Exploring gaps between real estate curriculum and industry needs: A mapping exercise

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Abstract

The objective of this paper is to explore the extent to which current real estate academic curriculum align with industry needs in order to identify key areas for reform. A case study of four Universities was undertaken in the study. These cases were randomly selected from the Midlands, Northern and Southern parts of the UK. Data for the study was collected through a desk-top review of real estate curriculum from the four selected Universities and analysed using mind mapping approach. The study revealed that though knowledge from real estate academic curriculum aligns with the industry in six out of nine knowledge base areas, there were gaps in knowledge in the three areas considered most significant to the needs of industry. The study, therefore argues that universities may have dedicated enormous resources to educating real estate graduates in modules that are not necessarily essential to their daily job roles thereby leaving graduates in a position to rely on industry during their early employment. This study presents the findings of a mind mapping exercise which identifies the key areas of actual curriculum that show gaps in real estate education offered by selected universities in the UK. The findings are significant and could inform future curriculum reform.

Keywords: Academic curriculum, Industry needs, Mind mapping, Real estate, UK

1.   Introduction

The education of real estate graduates has always been of keen interest to the different stakeholders of the profession: academic providers, professional bodies like the Royal Institution of Chartered Surveyors (RICS) and industry employers. However, these stakeholders tend to hold divergent views on expectations of the level of competencies, skills and knowledge that should or ought to possess by graduates (Boyd et al. 2014). Whilst academic providers expect to produce graduates that are equipped with the required knowledge to facilitate further development, professional regulators like the RICS expect graduates with the core competencies for further progression to full professional membership. Industry employers on the other hand are interested in candidates that can "hit the ground running" by making instant contributions to daily business activities by way of hitch-

free alignment with the strategic business objectives of the firm in order to facilitate the growth and development of the business.

This conflict of opinion makes it pertinent to question if there is a genuine misunderstanding between the stakeholders on what a typical real estate curriculum is designed to achieve, and the degree of alignment of current curriculum with activities that takes place in practice. Weeks and Finch (2003) maintain that the problem facing the real estate field is the existence of both industry and academic constituencies advocating differing directions for curriculum development. While academia and professional bodies have worked closely over the years to design real estate curriculum for accredited real estate programmes through partnership arrangement, there seem to be less collaboration with the industry (Poon et al., 2011). According to Weinstein and Worzala (2008) one of the main purposes of degree programmes is to educate real estate practitioners, although they also agree with Miller's (2001) opinion that most real estate degree programmes were out of touch with the real world of practitioners.

The consensus among academia, therefore, is that the requirements of the industry need to be the driving force in the development of real property curriculum (Black et al., 1996). However, there are different views on the specific type of knowledge to emphasise considering the diverse ranges of activities known to take place within the industry. For instance, Perera et al. (2011) argue that the industry seems not to fully appreciate the fact that graduates are educated to possess good level of intellectual capacity to develop further their professional and technical skills once in employment.

This notwithstanding, the importance of redesigning real estate curricula to bring it in alignment with the industry cannot be over emphasised (Callanan and McCarthy, 2003; Massyn et al., 2009, all cited in Hoxley et al., 2011). Hefferan's (2011) study highlighted this point on the changing industry demands for property professional in Australia and concluded that real estate education should go beyond the traditional valuation and analysis and focus on other specialist areas. This was further

emphasised by Poon and Brownlow, (2014) who stated that over time, the competency expectations for property professional had changed from the traditional technical knowledge to business and transferable skills.

A number of academic studies have emerged with a research focus on skill gap in real estate education, often by comparing the expectations of multiple stakeholders in the industry (E.g. of Poon et al., 2011 in the UK, Galuppo and Worzala, 2004; Weinstein and Worzala, 2008 in the US). These studies have provided detailed evaluation of the divergence between real estate courses and industry needs but are often based on perceptions. Very few studies have sought to explore the actual gap in real estate curriculum. This present study, utilising the mind mapping approach, aims to advance previous research and examines the alignment between the actual content of real estate curriculum of selected universities in the UK and the industry needs. Contrary to previous studies, this study sought to identify the industry needs from the practiced-based model of real estate body of knowledge developed in Boyd et al., (2014); an earlier UK study funded by the Royal Institution of Chartered Surveyors (RICS). Boyd et al. (2014) model provides a detailed outline of the overall body of knowledge subsets at different levels of practice: knowledge domains, as well as practice activities within the knowledge domains. It emphasizes the application of skills in practice and provides a richer and more grounded perspective to the use of competencies (Boyd et al., 2014) adopted in most previous studies.

Next is a review of previous research on real estate education and practice followed by the methodology sections. The subsequent section contains the findings and implications of empirical analyses, which is followed by a conclusion of the paper.

2. Previous research

The literature concerning real estate education and practice is extensive and ongoing. Within this body of literature, authors have mainly focused on real estate curriculum reform. For instance, Gibler et al. (2002) analysed the result of a survey conducted to find out if the role of real estate in corporate strategic planning was changing and if real estate managers were adjusting to changes in their business

environment. The author also investigated the future role of corporate real estate and the knowledge and skills needed by corporate real estate managers in order to be successful in the prevailing changing business environment in which they operated. Adopting a quantitative approach the study tested for differences in status of corporate real estate executives from UK, USA, Australia and Hong Kong using Chi-square and Kruskal-Wallis tests, while the Bartlett-Sphericity test was used to analyse their knowledge and skill. The study concludes that despite the different conditions between countries, real estate managers did not appear to have fully adjusted to changing business environment while strategic and management skills were considered more relevant to technical and financial skills, thereby indicated that changing business environment demanded new skill sets that were not prevalent in real estate practice.

