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A Review of Quality Management Research in Higher Education Institutions

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Abstract

The purpose of this study is to determine the state of research in quality management in higher education institutions based on a review of the academic literature. The aim is to provide universities with the best evidence for informing their focus and models for quality improvement. Despite quality's role growing in importance as universities strive to compete in an increasingly underfunded market for students and research funds the findings show that research is limited in volume and scope. The findings show that the three most common topics are quality management implementation issues, quality management models, techniques and tools, and quality management dimensions. The key quality management enabling dimensions found are: people management, process management and information and analysis, while the results dimension is predominantly focused on an understanding of stakeholders' requirements and feedback on their perceptions of performance. We find in this literature that students are discussed as both end customers as graduates and participants in the learning process who have views on their experience. Also provided is an analysis that shows popular journal outlets, research methodologies used and country focus. The paper concludes with recommendations for the development of quality management for universities, and a future research agenda.

Introduction

Pressure on universities and other higher education institutions (hereafter referred to as HEIs) through government financial constraints, along with the pressure to improve an institution's ranking in newspapers' HEIs performance tables to improve student recruitment (Foskett 2010; Tambi *at al*. 2008), are having a profound impact on the traditional way educational institutions manage their processes. With the aim to improve the quality of learning to improve degree results and student satisfaction (Sahney *et al*. 2008), HEIs are becoming more willing to adopt quality practices and systems (Sohail *et al*. 2003), that are similar to those in industry where Quality Management (hereafter QM) is seen as fundamental in achieving improvement in the quality of outcomes while lowering costs (Dick *et al*. 2008).

This indicates that improving QM in education should be a priority (Sahney *et al*. 2008). For example, international accreditation bodies have been created to recognise commitment to quality and continuous improvement in business schools such as the Association to Advance Collegiate School of Business (AACSB) and the European Quality Improvement System (EQUIS). Also, there is a QM framework for education in the USA (the Malcolm Baldrige Criteria for Performance Excellence for Education) and European HEIs are involved in a European convergence process, where quality improvement is an objective (Loukkola and Zhang, 2010). Many of these universities are currently developing quality assurance systems, based on the guidelines from the European Association for Quality Assurance in Higher Education (ENQA).

An understanding of the current literature is a foundation for informing policy and practice in any discipline. Our review seeks to synthesise the articles reviewed to show how QM can be applied in different areas in HEIs, such as non-academic functions, the administration of academic functions or learning processes. We also aim to help academics by providing a starting point for understanding what research has already been done and an appreciation of the gaps that exist in research on QM in HEIs that can be used by future researchers. In addition,

we aim to analyse the trends in research methods used and to summarize the journals that are most likely to publish papers on QM in HEIs.

Although a number of theoretical and empirical studies analyse different aspects of the application of QM concepts in HEIs, (Badri *et al*. 2006; Campatelli *et al*. 2011; Hides *et al*. 2004; Kanji and Tambi 1999; Romero 2008; Voss *et al*. 2005), including teaching areas, (Belohlav *et al*. 2004) only a few papers develop a literature review on QM in HEIs (Becket and Brookes 2008; Grant *et al*. 2004; Owlia and Aspinwall 1997). However, these reviews although informative do not review the whole of the available literature instead focusing on a limited set of papers related to QM in HEIs in order to propose QM dimensions and models for use by HEIs. They do not use a systematic review of the literature as has been done in the field of operations management (Machuca *et al*. 2007) and QM (Molina-Azorín *et al*. 2009; Sila and Ebrahimpour 2003). Thus, a gap exists for a broad systematic review of research to contribute to a better understanding of QM in HEIs to help institutions to use QM as a way of improving the quality of the educational experience and learning outcomes and overcome the existing tendency in HEIs to view QM as a bureaucratic tool and not a way of improving academic quality (Harvey and Williams, 2010).

The aim of this paper is satisfy this gap for HEIs and show researchers and practitioners the most frequently researched QM topics, QM dimensions, the practices to successfully implement QM, the journals that will most probably publish papers on the topic, how prolific articles are by country, and the most widely used research methods. To ensure the widest coverage in our systematic literature review we use three databases: ScienceDirect, ABI/Inform, and Emerald. The sections that follow offer definitions and detail the methodology used to conduct our literature review. Then we proceed to analyse the review and discuss the results before suggesting conclusions.

Quality management and higher education

QM can be defined as a holistic management philosophy that focuses on the maintenance and continuous improvement of all the functions within an organisation, with the goal of meeting or exceeding customer requirements and other stakeholders (Flynn *et al.* 1994; Kaynak 2003). QM systems and practices have their origins in manufacturing industry and more recently have spread into service organisations (Jenicke *et al.* 2008), including public services (Yasin *et al.* 2011) such as HEIs (Hides *et al.* 2004; Loukkola and Zhang 2010). Although there are certain differences between manufacturing and service industries, QM may be applied equally to both manufacturing and service firms (Brah *et al.* 2000; Huq and Stolen 1998; Prajogo 2005), and, generally speaking, most core concepts of QM are as valid in the public sector as in the private sector, provided some allowance is made when implementing the concepts (Boyne *et al.* 2002; Hartley and Downe 2007; Morgan and Murgatroyd 1994).

