b>	<ul style="list-style-type: none"> <li>• routine administration of student and alumni surveys</li> </ul>
<b>Penn State University</b>	<ul style="list-style-type: none"> <li>• conduction of a wide range of surveys</li> </ul>
<b>Olin College of Engineering</b>	<ul style="list-style-type: none"> <li>• conduction of the National Survey of Student Engagement annually</li> <li>• graduate surveys conducted 6 months – 2 years – 5 years after graduation to gain retrospective opinions</li> <li>• students surveys conducted each semester for course and instructor evaluations</li> </ul>

<b>University of Birmingham</b>	<ul style="list-style-type: none"> <li>• completion of an internal survey by students at the end of their second year, prior to the completion of the external National Student Survey by students in their final year</li> </ul>
<b>University of Sheffield</b>	<ul style="list-style-type: none"> <li>• conduction of the National Student Survey, the Times Higher Student Experience Survey, the iGraduate Survey, and other internally commissioned surveys</li> </ul>
<b>University of Zurich</b>	<ul style="list-style-type: none"> <li>• centrally organized student course evaluations (LVB) conducted at regular intervals by the Office for Academic Program Development</li> </ul>
<b>Vrije University of Amsterdam</b>	<ul style="list-style-type: none"> <li>• university wide service scan (planned for this year)</li> </ul>
<b>University of Gothenburg</b>	<ul style="list-style-type: none"> <li>• compulsory course evaluation by students</li> </ul>
<b>University of Eastern Finland</b>	<ul style="list-style-type: none"> <li>• involvement of external members in the University Board and in the University Collegiate Body</li> <li>• construction of questionnaires for customers</li> </ul>
<b>University of Aberdeen</b>	<ul style="list-style-type: none"> <li>• conduction of a wide range of institutional, national and international satisfaction surveys</li> </ul>
<b>Swinburne University of Technology</b>	<ul style="list-style-type: none"> <li>• construction and distribution of student satisfaction questionnaires</li> </ul>
<b>University of Colorado Boulder</b>	<ul style="list-style-type: none"> <li>• frequent performance of satisfaction surveys</li> <li>• annual management review</li> </ul>
<b>University of St.Gallen</b>	<ul style="list-style-type: none"> <li>• course evaluations, graduate and alumni surveys for teaching and executive education</li> <li>• use of specific KPIs for management evaluation</li> </ul>
<b>University of Amsterdam</b>	<ul style="list-style-type: none"> <li>• administration of the National Student Survey</li> <li>• annual survey for staff and services satisfaction</li> </ul>

**Table 3:** Ways of Measuring Customer Satisfaction

➤ *Evaluation of educational programmes*

All of the 20 respondents contributed to the raised issue of evaluation of educational programmes, by answering Q6 in Part B. They stated the particular processes that they implement to manage this handful task.

*Q6B: How do you monitor evaluation of the educational programs?*

Practically, higher education institutions manage to evaluate their educational programmes as illustrated in the following table.

<b>PARTICIPANT</b>	<b>EVALUATION OF PROGRAMMES</b>
<b>Tufts University</b>	<ul style="list-style-type: none"> <li>• conduction of peer reviews of educational programmes by external accreditation organizations</li> <li>• internal surveys conducted by the Institutional Research Group</li> </ul>
<b>New York University</b>	<ul style="list-style-type: none"> <li>• under the new accreditation guidelines of the accrediting association body (MSCHE)</li> <li>• compliance with standards through the submission of documents in prior a self-study process</li> </ul>
<b>Maastricht University</b>	<ul style="list-style-type: none"> <li>• student feedback</li> <li>• national education rankings and accreditation</li> <li>• Elsevier, Keuzegids, CHOI benchmarks</li> </ul>
<b>Handels University</b>	<ul style="list-style-type: none"> <li>• reoccurring external evaluations</li> <li>• accreditations</li> </ul>
<b>Georgetown University</b>	<ul style="list-style-type: none"> <li>• annual surveys voluntarily completed by each student for each class</li> <li>• individual questionnaires voluntarily completed by each student for each class</li> </ul>
<b>Aalto University</b>	<ul style="list-style-type: none"> <li>• annual evaluation in management review</li> </ul>
<b>Purdue University</b>	<ul style="list-style-type: none"> <li>• regional accreditation</li> <li>• individual accreditation requirements for many programmes of study</li> </ul>
<b>Penn State University</b>	<ul style="list-style-type: none"> <li>• outcomes based evaluation</li> </ul>
<b>Olin College of Engineering</b>	<ul style="list-style-type: none"> <li>• currently in the process of creating a new system for assessing educational outcomes</li> </ul>

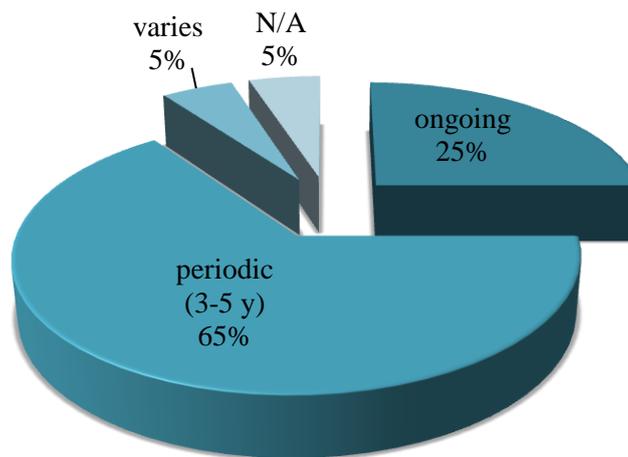
<b>University of Birmingham</b>	<ul style="list-style-type: none"> <li>• annual review of each educational programme in the light of various data on performance and the comments of external examiners</li> <li>• quinquennial review of schools</li> <li>• a whole day allocated to consideration of various matters, as part of the review</li> </ul>
<b>University of Sheffield</b>	<ul style="list-style-type: none"> <li>• use of information from graduate and student surveys, and other internally commissioned surveys combined with comments from external examiners' reports</li> </ul>
<b>University of Zurich</b>	<ul style="list-style-type: none"> <li>• centrally organized student course evaluations (LVB) conducted at regular intervals by the Office for Academic Program Development</li> </ul>
<b>Vrije University of Amsterdam</b>	<ul style="list-style-type: none"> <li>• yearly report about the process of quality assurance and educational results written by each faculty</li> <li>• annual meeting with the Rector of the university for the discussion of the report</li> </ul>
<b>University of Gothenburg</b>	<ul style="list-style-type: none"> <li>• various processes of evaluation</li> <li>• national agency's evaluations</li> </ul>
<b>University of Eastern Finland</b>	<ul style="list-style-type: none"> <li>• evaluation by external members in the University Board and in the University Collegiate Body</li> <li>• construction of questionnaires for customers</li> </ul>
<b>University of Aberdeen</b>	<ul style="list-style-type: none"> <li>• evaluation and review of all courses and programmes via an institutional process</li> <li>• institutional process for the evaluation of courses and programmes also evaluated, along with other academic processes as part of external quality assurance processes</li> </ul>
<b>Swinburne University of Technology</b>	<ul style="list-style-type: none"> <li>• evaluation under the requirements of the national quality agency (TEQSA) and the Academic Senate's and Council's guidance and supervision</li> </ul>
<b>University of Colorado Boulder</b>	<ul style="list-style-type: none"> <li>• external accreditation processes</li> <li>• internal institutional reviews</li> </ul>
<b>University of St.Gallen</b>	<ul style="list-style-type: none"> <li>• course evaluations</li> <li>• surveys for students and alumni</li> <li>• programme goal measurement for the assurance of learning</li> </ul>
<b>University of Amsterdam</b>	<ul style="list-style-type: none"> <li>• independent external accreditation process for each teaching programme</li> <li>• annual use of the Deming Cycle internally, with results from UvA Q tool being included</li> </ul>

**Table 4:** Ways of Evaluating Educational Programmes

➤ *Evaluation of institutional processes*

Moving on with the analysis of data, Q7 in Part B asked the participants to declare how often they evaluate their institutional processes for improving quality in their institutions. Figure 5 is indicative of the relevant frequency.

*Q7B: How often are the institution's processes evaluated?*



**Figure 5:** Frequency of Evaluation of Institutional Processes

➤ *Academic staff evaluation*

It is important that the evaluation of the academic staff of universities takes place on a regular basis to avoid undesirable inputs and outputs. Q8 in Part B of the survey provides valuable data on this particular issue.

*Q8B: How often is the institution's staff evaluated?*

From all participants, 17 out of 20 reported to evaluate their academic staff annually, 2 universities stated evaluation in phases of recruiting and promotion and 1 university provided the survey with no answer.

➤ *Consideration of overall evaluation results*

Q9 in Part B examined whether the evaluation results are taken into account in order for any of the feedback and procedures to change.

*Q9B: Are the evaluation results taken into account in order for any of the feedback and procedures to change?*

Here, all of the respondents were found positive and agreed.

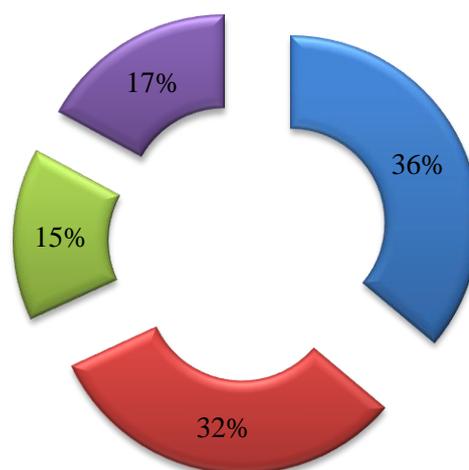
➤ *Types of benchmarking*

The aim was the gathering of data that report the use of the most common types of benchmarking by higher education institutions internationally. A simplistic statistical analysis of data was conducted through Q10 in Part B, as all of the participants responded positively and identified the particular types that they practice. The results are displayed in figure 6, as follows.

*Q10B: Does the university use any of the following types of benchmarking?*

*Internal – Competitive – Functional – Generic*

■ Internal ■ Competitive ■ Functional ■ Generic



**Figure 6:** Types of Benchmarking Used by HEIs

➤ ***Benchmarking payoffs***

Additionally, this action of research sought for a sound judgment on the results attained by the use of benchmarking. Respondents were encouraged to report the main advantages that they have observed by practicing benchmarking in their institutions. They outlined the following, by answering Q11 in Part B of the project.

