MAPPING RICS QUANTITY SURVEYING COMPETENCIES TO CURRICULA OF RICS ACCREDITED PROGRAMMES

Professor Srinath Perera*, Mr. John Pearson and Mr. Damilola Ekundayo

School of the Built and Natural Environment, Northumbria University, UK

ABSTRACT

The education and training of graduate Quantity Surveyors are highly influenced by academic institutions which produce the graduates and professional body such as Royal Institution of Chartered Surveyors (RICS) which sets competencies that guide both academic and industrial learning. The RICS competency documents set the requirements for candidates ready to sit the Assessment of Professional Competence (APC) but do not state the level of competency expected of a graduate. As such, it is a matter of interpretation open for dispute and debate. This research therefore examines the extent of coverage of RICS QS competencies in the programmes accredited by the RICS. A detailed case study exercise was carried out based upon 4 RICS accredited quantity surveying programmes offered by 4 leading universities in the UK to map the RICS QS competencies to the individual module specifications of the respective QS programmes. In effect, a scoring system and competency mapping matrix was devised to carry out a systematic numerical evaluation of the extent of competency mapping to curricula. The study revealed that different universities aim to achieve competencies at different levels based on their interpretations as there is no threshold standard or benchmark for level of competencies to be achieved by QS graduates completing a RICS accredited programme. It is thus recommended that a clearly defined Graduate Competency Threshold Benchmark (GCTB) should be created by the RICS who regulates the QS profession. In addition, a competency mapping framework that describes the process of the mapping of competencies to QS programme curricula should be developed to form the basis of identifying whether a programme seeking accreditation will have the necessary mapping levels to produce a graduate that will achieve this threshold benchmark.

Keywords: Academic Curricula, Competency Mapping, Graduate Quantity Surveyor, RICS QS Competencies.

1. INTRODUCTION

Significant growth in undergraduate level education of Quantity Surveyors stems from the late 1960's and early 1970's with the switch from Diplomas in Quantity Surveying to Honours Degrees. From the 1971 RICS report "The Future Role of the Quantity Surveyor" (RICS, 1971) identifying specific competencies of the time, the profession began to evolve rapidly, and in 1983 a further report was produced, "The Future of the Chartered Quantity Surveyor" (RICS, 1983) With the publication of the document "QS2000" (Davis Langdon and Everest, 1991) there was recognition of a number of forces acting on the QS profession, highlighting both the changes to the client body and to the construction industry.

Today, the academic, professional and training needs of Quantity Surveyors are pulled by three different stakeholders in three different directions (Figure 1); Academics, interested in producing a rounded graduate with the basic foundation in knowledge for further development, professional bodies, interested in graduates who can be progressed to full professional status through the achievement of the required competencies (RICS, 2009b) and industry, looking for a graduate who

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* Corresponding Author: E-mail-srinath.perera@northumbria.ac.uk, Tel-0044 (0) 191227 3172, Fax-0044 (0) 191227 3167

can straight away contribute both to the daily functions of business activity and to its growth. Hence, there is a tripartite pull on the development needs of the Quantity Surveyor. The present education system of the Quantity Surveyor does not recognise these multi-directional needs and hence often produces a graduate whom the industry sees as not fulfilling their requirements. This leads to many problems, with greater levels of employer and graduate dissatisfaction and obstacles to early career development of the QS graduate.
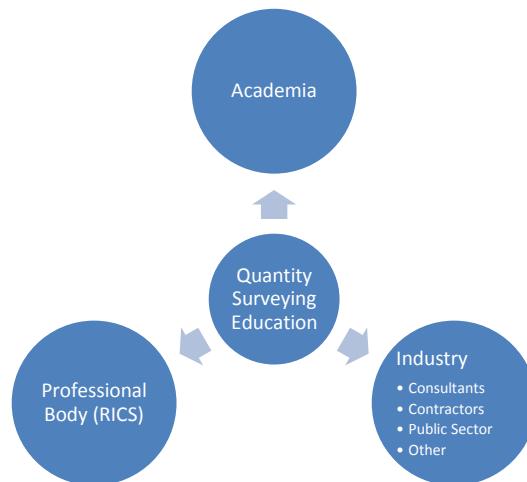