Thus, QM in HEIs needs to involve overseeing all activities and tasks needed to maintain a desired level of excellence in stakeholder outcomes (i.e. staff, students, employers, research impact/funding etc.). This includes creating and implementing quality planning and assurance, as well as quality control and quality improvement. To maximise quality improvement a philosophy often referred to as total quality management (TQM) in the literature is needed. This requires senior management quality commitment and leadership in the HEI, a focus on stakeholder needs, both internal and external, and an emphasis on measuring the cost of quality, employee engagement in continuous improvement activities etc. Accordingly, QM can be viewed as a philosophy and a set of practices for the management of HE organizations that goes beyond the control of quality.

To achieve improvement in QM performance, HEI's can use National or International quality management standards that provide a flexible template for the development of quality in

administrative and academic processes to achieve improvement in the learning process and environment. This implies the development of performance measures to judge improvement from the perspective of external and internal stakeholders. Well known standards/models used in services and industry are the Malcolm Baldrige National Quality Award (MBNQA) model in the USA, the European Foundation for Quality Management (EFQM) model in Europe, the Deming Prize model in Japan and the ISO 9001 International quality management standard. Alongside these models, several academic studies develop instruments for measuring QM applicable to both manufacturing and service organizations (Ahire *et al*. 1996; Conca *et al*. 2004; Flynn *et al*. 1994; Saraph *et al*. 1989) which can also be used as a guide by HEIs.

An alternative is to deploy QM models created for academia, such as the empirically validated instrument of Owlia and Aspinwall's for QM in HEIs (1998), or the suggestions of Waugh (2002) for the measurement of administrative quality in universities. HEIs can also use as an alternative to ISO9001 accreditation, models such as the AACSB accreditation standards, the EQUIS standard and the Malcolm Baldrige Criteria for Performance Excellence for Education.

Methodology

This paper follows the three stages suggested by Tranfield *et al*. (2003) and used later by other scholars such as Thorpe *et al*. (2005):

1) Planning the review (objective and protocol).

2) Conducting the review (identification of research, selection of studies, assessment of article quality, data extraction and data synthesis).

3) Reporting and dissemination (descriptive analysis and thematic analysis).

Planning the review

In planning the review the paper followed the model used in previous literature reviews on QM (e.g., Sila and Ebrahimpour 2003), operations management (e.g. Machuca *et al*. 2007) and other management areas (e.g. Bititci *et al*. 2011). The criteria used for inclusion is that articles were in peer reviewed academic journal articles that analysed QM in HEIs in teaching, research or administrative services from a managerial perspective. The quality of the methodology of each article was assessed so that we exclude articles where the method used were unclear so as to avoid the risk of including findings based on conjecture.

We anticipated that papers found would fall into two journal subject groups: business and management journals (B), and education management journals (E). So we plan to use these two groups to analyse and compare articles. The plan for analysis is to extract information on five areas:

a) Topics in QM, as there is no a standard classification, as happens in other areas (e.g., Machuca *et al*. 2007), these topics will emerge through content analysis.

b) Quality management dimensions, based on those most commonly cited in the articles analysed.

c) Journals, by frequency of articles published.

d) Countries contributing to research, for theoretical studies, the country where the authors were working stated in their affiliations. For empirical studies the country will be one where the empirical study was carried out.

e) Methods, classified into: Theoretical studies where we separate conceptual frameworks/models and literature reviews. Empirical studies were broken down into qualitative, quantitative, or mixed methods.

This method of classification combines some of the ideas found in the literature on classification for research methods where there is a wide range of approaches but little agreement. For example González *et al*. (2006) suggest for theoretical studies, conceptual, illustrative and applied-concepts, while Lockeet *et al*. (2006) use normative and non-normative, Machuca *et al*. (2007) theoretical/conceptual, literature review, models and simulations. Similarly, empirical studies are also classified in many ways, for example as case studies, field studies, field experiments and laboratory experiments (González *et al*. 2006), or quantitative and qualitative studies (Lockeet *et al*. 2006), or survey, direct observation, panel study, laboratory experiments and others (Machuca *et al*. 2007).

Conducting the review

The initial search examined in turn ScienceDirect, ABI/Inform, and Emerald databases as these are most widely used by management scholars. We searched article abstracts using the search expressions - Education and "TQM" (total quality management) or "quality management" or "quality assurance" or "ISO 9000" or "ISO 9001" or "EFQM" or "excellence model" or "six sigma".

Altogether, the searches yielded 745 articles. 19 articles in ScienceDirect, 452 in ABI/Inform, and 274 in Emerald. We identified 103 duplicate articles reducing the total to 638 articles. These were then scrutinized to ensure that their contents were relevant to the aims of the review. Firstly, the abstracts of the articles were read; if these were not sufficiently clear on any aspect, the full version of the paper was reviewed. This resulted in the exclusion of 450 articles leaving 188 papers for detailed analysis against our assessment criteria.

