

# Alignment of Academic and Industrial Development Needs for Quantity Surveyors: The Views of Industry & Academia

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## Abstract:

Education and training of Quantity Surveyors (QS) is subjected to conflicting pressures; firstly from Academic Institutions, which seek to address the academic learning of students; secondly from Industry, which is the graduate employer and thirdly the Professional Body, the regulator of the profession. This can cause tensions between these main stakeholders resulting in greater levels of employer and graduate dissatisfaction and obstacles to early career development of the Quantity Surveying graduate. These problems are further exacerbated in the current economic recession. The research investigates the changing developmental needs of QS within a post recession industrial environment. These must satisfy the aspirations of industrial, academic and professional stakeholders such as the RICS. The RICS provide a comprehensive list of basic, core and optional competencies for the QS. These were comprehensively reviewed to provide the basis for the survey questionnaires with the use of an Expert Forum and literature. Two detailed surveys were conducted; one to obtain views of the industry and the other targeting academia with respect to the RICS QS competencies and the debate of “training versus education”. The research revealed that the stakeholders, mainly the employers and academics, hold diverse views of the development needs for graduate QS. There is wide spread variation in the interpretations, the expected levels of attainment and the perceptions of the level of actual achievement of competencies by graduate Qs. The research proposes a framework that enables to define expectations, ambitions, and practical constraints in QS education that will lead to better understanding, effective collaboration and greater satisfaction in producing a Quantity Surveying graduate who will be seen as fulfilling the requirements of all stakeholders.

## Keywords:

Academic, industry, quantity surveying competencies, quantity surveying graduate, RICS

## 1 Introduction

Entry of graduates and others into any faculty of the Royal Institution of Chartered Surveyors (RICS) as fully qualified Chartered Surveyors comes only after success in the Assessment of Professional Competence (APC). This is true of the Quantity Surveyor (QS) as for any other. A successful candidate must demonstrate that they have attained

certain competencies determined by the Education and Membership Board of RICS. In the case of the graduate, these competencies will have been acquired as a result both of their formal university education and (in some cases) workplace training which they have received, whether as Part time students in employment or during a work Placement. In either case, the applicant will have undergone a period of full time employment beyond graduating, further enhancing their overall skills profile.

It will be appreciated that there is a balance to be struck between the level and type of competence which should be expected, and can be achieved, in the universities and that born of exposure to experience only available within the workplace. To some extent the two must be complimentary. It has emerged over the years that both Academia and Industry have certain expectations of one another, rightly or wrongly, as to what each can and will achieve as a vehicle for graduate learning. These are encapsulated within the “education versus training “debate that has dogged the relationship for as many years as formal Quantity Surveying education has existed.

It will be seen that, at best, there is scope for misunderstandings between the stakeholders as to what is being required and what is being achieved. At worst there may be actual gaps in the education and/or training being offered and received or, at least, some discrepancies between the levels of attainment. This study aimed at investigating the changing developmental needs of Qs within a post recession industrial environment that satisfies the aspirations of industrial, professional and academic stakeholders. The research sought to review competencies and analyse the views of industry and academia on graduate education aiming to ascertain and deliver a framework for alignment of different stakeholder views.

The research approached the problem from two angles; a literature review and two surveys of industry and academia. The surveys were comprehensive and simple descriptive statistics were used for analysing and presenting the results.

It has become apparent that the diverse views of industry and academia can only be harmonised through active mediation by the RICS as the guardian of the profession. This research therefore, proposes a framework for alignment of views based on 5 key recommendations. The successful implementation of the framework for alignment of views requires a concerted effort by all stakeholders in the development of graduate Quantity Surveyors who are industrially relevant, professionally qualified and who have a sound academic background.

## **2 Development of the QS Profession**

Significant growth in undergraduate level education of Quantity Surveyors (QS) stems from the late 1960’s and early 1970’s with the progression from Diplomas through to Honours Degrees. “The Future Role of the Quantity Surveyor” (RICS, 1971) identified specific competencies which led to the rapid development of the profession. In 1983, “The Future of the Chartered Quantity Surveyor” (RICS, 1983) further consolidated the professional status of the QS. The “QS2000” (Davis Langdon Everest, 1999) recognised a number of forces acting on the QS profession, highlighting both the changes to the client body and to the construction industry.