Epley (2004) further highlighted the gap in relevant skill set in a research to identify important skills and knowledge that were critical to the general corporate real estate executive in the US. Adopting a quantitative approach in a non-random survey to determine subjects that were most relevant to real estate decision making, the study identified management, leasing, finance, market interpretation and people's skill as most important compared to other traditional real estate skills.

Investigating graduates' level of preparedness for career in the property industry and employers' assessment of theoretical and practical knowledge obtained by recent graduates, Callanan and McCarthy (2003) administered open and closed ended questionnaires on final year students, recent graduates and industry employers to obtain quantitative and attitudinal data. Result indicated that students and graduates were of the opinion that experience that is more practical was required in certain subject areas while employers opined that graduates lacked the practical skills and knowledge required by industry and the ability to relate theory to practice.

Further research into the construction of real estate curriculum by Galuppo and Worzala (2004) focused on the methods employed to develop the curriculum for real

estate graduates at University of San Diego's Burnham- Moores between the late 1990s and 2003. The study adopted both qualitative and quantitative research techniques and used literature review, web-based information on several graduate real estate programs in the US and attitudinal questions to determine real estate courses offered the method of delivery and the level of skills required by real estate graduates. Findings from the study indicated that though there were similarities on course content, real estate based modules were not offered across all the sampled universities uniformly while real estate professionals were found to show interest in programmes that developed graduates to enhance the skills needed to succeed in a competitive and changing business environment.

Weinstein and Worzala (2008) further developed the study to determine the essential elements that should be included in the curriculum. The aim was to create the desired graduate programme that enhances practice. They compared newer programmes with existing graduate programmes from universities in the US, and adopted both qualitative and quantitative methods while also employing mapping to examine the important features that emerged from the data. Findings revealed that skills such as decision-making, negotiation, critical thinking, risk analysis, leadership and social skills, ethics and lifelong learning were vital to graduate programmes.

Furthermore, Manning and Epley, (2006) sought to find out whether competencies required by corporate real estate professionals were taught by universities in the US by using an earlier study conducted in 2003, where lecturers were surveyed in order to identify the particular courses they offered, their subject matter, and classroom material used during lectures. Whilst preliminary investigations suggested that majority of universities taught what was required to analyse and interpret location and markets, as well as finance, tax and law often required by middle managers. Later studies indicated that business skills (such as business strategy and decision-making) required by senior corporate real estate executives were not taught. This highlighted some areas of divergence between curriculum and aspects of industry needs.

This divergence was further emphasised in the study conducted by Tu et al. (2009) to investigate the essential elements of a highly successful graduate real estate programme that enhances practice in the US. Building on previous researches, quantitative approach was adopted and responses were graded on a Likert Scale. Findings indicated that some real estate courses lacked focus on vital subjects needed to assist graduates transit to practice thereby highlighting the inability of current curriculum to address the needs of industry.

From a European perspective, the global trend in real estate markets also had a significant impact on the structure of European real estate practice and education. According to D'Arcy and Taltavull (2009) a key issue for real estate education in Europe was the shift in skills required to deal with the changes within European real estate markets. Internationalisation of real estate activities, wider European integration and changes in European real estate investment markets were observed to impact significantly on the practice of the profession in the continent. This heralded new skill sets that reflected the growth of real estate as a professional business service and sometimes quasi financial service. D'Arcy and Taltavull (2009) pointed out that whilst these skills appeared to be incorporated within real estate bundle of skills, structured training programmes organised by leading employers within the profession was more prominent as a means of delivering these required skills thereby presenting the response of academia to changing market conditions and employers requirements as passive.

Arguably, the academia may have a different opinion on this assertion. As indicated in Poon et al. (2011), course providers were of the opinion that they contribute to bridging the skill gap by giving students simulated practical experience and questioned industry commitments in providing practical experience for students. This opinion is similar to the findings of a later study by Poon (2014) and parallels the views of Oladokun and Ayodele (2015) who concluded that students' industrial work experience schemes add value to real estate academic programmes in Nigeria by exposing students to behavioural and marketing skills. Real estate curriculum in the UK, on the other hand, have not adequately reflected these skills. For instance,

Poon et al., (2011) found that human resource managers expressed concerns over graduates' lack of commercial and economic awareness of the property market. Based on this finding, Poon and Brownlow (2015) concluded that it was important for students to gain practical experience in order to develop commercial and economic awareness.

The type of knowledge that should constitute the body of real estate knowledge is no doubt a contentious issue amongst researchers who have attempted to establish a definition of the topic. Black and Rabianski, (2003) quoting Epley, (1996) note that the findings from previous researches were based on the opinions of the writers rather than views expressed through survey research (Brown, 1981; Black et al., 1996). For Black and Rabianski (ibid), future attempts to define the body of real estate knowledge should be based on real estate activity nodes by soliciting the opinions of academic providers and industry practitioners on the relevance of various real estate topics. This paper agrees with this assertion on the premise that it is logical to assume that the knowledge base of any profession should reflect the activities carried out by members of that profession. It attempts to align current real estate curriculum to activity nodes that achieved consensus as indicated by the study conducted by Boyd et al (2014) through mapping in order to determine the extent of alignment and possible areas of divergences. This is pertinent because whilst many studies have investigated the relevance or efficacy of current real estate curriculum to address the needs of industry, no academic literature has yet identified the key areas of the actual curriculum that show gaps in knowledge offered by universities. This study bridges this gap by employing the concept of mind mapping to explore the extent to which current real estate academic curriculum of four selected UK universities align with real estate practice-based activity nodes established in previous UK research of Boyd et al. (2014).