*Q11B: Has the use of benchmarking led to competitive advantage and reduced costs? If yes, refer at least one example.*

Consequently, the employment of benchmarking has led to:

- competitive advantage, but seldom to reduced costs;
- reorganization of the support of the organization and a reduction of the overhead of national universities considered of superiority;
- improvement of quality in both research and education;
- high decrease on administrative costs;
- reduction in total costs of student attendance;
- grant application costing in the support for research and also to the sharing of certain costs with other local universities;
- increased success in recruiting and improvement of enrolment management;
- better service and consistency in getting a question answered or resolving a service issue;
- a much higher level of competence than the financial resources imply (retained equity, or endowment), much higher efficiencies than those of other local institutions;
- increased improvement and more satisfying evaluations from departments taking part in benchmarking projects;
- specific indicators in the field of research and use of these information during re-accreditation processes;
- determination of position among peer institutions, as data is used to ensure that they stay competitive in attracting, retaining and graduating students;
- staff reduction by about 30%, when redesigning the internal financial function by implementing external benchmarking, and reduction of space by using UK benchmarks on the amount of space used by university functions;

- reduction in costs by benchmarking of Professional Services (project), competitive advantage by benchmarking in terms of quality of research and education.

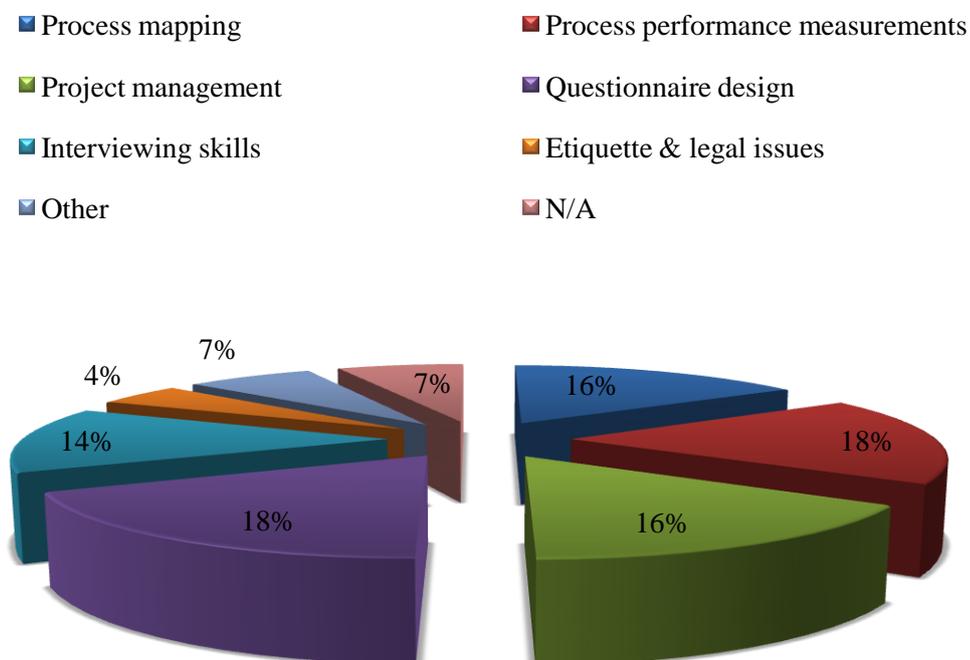
However, 3 out of 20 respondents provided the survey with no answer, while another 2 reported no special advantages, and 1 single respondent reported a lack of awareness for the time being.

➤ **Benchmarking tools**

Proceeding with the analysis of data, Q12 in Part B of this project called for identification of the kind of tools that universities use in order to benchmark. In other words, participants were requested to report how they actually put the theory of benchmarking into practice. They provided the survey with valuable data, as illustrated in figure 7.

*Q12B: Which of the following tools does the university use in order to benchmark?*

*Process mapping – Process performance measurements – Project management – Questionnaire design – Interviewing skills – Etiquette and legal issues – Other*



**Figure 7:** Selection of Benchmarking Tools by HEIs

➤ *Determining a benchmark*

Deciding on the point of reference that an institution desires to be compared with is one of the basic steps for practicing benchmarking. Q13 in Part B, asked for the various perspectives on what the process of selecting a benchmark entails.

*Q13B: How exactly do you choose a benchmark?*

Consequently, selection is made by searching:

- in national and international top rankings;
- geographically, similar providers and best practice performers;
- for long-term indicators to compare trends/developments to choose topic specific benchmarks for particular objectives and initiatives;
- for benchmark institutions that reflect a particular subject mix, comparable local context and level of aspiration/comparability in terms of performance;
- for competitors with similar structure and ambition;
- for comparators by reputation, contacts, and set criteria;
- in U-Multirank, Times Higher Education, Shanghai Ranking, QS World Ranking, and Leiden Ranking;
- for institutions that are in line with publicly available data on a national level, and reflect the institution's progress on its own goals;
- in groups of research competitiveness, and in the top 25 and top 50 of various rankings;
- for best practices from universities that face similar issues;
- for comparison with the Russell Group, which represents 24 leading UK universities committed to excellence in research, teaching and learning, and unrivalled links with business and the public sector;
- among public peers or institutions that are just using processes or programs of interest;
- for accountable institutes/entities, by basing on a number of criteria set by the Evaluation Office's regulations on evaluations;
- for available data on the academic quality of potential benchmarks.

Added to the above data, 2 out of 20 respondents reported that the searching process totally bases on discussion with faculties and participatory bodies and consultation

with the deans. Another 2 participating institutions gave fuzzy answers, like “We mostly choose universities which we like to benchmark” and “Depends on what results we are looking for and on what level the benchmark is going to be performed”. Of all the participants, 2 preferred to refrain and not answer.

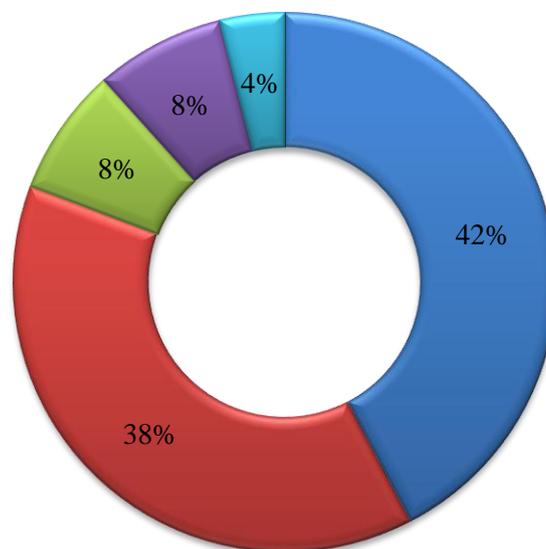
➤ *Searching for the best*

Every university strives to be recognized for quality in education, either nationally or internationally, by comparing its performance to the most successful ones in the sector. All of the participants reported where they start their search for the best, by marking one or more parts of the commonest benchmarking scale. Figure 8 illustrates the gathering of relevant data.

*Q14B: Where do you start the search for the best?*

*World class – Best-in-class – Slightly better – Just different – Other*

■ World class ■ Best-in-class ■ Slightly better ■ Just different ■ Other



**Figure 8:** Finding a Point of Reference

➤ *Analysis of competitors*

This project tries to highlight what happens in the international scene and how is the analysis of challengers actually made through Q15 in Part B of the survey. The participants provided us with the following valuable data.

*Q15B: How is the external operating environment (competitors with similar educational services) analyzed and measured in order to evaluate the institution's processes or set new ones?*

In the US, 3 out of 20 surveyed universities stated that best practices are freely shared through professional organizations and listservs, or by just being able to call up an individual who holds the same employment position at an institution that has a new way of doing something that someone wants to learn more about, and perhaps adopt the same methodology. Additionally, available information on competitors is used for assessment via a particular association that exchanges data among universities, and performance data on competitors are also available via the AAUP, the US News, the World Report, and vis-à-vis competitors.

Yet another US university referred to metrics that are commonly used, such as student satisfaction, school counselor recommendations, undergraduate and graduate selectivity and yield, research intensity, scientific impact, publications, and books. Another respondent pointed out the examination of external data benchmarks, surveys of key stakeholders, and interviews of primary resources as parts of the US external environment analysis. Finally, another 2 US participants reported that the openness of educational institutions allows for sharing the best practices at visits or conferences and that peer review and comparisons take place continuously at all academic and research levels.

In the UK, 2 of the participating universities underlined the process of benchmarking as a basic tool for the analysis of the external operating environment. The same participants pointed out a national comparator group (the Russell Group), which includes the UK's 24 leading research-intensive universities, as a key factor in the process of analysis. Yet, another UK respondent stated that their university uses benchmarking groups to track progress in their own performance on a time-series basis as against comparable competitors and to set required performance levels.

In Australia, 1 of the surveyed universities reported the conduction of regular assessment of competitors' performance through the use of process and outcome data, where available. As reported by 2 respondents in Sweden, benchmarking is established and implemented as a fundamental process in the analysis of competitors, but not a systematic one. In the Netherlands, 3 contributing universities stated that: (i) they use evaluations carried out by the Accreditation Organisation of the Netherlands and Flanders (NVAO); (ii) the comparison is made through national and international rankings; and (iii) the data on competitors are mainly used for the sake of feasibility – if university X can achieve a certain benchmark, they have equal opportunities to do so. Lastly, 2 participating universities in Finland reported that: (i) for their last strategy project they interviewed about 40 national and international professionals; and, (ii) they address experts who are making environmental analyses.

Since the question asked implies an open market situation, 1 of the Swiss universities had to emphasize its public identity and the fact that student mobility in Switzerland is comparably low, due to the fact that all universities are considered to be of very high standard. Moreover, the ten universities and two technical institutes of higher education differ quite a lot in their educational mandate, their size and their cultural background. In this way, they only partly compete or have to compete against each other with their educational services. However, another Swiss university reported to be a member of a benchmarking initiative and to exchange various figures and key performance indicators on a regular basis with some of its competitors.