The academic and training needs of QSs are pulled in different directions by three key stakeholders. Academics are interested in producing a rounded graduate with the basic foundation in knowledge for further development (RICS, 2009) whereas the industry is looking for a graduate who can contribute immediately both to the daily functions of business and to its growth. The RICS is interested in maintaining professional standards and quality benchmarks. Hence, there is a three directional pull on the development needs of the QS. Professional body influence such as RICS is often reflected in academia through accreditation of degree programmes meeting its criteria and through the setting of the competencies required for the achievement of professional status. The present education system of the Quantity Surveyor does not recognise these opposing needs of the QS and hence often produces a graduate whom the industry sees as not fulfilling their requirements. This leads to problems, with greater levels of employer and graduate dissatisfaction.

Added to this is a more fundamental failure on the part of all parties to appreciate the dynamics of the market sector. Most new graduates appear to be entering more non-traditional quantity surveying routes. It has been shown both through research (Perera, 2006) and through 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. Much of the academic content which reflects the structure of the RICS would seem directed at those employed in the former roles, paying less attention to the skills inherent in the latter. The emergence of Commercial Management (Lowe and Leiringer, 2006; Walker and Wilkie, 2002) as a distinct discipline encompassing the role of the Contractor Quantity Surveyor (CQS) must affect the traditional role of the professional QS.

### **3 Research Methodology**

The research was carried out in two distinct data gathering phases culminating in analysis and reporting. The key stages and processes are illustrated below.

A detailed literature review was carried out to explore the “training versus education” debate and identify the RICS QS competencies and their interpretation.

Expert forum: a ten member expert forum was established consisting of 3 academics, 3 PQSs, 3 CQSs and one RICS academic board member. The views obtained from this forum via a series of interviews inform the development of the questionnaire surveys.

Survey of the academia: a comprehensive web-based survey of 41 questions addressed academics representing all 26 RICS accredited QS programmes to capture views of academics on QS education. The survey was issued to 106 academics from which 65 responses were received, 45 of these being suitable for analysis.

Survey of the industry: A comprehensive web-based survey of 39 questions addressed PQS, contractors' QS, public sector and other specialists across firms in the UK using RICS member database to identify their perception of graduate QS. 2946 chartered surveyors were randomly selected from the RICS member database. A total of 615 responses were received whilst 301 of these, having complete responses, were analysed.

Both surveys were first piloted among a small sample of volunteers representing industry and academia. The review of feedback obtained through a discussion session led to modification of the questionnaires. The primary areas of investigation include: Role of the QS & related Developments, RICS Quantity Surveying Competencies, Quantity Surveying Education, Study & placement, and RICS Membership Routes & Training. A detailed account of the respondents' views on both academic and industry surveys is provided in the following section.

## 4 Findings and Discussion

### 4.1 The survey respondent profiles

The survey respondents for both surveys were well experienced in QS work, with over 90% having more than 10 years experience. 44% of the academic respondents were programme leaders. Just over half of industry respondents were PQSs, the rest equally spread between contracting (17%), the public sector (15%) and other (15%).

### 4.2 Role of the QS & Developments

The role of the QS is defined by current and future workloads and trends in development. The industry survey identified the key areas of work presently important for the QS. The top 3 core competencies: T062 Procurement and tendering, T067 Project financial control and reporting and T074 Quantification and costing of construction works directly map to the highest workloads identified. Both professionals and academics appear to agree that the largest growth area will be that of Refurbishment followed by Building construction and Building services. The rate of development of sustainability and e-business activities was also emphasised by both groups. The similarity in median scores together with low deviation suggests agreement amongst most academics. Practitioners, for their part, show a wider variety of opinion over this.

### 4.3 RICS Quantity Surveying Competencies

The RICS sets the competencies required for the attainment of professional status. The RICS Competencies are arranged into three groupings, depending upon their perceived relevance to the role of the QS (RICS, 2009b):

**Mandatory Competencies:** personal, interpersonal, professional practice and business skills common to all pathways and compulsory for all candidates.

**Core Competencies:** primary skills of the candidate's chosen [RICS] pathway

**Optional Competencies:** selected as an additional skill requirement for the candidate's chosen [RICS] pathway from a list relevant to that pathway. In most cases there is an element of choice, though driven, usually, by their employer's specialism.