Figure 1: Key Stakeholders Influence on Quantity Surveying Education

These conflicting concerns have long fuelled the "education versus training" debate and some conflict between Educators and Employers through which the RICS steers a sometimes difficult path. On the one hand it sends messages to the universities seeking programmes which lean more towards the "academic" rather than the "technical", whilst on the other hand it informs employers that they should accept graduates issuing from its accredited degree programmes as being appropriately qualified to take positions at higher than technician grade (for which the RICS itself has a specific training route via the HND / Foundation Degree). For its own part, the RICS has created a set of Core Competencies which, if they are to be fully achieved by candidates for membership, requires active cooperation between the academic sector (providers of basic subject knowledge and certain academic skills) and the industrial sector (providers of practical skills training) through the operation of their business.

Both the RICS and the educational sector appear to lack appreciation of the specific requirements industry may have of its newly graduated student members. At the same time the industry does not seem to appreciate that a graduate is a person with good level of intellectual capacity to rapidly further develop their professional skills and technical knowledge once in employment. This conflict and lack of alignment of industry, academic and professional perspectives create a barrier to the development of the profession as well as the career development of the graduate Quantity Surveyor.

Added to this is a more fundamental failure on the part of all parties to appreciate the dynamics of the market sector. The majority of new graduates appear to be entering more non-traditional quantity surveying routes. It has been shown both through research (Perera, 2006) and through records of 1st destination Surveys (UNN Returns, 2001 – 2008) that a large majority of new graduates find employment not in Private Consultancy Practice (PQS) or the Public Sector, as was the case until the mid 1980's, but with Main Contracting and specialised subcontracting organisations. Perera (2006) shows that in the University of Ulster more than 80% of graduates seek employment in the non- PQS sectors of the industry. The situation is very similar at Northumbria University and in other universities in the UK. Feedback from Assessment of Professional Competence (APC) workshops has noted a certain Private Practice bias within student presentations and, indeed feedback at university level suggests this. Both much of the academic content and the structure of the RICS would seem

directed at those employed in the PQS and Government Sector, paying less attention to the skills inherent in the role of the Contractor's Surveyor. For their part, those engaged in developing Quantity Surveying within the construction sector may see this as another barrier to cooperating with the RICS when required. This is evident from the fact that RICS membership does not grow in the same proportion to the growth in QS student numbers (Perera, 2006). The emergence of Commercial Management (Lowe and Leiringer, 2006; Walker and Wilkie, 2002) as a distinct discipline encompassing the role of the contractor QS is a fact that RICS should consider in detail in its future development of career paths for the QS. Leading Quantity Surveying professional bodies the world over have already begun to recognise these developments and trends. For example, recently the Australian Institute of Quantity Surveyors (AIQS) established a separate pathway for contractors' QS for completing professional qualification.

It is suggested that the present UK education system of the QS does not recognise the multi-directional needs of the QS and hence often produces a graduate whom the industry sees as not fulfilling their requirements. A further factor in the willingness on the part of the Industry to accept and train new graduates must be born of the financial insecurity being experienced by existing Members who might otherwise be more willing to accept the risk of employing and training new recruits. The problem is compounded and exacerbated by the resource constraints born of the severe economic recession being experienced by the construction industry in particular. It is possible that through its most recent initiative, aimed at measuring the level of transferable skills within degree programmes, there will be the roots of some agreement between the RICS, Academia and Industry (RICS 2009) (1). However, this process is a part of developing an effective understanding of the issues referred to above.

In summary, the education and training of graduate Quantity Surveyors are highly influenced by academic institutions which produce them and professional bodies such as RICS which set competencies that guide both academic and industrial learning. The RICS competency documents set the requirements for candidates ready to sit the Assessment of Professional Competence known as the APC but do not state the level of competency required upon graduation. As such, this is a matter of interpretation open for dispute and debate. This paper therefore aims to provide a full picture of the extent of coverage of RICS QS competencies in the programmes accredited by the RICS and to establish the views of the academic providers in respect of graduate QS competency level. This was achieved by mapping all the 24 RICS QS competencies against curricula for 4 RICS accredited QS honours degree programmes and reported as 4 case studies.