## 7.3 INNOVATION ANALYSIS

### *Research Methodology*

The second task undertaken in this phase of the project explores the changing roles and challenges for academic institutions that are driven by their need to innovate, in order to stay competitive, continuously develop innovative methods at an organizational, systemic, and social level, as well as be recognised with a global impact on research. The mixed method research design is qualitative and quantitative. Notwithstanding the openness of some questions, quantitative analysis was achieved by codification of the answers in numerical data that provide a statistical inference through relevant interpretation (charts, graphs, tables etc).

### *Results of the Survey*

#### ➤ *Globalization strategy*

Beginning with the analysis, Q1 in Part C of the survey investigates how the participants respond to the current demands for global education. The following data can be considered as an interpretation of the values that drive the plan.

*Q1C: What is the university's globalisation/internationalisation strategy?*

The participating universities reported their current and future needs through the following subject matters included in their internationalisation strategies, as illustrated in Table 5.

<b>PARTICIPANT</b>	<b>INTERNATIONALISATION STRATEGY</b>
<b>Tufts University</b>	<ul style="list-style-type: none"><li>• global connections with other institutions</li><li>• partnerships in research that have a global impact</li></ul>
<b>New York University</b>	<ul style="list-style-type: none"><li>• establishment of new-degree granting campuses and international academic centers all over the world that offer global experiences to all members of the university's community</li></ul>
<b>Maastricht University</b>	<ul style="list-style-type: none"><li>• students and scientific staff that compose an international classroom</li></ul>
<b>Handels University</b>	<ul style="list-style-type: none"><li>• deeper international cooperation with a unique maintained identity</li></ul>

<b>Georgetown University</b>	<ul style="list-style-type: none"> <li>• selection of operations that enhance the brand value</li> <li>• establishment of various operations that can be better performed in other locations than the home base</li> </ul>
<b>Aalto University</b>	<ul style="list-style-type: none"> <li>• an ambitious goal to achieve a world-class status by 2020</li> </ul>
<b>Purdue University</b>	<ul style="list-style-type: none"> <li>• international student enrolment</li> <li>• contacts with foreign companies and governments</li> </ul>
<b>Penn State University</b>	<ul style="list-style-type: none"> <li>• international student recruiting, placement, and exchange</li> <li>• embedded classes and semesters abroad</li> <li>• international student exchange</li> </ul>
<b>Olin College of Engineering</b>	<ul style="list-style-type: none"> <li>• student exchange partnerships with other institutions all over the world</li> <li>• conduction of outreach to other institutions to spread the college's pedagogical approaches</li> <li>• partnerships with other institutions in several countries that are developing new programs on the Olin model</li> </ul>
<b>University of Birmingham</b>	<ul style="list-style-type: none"> <li>• focus on a specific number of target city-regions for the development of intense research and educational links with comparable institutions</li> <li>• an aim to attract a diversity of international student applicants for education programmes</li> </ul>
<b>University of Sheffield</b>	<ul style="list-style-type: none"> <li>• significant research and teaching partnerships in all major areas across the world, but not intent on opening remote location branch campuses</li> <li>• an over 130 countries student and staff registration for diversity of global experiences</li> </ul>
<b>University of Zurich</b>	<ul style="list-style-type: none"> <li>• encouragement for integration of an international dimension in all degree programs</li> <li>• determination of which skills their students should acquire to be best qualified for an international environment</li> <li>• decision-making by faculties on whether changes must be made to the curricula</li> </ul>
<b>Vrije University of Amsterdam</b>	<ul style="list-style-type: none"> <li>• achievement of a high percentage of students and researchers exchange</li> <li>• partnerships with preferred universities abroad</li> <li>• commitment to long terms relations with Indonesia and South Africa</li> </ul>

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**University of Gothenburg**

- development of broad cooperation encompassing student, staff, faculty and research exchange through the Global University, which is a collection of multi-disciplinary research projects aimed at developing long-term sustainable collaboration with universities in developing regions around the world
- being an active international university engaged in collaborative projects and partnerships

**University of Eastern Finland**

- bilateral agreements of cooperation with a number of universities and research centers throughout the world
- provision of Master's and doctoral programmes in English and enrolment of international students
- student and teaching staff exchanges with other European universities that are mainly realised within Erasmus, Nordplus, FIRST and Campus Europae programmes
- participation in international networks
- partnership agreements with research institutes

**University of Aberdeen**

- promotion of overseas student recruitment activities
- identification of opportunities for collaborations with overseas universities, organisations and governments

**Swinburne University of Technology**

- focused research and strong international partners in areas where the institution aims to be world-class
- establishment of attentive partnership, management relations and clear agreements
- shared education programmes
- student and staff exchanges (off-shore campus)

**University of Colorado Boulder**

- it is quite extensive to be reported

**University of St.Gallen**

- being an international and multicultural institution by holding the many English-language programmes in high esteem
- the provision of Master's programmes in English to help students reach their various international educational goals

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**University of Amsterdam**

- being and staying among the best research universities in the continent
  - exploiting the brand name of Amsterdam
  - attracting a growing number of international master and PhD students
  - improvement of the provision of services in English
  - provision of master programmes in English
- 

**Table 5:** Strategies for Globalised Education

➤ *Operating a higher education innovation system*

Moving on with the gathering of data, Q2 in Part C of this project asked the participants to denote how they perceive and conduct the operation of a higher education innovation system in terms of functions, relationships and components.

*Q2C: Does this university operate a higher education innovation system? If yes, what are the functions, components and relationships?*

In practice, of all 20 participating institutions 16 reported their particular approaches, trends and innovative quality procedures correspondingly as follows:

- commercialization office operation, IP advice, and business innovation support;
- engagement and investment in innovation initiatives;
- establishment of a central business development office for the support of new initiatives and innovations and the development of revenue generating activities;
- establishment of the Center for Research on Higher Education Outcomes; (CRHEO) and engagement in innovative research that improves the effectiveness of higher education and beyond through evidence-based inquiry;
- operation of a national Academic Alliance fund, focused on strengthening education and research in the country;
- knowledge management platform, social engagement, and incubation;
- faculty that is encouraged to explore new pedagogical approaches with their students and to share their findings with the larger educational community, and operation of the Collaboratory, which is responsible for outreach to other institutions;
- establishment and operation of an office that specializes in commercialization and technology transfer, use of extensive policies that promote innovation, use of

- technology that has resulted in sales excess of \$20 billion – also yielding substantial royalty revenue to the University and its inventors;
- operation of an ED-lab dedicated to quality control and innovation in education;
  - small class focus, lots of faculty-student interaction, capstone classes, and undergraduate research;
  - establishment and operation of individual departments in technology and research;
  - extensive grants and contracts, industry development, and a technology transfer office;
  - operation in internationally competitive research, practice-oriented training, and development of collaboration and utilization processes;
  - innovative culture and multiple innovation initiatives;
  - operation of offices that support scientists in their collaborations with private industry and other public or private research institutions, new products and services fostered in collaboration with the scientists, and cooperation agreements with a number of partner institutions;
  - working groups of protagonist teaching directors foster innovations such as blended learning.

However, 2 out of 20 participants gave obscure answers like “We seek to be innovative in everything we do” and “Innovation is part of the institutional DNA”, whereas another 2 did not grant the project with an answer.

### ➤ ***Innovative curriculum***

Since, curriculum plays an important role in forging lifelong learning competencies, as well as social attitudes and skills, Q3 in Part C of the questionnaire provides valuable data on the ways that innovation can be accomplished.

*Q3C: In what innovative ways is the curricula and education carried out to a high quality standard?*

Of all the 20 participating universities, 14 reported:

- PBL, project cases, and a variety of teaching and learning methods;
- the development of unique curriculum involving all undergraduates in cross-disciplinary projects that takes them out of their own discipline;

- the use of technology, virtual simulation labs, and the recruitment of faculty with very good reputations in areas of research and teaching;
- the configuration of a student-centered curricula transformed via an IMPACT program, and the development of competency-based degrees;
- undergraduate research, open lab/“learning by doing” projects, and the formation of physics class teams;
- the project Innovation Lehre;
- PBL learning and international classrooms;
- the use of technology that is up-to-date and different class formats;
- the utilization of project-based learning approach which emphasizes learning through hands-on application rather than traditional lectures, and the integration of arts, humanities, social sciences, and entrepreneurship across the curriculum to give students a better understanding of the world around them;
- a close relationship between research and education;
- fast growing online programmes, innovative pathways for students wishing to progress from vocational to higher education, industry-based PhD training, new technologies and innovative pedagogies that incorporate experiential learning;
- an innovative multidisciplinary research based on strong individual disciplines, education that is research based, and students being put in contact with active researchers and highly advanced research;
- internal and external peer review and national level accreditation ensure that education standards are met;
- curricula that is based on programme outcomes and qualification goals on the quality of the faculty and teaching staff and on peer evaluations and student course evaluations;
- curricula that is regularly reviewed to reflect on the distinctiveness of their content.

However, 1 participant reported that new educational programmes are licensed in advance by a national accreditation agency, whereas another participant emphasized the flexibility of the university’s curriculum. Added to these, 3 participants provided the survey with no information.

➤ **University – Industry collaboration**

Q4 in Part C invited the participants to claim their vigor as centers of competence and the particular sectors of industry that they partner with.

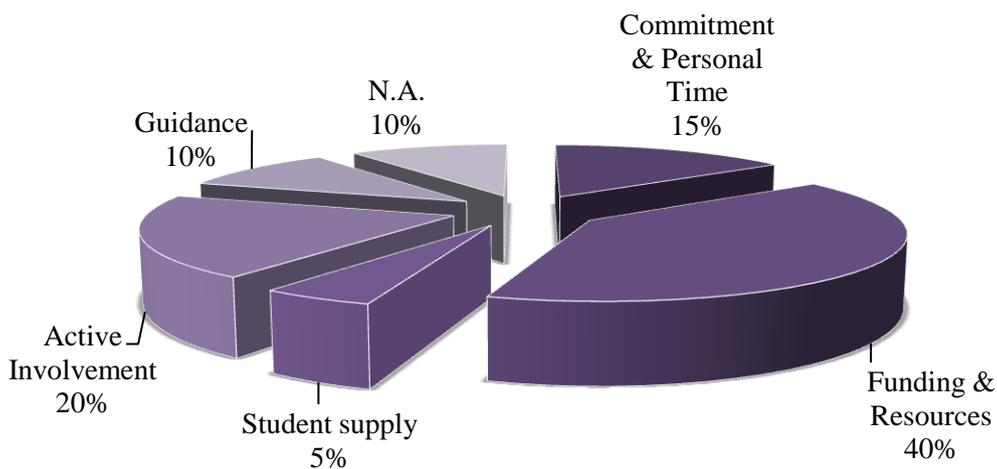
*Q4C: Are the institution's educational programs connected with key sectors of industry? If yes, name them.*

Collectively, the sample of research brought to the fore partnerships with technology, law, business, finance, architecture, urban planning, fine arts, engineering, social work and health care, medicine, advanced manufacturing, design innovation, digital innovation, life sciences, and government. Besides, some of the participants reported that individual programmes may have advisory panels with members from industry in particular, if the programme educates for a particular profession.