3.   Research methodology
3.1   Research design
The approach to the present study is one where the contents of modules for real estate courses in the UK are explored and compared to industry needs based on

activities undertaken at workplace. The research is, therefore, conducted within a qualitative framework. This approach, according to Denzin and Lincoln (1994, p 2), involves *"an interpretative, naturalistic approach to its subject matter"*. In other words, qualitative research intensively studies a phenomenon in its naturalistic environment and interprets the findings in terms of the meaning people bring to them. Merriam (1988) also argued that qualitative research is descriptive (words rather than numbers-based), exploratory, inductive and emphasises processes rather than ends. Patton (1990) enumerates the key strategic themes of qualitative research, some of which have direct application to this present research, and hence justify its choice. These include context sensitive, unique case selection and holistic themes. This study is context sensitive in the sense that it is sensitive to the context in which the date were collected. It also involves unique case selection in that its focus was four case studies of universities offering RICS accredited real estate courses in the UK. Holistically, the study sought to explore fully the curriculum of universities offering real estate course in order to identify gaps and why they exist.

Most of the earlier studies discussed in the literature review adopted quantitative approach based on a survey of the expectations of stakeholders within the profession. Although these studies have successfully highlighted some skills gap in real estate courses, the use of qualitative approach to data collection allows detailed exploration of the phenomenon in order to highlight fully the level of alignment between the subjects that make up the real estate curriculum and the different activities that take place in practice. The use of qualitative approach also helps avoid the problem of divergence of views characterising pervious research that relied primarily on quantitative approach. Stakeholders' views in these studies were very much dependent on their respective interest on the subject. Industry employers for example hold strong views that real estate curriculum should be geared towards industry needs (Black et al., 1996; Callanan and McCarthy 2003; Galuppo and Worzala, 2004) while academia on the other hand have always argued that their primary role was to equip graduates with the basic skills and knowledge to facilitate further development. Professional regulators like the RICS seem to be caught up

between these conflicting interests whilst the graduates themselves may feel strongly about employers' perceived inadequacies of their qualifications. Another issue with quantitative approach is that it attempts to explain the inadequacies of curriculum rather than seek to understand the interpretations and motives behind its delivery which this paper intends to explore through mapping.

Although this research is primarily qualitative, it also employs some quantitative analyses to gain an understanding of level of alignment. Several authors have advocated the use of both qualitative and quantitative approach in a research, especially where doing so facilitates different levels of understanding on the phenomenon being investigated (Salomon, 1991; Qureshi; 1992; Hurmerinta-Peltomaki and Numela, 2006). In this present research, for example, qualitative analysis was used to explore and re-categorise the modules that constitute real estate degree programmes according to how they inter relate while quantitative analysis was used to count the number of times knowledge and skills from each module is reflected in practice-based activities. The use of mixed method is also consistent with other similar research on the subject (e.g. of Galuppo and Worzala; Weinstein and Worzala, 2008; Poon et al., 2011).The qualitative approach to research encompasses a number of research strategies including the case study adopted in this research. The use of case study allows a detailed knowledge and skills mapping exercise to be carried out based on selected universities offering RICS accredited real estate programmes.

As a concept, mapping is usually employed to analyse qualitative data. Depending on the researcher's ideas about the research subject, different approaches to mapping may be employed. Brightman, (2003) identified four different types of mapping to include mind, concept, cognitive and dialog mapping. The method adopted could be used to either organise the researcher's thinking or express and explore the relationship between the different variables in a data. In this paper, mind mapping is used to explore the relationship between current curriculum and industry based activities in order to investigate the extent of alignment between

both sets of variables. This approach is the most widely used to evaluate gaps in academic curriculum (e.g. of Weinstein and Worzala, 2008 in the field of real estate and Perera et al., 2011 in the field of quantity surveying)

According to Tattersall et al. (2007), mind mapping as a tool for qualitative research could aid the analysis of qualitative data by helping the researcher group their own preconceptions of an existing subject. Although there are no set rules for the adoption of mind mapping, to maximise the use of the concept the researcher could develop their own code, symbols or lines that may assist in organising data for further analysis (Buzan, 1997). Information may thereafter be converted into a combination of written, diagrammatic or graphic representations thereby allowing concepts or ideas to be linked or integrated with each other both on paper and in the researcher's mind. By adopting this method therefore, this paper was able to investigate the basic reasoning behind the delivery of existing real estate curriculum in order to understand if it aligns with industry's perception of practice based activities thereby reducing bias associated with the views of individual stakeholders.

3.2 Mapping process

As stated earlier, a detailed knowledge and skills mapping exercise was carried out based on case studies of universities offering RICS accredited real estate programmes. This process is similar to the one used in the study of Perera et al., (2011) and it involves mapping practice-based activities to the individual module specifications of the respective real estate programme. The mapping was carried out in two stages described below:

Stage 1: Module re-categorisation

Desk-top review of real estate curriculum from four selected universities in the UK was carried out in order to identify and re-categorise the modules that constitute real estate degree programmes. The selection criteria was based on achieving geographical spread across the country with universities tagged case study A, B, C and D randomly selected from the Midlands, Northern, and Southern parts of the

UK. Appendix A sets out the modules/courses taught on the real estate programme from the selected Universities.

After modules from selected universities have been identified, a list of nine typical real estate modules was drawn up based on the similarities in terms of module framework and re-categorised according to how they inter-relate. By re-categorising the related modules into broad module categories, it was possible to allocate credit units that represented the total time allocated to the teaching and learning by the sampled universities (See Appendix B). Modules that achieved higher total credit unit imply that academic providers attach more relevance to such module within the curriculum. To avoid double counting, the credit unit is split between modules that interrelate. The process of re-categorising real estate modules presented some challenges that had to be addressed. Since it was not possible to make reference to previous research that attempted to re-categorise modules from curriculum into such broad categories due to difficulty in finding previous studies on the topic, the credible option available therefore was to re-categorise the modules according to similarities based on the description from the module framework of the sampled universities (Appendix B).