2. RESEARCH METHODOLOGY

A detailed competency mapping exercise was carried out based upon 4 RICS accredited quantity surveying programmes offered by 4 leading universities (referred to as case studies A, B, C and D). This involves mapping RICS QS competencies to the individual module specifications of the respective QS programmes. These are referred to as mapping case studies.

The RICS Competencies are arranged into three groupings, depending upon their perceived relevance to the Role of the Quantity Surveyor:

1. **Mandatory Competencies:** personal, interpersonal and professional practice and business skills common to all pathways [into membership] and compulsory for all candidates.
2. **Core Competencies:** primary skills of the candidate's chosen [RICS] pathway
3. **Optional Competencies:** selected as an additional skill requirement for the candidate's chosen [RICS] pathway from a list of competencies relevant to that pathway. In most cases there is an element of choice

The RICS distinguish between three possible levels of attainment in each of a range of competences when setting its requirements of those seeking membership. Briefly, these are as follows;

- **Level 1:** Knowledge (theoretical knowledge)
- **Level 2:** Knowledge and practical experience (putting it into practice)
- **Level 3:** Knowledge, practical experience and capacity to advise (explaining and advising)

There are 10 Mandatory competencies, 7 Core competencies and 7 Optional competencies (two only of these last to be selected by the candidate). The RICS stipulates that an APC candidate needs to achieve all Mandatory competencies at Level 2 or above, all Core competencies at Level 3 (except one not relevant to specialisation depending on employment in consulting or contracting practice which is at Level 2) and 2 Optional competencies at Level 2 or above.

2.1. COMPETENCY MAPPING METHOD

The main method of competency mapping involved the use of a two dimensional matrix comprised of QS competencies on the Y – axis (vertical listing) and Programme specifications on the X – axis (horizontal listing). Each competency was subdivided in to the three Levels (1 to 3). Figure 2 illustrates an example of this mapping matrix created as a protected spreadsheet form.

Figure 2: Competency Mapping Matrix Form

A detailed map scoring system (

Table 1) was devised to enable indication of perceived levels of achievement of competencies through the evaluation of the individual module specifications pertaining to a programme.

Table 1: Map Scoring System

Score criteria	Score
Achieves small parts of a competency	0.25
Partially achieves a competency	0.5
Considerably achieves a competency	0.75
Fully achieves a competency at respective level	1.00

The respondents completing the form were required to make judgements as to what amount of a competency at which Level (Levels 1, 2 or 3) was achieved by each module of a programme.

2.2. MAPPING PROCESS

Competency mapping to programme specifications was carried out in 3 stages:

1. Scoring the mapping matrix by the researchers
2. Scoring the mapping matrix by programme directors of the respective programmes
3. Consensus adjustment of scoring by the researchers to eliminate bias

This three stage process established the final scores for competency mapping to programme specifications which were then used for the evaluation explained in this paper.

Programme Directors of the programmes selected as case studies were requested to complete the matrix form based on their judgement of the level of attainment of competencies. These case studies are referred to as Case study A, B, C, D. Each was asked to allocate approximate scores, at each Level, as defined above, on a scale of 0.25 to 1.00 depending upon their estimation of the coverage they achieved of each of the RICS Mandatory, Core and Optional Competencies through delivery of the modules making up their Undergraduate Quantity Surveying Programme. Through this exercise total scores were achieved in respect of each of the above competencies for each University, together with totals relating to all Modules delivered. The scoring carried out by the programme directors was reviewed by the researchers through a discussion process to achieve consensus view on individual module scores. The aim of this process was to eliminate individual bias of the scoring process and to achieve a reasonable degree of uniformity in the interpretation of scores.

The last figure can be split to show total estimated delivery at each of the Levels, 1, 2 and 3.