➤ **Support for innovation**

It is essential to find out how the sample of research manages to promote innovation and change. Q5 in Part 3 invited the respondents to grant valuable data on this particular issue. The participants' responses are simplistically illustrated in figure 9.

*Q5C: Do senior executives sponsor and actively support innovation programs?*



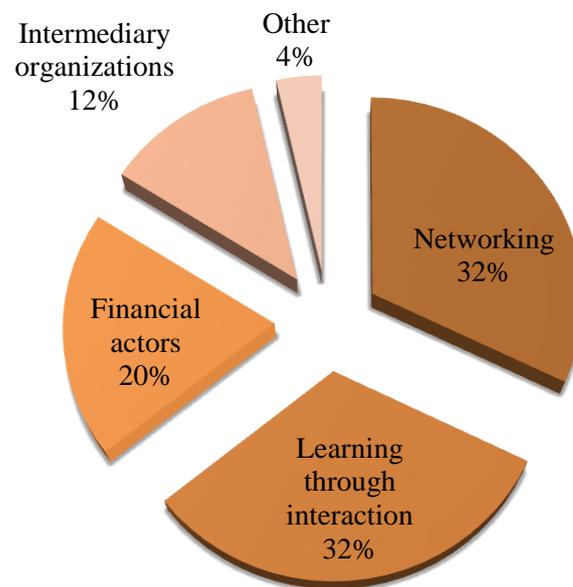
**Figure 9:** Ways of Supporting Education Innovation

➤ *Important factors for innovation*

Q6 in Part C of this project inspects whether the surveyed universities view the content of Triple Helix structures as crucial for innovation. Figure 10 illustrates the particular viewpoints as reported by the participants.

*Q6C: Do you think the following as crucial for a university in order to innovate?*

*Networking – Learning through interaction – Financial factors – Intermediary organizations – Other*



**Figure 10:** Contribution of Factors in Higher Education Innovation

➤ ***Importance of research and innovation***

Since the highest standard of academic excellence is assigned to research and innovation programmes by all higher education institutions, Q7 in Part C asked the participants to declare their level of research and innovation

*Q7C: What is the university's level of research and innovation (R&D and the development of innovation systems)?*

In particular, 8 out of 20 participating institutions expressed a very high level of research and innovation, with 4 of them providing figures like \$220, \$450, \$800 million, and £500 million. Moreover, 6 out 20 declared a high level by stating that they focus on world-top areas and that they actively publish and present their work publicly every year, whereas 1 reported a basic level of research. However, 4 of the participants chose not to provide any information.

➤ ***Certifications and awards***

Q8 in Part C of this project signifies the credibility of institutions that participated in this survey for excellence in higher education.

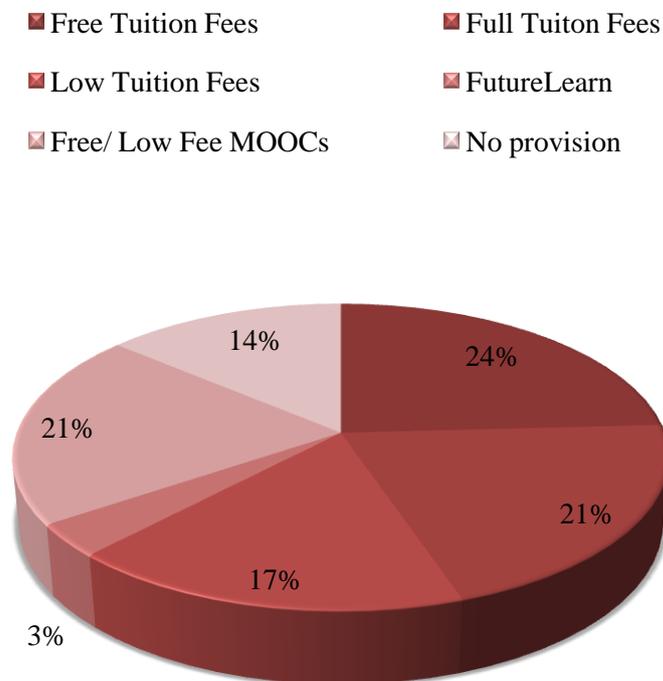
*Q8C: Has this university ever been certified or awarded for innovation?*

Additional evidence of their awards and accomplishments was provided, as 13 out of 20 respondents stated to be awarded for quality and excellence with various national and international awards, which were namely reported in the survey but too extensive to be reported in this analysis. Another 2 of the participating institutions responded negatively, while 5 of the total amount surveyed preferred to refrain and not answer.

➤ **Online education**

New options of online teaching and learning in higher education were the case examined by Q9 in Part C of the survey, and participants were asked to mark whether they offer complete online courses and programmes to the public at large. Figure 11 illustrates the type of supply (free, full, or low fee) and one of the most innovative practices included in online education, as reported by the participants.

*Q9C: Does this university provide a complete online study program or online courses for free or low fee?*



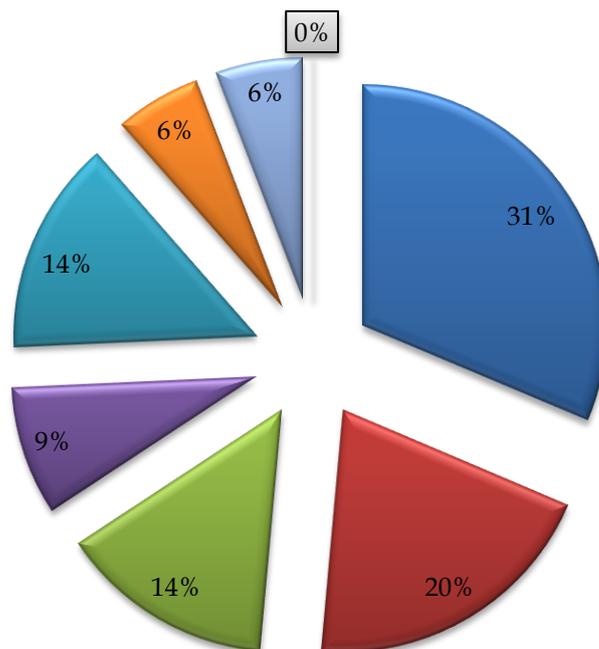
**Figure 11:** Provision of Online Education by HEIs

➤ *Use of learning analytics*

Participants were asked to declare the degree at which they perform innovative approaches and methods for practicing different types of Learning Analytics, by answering Q10 in Part C. Figure 12 illustrates the particular views on this topic.

*Q10C: What are the innovative approaches and methods to use of learning analytics?  
Course signals – Discourse analytics – Key questions – Social learning analytics –  
Key learning analytics – Disposition analytics*

- N/A
- Course signals
- Key learning analytics
- Social learning analytics
- Key questions
- Discrete use
- Discourse analytics
- Disposition analytics



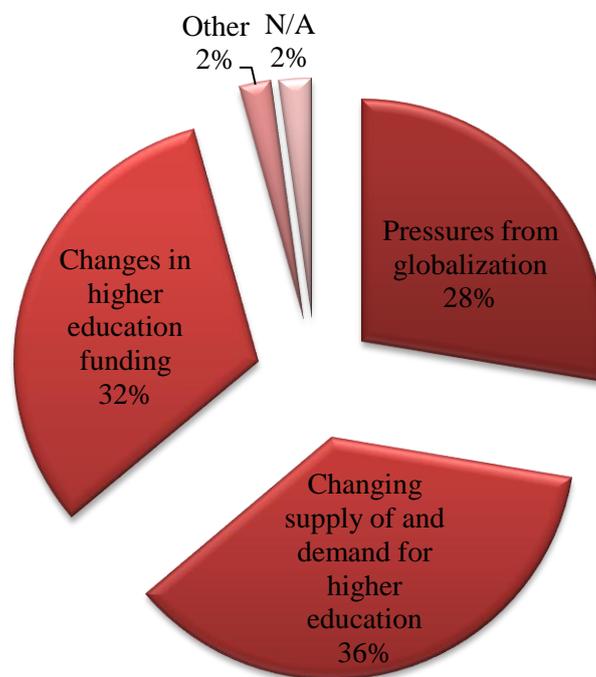
**Figure 12:** The Use of Learning Analytics for Education Innovation

➤ *Challenges driving innovation*

Universities around the world are challenged by three of the rifest and commonest forces of change in the higher education sector. Q11 in Part C of this survey asked the participants to declare which of the forces is the most challenging for their institution. Figure 13 illustrates the particular views on this topic.

*Q11C: Which of the following challenges driving innovation has the university taken?*

*Pressures from globalization – Changing supply of and demand for higher education  
– Changes in higher education funding*



**Figure 13:** Challenges Driving Innovation in HEIs

➤ *Contexts for successful innovation*

What universities regard as successful innovation contexts according to their empirical experiences and practices, is examined by Q12 in Part C of this project.

*Q12C: What are the contexts (e.g. scope of the initiative, level of autonomy etc) for successful innovation?*

Of all the participants, 9 out of 20 reported the following crucial factors for successful innovation in higher education by reporting:

- a high degree of autonomy;
- an encouraging environment for faculty from different disciplinary areas to come together and collaborate, and autonomy to think out of the box;
- the challenge and opportunity to mix in-class learning with real life, the involvement of successful innovators, youth and risk tolerance, and financial support;
- university autonomy as a key factor, a linkage of education and research programmes to societal challenge, and being embedded in the region with a global perspective;
- the requirements of opportunity to change and innovate not being encumbered by legislation, regulation, and funding limits;
- the understanding of the market, the existence of clear goals, agreement from all stakeholders, and evaluation and monitoring of outcomes;
- dependency on the context, subject, financial needs, cultural aspects, and scientific customs;
- a level of autonomy and a particular scope of the initiatives;
- adopting the perspective of the present-day learners (students) and their ways of acquiring and processing information;
- considerable local autonomy in deciding whether to try something new, with Schools and Colleges being able to provide funding for experiments.