Stage 2: Curricula mapping

Activity nodes that constituted real estate body of Knowledge were also itemised and mapped against knowledge obtained from academia in order to provide framework for the alignment of views. The selection criteria was to identify the first 33 activity nodes that achieved consensus between academic providers and industry practitioners from the list compiled by Boyd et al., (2014). As in Perera et al. (2011). the process employs a two-dimensional matrix (shown in Table 1) with activity nodes on the Y- axis (listed vertically) and knowledge from real estate modules on the X- axis (listed horizontally). Modules that align with activity nodes were then marked with an 'X' sign and counted in order to reflect the number of times knowledge from that module reflects practice based activities and a count was made at the end. This process is justified by previous research by Buzan, (1997) where it was pointed out that in order to maximise the use of mapping the researcher could

develop their own code or symbols that may assist in organising data for further analysis.

Table 1: Real estate activity nodes and module alignment count

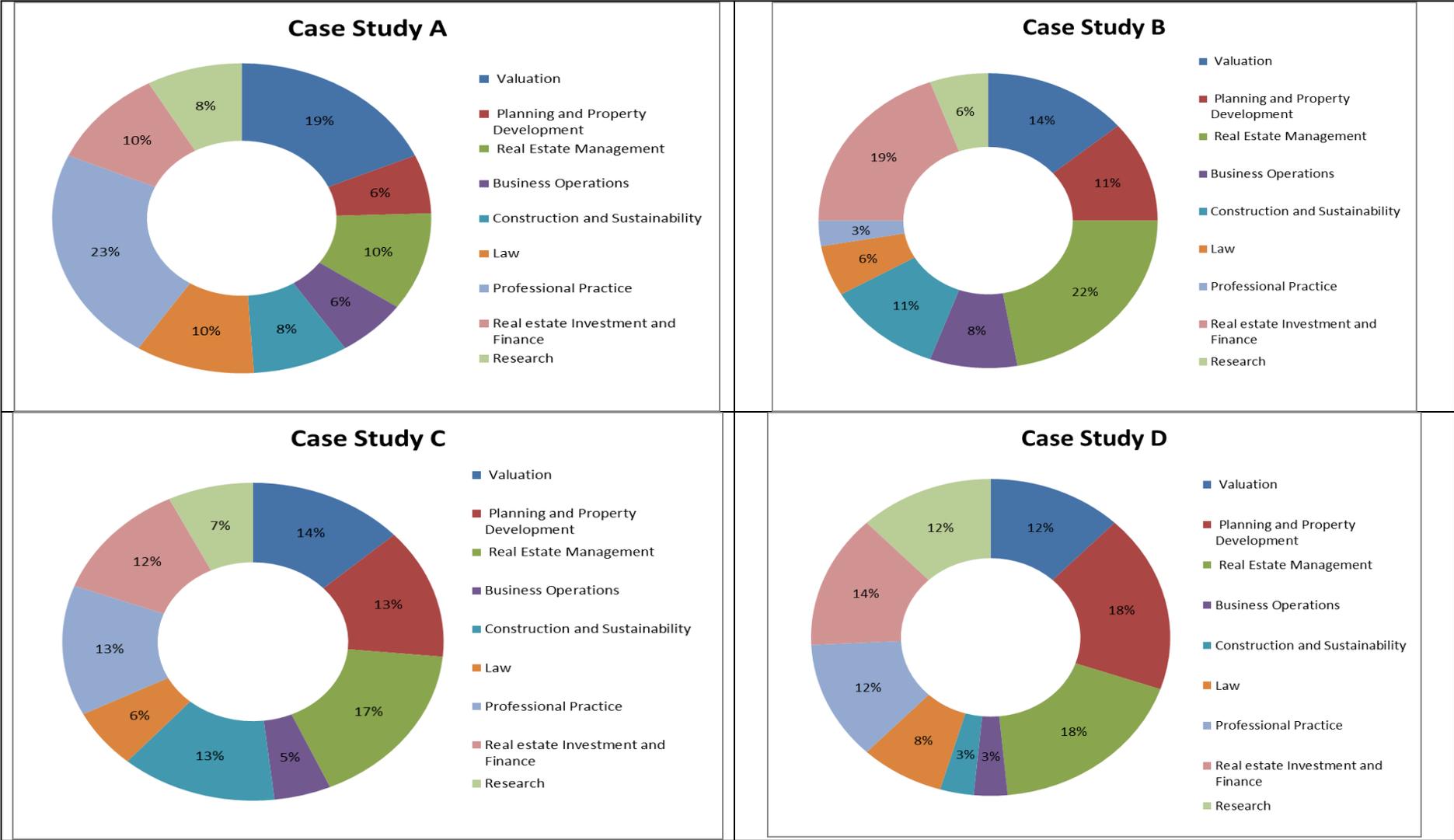| Serial number	Real Estate Body of Knowledge (Activity Node)	Valuation	Planning & Property Development	Real Estate / Property Management	Business Operations	Construction and Sustainability	Law	Professional Practice	Investment & Finance	Research
1	Maintain professional integrity							x		
2	Maintain ethical standards							x		
3	Identify political, economic, social, legal, sustainability, financial factors and reflect their significance when giving advice	x	x	x	x	x	x	x	x	x
4	Ensure proper interpretation of lease and other records			x			x			
5	Discuss briefs with clients to identify their needs	x		x	x			x	x	
6	Disseminate good practice through formal and informal training, publishing and other means				x			x		
7	Ensure all aspects of operational work comply with internal process and professional standards				x			x		
8	Listen to complaints and resolve conflicts				x			x		
9	Keep abreast of and digest relevant laws						x	x		
10	Recruiting competent and qualified staff				x					
11	Offer teaching and advice for students and developing practitioners				x			x		
12	Assimilate clients feedback to appropriately improve quality of delivery	x	x	x	x	x	x	x	x	x
13	Network with businesses, clients, and other professionals to be aware of their concerns and see opportunities.				x					
14	Provide leadership about problematic and controversial issues of practice				x			x		
15	Make judgement about market conditions	x		x					x	x
16	Undertake self-evaluation and reflect on improvement				x			x		
17	Inspect property and maintain documentary evidence of inspections	x		x		x				
18	Maintain appropriate health and safety procedures				x		x	x		
19	Investigate and monitor quality assurance process				x					
20	Interpret professional standards when offering client services				x			x		
21	Conduct research in and around the field of real estate	x	x	x		x	x	x	x	x
22	Display and maintain empathy for staff, work enthusiasm and other social attributes that contribute to an enabling work atmosphere				x					
23	Ensure resources are used efficiently				x					
24	Awareness of staff training and development issues				x					
25	Conduct evidence based critical analysis and debate of real estate-related issues with peer inclusion	x	x	x	x	x	x	x	x	x
26	Instigate appropriate client care				x			x		
27	Integrate technical, infrastructure, and personal resource to ensure effective service delivery			x	x	x				
28	Facilitate team working and collaboration among different organisational units				x					
29	Review discussions to ensure client expectations are met	x	x	x	x	x	x	x	x	
30	Apply regulatory directives						x	x		x
31	Implement research into practice							x		x
32	Appropriately maintain clients' accounts				x					
33	Appropriately ensure that client pay fees				x					
	Total alignment Count	8	5	10	24	7	9	21	7	7