These competencies are expected to be attained at three possible levels:

**Level 1:** Knowledge (theoretical knowledge)

**Level 2:** Knowledge and practical experience (putting it into practice)

**Level 3:** Knowledge, practical experience and capacity to advise (advising)

There are 10 Mandatory competencies, 7 Core competencies and 7 Optional competencies (two to select). The RICS stipulates that an APC candidate needs to achieve all Mandatory competencies at Level 2 or above, all Core competencies at Level 3 and 2 Optional competencies at Level 2 or above. This section analyses the views of the respondents to establish the expected level of achievement by the graduate QS. In the absence of a threshold benchmark standard for graduate competencies, it is important to ascertain what key stakeholders perceive a graduate should achieve. This section aims to establish a consensus view on the level each competency should be achieved at by a graduate from an RICS accredited degree programme. The overview comparison of all competencies between Academia and Industry is given in Figure 1 and Figure 2 respectively.

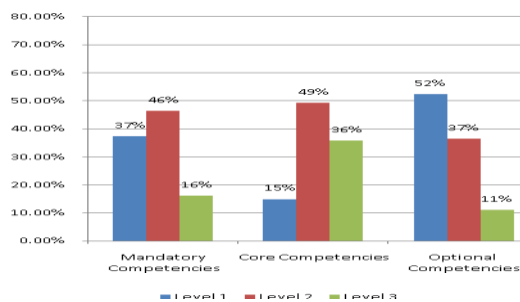


Figure 1. Overview - Expected Graduate Competency (Academic)

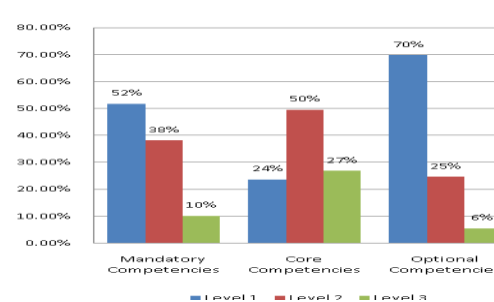


Figure 2. Overview - Expected Graduate Competency (Industry)

In overall terms academics' expected levels for all three types of competencies are higher.

#### 4.3.1 Expected level for Mandatory Competencies

Whilst academic responses to this section appear somewhat biased towards Level 2, the industry response appears more logical, expecting the highest level of experience to be at Level 1, falling to the least being at Level 3. In both cases the highest ratings were given in the areas of M010 Team working and M004 Communication and negotiating and M007 Data management, all being transferable skills. Of those competencies that do feature at Level 3 within both industry and academic assessment, M010 Team working appears once again. This acknowledged degree of expertise may stem from its increasing use as a vehicle of teaching and assessment within university programmes of study.

Final assessment of Mandatory Competencies is presented in Figure 3 & 4 below. The majority view indicates that in general those Mandatory competencies are being achieved at Level 1 except for M006, M007 and M010. This is very much in line with RICS recommendation.

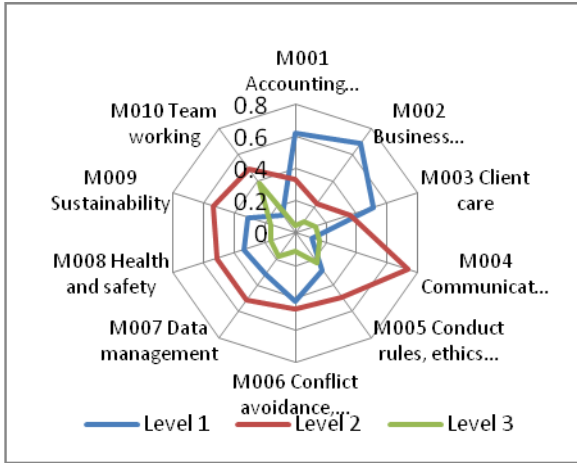


Figure 3. Expected Level of achievement of Mandatory Competencies for New graduate QS (Academic)

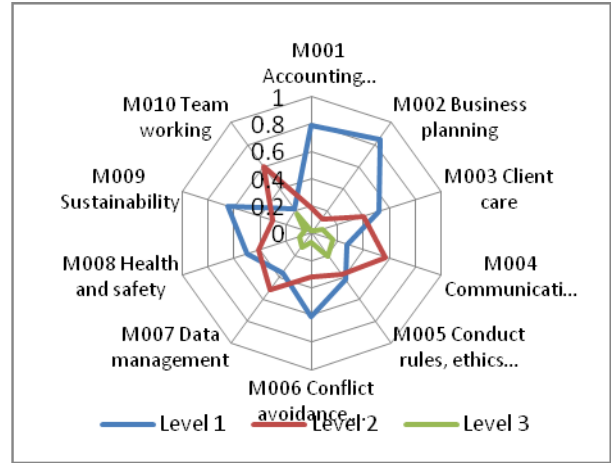


Figure 4. Expected Level of Achievement of Mandatory Competencies for New Graduate QS (Industry)