However, 2 of the participants provided the survey with vagueness, as they claimed that the administration of this matter depends on the nature of innovation and on the requirements of each programme, while 8 of the participants left this field of the survey blank.

➤ ***Innovation outcomes***

Q13 in Part C of this survey asked the respondents to report what they have inspected as gains from innovative practices.

*Q13C: What are the main outcomes of innovation for the university?*

Of all 20 participants, 14 stated that innovation has brought anticipating and understanding results in:

- becoming the leader;
- booming the university's research section and a high student placement;
- keeping a competitive edge;
- lowering the costs of more effective operations, upgrading the service levels, cutting edge research, and taking better chances of receiving government funding;
- technology transfers for industry and spin-off firms based on the university;
- improving quality of research and education and a societal impact;
- commercialization of inventions that result in products;
- triple helix structures, linking private to public sectors for regional innovation, and a generation of positions of knowledge workers;
- enhancing the institution's reputation, gaining desirable research partners, gaining industry partners for student employment, and funding;
- producing students who are well-rounded engineers that understand and apply human centered design and rate highly on important skills, like team work and communication;
- keeping the university in a competitive position for research grant capture and student enrolments, and a high reputation;
- establishment of a holding company which has successfully funded, developed and divested new businesses that have sprung out of the university's research results and academic competence;
- transfer of knowledge that is needed to society;
- financial gains, and staff and faculty at a higher level of achievement;
- superior educational offerings and research with further and greater impact.

Of the total research sample, 4 participating institutions chose not to answer, whereas another 1 claimed that main outcomes depend on the nature of innovation.

➤ ***Barriers to innovation***

Trying to get a clear picture of how innovation in higher education institutions can be encumbered, Q14 in Part C asked the participants to express what they have experienced in relation to this topic.

*Q14C: What are the potential blockages (e.g. institutional level, national/regional level, regulatory framework) for innovation and where can be found?*

According to 14 respondents, potential blockages for innovation can be found in:

- conflict of time or interest of faculty members;
- the regulatory framework and conservatism within the institution;
- young and undervalued perspective of the innovation and technology transfer culture;
- funding, regulations, fear of change by faculty and staff, and reluctance to question the long-accepted way of doing things;
- lack of (venture) capital;
- tradition, costs, trust, and lack of reward;
- regulations, public funding, and inertia issues;
- over-regulation, bureaucracy, and lack of extra funding for innovation;
- regulatory framework and limited employment relations that do not encourage innovation;
- individuals who do not want to change, financial constraints, tradition concepts of what a graduate must learn and know, and regulatory agencies that can hinder innovation when large scale change to pedagogical methods and ideas are attempted;
- funding and system difficulties when introducing new processes, and objections from key stakeholders who have not been brought on board;
- academic freedom in research being harmed or reduced;
- start-up/seed funding of efforts, export controls, conflict of interest, and compliance issues;
- detailed regulatory frameworks, especially where it requires to provide education and services without proper funding, and academic autonomy;
- conflict of time on an institutional level, which can be far more taxing in case an external agent has to be involved.

However, 1 participant responded vaguely as “It depends on the nature of innovation”, whereas 4 other participants were uneager or reluctant to provide an answer.

## 8. DISCUSSION ON FINDINGS

### 8.1 QUALITY FEATURES: RESEARCH RESULTS

The validity of this survey on business excellence in higher education in relation to the research sample can be ascertained by the gathering of data regarding the vision, the mission of challenging society's need for knowledge and the implementation of quality systems in the academic culture of the universities that were surveyed.

Table 1 shed more light upon what means to have a vision in order to continuously improve and strive for excellence. In a holistic view, all of the participants identified their institutions differently as supporting: excellence, national and global leadership, internationalisation, innovation, world-class research, student-based research, problem-based learning, thinking out of the box, and highest-value education.

It is common knowledge that all tertiary institutions are currently challenged by higher education reforms and transformations, such as the growing demand for higher education and the changing landscape in the emerging higher education market. Table 2 provided realization on how universities succeed in challenging society's need for knowledge. The findings of the conducted survey reveal that all participating universities create their strategic plans on the basis of providing society with career-ready individuals, connecting industry with academia, and engaging with societal and interdisciplinary research themes. The main focus is, thus, on the anticipated outcome of creating leaders that are very much needed for a knowledge-based economy and a society made of well-rounded graduates. The discussion is clearly upon anthropocentric institutions

Quality in higher education may mean anything from standard to excellent and thus, acquiring knowledge on quality systems of universities can be achieved by looking into the basic values, methodologies, and tools that support them. At this point, the scope of the conducted research is to underline the most significant elements included in a quality system, according to the respondents' empirical experience. With obtaining paradigm being the case, the findings derived from Q7A reveal that: (a) *customer focus*; (b) *continuous improvement and educating*; and, (c) *benchmarking* take the top shot in the formation and operation of quality systems, with each of the educational approaches possessing the equal proportion of 15% of the total amount of quality methodologies and tools used by higher education

institutions. *Team work* is indicated as the next preferred quality tool by the research specimen, being attributed a 13% quota.

## 8.2 BENCHMARKING: RESEARCH RESULTS

Based on the results of the application of qualitative and quantitative research methods, the discussion is upon what processes higher education institutions establish and implement for quality assurance, to what extent they analyze and evaluate their processes for continuous improvement, and how they conceptualize and implement the process of benchmarking in order to reach exceptionalism and compete in the international higher education arena.

The frequency of setting strategic objectives depends on the particular goals set by senior management and on whether these goals are achieved in a given period of time. The analysis of Q1B indicated a *five-year period* as the most reviewed by higher education institutions, in order for long-term goals to be rendered into short-term practices for teams and individuals. Additionally, half of the respondents claimed to review their strategic plans *annually* and *permanently* to satisfy their constant need for improvement, by establishing *diagnostic benchmarking* in their strategic planning and control, which is also supported by the findings derived from Table 1 that include benchmarking in the top three tools for successful operation of a quality system.

One of the most important aspects of quality in higher education is building awareness among the interested parties of an institution (stakeholders, faculty members, students, society etc). The quantitative feedback from Q2B reveals that the majority of the surveyed institutions (45%) reported that their strategic objectives are *published* and *publicly available* in their websites. A great amount of universities (40%) reported to *develop* and *discuss* their strategic objectives in consultation with the whole university community, and finally *announce* them *publicly*. The particular findings bear witness to the fact that practicing quality in higher education is indeed an all inclusive process. The findings also indicate that the surveyed universities meet two of the eleven criteria (analyzed in the theoretical part of this thesis) for practicing benchmarking: (a) *progressive strategic management and governance*; and, (b) *commitment to academic development*.

The analysis of institutional processes constitutes one of the basic steps in detecting where we are now, and where we want to be in the future. Evaluation comes next, as a process to understand our strengths and weaknesses. Qualitative comments by respondents suggest *internal evaluation and audit* as the most selected and adopted method (with a rate of 18%) for analyzing their institutional processes, while *external evaluation and audit* comes second (with a rate of 12%) in their projects for analyzing their institutional processes. Additionally, the use of benchmarking for this purpose is not strongly suggested by the results, as it holds only a 9% quota of the total amount of analyzing processes and models. Internal and external evaluation and audit cannot provide a particular research paradigm, in that these tools for analysis include a wide range of practices and procedures that respondents decided not to mention. In essence, what is actually practiced is *diagnostic benchmarking*, which internally examines an institutions well-being and the internal practices that need change.

Considering students as customers in the higher education industry, with a more business-like approach, no university should pass over student needs and expectations for quality in teaching and learning. Eliciting, documenting and validating customer needs is one of the most essential quality processes that build up a quality culture that is student-focused, as enforced by the international standards and the growing demand for higher education. The qualitative analysis of Q4B showed whether institutions can operate as businesses that pay the much of their attention to the public demand for teaching and learning. The findings reveal that more than half of the participating universities are doing much in trying to bring forward their students' needs by conducting *annual or periodic surveys*, either on a national or an international level. Despite the element of openness in answering this question, none of the respondents directly reported benchmarking practices in this area of evaluation. However, what is certainly connoted is that half of the entire research sample spy out the land of customer needs by keeping *a strong track record in student destinations*, which is one of the eleven criteria for practicing benchmarking.

This survey sought participant views not only on customer needs, but also on customer satisfaction with higher education services. Table 3 aimed to provide realization on how various institutions around the world take into account the gratification of their students, as an action of evaluating and reviewing their

institutions. The qualitative feedback suggests that improvements in teaching and learning are achieved through a wide range of conducted *surveys* completed by students and graduates, as reported by the majority of the respondents. A small number outlined *outside evaluations* and *external assessment* without stating the particular tools of evaluation. However, all participants indicated the development of metrics and communication strategies to report progress and results, as well as the selection of key performance indicators for enhancement, leaving space for implications of practicing benchmarking.

With evaluation being centralized to the concept of benchmarking, this action research tried to describe in simplistic terms, the ways that universities monitor evaluation of their educational programmes. The discussion is upon what extent their approaches confirm or contradict the practice of benchmarking as a basic tool for internal evaluation and continuous improvement. From the focus group study, Table 4 granted evidence on the establishment of both *internal* and *external evaluation* of educational programmes through various *surveys*, *evaluations* and *accreditations*, *rankings*, *focus groups*, and *educational outcomes*. A statistical approach simplifies the results of research analysis by attributing a 62% / 38% ratio of *internal* to *external evaluation* of educational programmes. Consequently, self-evaluation is outlined for quality enhancement, which refers to making improvements within the organization, whereas external evaluation refers to external professionals determining whether aims have been accomplished. Thus, *internal benchmarking* is mostly outlined in this process of evaluation, probably due to the encumbrance of costly external evaluation, bureaucracy and the tendency of preserving university autonomy.