To ensure that our search did not omit articles that may have been published in the top ranking journals that are known to publish articles on QM we expanded the search terms in three operations management journals in the Social Science Citation Index management category:

Journal of Operation Management, OMEGA, and International Journal of Operations & Production Management. In this search, we used the key words "education" or "educational". This search found 8 articles in the Journal of Operations Management, 40 articles in OMEGA, and 30 articles in the International Journal of Operations & Production Management. These 78 articles were then read but only six, were found to meet the aims of the study making a total of 194 articles to be read and analysed. During the reading of the 194 articles we checked references that could be relevant to our research aims against the articles that we had found in our initial search and found some new articles. These new articles were then read to see if they met the inclusion criteria. This resulted in the addition of 8 articles giving us a grand total of 202 articles from 45 journals to analyse in detail.

Reporting and dissemination

To capture information from reading each article we entered onto forms details of topics, QM dimensions, journals, year, country, and methodology and from this data developed tables and figures that were designed to contain the topics, QM dimensions, journals, years, countries, and methods. SPSS was used to analyse the frequency of the set of categories examined and chi-square tests or Mann-Whitney U tests were employed to test if there were statistically significant differences between groups.

Results

Topics

Table 1 shows the numbers of articles dealing with each topic and the percentage of the total that they represent. Taking all the journals together, the topics that have been most frequently discussed in QM in HEI studies are those referring to QM implementation (42%), followed by the implementation of quality models, techniques and tools (24%) and QM dimensions (10%).

These first three topics clearly stand out from the rest, with significant differences (p=0.014), and represent 76% of the articles.

In business journals there are also differences between the first three topics and the rest (p=0.013), whereas in education journals the differences are noticeable between the first two topics and the rest (p=0.032).

Table 1 here

Business journals reflect the ranking found for all the articles, with QM implementation (36%), the adoption of models, techniques and tools (e.g. ISO 9000, SERVQUAL, etc.) (25%), followed by issues related to QM dimensions in HEIs (17%). For education journals QM implementation represents an even higher percentage (48%), with models/techniques and tools (23%) being similar to business journal. Different for education journals is the ranking in third place of quality assurance collaboration (6%) and in fourth place barriers to QM (4%) followed by QM dimensions (3%).

Table 1 shows the topic of QM dimensions is important in business journals, but not so common in education journals. This is probably due to these having their origins in industry practices that have been extensively researched in management journals where the QM literature analyses how to introduce and measure QM, QM dimensions and their measurement and QM and business performance.

We also note clear divergences between business and education journals on the topics of: national quality policy, national quality assurance requirements and quality bodies. This divergence is due to these topics being appropriate for education journals where regulatory and international/national education issues are important themes. Such specialist content is much less likely to be published in business journals.

This review also shows some similarities and differences between QM literature in business and education areas. The most common topics about QM in HEIs in Table 1 reflect those found in the general QM literature (Bou-Llusar *et al*. 2009; Curkovic *et al*. 2000; Flynn *et al*. 1994; Molina Fernandez *et al*. 2003; Saraph *et al*. 1989). Similarly, these topics support the review by Harvey and Williams (2010) on the contributions to the journal *Quality in Higher Education*. They indicated that the key issues in this journal were the definition of quality, external quality assurance processes, quality models (e.g. audit, accreditation), international and national framework and systems, industrial models, performance vs. financial funding, improvement and accountability and specific dimensions critical for HE such as management and leadership. This means that the issues investigated from the educational quality management perspective are similar to those analysed in QM in HEIs studies from the management journals. The main divergence is that accountability is examined mainly in education field.

In addition, comparing the findings in Table 1 to the topics that are found in the literature on quality management in industry we note other issues that need to be discussed. First, although the review indicates some attempts have been made regarding QM in HEIs, more research is needed on QM dimensions in HEIs to clarify in greater detail the aspects managers should focus on when introducing QM. Second, an important issue in research published on industry is the analysis of the effects of QM practices on business performance (e.g. Kaynak 2003). In contrast for HEI we find little focus on QM and HEI performance in the articles we have examined apart from those on research performance. This gap indicates an important future field for QM research in HEIs.

Overall the review of topics in HEI in the business and educational journals suggests that the application of QM in university service departments is similar to that in any other service sector, whereas several papers in the education journals indicate that application is more

difficult in the teaching and learning. However, other papers in business and in educational journals suggests that HEIs may apply QM in teaching and research activities, and that industry QM practices may be successfully adopted across the institution with intelligent adaptation (Voss *et al*. 2005). To overcome difficulties in implementing QM in teaching and learning areas (Harvey and William, 2010) it is important to clarify the role of QM implementation and here we find a wide range of articles.

Business and education journals include articles on the topic of QM implementation and studies of the critical factors for the development of QM (e.g., leadership, culture and organisational issues), QM practices (e.g., leadership, customer focus, people management, etc.), and the steps to implement QM in HEIs in general terms, or for a specific programme, an administrative service, or an academic department. These articles focus on the application of QM concepts to HEIs, while the theoretical articles discuss these issues in HEIs in general. Empirical articles analyse QM in the HEI as an institution (including those focusing on a faculty or a department) and QM issues in programmes or courses or in administrative services (e.g. academic and non-academic services, staff services).