There are three possible levels of analysis; the overall total coverage of all competencies for each University, the split between levels for each University and the individual Universities' actual coverage of specific competencies. These are each analysed in the following sections.

3. RESULTS AND DISCUSSION OF FINDINGS

3.1. OVERALL TOTAL COVERAGE OF ALL COMPETENCIES BY UNIVERSITIES

There is some variation between the universities studied. Two Universities return total scores of 45 to 48, as against the others who both score 37, a difference between the two pairs of 25%. This would seem to be a significant variance, given that all are offering broadly the same overall programme of delivery and assessment, within broadly similar timescales, and all leading to the same award.

Table 2: Total Mapping Score Comparison

Total Score			
University A	University B	University C	University D
45.25	37.25	37.75	48

3.2. INTER-LEVEL SPLIT ACROSS UNIVERSITIES

The aggregated level of competency mappings for each university is evaluated in Table 3 below.

Table 3: Final Scores by Competency Level

	Cumulative Level Score			
Level	University A	University B	University C	University D
Level 1	32.5	27	26	37
Level 2	12.25	10	11	11.25
Level 3	0.50	0.50	0.25	0.50

The main reason for the high level of variance between total coverage of competencies (Table 2) is the level of variance built in due to different volumes of coverage at Level 1. Both Level 2 & 3 scores are very similar between universities. This suggests that they have a similar appreciation of the significance of the value of the higher two levels required of new graduates by the RICS. As would be expected, in all cases the total score for Level 1 far exceeds that for Level 2, and that for Level 2 is far in excess of that for Level 3. The Level 3 hardly features at all, as one might expect for it is a competency level only expected of candidates at the time they come to sit their APC, one year or more after graduating.

3.3. COVERAGE OF SPECIFIC COMPETENCIES BY UNIVERSITIES

This section examines the coverage of competencies at the three different levels by the programmes studied. These are analysed separately for Mandatory, Core and Optional competencies.

3.3.1 MANDATORY COMPETENCIES

Every graduate wishing to become a Chartered Quantity Surveyor must meet the RICS requirements in these areas. All should be achieved to Level 1 or greater, some to Level 2 and, in the case of M005 "Conduct rules, ethics and professional practice", to Level 3.

M001 Accounting Principles (Level 1 required): Only one University progresses beyond Level 1 in this area. University A does not address it at all.

M002 Business Planning (Level 1 required): This area is addressed significantly by all Universities at Level 1. Two progress even to level 2.

M003 Client Care (Level 2 required): All Universities address this up to and including Level 2 to some extent.

M004 Communication and negotiation (Level 2 required): This competency features strongly across all universities, as might be expected of a generic, transferable skill at university level. University A progresses this to Level 3.

M005 Conduct rules, ethics and professional practice (Level 3 required): All Universities address this important area though to differing extents, even at Level 1 where the total score ranges from 0.5 to 1.75. Universities B, C and D progress this to Level 2 to some extent but University A stops at Level 1. This variance between Universities may be a cause for concern, especially when this has always been considered by the RICS to be one of the most important competencies.

M006 Conflict avoidance, management and dispute resolution (Level 1 required): All Universities address this Competency at level 1 to varying degrees, all progress this to Level 2 with the exception of University C.

M007 Data Management (Level 1 required): As with M 04 above, this competency is addressed at all Levels by all Universities, though to varying degrees. All show some evidence of coverage at Level 3. This competency often involves dissertation modules and as such high level of coverage is expected.

M008 Health and safety (Level 2 required): This important area appears to be addressed in a varied manner. Only two Universities, A and C, progress beyond Level 1

M009 Sustainability (Level 1 required): Again, an area which is considered by most to be significant for the future, this is addressed reasonably well to Level 1 by all Universities, but only two achieve any coverage at Level 2. Perhaps although it is being met at present, the RICS might reconsider their requirement due to increasing significance and developments in this area.

M010 Team working (Level 1 required): Whilst the RICS only require attainment of Level 1 in this area, all three Universities give equally strong ratings, well into Level 2. This is probably a reflection of the emphasis placed by most on project work, involving teams of students.