When it comes to evaluation, the frequency that it takes place is indicative of the academic culture and the academic standards for sustainable development. The institutional processes may be evaluated either continuously or periodically. In the area of process evaluation, the findings derived from Q7B were attributed in a statistical manner with *permanent evaluation* possessing a 25%, *periodical evaluation* holding a 65%, and *evaluation that varies due to process content* owning a 5%. The unfolding of this analysis regards the most critical challenge in the idea of benchmarking: continuous improvement through evaluation. Interestingly, the majority of the participants seem to be totally engaged with *periodical evaluation*, rather than *permanent evaluation*. This finding corresponds to the various literature

regarding: (i) the product of higher education as invisible and intangible in relation to the manufactured product; and, (ii) the typical obstacles to a successful TQM implementation in higher education due to the non-standard human factor.

Sticking to evaluation, the academic staff cannot be excluded from this process. Quality management in higher education involves the commitment of all institutional members that should give the best out of themselves. Given that 'the best' or 'the exceptional' can be totally subjective, the top management has to check and evaluate whether individual views and attitudes consort with the mission and vision of the university. According to the results derived from Q8B of the survey, an aggregate of 85% of the respondents correspond to benchmarking requirements for excellence by evaluating their academic staff on an *annual basis*. Concluding the issue of evaluation, it was sound to ask the respondents if they actually apply the results of manifold evaluation. The analysis of submissions, as derived from Q9B, indicates that *the results of evaluation are taken into account* for quality improvements by a 100% of the surveyed universities.

Benchmarking can be viewed as a methodology of improvement and an opportunity to learn best practices, identify, establish and achieve exceptional standards, as long as the process of comparing and competing is an ongoing one. The respondents provided this survey with valuable data that led to the determination of the primary benchmarking type that is used by higher education institutions. The analysis of Q10B ascribed a 36% to the use of *internal benchmarking* and a subsequent 32% to the use of *competitive benchmarking*, as indicative of examining their well-being and competing for national or international recognition. Though the findings yield a slight deviation (4%) between internal and competitive benchmarking, the selection of internal benchmarking can be explained in terms of measurable progress inside the institution which usually does not include the costly participation of external professionals. Moreover, the acquisition of information on competitors requires access to performance data that are made available by national or international comparator groups and associations, which may add unnecessary bureaucracy and extra costs to the institutions.

The qualitative analysis also included the competitive advantages that participants have perceived by the establishment of benchmarking in their institutions. The

findings derived from Q11B suggest that the most significant effects induced by benchmarking practices are: (i) *reduction on administrative or total costs*; (ii) *level-up competitiveness*; (iii) *increased student and management enrolment*; and, (iv) *improvement of quality in both research and education*. Thus, the majority of the surveyed universities reported satisfaction with practicing benchmarking in their institutions.

However, the formation and pursuance of benchmarking involves the use of some practical and functional tools in order for institutions to be able to diagnose, improve, collaborate, continuously compare and measure their work processes. Considering this survey as exemplary and paradigmatic, it is of high importance to understand how the theory of benchmarking is actually put into practice. Examining the co-occurrence between tools that are used by institutions in order to benchmark, a statistical analysis of Q12B gave the lead to *process performance measurements* and *questionnaire design*, as the best practiced tools with a respective 18% quota. The next highly practiced tools are *process mapping* and *project management* with each of them possessing an 18% quota.

Institutions need to be able to relate what they want to achieve with the benchmarking exercise. What they need to consider when selecting a benchmark are: (a) the level of their benchmark partners/competitors; (b) whether they choose their benchmark internally or externally, nationally or internationally; (c) the advantages or disadvantages of the group size; (d) the level of group homogeneity; (e) whether the benchmark is trustful and keen to benchmark with broadly similar goals. The findings generated from the analysis of Q13B correspond to the search areas mentioned above, and also include the search of suitable competitors in top rankings. Qualitative analysis was made in order to realize whether this process is a standardized one, its level of difficulty, and to acquire paradigm. However, only a limited number of respondents reported what this process entails: (a) *discussion with faculties and participatory bodies*; (b) *top management meetings*; and, (c) *internally established criteria*.

Since the central idea of benchmarking is to admit that someone else is better, it is quite reasonable to search for the best, learn from them, try to match with them and even surpass them. The results of the quantitative analysis of Q14B strongly suggest

that the views of respondents on this particular issue indicate *world-class* challengers with a 42% ratio, and *best-in-class* challengers with a 38% ratio, as the most significant points of reference. Challengers that are *slightly better* or *just different* come third, holding a 6% ratio according to the focus group decisions. Since the majority desires to be compared with world-class institutions, there is a strong correlation between benchmarking and internationalisation, as universities move beyond their national boundaries by participating in international surveys for quality in order to be able to gather performance data on their comparators for the conduction of environmental analyses through practicing benchmarking.

However, prior to searching for the best and finally choosing a benchmark is to identify, analyze, and measure competitors with similar educational services, as underlined by the findings from Q15B. An analysis of the external operating environment is an intricate process that entails covert difficulties due to the complexity of the higher education sector. Academic standards and culture of quality may differ beyond national boundaries and thus, international rankings allow for comparisons against competitors with required performance levels. A comparative analysis indicated that half of the research universities (regardless of the country that they operate) *share valuable information with competitors of similar services* and are given the opportunity to learn from each other by practicing benchmarking as a fundamental tool for improvement of their institutional and educational processes. Additionally, a small number reported the *operation of particular associations* that exchange data between higher education institutions. Universities are conscious of ranking and, thus, practice benchmarking in order to be able to collect data on their competitors from existing data sources.

### **8.3 INNOVATION: RESEARCH RESULTS**

This section of the survey provides awareness of the institutional and educational contexts for successful innovation in a totally challenged environment that is characterized by rapid changes in the supply of and demand for higher education. The effort of research is also to provide exemplar findings on the outset of practicing

innovation in higher education institutions, by reporting the particular methods and practices that support an innovation system.

Internationalisation is a process that introduces new practices and improves institutional quality and delivery of education and essentially is the force driving the plans of change in higher education institutions. Based on the extensive comments provided by the participants in Table 5, we realize that the surveyed institutions are totally conscious of internationalisation and are also subject to: (a) *processes of comparability of qualifications through international partnerships with universities, organisations, and governments to be world-class*; (b) *national and international partnerships in research*; (c) *students, staff, and researchers exchanges*; and, (d) *provision of postgraduate programmes in English*. All in all, the collected feedback is indicative of the fact that they strive to reference themselves against the supposedly 'best' and 'world class' universities through the selection of operations that enhance their brand value. These particular findings yield the interrelation between benchmarking and internationalisation, due to processes of evaluation (including comparisons) that are conducted as prior to the process of selection of international partnerships and exchanges in research, students and staff.

The purpose of the conducted survey is also to provide a comprehensive image of the particular elements that compose an innovation system in universities around the globe and acquire empirical paradigm of how a higher education innovation system should be structured. The analysis of submissions indicated that successful operation of innovative systems is achieved through *technology transfer and infrastructures, operation of particular offices for business and research, and collaborations and partnerships with industry and the larger educational community*. Education and research are equally highlighted to technology transfer, whereas social engagement (as a mission of service to society) is the only function that is given the less importance, as evinced by the findings. Components, including the direct individual and institutional actors (students, academic staff, innovation professionals) and the indirect individual and institutional actors (from social, economic, and political spheres at national, regional and local governments), are slightly mentioned and developed. Similarly, the relationships among system components are given the least significance of all three elements of an innovation system, as drawn from the different perspectives of the respondents. Thus, it is sufficiently emphasized that the primary

goal is to create infrastructures for the well-functioning of education, research and technology transfer. What comes second is to involve and adjust components with qualifications that will successfully serve the functions of an innovation system.

Given that all kinds of educational contexts of innovation principally depend on curriculum and pedagogic applications, it is of high importance to gain exemplary knowledge of the innovative ways that the curricula and education are carried out to a high quality standard. The qualitative analysis of Q3C identified the utilization of *problem-based learning (PBL)*, or *project-based learning*, as the most effective content of an innovative curriculum. *Technology transfer* and *multidisciplinary research* come second, with slight difference, but given remarkable significance by the participants. Industry-based training and entrepreneurship, as well as online education were moderately marked as successful ways of carrying out an innovative curriculum. The findings correspond to contemporary literature and research on interactive ways of teaching and learning, including PBL as the most modern breakthrough in higher education.

For over a century, university-industry collaboration has signified the rise of a global knowledge economy. Universities that take up initiatives to partner with key sectors of industry are considered to be pioneers through their research programmes and designed to run longer, invest more, look farther ahead and strive for competitiveness. The analysis of Q4C provided evidence on the consensus and positive attitude of the surveyed universities on *education-industry collaborations and partnerships*. A marked number of participants also reported the *involvement of government* in terms of agreement and support. It is, thus, clearly understood that the employment of Triple Helix structures has provided higher education with new, innovative perspectives that are highly applicable, despite the bottlenecks, the extra cost, and effort included in such innovative initiatives.

The funding of research programmes is relative to and indicative of the finance improvements in university quality. Successful innovation entails a governance structure made of people with individual enthusiasm and persistence, and with the ability to carry out new initiatives and innovative approaches to existing problems in teaching, learning and management. The findings derived from the quantitative analysis of Q5C strongly suggest *funding and resources* according to respondents'

empirical perspectives, with a 40% ratio, as the most active support for innovation and change, whereas *active involvement* and *commitment and personal time* come next, with a 20% and 15% ratio correspondingly. Although funds is identified by various literature as the most critical success factor, the particular findings on active involvement and commitment and personal time emphasize that innovation systems are in need of the human capital in order to prosper and bring about excellence.

Trying to highlight the elements that can build a strong quality academic culture, this survey explored the dissemination level of the Triple Helix approach in universities around the world. The Triple Helix approach is a combination of innovation systems as institutional units of analysis, with innovations as reconstructions on the basis of networking, learning through interaction, and financial actors, including intermediary organisations as dynamics of the market. The analysis of Q6C indicated *networking* (32%) and *learning through interaction* (32%) as the most crucial factors for successful innovation. The importance of *financial actors* comes third according to respondents' theoretical perspectives, with a 20% quota of the total amount of factors included. Evaluating the outcome of research, we get the collaboration of Industry, Government and Universities in order to innovate and pursuit excellence in higher education. In retrospect, the findings attributed a 32% quota imply the cruciality of the human capital contrary to the findings on factors that actively support innovation in higher education, derived from the analysis of Q5C.