#### 4.3.2 Expected level for Core Competencies

In this, the most discipline-specific area, both academics and industry most frequently seek competency at Level 2. Respondents from academia display a higher expectation at Level 3 than do industry. As above industry are being more realistic in their expectation, as a new graduate is unlikely to be in a position immediately to advise clients etc. as the acquisition of Level 3 suggests. Academia is either perhaps exhibiting wishful thinking, or else is unaware of the actual requirements of Level 3. What is disconcerting in both these analyses is that a considerable number expect Core competencies to be achieved at Level 3. The academic survey indicates Level 3 expectancy at 36% whereas the comparative figure for industry is 27%. Both these are very high and indicate possible misinterpretation of level classifications or unrealistic expectations. The final assessment of core competencies that can be deduced from this analysis is given below.

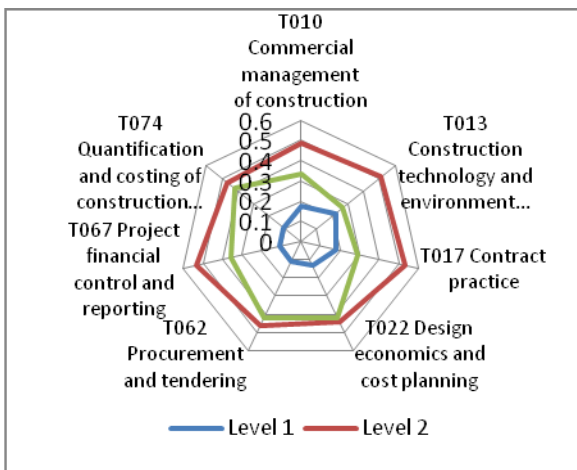


Figure 5. Expected Level of achievement of Core Competencies for graduate QSs (Academic)

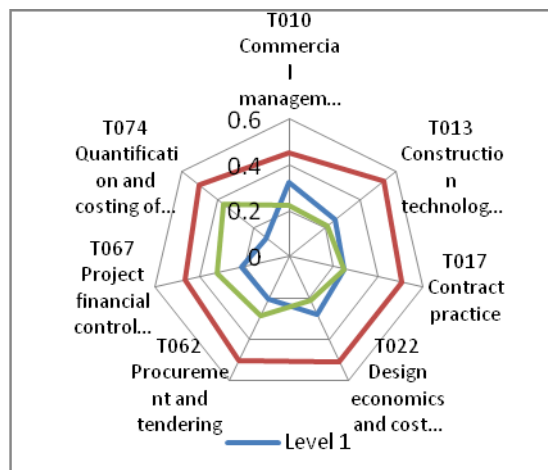


Figure 6. Expected Level of Achievement of Core Competencies for Graduate QSs (Industry)

Core competencies largely define the primary role of the quantity surveyor. However, there is no consensus view on achievement of core competencies, with some in industry

stating it should be at Level 1 and some academics stating it should be at Level 2. Therefore, it is recommended that Core competencies be achieved at Level 2 in part as indicated. This is also justified by the fact that most programmes have the capacity to proceed to Level 2.

#### 4.3.3 Expected level for Optional Competencies

With regards to Optional competencies the rankings of both respondent groups show much the same pattern, their most likely expectation of attainment being Level 1 only, expectation of Level 3 being by far the least. Again, industry responses are far less at Levels 2 and 3 than those of academia, reflecting a more realistic picture perhaps, one born of experience. The specialisms of T008 Capital Allowances, T045 Insurance, T025 Due Diligence and T020 Corporate recovery and insolvency each are being the highest in ratings by both respondent groups. Both academia and industry attach greater significance to T016 Contract administration giving it an expected ranking of Level 2, born of the fact that it is often considered a key function of quantity surveyors. The final assessments of optional competencies are presented in Figures 7 & 8.

There is considerable argument for T016 Contract administration, T063 Programming and planning and T077 Risk management to be achieved at Level 2 mostly arising from academics. It is recommended that Optional competencies be achieved at Level 1 for all competencies and extending in part to Level 2 for some competencies.