In the articles that featured the topic Models, techniques and tools, we found that for business journals, theoretical articles typically analyse the quality assessment procedure, whereas empirical articles analyse the adoption of quality models (e.g., ISO 9000, EFQM, MBNQA, SERVQUAL, quality service, etc.) in HEIs as an institution, or in a service or a faculty. A similar pattern is found in the education journals with theoretical articles analyse quality assessment, ISO 9000 and academic audit, while empirical papers deal with quality assessment in a department, ISO 9000, EFQM, SERVQUAL, benchmarking, quality audit, etc. Both business and education journals suggest HEIs adopt well-known QM models but adapted to their context e.g. ISO 9001, MBNQA (Clavo-Mora *et al*. 2006; Hides *et al*. 2004; Sohail *et al*. 2003). However, some authors suggest new models designed for academia (e.g. Owlia and

Aspinwall 1998; Srikanthan and Dairyple 2007) or discuss those created specifically for measuring education institutions (the Malcolm Baldrige Criteria for Performance Excellence for Education) or for the accreditation of academia by quality award bodies (e.g., AACSB, EQUIS).

Articles related to the topic QM dimensions tend to do this through analysis of the quality models used in HEIs. Theoretical papers only identify these dimensions and are few in number compared to the empirical papers that either identify them, or in addition propose a measurement instrument and analyse the instrument's validity and reliability. Theorists identify these dimensions in a general way for HEIs while amongst the empirical articles some can be found proposing dimensions for the quality of staff services, a programme or a faculty. Business journals dominate publications on this topic as we found only three articles in education journals that examine QM dimensions. Later we will examine QM dimensions in greater detail.

Next we discuss the papers that identify Barriers to QM most of which cover difficulties with the development of a quality culture in HEIs. These barriers are similar to those found in industry, resistance to change, inadequate resources to employ QM, employee training (Bhat and Rajashekhar 2009). Some of the articles that cover this topic indicate other barriers specific to the HEIs context (Cruickshank 2003; Koch 2003; Meirovich and Romar, 2006; Srikanthan and Darlrymple 2007):

- the difficulty of measuring core learning processes
- the difficulty of controlling teaching in HEIs due to the variety of: products, sites of delivery, delivery modes, processes and personnel to be controlled
- a lack of managerial responsibility for quality
- the lack of empowerment of staff for quality improvement

- the absence of standards that reflect customer requirements

- academic freedom

- the difficulty of specifying who the customers are

- the difficulty of determining the product of HEIs

- irregular teaching commitments and the conflict with research responsibilities.

Looking at the topic Status/effectiveness of QM in Table 1 that covers articles measuring the level of implementation of QM practices and/or the success of the implementation of such practices, we see there are more publication in business journals than education ones. Measures discussed in the articles ignore the financial metrics used in industry in favour of those specific to the educational context (e.g. number of students enrolled, student satisfaction, research output, etc.). Our discussion above covers 86 per cent of the articles analysed covering topics in QM so we now move on to discuss quality dimensions in more detail.

QM dimensions in HEIs

Table 2 lists the articles by their year of publication that discuss/research quality dimensions along with a brief summary of their content. Business journals are the dominant source for these as education journals contribute only three articles (1 theoretical and 2 empirical). The four theoretical studies identify QM dimensions from a literature review and apply them to higher education as an institution (2 articles) or to programmes or courses (2 articles). Amongst the empirical studies (17 articles) some discuss dimensions for the institution as a whole while others examine dimensions for programmes, courses or services. Among the empirical articles six present scales for measurement of QM dimension along with tests for reliability and

validity. These articles use QM dimensions adjusted to the HE context based on the QM literature and quality models (e.g. MBNQA model, EFQM model).

Table 2 here

We next examine in more detail the 15 empirical works that propose QM dimensions for higher education, in order to identify the most common QM dimensions proposed by the literature. These are summarised in Table 3.

Table 3 here

Looking at Table 3 the six most mentioned QM dimensions are:

- People management (e.g. involvement, training, recognition of staff, professional development)
- Information and analysis (measurement, data from student learning, daily operations, complaints, academic results)
- Process management (e.g. design of the learning process, mapping processes)
- Stakeholder focus (aspects related to students, staff, society and other stakeholders relationships)
- Planning (definition, communication and review of objectives and plans)
- Leadership (top management commitment).

Finally, with less frequency than the above are three other dimensions: continuous improvement, programme design (involvement of all affected departments in design reviews, clarity of specifications and emphasis on quality), and supplier management (relational practices associated with suppliers). Not included in Table 3 are dimensions that appear in only one or two studies.

In addition, some articles mention sub-dimensions of the main dimensions shown in Table 3. For example, the resources dimension is included under process management in many studies. Similarly, customer focus and student focus are sub-dimensions suggested in some articles as part of stakeholder focus. Confusingly some articles consider continuous improvement as a quality dimension or a sub-dimension of process management. However, we view continuous improvement as an effect of the other eight quality dimension in Table 3, rather than a quality dimension which reflects the view in the industry quality literature (Molina-Azorín *et al*. 2009).