Proceeding with the findings, the project tried to evince the adequacy of the surveyed sample to provide awareness on the concept of innovation for excellence in higher education, as they were invited to declare their international levelness of research and innovation. The analysis of Q7C highlighted the credibility of the surveyed universities to participate in this project for excellence, as the majority of the respondents declared a *very high* or *high level of research*. Additionally, another indicator of performing quality and excellence in innovation and research is the recognition that universities acquire through certifications and awards. The analysis of Q8C outlined that the majority of the surveyed universities have been awarded for excellence either partially or entirely. Thus, their submissions bared witness that they are world-class universities and committed to innovation for the pursuit of excellence.

A wide range of technologies has changed the provision of distance education. Online education is an innovative practice including new communication technologies and online platforms, which has positively affected and increased student and staff enrolment all over the world. Thus, it is quite interesting to measure the level of provision of online education and the level of ‘openness’ to the public in relation to the tuition fees. The relevant analysis of Q9C yielded a 24% and a 21% quota for *free* and *full provision* of complete or short-term online courses correspondingly. *Free/low fee MOOCs* were attributed a 21% quota as well. Despite the fact that we are provided with a low variance (3%), the most critical challenge to the idea of attracting students is taken by the majority of higher education institutions that do not charge their supply of knowledge to individuals who wish to become members of their academic communities. However, the 21% quotas for full or low fees on online teaching and learning provided by HEIs can be explained and understood in terms of need for extra pedagogical research on MOOCs and other online courses, plus the extra funding resources needed for the establishment and maintenance of such innovative methods.

Given that the focus of innovation is on continuous experimentation and detailed-ground work, the use of Learning Analytics involves a number of approaches and methods that are in the disposal of higher education institutions for successful innovation. Trying to explore the level of dissemination of the different types of this tool for innovation, the findings derived from the analysis of Q10C showed that 31% is a N/A ratio regarding *no use of Learning Analytics*, with the participating universities being either skeptical with or unaware of the approaches and methods in the use of Learning Analytics. Hopefully, a 20% quota is possessed by *course signals* and a 14% is held by *key questions* and *key learning analytics* correspondingly, as indicated by the research specimen.

Proceeding with the findings, it is important to realize which of the particular challenges are given the greatest weight by institutions that desire to practice innovative methods, as a basic step for analysis of the external environment. Universities all over the world have been highly affected by the changing needs and expectations of students and other stakeholders that are totally driven and shaped by powerful social, political, economical, and technological forces. The findings from the quantitative analysis of Q11C suggested structuring a hierarchy of the challenges taken by globalised higher education institutions. The particular findings yielded 36%

for *the changing supply of and demand for higher education*, 32% for *changes in higher education funding*, and 28% for *pressures from globalization*, according to participant views on this particular issue. However, it is also possible to perceive a symbiotic relationship among these factors of change, in that they are in effect interactive in the formulation of an institution's mission.

Successful innovation in higher education lies in an institution's organisational, systemic and wider context. It is meaningful to try to gain realization of how universities put this broad theory into practice. Their capacity, disposition and the environment in which the innovation occurs are essential factors for successful innovation. It was necessary to include this inquiry in this project to establish how institutions control their quality regarding the importance that they administer on crucial factors for excellence. Of all the practical suggestions included in the analysis of Q12C, *university autonomy* was the most mentioned factor for successful innovation. An overall image of the analyzed data indicated *financial needs* and *interdisciplinary education and research* as the next significant factors, but less mentioned than university autonomy. University autonomy as the most significant factor in successful innovation context constitutes a quite reasonable finding because it allows HEIs for thinking out of the box and approaching problems in new, innovative ways like businesses of other sectors do.

There are quality experts who highly recommend evaluation and improvement of educational teaching and learning that is outcome driven. Putting theory successfully into practice requires measuring the level of achievement through the manifestation of considerable outcomes of innovation. The findings derived from the analysis of Q13C provided a model compilation of the main outcomes. The innovation outcome of *cutting edge research* comes first, as the most reported by the participants. *Reputation* and *competitive position* along with *Triple Helix structures* come second, whereas *funding resources* and *lowering of costs* come third. Last but not least, societal impact was also reported but less than the other outcomes. Considering the main outcomes of innovation identified by the participants, we get the idea that business is what we actually discuss. The greatest reality, according to previous research and successfully evinced by this action research, is that 21<sup>st</sup> century universities have outreached industry and operate as businesses in a knowledge-based economy.

Considering innovation as part of the concept of quality in higher education, it is sound and logic to involve potential blockages for universities that reckon on the perceived benefits from innovative practices. Contrary to the philosophy that points out to stop thinking that problems come from outside, the findings from the analysis of Q14C indicated *regulations* and *funding* as the most potential blockages for innovation, which in fact are derivatives of the external environment. *Conservatism* comes third as an indication of fear for change.

#### **8.4 LIMITATIONS OF RESEARCH**

The findings of this research thesis are highly important provided that it bases on reliable papers and high-impact educational organizations. However, this survey has faced a limitation with potential impact on the findings of research. For all the practical purposes, the research sample is limited including an aggregate of 20 universities. Nevertheless, the degree to which this reduces the quality of our findings is a matter of debate.

Given the fact that all research suffers from limitations, whether it is performed by undergraduate and master's level dissertation students, or seasoned academics, the limited number of the research specimen is not viewed by this thesis as a weakness. The researcher collected 200 participations, but selected only 20 universities, whose answered questionnaires marked their quality features and their commitment to excellence. This particular attitude explains the low variances attributed by some of the findings, as the N/A element affected the induction of high percentages in some areas of the quantitative analysis and the codified and subsequently statistically reported qualitative analysis.

The discussion of limitations is upon a thesis with particular length indicated by the regulatory framework of this university. Considering the action of research as richly analyzed, a wider participation would exceed the regulatory limits. However, this work can be used for future research on this field of study, including broader specimen.

## 9. APPENDIX

### NOMENCLATURE

HEI – Higher Education Institution
TQM – Total Quality Management
ESG – European Standards and Guidelines for Quality Assurance in the European Higher Education Area
CQI – Continuous Quality Improvement
PEST – Political Economical Social Technological Analysis
SWOT – Strengths, Weaknesses, Opportunities, Threats
QAM – Quality Adaptation Model
KPIs – Key Performance Indicators
RAE – Research Assessment Exercises
REF – Research Excellence Framework
EFQM – European Foundation for Quality Management
CMM – Capability Maturity Model
SERVQUAL – Service Quality
EUA – European University Association
ENQA – European Association for Quality Assurance in Education
EHEA – European Higher Education Area
QAA – Quality Assurance Agency
IAU – International Association of Universities
CHEA – Council for Higher Education Accreditation
EQM – External Quality Monitoring
KBE – Knowledge-Based Economy
ICT – Information Communication Technology
MOOC – Massive Online Course
EADTU - European Association of Distance Teaching Universities
PBL – Problem-Based Learning
NACUBO – National Association of Colleges and University Business Officers
HEFCE – Higher Education Funding Council for Higher Education
CHEMS – Commonwealth Higher Education Management Service
UNESCO – United Nations Educational, Scientific and Cultural Organization
UNESCO–CEPES – European Centre for Higher Education (Centre Européen pour l’Enseignement Supérieur – CEPES)

## INSTRUMENTATION

### Business Excellence in Higher Education Questionnaire

You are being invited to voluntarily fill-in the following questionnaire. The purpose of this particular survey is to gather data for quality assurance approaches and practices in higher education, as well as changing roles and strategies for academic institutions.

This survey is conducted within the framework of a dissertation thesis on “Business Excellence in Higher Education Using Innovation and Benchmarking”. The following questionnaire consists of 3 parts, and you are asked to reply open-ended and multiple choice questions, which should take no more than 30-45 minutes. Your input is very helpful, in order to develop reliable data.

Your reply to the questionnaire will be strictly protected. The results of all questionnaires will be processed and displayed in aggregated form. The universities participating in the survey will be introduced to the academic audience within the thesis presentation.

Thank you,

KonstantinaTasopoulou

#### ***Profile of Respondent***

<i>Name</i>	
<i>Role/Function in the university</i>	
<i>Name of university</i>	
<i>Address</i>	
<i>e-mail</i>	
<i>Tel/Fax</i>	
<i>Country</i>	
<i>Date</i>	

***PART A: Institutional Information***

1. How many years does this university operate, and which exactly is its vision?


2. How many students have been enrolled this year?

--

3. How many faculties does the university consist of?

--

4. How exactly is the management system structured?


5. Can this university challenge society's need for knowledge? If yes, in what way?


6. The provision of higher education services should be characterized by specific requirements (e.g. buildings, laboratories, libraries, papers, seminars, research etc). Which are the specific requirements of this university that promote successful transfer of knowledge?


7. Does this university operate a quality system? If yes, state the basic values, methodologies and tools that support it, by marking the appropriate boxes below.

- Customer focus    Team Work    Continuous Improvement& Educating
- Quality Function Deployment    Deming Cycle    Benchmarking
- Policy Deployment    Process Management    Kano Model
- 7 Management and Planning Tools    ServQual    ISO 9000:2000
- EFQM Excellence Model    Other

***PART B: Structure and Applications of Processes for Quality Assurance***

**1.** How often does this university set objectives?


**2.** Is there transparency of strategic and generic objectives? If yes, in what way?


**3.** What approach or model do you use in analyzing your institution's processes?


**4.** Do you have a methodology specifically for eliciting, documenting and validating customers' needs and expectations? If yes, name it.


**5.** Do you have a methodology or tool for taking into account customers' satisfaction with the institution's services? If yes, name it.


**6.** How do you monitor evaluation of the educational programs?


**7.** How often are the institution's processes evaluated?


**8.** How often is the institution's academic staff evaluated?


9. Are the evaluation results taken into account in order for any of the feedback and procedures to change? Mark your answer.

Yes No

10. Does the university use any of the following types of benchmarking? If yes, mark the appropriate box.

internal  competitive  functional  generic

11. Has the use of benchmarking led to competitive advantage and reduced costs? If yes, refer at least one example.


12. Which of the following tools does the university use in order to benchmark?

process mapping       process performance measurements  
 project management     questionnaire design  
 interviewing skills       etiquette and legal issues     other

13. How exactly do you choose a benchmark?


14. Where do you start the search for the best? Mark your answer.

world class  best-in-class  slightly better  just different

15. How is the external operating environment (competitors with similar educational services) analyzed and measured in order to evaluate the institution's processes or set new ones?