Generally, given that the required attainment levels set by the RICS for the Mandatory Competencies do not seem very high, most Universities are already meeting or working towards acceptable targets in most areas for their students at this stage in their education.
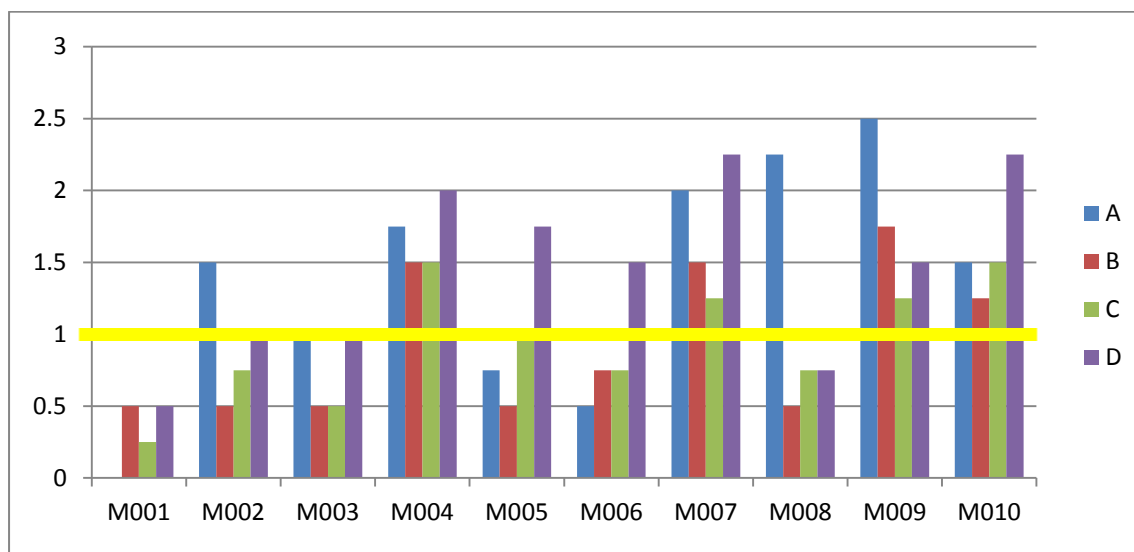
Figure 3: Mandatory Competency Mapping Scores: Level 1

Figure 3 above illustrates the scores for Level 1 for Mandatory competencies. The yellow benchmark line is set at a score of 1 to indicate competencies not meeting this requirement. It is clear that many universities are below this threshold for M001, M002, M003, M005, M006 and M008 competencies. This indicates some aspects that universities need to address.

3.3.2 CORE COMPETENCIES

It is in this area that the most demanding requirement is made of those seeking membership, for they must have attained Level 3 in all Core Competencies before being admitted to full membership of the RICS. If there is any one area which Universities might be expected to equip the students with a sound grounding, even in the early stages of their education and training, then this is it.

T010 Commercial management of Construction: All Universities display a strong performance in this area at Level 1. All achieve the same (0.25) at Level 2. This seems appropriate at this stage in students' development.

T013 Construction technology and environmental services: This is one of the key areas for the QS where there is a strong attainment at Level 1. However, there is more variance at Level 2, with University B, remarkably, failing to claim any score at all at this Level.

T017 Contract practice: Scores are reasonably consistent across all Universities across Level 1, although Universities C and D are higher at Level 2.

T022 Design economics and cost planning: Scores are quite healthy and pretty much the same across all Universities at both Levels.

T062 Procurement tendering: Mostly as for T022 above, although University B is lower at Level 1.

T067 Project financial control and reporting: Both Levels 1 and 2 are addressed by all Universities but the figures show some variance at each Level.

T074 Quantification and costing of construction works: In this, one of the most traditional of the Quantity Surveyors' skills there is quite a range of results at Level 1, (from 1.25 through to 3.75) which may reflect the differing emphasis placed on teaching the basics of this skill. At Level 2 there is more agreement between the figures submitted by the four Universities.