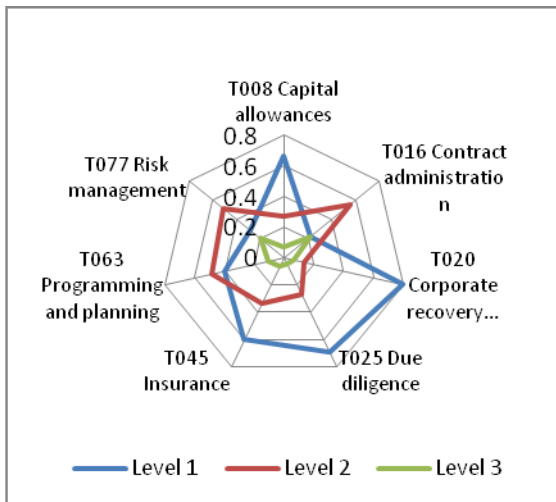


Figure 7. Expected Level of achievement of Optional Competencies for Grad Qs (Academic)

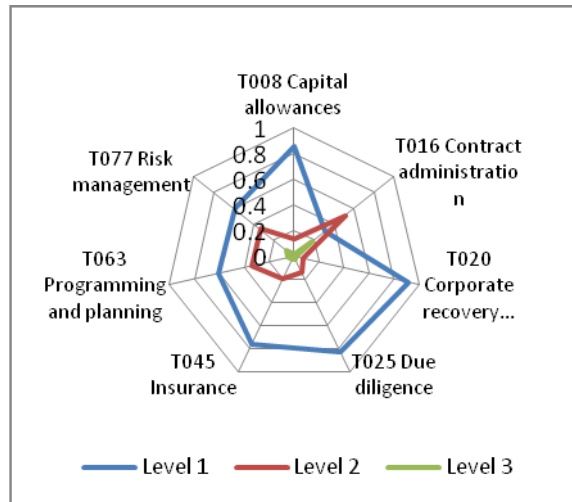


Figure 8. Expected Level of Achievement of Optional Competencies for Graduate Qs (Industry)

#### 4.3.4 Cross comparison of levels of expectation, achievement and importance of competencies

A comparison of industry survey respondents' views on the Expected level of attainment, the Importance and Level of achievement of competencies by graduates is cross plotted to evaluate relationships between these criteria (Figure 9).