***PART C: The Changing Roles and Challenges for Academic Institutions***

1. What is the university's globalization/internationalization strategy?


2. Does this university operate a higher education innovation system? If yes, what are the functions, components and relationships?


3. In what innovative ways is the curricula and education carried out to a high quality standard?


4. Are the institution's educational programs connected with key sectors of industry? If yes, name them.


5. Do senior executives sponsor and actively support innovation projects? If yes, in what ways?


6. Do you think of the following as crucial for a university in order to innovate? Mark the ones you do think as crucial, and state some factors of your own as well.

- networking       learning through interaction  
 financial actors    intermediary organizations    other

7. What is the university's level of research and innovation? (R&D and the development of innovation systems)


8. Has this university ever been certified or awarded for innovation? If yes, when and how?


9. Does this university provide a complete online study program or online courses for free or low fee?


10. What are the innovative approaches and methods to use of learning analytics?

- course signals                       discourse analytics             key questions
- social learning analytics     key learning analytics     disposition analytics

11. Which of the following challenges driving innovation has the university taken?

- pressures from globalization
- changing supply of and demand for higher education
- changes in higher education funding

12. What are the contexts (e.g. scope of the initiative, level of autonomy etc) for successful innovation?


13. What are the main outcomes of innovation for the university?


14. What are the potential blockages (e.g. institutional level, national/regional, regulatory framework) for innovation and where can be found?


***Interviewee's Comments***


## CONTRIBUTION

Name	Role	University	Country	Function	Enrolment	Faculties	HE Services	Management System
<b>Dimolitsas Spiros</b>	<b>Senior VP for Research</b>	<b>Georgetown University</b>	USA	226	~6,000 undergraduates ~8,000 graduates	9	Unique laboratories/facilities for research, libraries, papers, seminars, and excellent faculty.	The Board: the President, the Chief Operating Officer, the Chief Academic Officer, the Chief Research Officer, and Campus Executives. Centralization, but with considerable autonomy at the local level; shared government with faculty on specific issues.
<b>Kirsi Eulenberger -Karveti</b>	<b>Quality Manager</b>	<b>Aalto University</b>	Finland	5	14,040 undergraduates 713 graduates	6	Research papers, learning hubs, libraries, different kind of labs, and workshop seminars.	A documented management model; modeled processes; and an annual clock that records and regulates management actions.
<b>Per Cramer</b>	<b>Dean of Business, Economics and Law</b>	<b>Handels University</b>	Sweden	61	~40,000 total	8	Education and research programs are well-financed by public resources.	The Ministry of Education and Research: VCs, Deans, and Heads of Departments for collegiate mandates.
<b>Katherine Fleming</b>	<b>Deputy Provost and Vice Chancellor</b>	<b>New York University</b>	USA	184	~40,000 total	16	Libraries, labs, teaching halls, leading international centers for research and education, varied institutes and centers, and technologically advanced lecture halls and facilities.	The Board: the Provost and the Executive VP of business operations report to the President; the VP for Health works with the Deans and together regulate all kind of matters.

<b>Donald Birx</b>	<b>Chancellor</b>	<b>Penn State University</b>	USA	160	~4,500 total	250	Shared spaces with industry and academia.	The Chancellor cooperates with: Associate Deans of Research, Academics, Industry Outreach and School Directors.
<b>Brent Drake</b>	<b>Chief Data Officer</b>	<b>Purdue University</b>	USA	153	38,770 total	2,072	Core curriculum, discipline specific work, and a properly assessed faculty are evidence of mastery.	The President reports to the Board of Trustees, all but one of which is appointed by the Governor of the State.
<b>Seth Kornetsky</b>	<b>Executive Director for Audit &amp; MGMT Advisory Services</b>	<b>Tufts University</b>	USA	113	5,108 undergraduates 10,037 graduates	10	Up-to-date facilities, IT infrastructure for supporting access to data and modern teaching methods, plus a specially designed building for the collaboration and research among its faculties (heavy investments).	The President and the Provost appoint a Dean for each faculty with consent from the Board of Trustees; the Executive VP for business operations reports to the President and all senior Officers report to the Board of Trustees.
<b>Anne Buckle</b>	<b>Head of Strategic Planning</b>	<b>University of Aberdeen</b>	UK	520	16,500 total	3	Physical and digital infrastructure, high-caliber staff and students, efficient management, and support structure.	The University Court: corporate and legal responsibilities; the Senatus Academicus: regulation of teaching and promotion of research; the General Council: comprises all graduates and certain academic staff.

<b>Matthias Bakker</b>	<b>Policy Advisor</b>	<b>Vrije University of Amsterdam</b>	The Netherlands	135	24,517 total	11	Audio-visual Centre (AVC), supporting lecture rooms, web and digital lectures, all facilities for teaching and research.	Supervisory Board: the Chair and Vice Chairs; Executive Board: the Chair, the Rector, and the Secretary; Faculties: Deans
<b>Sirpa Suntioinen</b>	<b>Quality Manager</b>	<b>University of Eastern Finland</b>	Finland	5	~1,600 total	4	Up-to-date video conferencing/IT system, high-quality research, education, counseling and support services, diverse academic offering, state-of-the-art learning environments, and traditional and online courses.	The UEF Board is the highest decision making body and along with the Rector, the Academic Rector, the Collegiate Body, the Faculty Councils, the Deans and the Administration Service Centers, are responsible for the management.
<b>Paul White</b>	<b>Deputy Vice Chancellor</b>	<b>Sheffield University</b>	UK	110	~26,000 total	5	Libraries and IT systems for the dual functions of research and teaching; HR, Estates and Finance for the facilitation of research and education.	Executive board: the VC (head) and Pro-VCs for Research, Innovation, Learning and Teaching, Financial Officer, the General Secretary and the Director of HR for the line management of business areas.

<b>Jeremy Goodman</b>	<b>Director of Institutional Research &amp; Evaluation</b>	<b>Olin College of Engineering</b>	USA	13	350 total	1	<p>Studio environment, project-and-team-based learning, interdisciplinary curriculum, few lecture-based courses, faculty mentored projects and/or internships, and real-world problem experiences.</p>	<p>The Board: the President, the Provost, VPs and Deans are responsible for the various functional areas, and under the strategic oversight of the Board of Trustees.</p>
<b>Linda Kristjanson</b>	<b>Vice-Chancellor</b>	<b>Swinburne University of Technology</b>	Australia	107	50,000 total	3	<p>Engaged academics and professional staff who can work effectively with Industries, professions and communities; state-of-the-art facilities, IT infrastructure, strong international partnerships; high quality publications, research grants; innovative design, industry innovations, graduates ready for Industry.</p>	<p>The Board: the VC &amp; President, the Senior Deputy VC &amp; Provost, Deputy VCs for Research &amp; Development, Engagement; VPs for Corporate Services, International Affairs &amp; Students, Strategy &amp; Business Innovation; the Chief Financial Officer; Executive Deans; Associate Deans for Research &amp; Engagement, and Teaching &amp; Learning Innovation for each faculty.</p>

<b>Martin Paul</b>	<b>President</b>	<b>Maastricht University</b>	The Netherlands	39	16,000 total	6	Unique laboratories/facilities for research, libraries, papers, seminars, and qualified faculty; all combined with a center of valorization (societal and/or economic value generation).	The University consists of the Supervisory Board, the Executive Board, and the Faculty Board.
<b>Peter Lindstrom</b>	<b>Director of Quality DEV</b>	<b>University of St. Gallen</b>	Switzerland	117	8,020 (excluding the executives)	5	Freedom in teaching and research, robust funding, university culture, motivation of the members of the university, course architecture, international reputation, alumni network, and recognised quality.	The Board of Governors: the Senate Committee, the President's Board (the President, Vice-Presidents, Executives, Deans, the General Secretary), and the International Advisory Board.
<b>Malin Östling</b>	<b>Quality Coordinator</b>	<b>University of Gothenburg</b>	Sweden	~100	~37,000 total	4.000	Continuous flow of new knowledge and ideas, strong research and attractive study programmes, and active work for sustainable development.	The University Board with external chair appointed by the government; the VC appointed by the government; 9 elected Faculty Boards and Deans; 37 elected Heads of Departments.

<b>Stein Sture</b>	<b>Vice Chancellor for Research</b>	<b>University of Colorado Boulder</b>	USA	139	32,000 total	2,800	Review, assessment, accreditation in regular intervals, knowledge transfer as part of the assessments, high standards, placement of graduates in society; new business start-up companies, technology transfer, patents, and entrepreneurship that are assessed and reported.	The University is headed by a Chancellor, to whom 6 VCs report; 14 Deans and 92 Directors report to the VCs; and, 120 department and program Heads report to the Deans.
<b>Anita Klöti</b>	<b>General Secretary</b>	<b>University of Zurich</b>	Switzerland	182	26,356 total	7	The Main Library, numerous public libraries, continuing education courses, Center for Continuing Education, and cutting edge research.	The University Board (the highest body); the Executive Board (policy-making body); the Extended Executive Board (operational management body); the Senate, the President and VPs, and the Independent Bodies (Evaluation Office, Internal Review, and Appeals Commission) structure the University's management.

<b>Arne Brentjes</b>	<b>Director of Strategy &amp; Information</b>	<b>University of Amsterdam</b>	The Netherlands	139	31,186 total	7	The University library and lecture venues and clubs provide access to the general public; being close to the headquarters of national newspapers and television, the University is an important supplier of talking heads and opinion leaders.	The Board of Governors (4 members, including the Rector Magnificus); the Supervisory Board (4 members) appointed by the Ministry for Education appoints the Board members; Deans of faculties appointed by the Board; shared service units outside the faculties.
<b>Michael Whitby</b>	<b>Pro-Vice Chancellor, Head of College of Arts &amp; Law</b>	<b>University of Birmingham</b>	UK	115	29,000 total	5	Excellent facilities for staff and students alike; being in the middle of a £500 million investment programme across its campus with a new library, sports center and accommodation for students and new and refurbished buildings for academics.	The VC= CEO; the Provost and Deputy VC is the chief academic officer; 5 colleges are each headed by a Pro-VC, and there are Pro-VCs for Research and Education; the Registrar heads up the Professional Services; and, all these sit on the University Executive Board, as well as the Directors of Finance and HR.

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