4. Findings and discussion of empirical analysis

4.1 Analysis of module significance

As stated earlier, the first stage of mapping process employed in this study involves re-categorising modules into broad module categories according to how they interrelate and allocating credit unit to each category. Where the contents of a module was found to inter-relate to more than one categories, the credit unit for such module was split between the categories it relates to. This process leads to numerically quantifiable data, that is credit units for each module category, that were subsequently used to determine the significance of each module category based on the proportion of the credit unit allocation to that module category in relation to the total credit units available. For example, the total credit units allocated to valuation module in the real estate curriculum of Case A is 67.5. Based on the total credit units of 360, the unit time allocation to the valuation module is approximately 19%. Figure 1 provides graphical illustration of the module/course significance within the curriculum of individual case based on a unit time distribution.

Findings from case study A reveals that about a quarter of credit unit was dedicated to professional practice, almost a fifth to valuation and one tenth to others except for modules relating to business operations which achieved the least at 6%. This implies that about 42% of study time available to educate real estate students was allocated to professional practice and valuation thereby indicating that these modules were prioritised over other modules.

The situation was slightly different in Case Study B as real estate/property management and real estate investment and finance were allocated over and just about a fifth of credit unit respectively, while 14% is for valuation and 11% or less for others. This implies that 55% of total credit units were allocated to the property management, valuation and real estate investment and finance while all others shared 45% of which business operations was allocated 8% thereby indicating that it ranked low in priority within the curriculum of this university.

Figure 1: Unit time distribution of individual case

Case Study A

- Valuation — 19%
- Planning and Property Development — 6%
- Real Estate Management — 10%
- Business Operations — 6%
- Construction and Sustainability — 8%
- Law — 10%
- Professional Practice — 23%
- Real estate Investment and Finance — 10%
- Research — 8%

Case Study B

- Valuation — 14%
- Planning and Property Development — 11%
- Real Estate Management — 22%
- Business Operations — 8%
- Construction and Sustainability — 11%
- Law — 6%
- Professional Practice — 3%
- Real estate Investment and Finance — 19%
- Research — 6%

Case Study C

- Valuation — 14%
- Planning and Property Development — 13%
- Real Estate Management — 17%
- Business Operations — 5%
- Construction and Sustainability — 13%
- Law — 6%
- Professional Practice — 13%
- Real estate Investment and Finance — 12%
- Research — 7%

Case Study D

- Valuation — 12%
- Planning and Property Development — 18%
- Real Estate Management — 18%
- Business Operations — 3%
- Construction and Sustainability — 3%
- Law — 8%
- Professional Practice — 12%
- Real estate Investment and Finance — 14%
- Research — 12%

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The spread in case study C reveals an almost even allocation to all modules except for research, law and business operations which recorded below 10% each. Though real estate/property management and valuation seemed to have slightly dominated curricula activities, business operations recorded the lowest percentage score of 5%.

Case Study D was observed to allocate almost a fifth of credit unit to planning/property development and real estate/property management, 14% to real estate investment and finance and about or a little over 10% to others with the exception of construction and sustainability and business operations which recorded 3% each. The distribution also reveals that considerable emphasis was placed on three module areas within the curriculum - real estate/property management, planning and property development and real estate investment and finance (50%) while six other modules shared the remaining 50% out of which business operations was allocated a mere 3%.