Generally, the Universities in this section of the study are addressing the targets set them although there are some exceptions, as noted above. Perhaps the RICS should be slightly concerned at these

last, occurring as they do in Core Skills T013, T067 and T074 those skills which specifically define the Quantity Surveying specialism.

Core competencies can be further analysed using the following Figure 4 and Figure 5 at Level 1 and 2 respectively.
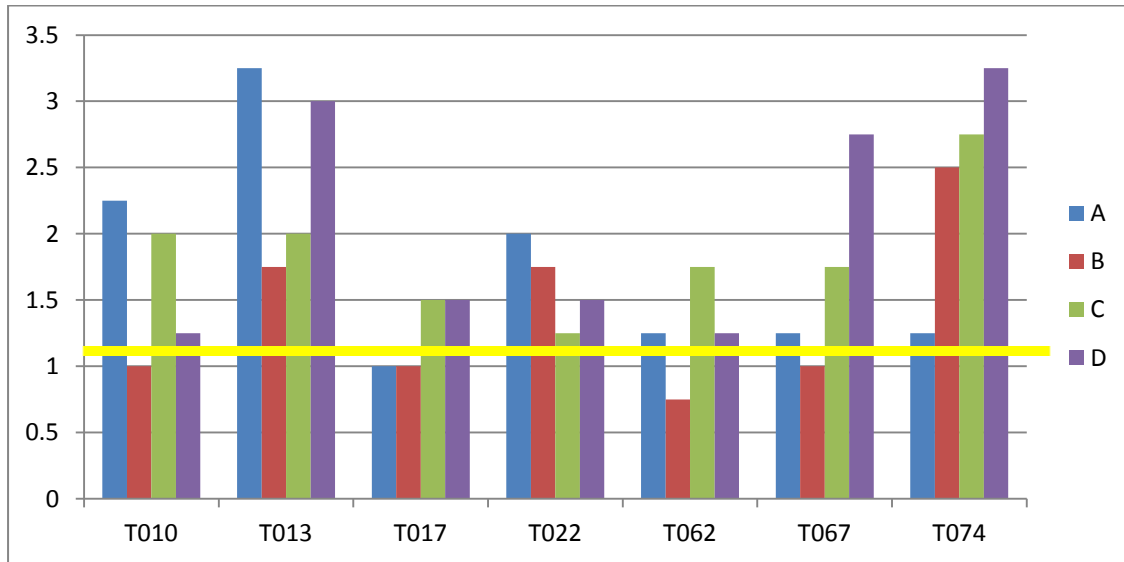

Figure 4: Core Competency Mapping Scores: Level 1

The illustration above (Figure 4) indicates that core competencies are well achieved by all universities. However this is based purely on our interpretation of map scores and when you consider a benchmark score of 1 only.
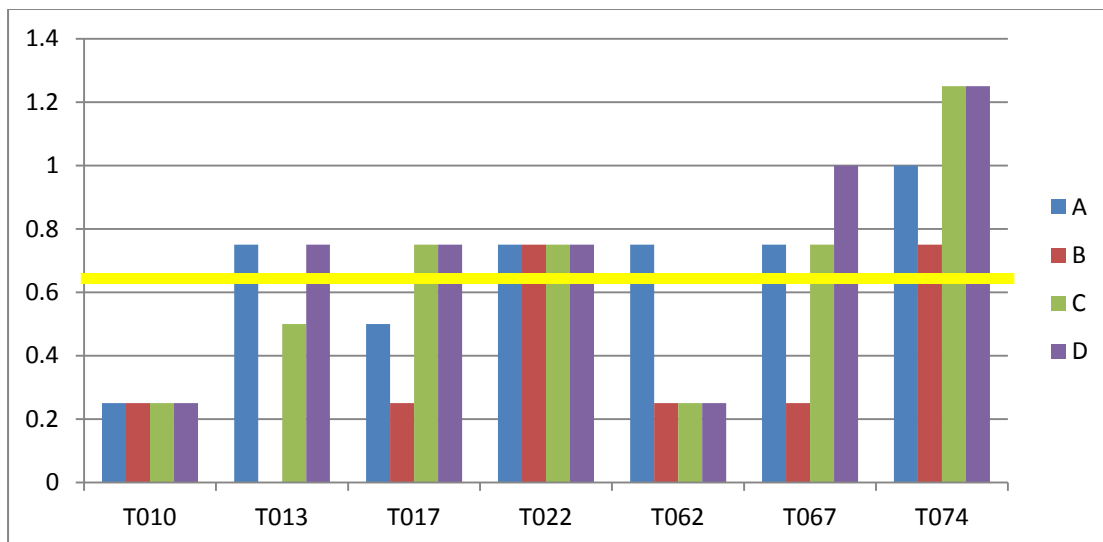