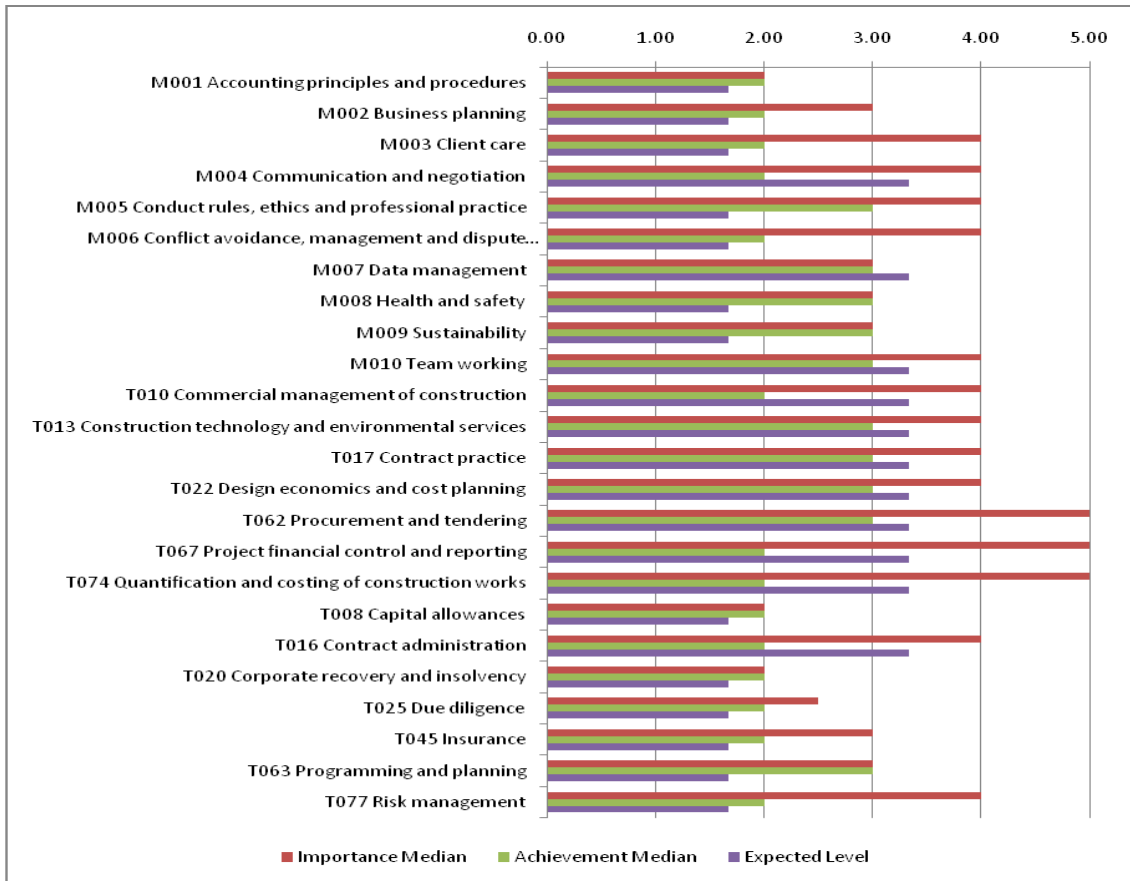


Figure 9. Cross comparison of competency expected level, importance ranking and graduate achievement

The Expected level has been re-scaled to 1 to 5 to graphically compare with Importance ranking (scaled 1 to 5) and perceived Achievement (scaled 1 to 5). From this comparison it is clear that whilst high importance is attached to a competence there may be a comparatively lower level of achievement. This is clearly evident with T067 Project financial control and reporting and T074 Quantification and costing of construction works competencies. Other clear gaps in expectation and achievement are with M002 Business planning, **M003 Client care**, **M004 Communication and negotiation**, M005 Conduct rules, ethics and professional practice, **M006 Conflict avoidance, management and dispute resolution procedures**, M010 Team working, **T010 Commercial management of construction**, T013 Construction technology and environmental services, T017 Contract practice, T022 Design economics and cost planning, **T062 Procurement and tendering**, **T067 Project financial control and reporting**, **T074 Quantification and costing of construction works**, **T016 Contract administration**, T045 Insurance, and **T077 Risk management**.

Those competencies highlighted in bold above show the greatest gap between achievement and importance. These include 9 of the 24 competencies (3 mandatory, 4 core and 2 optional competencies) which have a significantly high importance in the role of the quantity surveyor.



#### **4.4 Quantity Surveying Education**

The surveys probed in detail the views of both academia and industry as to their level of understanding and awareness of aspects of education, university industry collaboration and other. Only half of the industry respondents felt themselves to be either reasonably or fully aware of the content of the curricula. As to their satisfaction with curricula content, 60% expressed dissatisfaction or partial dissatisfaction with the curriculum. This begs the question whether their dissatisfaction might be linked to their self confessed lack of awareness of the detail. Industry generally displays reasonable to full confidence with the level of lecturers' academic knowledge, QS Practice and use of teaching materials. Academics themselves indicate a very high level of confidence in the programme delivery capacity.

Industry and academic collaboration in the delivery of QS programmes is vital to the success of graduates. Therefore, academics perceptions of industry's willingness to collaborate were matched against the willingness of the industry to collaborate. A less promising picture emerged; 75% of academia saw the possibility of collaborative activity as likely or very likely but the equivalent figure for industry amounted to only 28%. Further, 47% of academics perceived the RICS – University Partnership Agreement process as successful while 22% saw this as partially so or unsuccessful whilst 31% were undecided. This suggests consensus on the overall concept of the partnership but a considerable amount of scepticism about the partnership process, which warrants further investigation.

Regarding the role of universities in producing a graduate quantity surveyor, there was a clear difference in perceptions between the two sets of respondents. Industry were almost equally split (57% to 43%) as to whether universities should produce surveyors for immediate QS employment upon graduation (Training) or, rather, graduates with overall knowledge and a good foundation in Quantity Surveying (Education). Academia took the opposing stance, preferring the Education approach by a ratio of 73% to 27%. This mirrors quite closely the traditional perceptions within the "education versus training" debate. This crucial aspect sets the ethos for university programme provision and industry aspirations. It is abundantly clear that the industry prefer their graduate recruits to be more directly employable than they are today, an explanation perhaps for the high level of dissatisfaction expressed in graduate performance by Industry. But, the question is on the boundary of demarcation between university and industry as to producing a professional and converting a graduate to a professional.