Figure 2: Unit time distribution of combined case
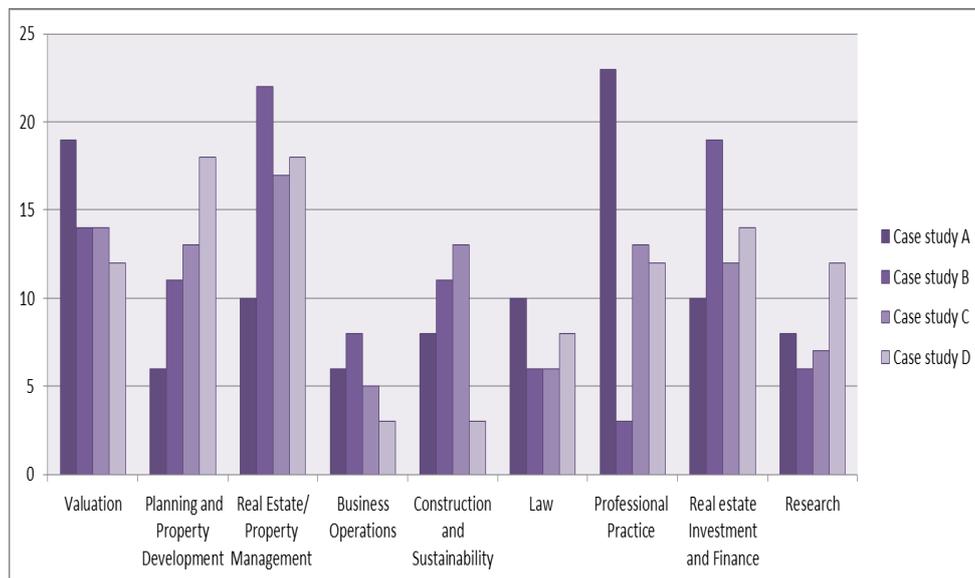
Findings from the combined studies suggest that there are divergences in the amount of unit time allocated to particular modules within the curriculum as indicated in Figure 2. With the exception of modules relating to real estate/property management which enjoyed almost a fifth of the unit time across 75% of all

universities sampled, there were significant discrepancies between universities on time allocated to other modules. Valuation for example commands about 15% in 75% of sampled universities, while business operations was observed to be the only module to record less than 10% in all the universities sampled.

This may also suggest that some universities might have adopted and fostered an ideological background to the study of real estate thereby implying that graduates from such universities may be skewed towards knowledge from modules prioritised by the university. This is an interesting area for further research in order to determine the extent to which such underlining ideological background eventually determines the type of knowledge obtained by graduates from such universities and how relevant these are within the industry.

4.2   Academia rating of module significance

The average unit time allocated to modules from the different case studies as shown in the earlier section was calculated to obtain the mean percentages from the sampled universities in order to deduce the general perception of module significance within the curriculum from an academia point of view. The results of this analysis is presented in Figure 3.

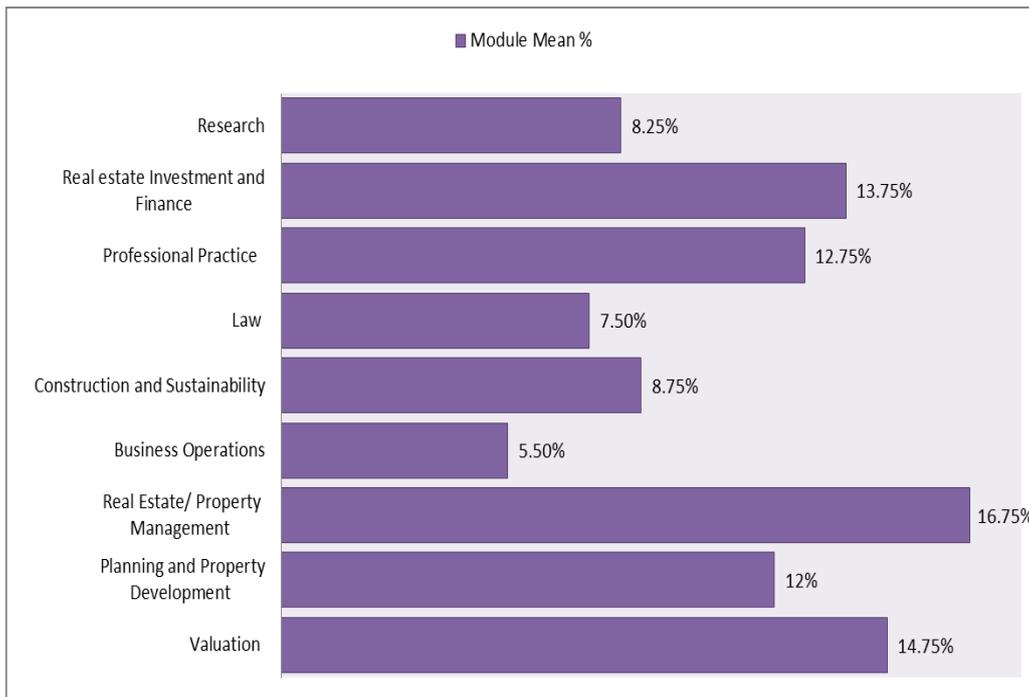**Figure 3: Academia rating of module significance**

Figure 3 reveals that the key areas of module significance are real estate/property management, valuation, professional practice, real estate investment and finance and, planning and property development. Each of these modules scored above 10% of the average credit units available in the curriculum while four other modules scored below 10%. However, business operations appeared to be the least prioritised module with an average of just above 5%.

4.3   Real estate activity nodes

Activity nodes that constitute real estate body of knowledge were also itemised in order to facilitate their mapping against real estate modules. The activity nodes have been previously identified by Boyd et al. (2014) as activities that achieved consensus amongst academic providers and industry employers as constituting the body of real estate knowledge, and have been ranked according to significance. The essence of the mapping exercise was therefore to identify activities that align with knowledge from identified modules within real estate curriculum.