So are these HEI dimensions different from those suggested for the field of quality in industry/commerce? In three articles reviewing the literature on QM in industry (Molina-Azorín *et al*. 2009; Nair 2006; Sila and Ebrahimpour 2003) the most common dimensions for QM were identical to the eight found in Table 3 (the exception being the continuous improvement dimension that the wider quality literature considers an effect rather than a quality dimension). However, in industry the dimensions design and supplier management that are the least frequent in HEIs are shown as much more frequent in the industry reviews. That supplier management is of lesser relevance to HEIs is understandable but design is an important issue in higher education because programmes need to be designed to fulfil the quality requirement established by employers, institutions, government, and quality bodies. Therefore, future research on QM in HEIs should give greater prominence to this design-dimension.

Based on these studies in Table 2, we can suggest other similarities and differences between these practices in HEIs and business. The main differences, when adopted in HEIs, are the following practices: supplier management, information and analysis, process management, and design. However, difficult areas in adoption of some of the dimensions are pointed out by some scholars. First, the diverse needs of customer and other HEI stakeholder make it difficult to

achieve a balance to satisfy all stakeholders. Secondly processes are different in HEIs compared to business. Finally, compared to industry quality is difficult to measure, monitor and improve in HEIs as it is has intangible product characteristics.

In spite of the differences, in general terms, the review shows that QM practices are not so different from those experienced in manufacturing or service organizations (Lagrosen *et al.* 2006; Owlia and Aspinwall 1997). In addition, experts in quality in education suggest that many core QM principles are also critical for HE such as the participation of academic staff, students and administrative, stakeholder satisfaction, etc (Rosa and Amaral 2007). Although QM dimensions in HEIs are similar to those developed by manufacturing and services organizations, the HEI studies in Table 2 propose items adjusted to the HE context for each QM dimension. These articles demonstrate how the QM dimension can be adapted by HEIs to satisfy educational characteristics and be implemented successfully. All these eight dimensions show issues to consider for QM development and managers in HEIs can use them to develop and evaluate the QM systems in their institutions and create a continuous improvement culture to improve institutional and educational performance outcomes.

The QM dimensions in HEIs studies show that the success of the QM adoption begins with management commitment and that this is critical to the development of the other practices. As has been found in the business sector leadership is a key issue for the successful development of other QM practices. Causal relationships between QM practices in HEIs are also similar to those found in business research (e.g. Badri *el al.* 2006; Calvo-Mora *et al.* 2005; Rosa *et al.* 2003).

An alternative perspective is offered by Harvey and Williams (2010), who consider QM as a bureaucratic tool and not a way of improving academic quality. These objections to QM implementation will concern many academics but these concerns will fade when they see

improvements in academic areas. So can these QM dimensions help to improve quality in academic areas?

First, continuous improvement is agreed by many experts on quality in education (e.g. Rosa and Amaral 2007) as a central element in achieving improvement. Yet, continuous improvement is observed as lacking in many HEIs (e.g. Kanji and Tambi, 1999). Therefore, when HEIs adopt QM dimensions they need to use them as a way of managing the organization with a focus on continuous improvement in both administrative and academic areas. For example, dimensions related to planning, processes and measurement in HEIs need to consider how they improve core educational processes.

Second, objectives, process control and improvement measures for academic areas need to inform improvements needed in administrative areas. Central is the need for managers to identify measure and monitor performance related to academic outputs. As we discussed earlier when examining topics, performance measures need to be adapted to the HEIs context. For example the review suggests performance measures related to stakeholder satisfaction (students, staff, society, etc.), academic output and research output. In the QM in industry literature the effect of QM on firm performance is a key research topic (Kaynak 2003; Lafuente *et al*., 2009). In contrast we found few studies in HEIs that use measures of performance (see Table 2) and a lack of studies in HEIs that analyse performance changes from the development of QM practices. This suggests a productive area for future research, will be how performance changes when HEIs adopt new quality systems and practices. Here performance measures related to student learning outcomes and/or other stakeholder (e.g. faculty, staff) outcomes would be appropriate.

Finally, we re-stress the importance of supportive leadership in HEIs for enabling progress in developing the other QM dimensions, as is true for manufacturing and service organizations.

Journals analysed

An analysis of the journals in which the articles were published is shown in Table 4 (grouped into education and business journal categories). The table shows the number published and the percentage that the journal represents of the whole number of publications. The journal *Quality Assurance in Education* journal is by far the most common outlet for QM in HEI articles (32%), followed at some distance by the *Total Quality Management & Business Excellence* (11%), *The TQM Journal* (10%) and *Tertiary Education and Management* (7%). These four journals account for 60% of all articles published (Mann-Whitney U test p=0.000), with empirical articles dominant in *Total Quality Management & Business Excellence* while theoretical articles are more prominent in *Quality Assurance in Education* and dominant in *Tertiary Education and Management*. We found no substantial difference between the number of articles published in education versus business journals (Mann-Whitney U test p=0.146).

Table 4 here

For business, the journals most likely to publish papers on quality in HEIs are *Total Quality Management & Business Excellence* and *The TQM Journal*. While in education, the most likely journals are, *Quality Assurance in Education* and *Tertiary Education and Management*. The other business journals where it is possible to publish, although at significantly lower rate than the first four journals, are the *International Journal of Quality & Reliability Management*, *Managing Service Quality* and the *International Journal of Educational Management.*

Nine out of these 45 journals are included in the Social Science Citation Index or Science Citation Index and these nine journals published 18% of the 202 articles considered in the study. These articles are mainly empirical suggesting that it is difficult to publish theoretical articles on QM in HEIs in these journals.