#### **4.5 Modes of Study and Placement**

Asked to rate the importance of a structured placement training model, there was considerable agreement between both sets of respondents. Industry's ranking of this as either very or extremely important came to 64% whilst academic gave this 80%. This may reflect the fact that whereas academics are used to training students within strict curricula, industry does not always perceive itself as providing structured training but, rather, a generalist training opportunity? When asked about their perceived opinions on the benefits of offering a placement, 90% of industry respondents proclaimed this to be, above all, a good test-bed for potential staff after graduation. 59% saw it as affording opportunities for a two way flow of knowledge between university and industry while, 44% saw it as a source of new ideas from current education.

#### **4.6 RICS Routes of membership & Training**

The graduate route was the clear preferred route to RICS membership of both industry and academic respondents, with 91% of academics and 71% of industrial respondents supporting this. Appreciation of the other routes (Assoc. RICS and the Senior Professional route) was fairly evenly distributed across both sets of respondents. Not surprisingly, those involved in delivering education tended to have a greater understanding of this matter. When evaluating the appropriateness of the routes to membership, a marked difference emerges between the two groups. Whilst the most favoured by both is still the Graduate route there is also a marked tendency by industry to support both the Senior Professional and the Assoc. RICS routes.

When considering the importance of attaining Chartered status in one of the leading professional bodies, both industry and academia are in agreement that by far the most important is the RICS with 56% and 62% of respondents respectively rating it extremely important. This is perhaps not surprising considering the survey population reflects full members of the RICS. With respect to the importance of a Structured Training Programme (STP) for APC, 95% of academia considered this to be either very or extremely important as against a total of just over 70% from industry. The level of provision of STP in industry is markedly low when compared with its perceived importance. A staggering 44% of industry respondents indicated that their organisation have no STP. Whilst it should be remembered that the sample sizes varied quite considerably there were 8% (24) of respondents from industry who ranked the STP to be not important at all as against 0% from the academia. There were a further 6% (19) from industry who thought it was of little importance. These are significantly worrying figures when APC guidance clearly champions the need for a comprehensive STP.

#### **4.7 Alignment Framework**

The research primary focus was to evaluate the views of the three main stakeholders in education of graduate QSs, the universities, industry and RICS. The universities were represented by academics responsible for programme delivery whilst industry was represented by PQS, contractor or commercial (CQS), public sector and other specialist quantity surveyors. The views of these stakeholders and their relationship with the RICS and its role were also investigated.

There are considerable differences in views and levels of responsibility from all stakeholders, born mainly of inaccurate interpretations of competencies and lack of commitment. For example both industry and academia view structured training programmes for APC candidates as important but very few provide these. This is lack of responsibility.

There is no defined level of competency achievement for graduates. This leads to academia interpreting it in one way and industry interpreting it in another, resulting in discontent for both parties. This is lack of definition. The levels of achievement of competencies required for attainment of Chartered status is well defined by the RICS (2009a). But the expected level of achievement of competencies by graduate QS of a RICS accredited programme is not defined. This lack of a common benchmark for the interpretation of achievement of competencies clearly contributes to the dissatisfaction and false expectations on the part of the industry and demoralisation of the graduate.

In order to address this situation and thereby align views of industry, academia and even the RICS the following alignment framework with 5 key elements is proposed.

1. *Graduate competency threshold benchmark (GCTB)*: A clearly defined graduate competency level achievement threshold should be created that is clearly aligned with APC threshold benchmarks defined with graduate career progression in mind.
2. *Re-evaluation of status of competencies*: A detailed study should be undertaken to re-evaluate RICS QS competencies.
3. *University-Industry collaboration*: Greater levels of university and industry collaboration in developing and delivering QS programmes should be made an essential part.
4. *RICS-University-Industry partnership*: The current RICS-University partnership should develop more of a tripartite relationship with regular industry representatives forming part of the partnership.
5. *Review of stakeholder roles and responsibilities*: A radical review of how a Chartered Surveyor is developed from their early stages to Chartered status must be undertaken where the role of each stakeholder is well defined to avoid wrong interpretations and subjugating responsibility.

The dilemma of attracting high calibre people with good knowledge of industry practice to academia and retaining them is one which both universities and industry will have to resolve for the sake of development and enhancement of the profession.