Figure 5: Core Competency Mapping Scores: Level 2

Figure 5 indicates that Core Competencies are achieved to some extent by the universities but nowhere near completely. Since core competencies for the most part define the profession it is the area where universities might ought to make a greater effort to progress.

3.3.3 OPTIONAL COMPETENCIES

Candidates are required to attain Level 2 in a choice of two optional Competences of their choice. As might be expected, being specialist areas, availability of which may vary across Universities according to the specialism of their staff, there is no uniformity of provision. Correspondingly, there is no sensible detailed comparison which can or should be made. As a general rule, the Optional Competencies are not being covered beyond Level 1 which is perhaps appropriate at this stage.
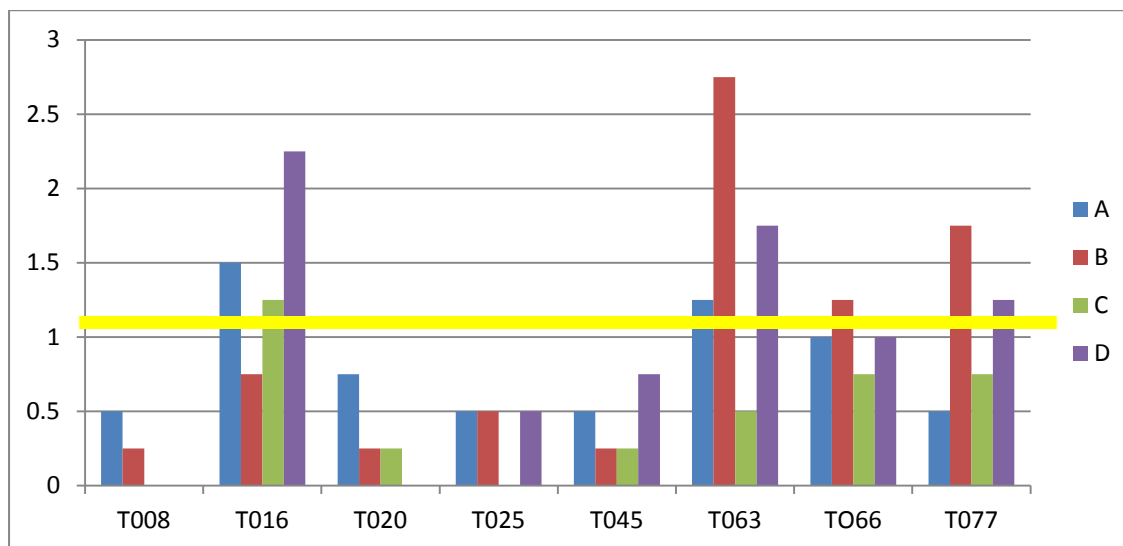

Figure 6: Optional Competency Mapping Scores: Level 1

Figure 6 indicates that most optional competencies are not adequately achieved except 4. For example; T016, T063, T066 and T077 are reasonably attained by some universities with scores well over 1 for Level 1 and some approaching Level 2 as well. This is may be due to lack of direction on to what extent universities should deal with optional competencies.