Figure 4: Activity nodes percentage score

Figure 4 *(chart showing % Count by category)*

Research — 7%
Real Estate Investment and Finance — 7%
Professional Practice — 22%
Law — 9%
Construction and Sustainability — 7%
Business Operations — 25%
Real Estate/ Property Management — 10%
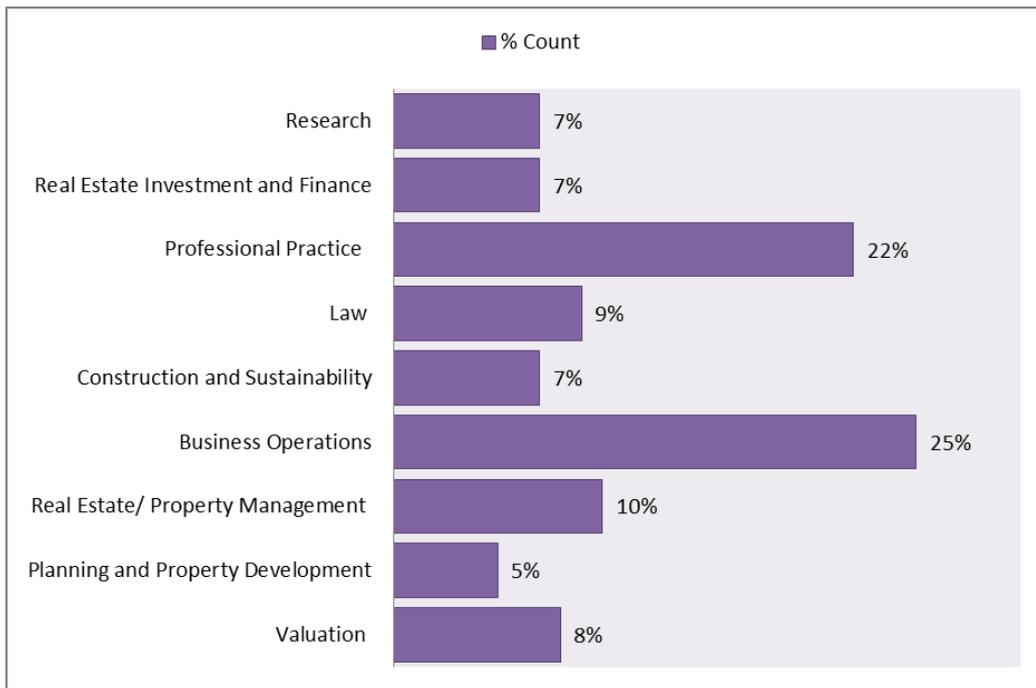Planning and Property Development — 5%
Valuation — 8%

Figure 4 reveals the average percentage score of the total count obtained during the mapping exercise and indicates that activities relating to business operations and professional practice were most prominently reflected with each achieving about a quarter of the activity nodes. Also, with the exception of activities relating to real estate/property management which achieved one tenth all other activities recorded below 10% of work that takes place in practice.

## 4.4 Mapping of curriculum and activity nodes

Here, analyses are drawn between the modules identified as most relevant to academia and the level of significance attached to knowledge obtained from such modules by industry based on the total count obtained during the mapping process. Figure 5 indicates that with the exception of three modules (Construction and sustainability, law and research) where knowledge obtained from academia seemed to closely align with related activity nodes, there were significant gap in knowledge required to carry out activities relating to business operations and professional practise. This implies that real estate graduates are likely to rely on industry to fill this gap.

**Figure 5: Alignment of module to activity nodes**
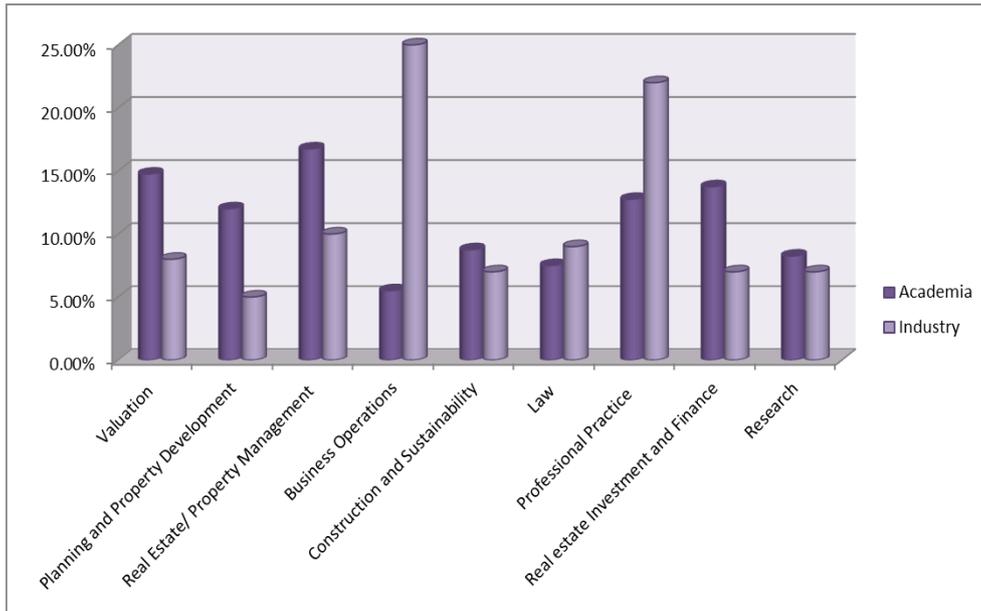
Also, there are further indications that academia attach more relevance to modules that impact knowledge which are not necessarily key features of industry activities. Modules such as real estate/property management, valuation, planning and property development, and real estate investment and finance highlighted these issues. Further, the range score in Figure 6 shows the extent of divergence between academia and industry and areas that need to be addressed by academia in order to meet the needs of industry.