Next we examine the evolution of publication for QM in HEIs. The earliest article dates back to 1991. These earlier papers tended to favour a theoretical approach but after 2002 the trend was downwards with empirical papers becoming more popular a trend similar to that found in public management research in general (Pitts & Fernandez, 2009). Figure 1 shows graphically the number articles published over time. The trend reflects the normal scientific paradigm presumption that works shifts from theory studies to empirical studies to test theory as a field develops (Kuhn, 1962).

Figure 1 here

Countries

Table 5 reveals how prolific each country is in producing articles. For theoretical studies we use the nationality of the author, and for empirical articles the country of the firms studied (most of these deal with a single country, but seven include two or three countries). Overall there were 36 countries involved, covering all five continents.

Table 5 here

Table 5 shows the prevalence of the UK (33%) and the USA (24%), followed at some distance behind by Australia (7%). There are significant differences between these three countries (UK, USA, Australia) and the rest (p=0.003). This is also true when examining business (p=0.003) and education (p=0.003) journals separately. Therefore, a gap exists for extending research on Quality in HEIs to countries other than the UK, the USA and Australia.

In contrast with industry QM literature reviews by country where China has been prominent (Dereli *et al*. 2011; Sila and Ebrahimpour 2003), Table 5 shows only one paper for China. This may indicate the divide between QM practice between the public and more open manufacturing sectors of the Chinese economy.

Considering the continents, our findings show a significant prevalence of papers published in Europe, followed by America (mainly from the USA), Asia, Oceania and Africa. Table 5 also shows that articles published in Europe and USA dominates both business journals and education journals whereas African countries are the most underrepresented.

The table indicates that there is a lack of studies about QM in HEIs in some regions of the world such as Asia, South America, the Middle East and Africa. This pattern of results is similar to that obtained by Sila and Ebrahimpour (2003) when looking at critical factors of quality management in industry.

The review also found different regional preferences on where QM in HEIs articles are published. UK and European scholars usually publish in education journals; while the opposite is true of USA and American scholars whose works are much more likely to be published in business journals (see Table 5).

Research methodologies

Table 6 shows that 50% of the articles are empirical studies, with the other 50% being theoretical studies among which are 6 (3%) literature reviews. Business journals represent a higher percentage of empirical studies (61%) than theoretical ones, while the opposite is true for education journals, where theoretical papers (61%) are more popular.

These differences are statistically significant (X_2=10.48, p=0.001). Amongst the empirical articles, most use only one methodology, be it quantitative or qualitative, with no significant differences between the use of methodologies and the type of journal (X_2=0.33, p=0.563). However, the data in Table 6 shows that among the empirical articles, education journals publish mostly qualitative studies, whereas there are no important differences between the number of qualitative and quantitative methods for the business journals.

Table 6 here

In the field of education in general the use of qualitative methods is dominant and Table 6 shows this is also true for articles in the education journals and to a lesser extent is true for the business journals. In contrast to industry based QM research (Dereli *et al*. 2011), in the HEIs studies mixed methods are well represented.

An explanation for the prominence of theoretical studies, qualitative methods and mixed methods over quantitative methods is the relative immaturity of quality management research in HEIs. In a new field of research, new ideas that inform theory building are grounded on qualitative studies and refined through mixed methods. Quantitative methods then emerge as dominant, to test and extend theory (Malhotra and Grover 1998). Therefore, we can predict that based on the pattern seen in Table 6 the trend in the future is likely to be towards more articles using mixed methods and quantitative methods along with a decline in theoretical and qualitative studies (Malhotra and Grover 1998).

We are not suggesting that any particular methodology is better than another (Galán Zazo 2006) but at this stage of development of research into HEIs mixed methods offer the insights and knowledge of priorities offered by qualitative approaches. This can then inform the development of sound quantitative methods that have the advantages of allowing generalization of new knowledge (Malhotra and Grover 1998; Higón *et al*. 2010).

Conclusions

The purpose of this study was to analyse published research on the quality management (QM) of organizations delivering higher education (HEIs) to determine what topics have emerged as most important and how quality is categorized into dimensions to provide insights on the focus needed to improve quality in academic institutions.

We have also shown the convergences in approaches to quality management between industry and HEIs and explored the divergences in approaches to the topic of quality and research methodologies in HEIs between business and education journal.

This paper's contribution is that the review has a much broader scope than previous literature reviews on QM in HEIs in terms of the width of literature examined in our systematic searches and the range of topics that are analysed in depth. Previous reviews analysed few articles (for example 14 articles by Owlia and Aspinwall 1997, and 18 articles by Grant *et al*. 2004) or reviewed the literature in a selective way to compare quality models in HEIs adapted from business to quality models developed for HE (Becket and Brookes 2008). Our comprehensive review supplements and expands these previous literature reviews to inform improvement in QM practices in HEIs, the dimensions that can be used to manage quality in HEIs and the directions for future research into QM in HEIs.