## **5 Conclusion and Further Research**

The research aimed at investigating the changing developmental needs of Quantity Surveyors within a post recession industrial environment that satisfies the aspirations of industrial and academic stakeholders. A review of RICS QS competencies was initially conducted followed by a survey to ascertain views of academics on QS education and a survey to ascertain views of industry (consultants, contractors, public sector and other specialist chartered quantity surveyors) on similar subjects.

The RICS has formulated clear and detailed documentation (RICS, 2009) identifying, classifying and explaining QS competencies. These are primarily aimed at providing guidance to APC candidates seeking full professional membership of the institution. There are 24 QS competencies classified as Mandatory (10), Core (7) and Optional (7) achieved at prescribed Levels of 1, 2 or 3. There is no such systematic approach or guidance as to what level of competency need be achieved by a graduate completing an RICS accredited honours degree programme. At present, it is an estimation of whether core competencies are addressed accordingly. What was clearly found in this research is that the absence of a threshold benchmark that clearly defines graduate level of competence has led industry to have unrealistic expectations, and academia to aspire for unattainable levels of competence producing a less than satisfied graduate that lacks direction.

Diverse views were found on key elements of research relating to QS competencies, education and development. The primary reason for dissatisfaction with any process comes from the difference between expectations and outcome. There were very high expectations of graduate competencies but the outcome does not seem to satisfy these.

There were several endemic problems related to QS competencies both in academia and industry, originating mostly from the absence of defined or prescribed levels of graduate competency. There were diametrically opposing views on the ethos of graduate education, industry seeing it more as training graduates for direct employment whilst academia saw it as educating graduates with a core knowledge base for professional employment. This issue is further aggravated by the industry having less trust in the curricula used and the academics knowledge of current practice. The industry is faced with the dichotomy of greater collaboration but lack of a suitable mechanism and commitment to proactively influence the process of graduate education.

The proposed alignment of views framework takes account of the underlying situation presented above (Perera & Pearson, 2011). Therefore a framework with 5 key elements was proposed and they include: Graduate competency threshold benchmark (GCTB), Re-evaluation of status of competencies, University-Industry collaboration, RICS-University-Industry partnership and Review of stakeholder roles and responsibilities. The outcome of successful implementation of the proposed framework requires a concerted effort by all parties for the development of Quantity Surveying graduates who are industrially relevant, professionally qualified and with a sound academic background.

The implementation of the key elements of the alignment framework will require further research in the development of the Graduate Competency Threshold. Further research will also be required to re-model the RICS partnership process as envisaged in the framework. RICS competencies need to be re-evaluated to find currency and relevance considering current and future developments of the profession. The final element of the alignment framework will also involve a considerable degree of research to fully establish the roles and responsibilities of the key stakeholders in the profession (industry, academia and the RICS) and to create a holistic view of the profession and how it develops the professional.

## **6 Acknowledgement**

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## **7 References**

- Bartlett, J.E., Kottrliikk, J.W. and Higgins, C. (2001), 'Organizational Research: Determining Appropriate Sample Size in Survey Research', *Information Technology, Learning, and Performance Journal*, **19**(1), pp 43-50.
- Davis Langdon and Everest (1991), *Quantity Surveying 2000*, Royal Institution of Chartered Surveyors (RICS), UK.

- 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.
- Perera, S. and Pearson, J (2011), "Alignment of Professional, Academic and Industrial Development Needs for Quantity Surveyors: Post Recession Dynamics", RICS Education Trust funded research report, [http://www.northumbria-qs.org/RICS\\_Alignment/Reports/Alignment\\_of\\_views\\_final\\_report.pdf](http://www.northumbria-qs.org/RICS_Alignment/Reports/Alignment_of_views_final_report.pdf).
- RICS (1971), 'The Future Role of the Quantity Surveyor', RICS.
- RICS (1983), 'The Future Role of the Chartered Quantity Surveyor', RICS.
- RICS (2009a), 'RICS Employability Threshold Consultation Document: letter to Partner Institutions', RICS, October 2009.
- RICS (2009b), 'Requirements and competencies', *RICS Education and Qualification Standards*, RICS, [http://www.rics.org/site/scripts/download\\_info.aspx?fileID=3729&categoryID=98](http://www.rics.org/site/scripts/download_info.aspx?fileID=3729&categoryID=98), viewed: 2010.
- Rowe and Wright (2001), 'Expert Opinions in Forecasting: Role of the Delphi Technique', In: Armstrong (Ed.), *Principles of Forecasting: A Handbook of Researchers and Practitioners*, Kluwer Academic Publishers, Boston.
- 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.