4. CONCLUSION

Competency mapping in this analysis is carried out based on the limited guidelines provided in the QS pathway documents. This document does not provide in-depth information on the actual knowledge areas which should be covered. As such, these are open for interpretation by individuals and organisations. The less prescriptive nature of these documents may help innovation and freedom to design curricular. On the other hand this very feature inhibits the full attainment of competencies across all institutions due to narrow or incorrect interpretation. Therefore, a score of over 1 for a competency may not assure that a competency is fully attained to the level expected. In any case RICS do not specify a level of attainment of competencies by a graduate completing an accredited degree. The absence of such a benchmark means that it is at the discretion of the individual universities to set these at levels they see suitable. This means that invariably there will be differences in the level of graduate quality expected by the industry employers and the ones set by individual universities.

4.1. KEY FINDINGS OF THE COMPETENCY MAPPING

The key findings of the competency mapping study can be summarised as follows:

1. There is no threshold standard or benchmark for level of competencies to be achieved by QS graduates completing a RICS accredited programme.

2. Different universities aim to achieve competencies at different levels, based on their own interpretations.
3. In the absence of a detailed competency specification, the level of achievement of competencies judged by our own interpretation seems satisfactory for the most part. There are inadequacies in level of coverage of some competencies.
4. Programme leaders tend to interpret levels of achievement of competencies differently to one another resulting in apparent differing levels of achievement of competencies and different levels of coverage.
5. There is no standard way to interpret the actual achievement of competencies.
6. There is no formal competency mapping process available for universities in curricular development or revision.
7. Most mandatory competencies were not achieved to a significant extent by those universities studied.
8. Core competencies are well achieved at Level 1 based on interpretations made by universities and some attempt made at Level 2. There is greater scope towards achieving core competencies to some extent at Level 2.
9. Optional competencies are not reasonably achieved at Level 1 by most universities. Some competencies are however dealt with to a considerably higher level by some universities. There is greater variation across universities.

4.2. LIMITATIONS OF MAPPING

The mapping of competencies using a scoring system attempts to allocate a map score for each competency by each module specification of an accredited programme. The scoring was carried out by individual Programme Directors of the four programmes analysed and moderated by the researchers to eliminate bias and impact of individual interpretation. This is a very difficult activity as degree of interpretation varies considerably across individuals. There are no standard guidelines as to what curricular content should exist, to map directly to a competence. As such it is difficult to achieve a uniform and even scoring of competencies across all case study universities. This is an inherent limitation which could only be eliminated by proper and full definition of competencies to include standard curricular content expressed as sub competencies. Competency mapping then has to be carried out by a third party interpreting curricular and negotiating with module tutors responsible for delivery. This would be an impossible task, given the resource levels for this research. Therefore, the method adopted was a compromise in order for the research team to make a reasonable judgement of the mapping of competencies to programme curricular, to achieve its objective of identifying relative levels of mapping of competencies.

5. REFERENCES

Davis Langdon and Everest, 1991. *Quantity Surveying 2000.* Royal Institution of Chartered Surveyors, RICS.

Lowe, D. and Leiringer, R., 2006. *Commercial Management of Projects: Defining the Discipline.* Blackwell Publishing.

Perera R. S., 2006. Views of Prospective Graduate Surveyors on their Professional Career Plans, Final Report. *RICS NI*, August 2006.

RICS, 1971. *The Future Role of the Quantity Surveyor.* Royal Institution of Chartered Surveyors, RICS.

RICS, 1983. *The Future Role of the Chartered Quantity Surveyor.* Royal Institution of Chartered Surveyors, RICS.

RICS, 2009a. *RICS Employability Threshold Consultation Document: Letter to Partner Institutions.* Royal Institution of Chartered Surveyors, RICS, October 2009.

RICS, 2009b. *RICS Website* [online]. Requirements and Competencies: RICS Education and Qualification Standards. Royal Institution of Chartered Surveyors, RICS. Available from: http://www.rics.org/site/scripts/download_info.aspx?fileID=3729&categoryID=98 [Accessed 2010].

UNN Returns, 2001- 2008. UNN Returns: Annual 1st Destination returns from the University of Northumbria to RICS Partnership Accreditation Board, 2001 – 2008.

Walker, I. and Wilkie, R., 2002. *Commercial Management in Construction.* Blackwell Publishing.