The nature of quality in Higher Education

For QM topics the most common representing 76 per cent of articles, are QM implementation followed by 'Models techniques and tools', and QM dimensions. These results are consistent with the most popular topics found in the industry QM literature (Lo and Chai 2012; Molina Fernández *et al*. 2003) with one exception. The effects of QM on organisational performance (see Table 1) has not been examined in any depth in HEI compared to its prominence in the general QM literature, where performance measures such as customer and employee satisfaction, customer complaints, service quality, performance outcomes, organisational performance are frequent topics (Dereli *et al*. 2011). We will return to this anomaly in our recommendations.

Also, found was that there was no consensus on which QM models best suited HEIs. The review found the use of national quality award's models (e.g. EFQM) and ISO 9000 quality

standards and overall shows that the techniques and tools of QM that have been successful in industry can be relevant to HEIs across different geographic areas, and can be adapted to the needs of different national agencies. The literature review shows that HEIs can successfully utilise QM dimensions in the implementation of QM, as has been found in several other studies (e.g. Chen 2012).

The findings for the most common QM dimensions in HEIs that represent 86 per cent in rank order are: people management, information and analysis, process management, stakeholder focus, planning, and leadership. Of lesser importance but of relevance are the design-dimension and supplier management-dimensions. Although some differences has been suggested regarding how to apply them, in general terms, the QM dimensions are similar in both contexts but HEIs need to implement them adjusting to the education context. The findings indicate that an HEI that wishes to improve overall quality must develop a range of actions for each proposed dimension to enable continuous improvement to be achieved. These dimensions may be used by HE managers as the main focus for the development of and measurement of quality in non-academic departments and with adaption also in academic areas. For researchers these quality dimensions indicate those that can be fruitfully used to examine and measure QM in HEIs in future studies. In particular, a gap exists for comparative research that considers these dimensions alongside measures of performance such as student learning outcomes and or other stakeholder measures.

Publications on QM in HEI, geographical focus and methods

The review considered the number of publications on QM in HEIs grouped by business and education journals and found the number of articles published is similar for each of these with a trend over recent years for more empirical articles being published. There are several journals, such as *Total Quality Management & Business Excellence* and *The TQM Journal* in

business journals and *Quality Assurance in Education* and *Tertiary Education and Management* in education journals, which are more likely to publish this type of article (see Table 4). For journals that are in the Social Science Citation Index or Science Citation Index, the review found that empirical articles on QM in HEI are dominant. The findings show there is prevalence for empirical articles in business journals, in contrast theoretical articles prevail in education journals where even amongst the few empirical articles, qualitative studies prevail.

For countries, the literature on QM in HEIs indicates that the USA, the UK, and Australia are those most extensively analysed by academics. This finding is similar to that found in the industry QM literature.

Recommendations for HEIs for the development of QM

Synthesising the content of the articles we have reviewed we can say that QM can be applied in all areas in HEIs, such as non-academic functions, the administration of academic functions or learning processes. In industry, firms mainly implement QM philosophy due to marketing motives while motives for HEIs were to improve efficiency or reduce cost as a way to face funding constraints, and/or government demands. Thus, improved QM can be beneficial in matters of curriculum, teaching, and research, and can help in designing more effective educational processes and systems, although intelligent adaptation is required, as several scholars have shown (Voss *et al*. 2005).

With higher education increasingly under pressure due to squeezed funding, competition for improved rankings, etc., the potential of the quality management practices and systems that have served industry well in reducing costs and improving internal and external quality, has never been greater. Given the economic imperatives, we suggest that at the national level governments need to encourage the national bodies responsible for HEIs to consider these QM dimensions as a general way of managing HEIs and then allow national bodies to publish

guidelines for QM that serve as a flexible template for the development of quality in administrative and academic processes to achieve improvement in the learning process and environment. This implies the development of performance measures to judge improvement from the perspective of external and internal stakeholders.

These QM practices may be adopted in the university administrative services in the same way as in the service sector. In the case of teaching and research activities these practices should be implemented but face additional barriers such as, the difficulty of measuring core learning processes; the difficulty of controlling teaching in HEIs due to the variety of products, modes, delivery sites, processes and personnel; and academic freedom. However, increasing managerialism in higher education has removed some of these barriers through the modularization of teaching programmes and the adoption of standardised processes across the institution (Deem 2004). In addition, metrics are increasingly being used to measure academic and research staffs' outputs in the quest for teaching excellence, research excellence and generation of income from working with industry (Cuthbert 2011).

Earlier, we identified from the review that leadership is a key element for the development of the other QM dimensions. Therefore, senior managers need to consult with all stakeholders to establish quality policy and objectives that will act as a guide for QM activities to meet other quality dimensions (Chen 2012). The stakeholder focus dimension is important for HEIs as they have a wider range of stakeholders compared to business organisations. Therefore, it is important to collect information from all stakeholders and analyse these needs to best inform QM objectives, how to measure teaching and learning activities and to define improvement actions. (Loukkola and Zhang, 2010). This requires that managers consider different stakeholders (e.g. students, graduates, employers) and that students plays different roles, as customers and as an active participant in the processes they experience. For example, recent

graduates and employers may assess academic quality as customers and for non-academic departments; students may evaluate the service quality they receive as customers.

To meet these objectives it is essential that efforts focus on incorporating continuous improvement in academic areas and using measures for core education processes. If quality efforts are focused only on ensuring accountability and external control (Harvey and Newton 2007) then it becomes difficult to develop improvement in core education processes. This then results in academic staff showing resistance to the quality management system as they don't see any improvement that aids their activities; instead the see bureaucracy and interference with professionals' efforts (Stensaker *et al*. 2007). In other words staff in HEIs will have a positive perception about the effects of QM in terms of improvement but a negative perception about the effects in terms of control (Kleijnen et al. 2011).

This negative perceptions of control from QM (Kanji and Tambi 1999) needs to overcome by QM implementation having a clear focus on improvement actions. QM leads improvement when a HEI identifies improvement performance indicators, framed around educational aims and values and the criteria for assessing learning. For example, using indicators related to student learning, programme-level learning, etc. Here the quality planning-dimension can serve to define targets related to teaching and research activities and clarify designation of responsibility for quality issues (e.g. teaching quality) at the institutional level.

Essential is knowledge of existing processes so here the process-dimension should be used by HEIs to map their processes to understand potential failure points that need monitoring and how processes can be redesigned to reduce complexity and improve quality..

Improvement against objectives requires standards to be set and measured. For learning existing measures can provide a starting point (e.g. proportion of employed among graduates, average duration of study, student evaluations, student drop-out rate, number of doctorates

among the personnel). Measurement in other areas will require the identification of performance indicators (e.g. number of publications, ranking of journal publications, and participation in faculty development activities) that are agreed as the best way to assess organisational success in research and non-academic activities. To avoid extra workload for faculty members these measurements should be developed and monitored by the quality management function of the institution using a range of tools (e.g. teaching and learning audits, students' surveys, focus groups of students, etc.) to analyse the data. For this, it is crucial to use a database to help in the analysis of strengths, weaknesses, and success in making improvements. For the people-dimension of quality, reward and promotion systems should emphasize compensation for improvements in research quality, teaching quality, and in non-academic departments' meeting of quality improvement targets. These improvements being measured using the quality information and analysis-dimension, based on internal and external measures. For instance, surveys of students can assess every course and teacher (Meirovich and Romar 2006); while surveys of graduates can evaluate the quality of the education experience as a whole. Finally, formal oversight structures need to set for evaluating performance (Chen 2012) to identify improvement actions in academic areas

To summarise we believe that QM concepts from industry can help HEIs using these quality dimensions. Managers can define targets, measure teaching and research activities and have as a result data to make better decisions. These informed decisions help focus continuous improvement activities which eliminate wastes and so reduces costs. Thus, the QM dimensions we suggest can be a route to improve efficiency in HEIs while at the same time improving academic results and stakeholder quality.

In contrast, we warn against HEI managers focusing only on satisfying national and accreditation bodies as this usually develop a symbolic adaptation of QM rather than a embedded quality improvement system. Likewise, only applying quality concepts in

administrative areas will not achieve a real continuous improvement culture as the changes will be decoupled from the core educational objective of HEIs.

We acknowledge that QM is not the sole contributor to HEI success and that there is no guarantee that QM will satisfy all stakeholders in HEIs but it is a framework that increases the likelihood of success, as it allows managers to manage more effectively and systematically than before, to achieve this aim.

So do these changes challenge academic freedom? Well to some extent any change upsets the status quo but all institutions have to establish goals and policies to guide actions and processes and individuals need to accommodate the constraints of corporate obligation that allows them the academic freedom to pursue individual ways of achieving goals. So a balance between control and autonomy must exist in the organisation. In particular lecturers must understand the roles of students, as customers as well as participants in the learning process (Meirovich and Romar 2006) and the institution needs to provide a quality learning environment and support for students so that they have the opportunity to achieve their potential, using QM dimensions as a way to continuous improve learning and the education environment.

Research opportunities for QM in HEI

We believe this review of QM in HEIs will help academics by providing a starting point for understanding what has already been done and an appreciation of the gaps that exist in research on QM in HEIs. Our findings indicate the QM dimensions that may be used by future researchers in order to measure and assess QM developments in HEIs. We show researchers which journals publish papers on these topics and which journals have published the greatest number of papers. In addition, we suggest that trends indicate that the field would benefit from mixed methods at this stage in its development.

Next we suggest an agenda for future research. First, we note that existing HEI research follows the pattern observed in industry based research on quality, so there exists an opportunity to look more deeply at the opinions of academics and managers in HEIs to understand more about the needs of these key stakeholders. This might be formalized in comparative surveys of HEI academics, managers and national funding bodies. Secondly, future research needs to formalise measurements for each quality dimension and analyse their validity and scale reliability across different institutions. These can then allow comparative analysis of quality to indicate which practices are more successful in a HEI environment and evaluate which barriers affect QM implementation.

Thirdly, studies are needed to clarify the impact of QM on improving the quality of learning for students and the negative or positive effects of quality initiatives on academic engagement and commitment. Each of these are under-investigated areas in the publications on QM in HEIs. Fourthly, there is lack of research in regions that have new economic importance to understand their perspective on quality in HEIs. Are their practices differentiated or based on western ideas? Can their practices provide new insights on quality management improvement in HE that may have the impact that Japanese industrial quality improvement methods have had for the West?

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