Figure 6: Range indicating level of divergence between modules and industry
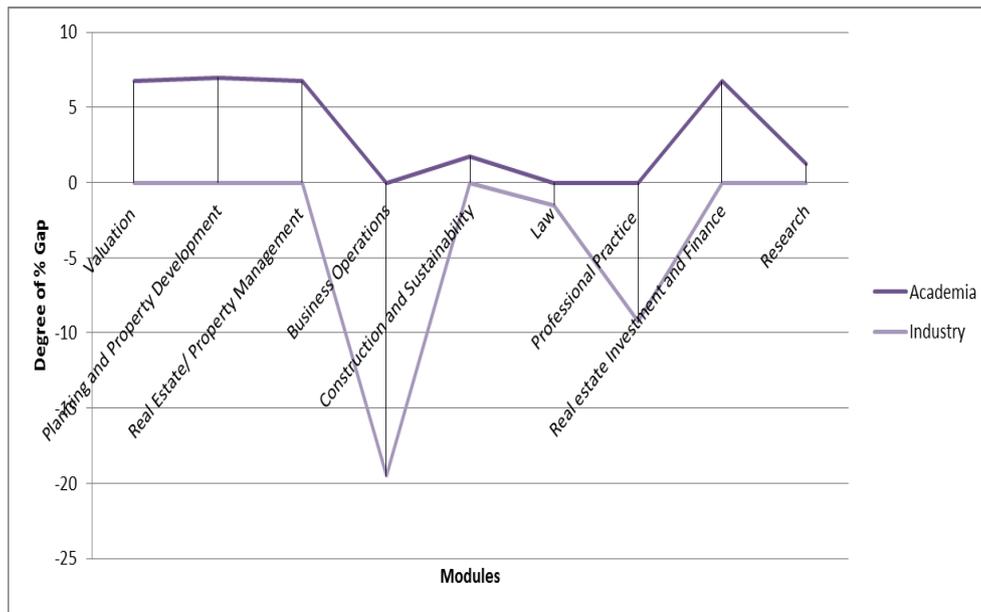
Figure 7: Performance of curriculum in addressing the needs of industry
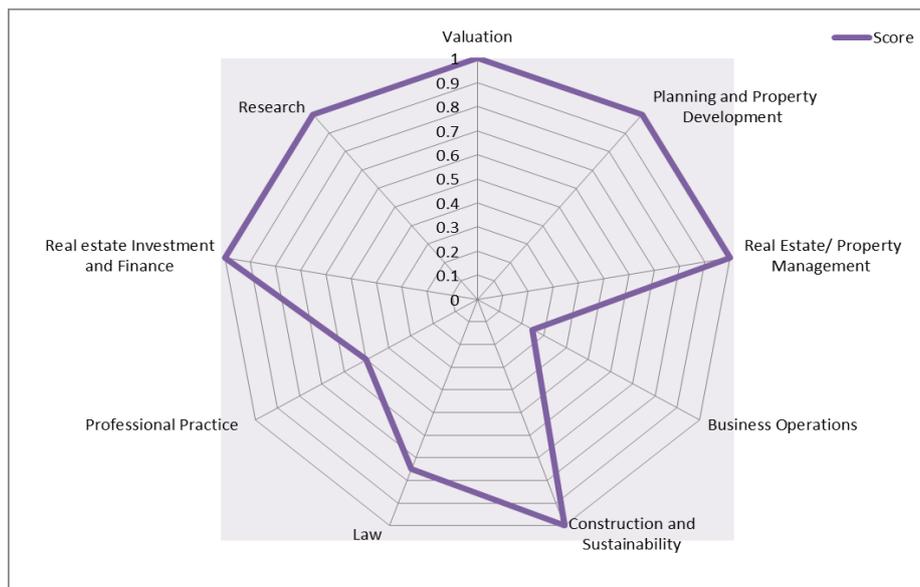
Findings from Figure 7 indicates that three modules - business operations, professional practice and law do not achieve the desired target with business operations and professional practice showing considerable divergence thereby indicating that academia may not have shared the views of industry on the relevance of these activities.

Generally, findings from analysis imply that whilst real estate graduates may find it easier to draw from knowledge obtained from academia when faced with tasks

relating to valuation, construction/sustainability, planning/property development, real estate/property management, research and real estate investment/finance, they are likely to rely on employers for support in law, professional practice and business operations. The prominence of the latter activities during the mapping process indicates that during the early stages of employment, graduates are more likely to be confronted with job roles they are least prepared to undertake due to gaps in knowledge obtained from academia.

It is not surprising therefore that industry employers hold the view that current curriculum is not doing enough to address their needs. However, academia may argue that by achieving above the desired requirements in six out of nine module areas it is logical to assume that curriculum is doing enough to prepare graduates for a hitch free transition to practice. Many may agree with this view considering that the gap in knowledge was only noticed in two module areas - business operation and professional practice and that the nature of knowledge required to perform these roles are more likely to be developed by carrying out the activities over time. Also, it could be argued that the required competency in professional practice is best achieved through practical experience and this parallels Poon et al.'s (2011) view that the academia plays its part by creating simulated practical activities to give students an insight into the industry. However, industry practitioners have presented arguments to counter this view (Manning and Epley, 2006; Weinstein and Worzala, 2008; Tu et al., 2009) and may argue that the inadequacies of curriculum to address key areas of daily activities in practice indicates that their needs are not being meet. Findings in this paper suggest that where such areas of divergence exist, it was at significant levels as indicated in Figure 6.

5.   Conclusions

This paper provides insight into the alignment of current real estate curriculum to real estate activity nodes through mapping. The process reviewed modules from four sampled universities in order to analyse their significance within curriculum as a basis for comparison with selected activity nodes. From analysis real estate curriculum was found to align with industry in six areas which included valuation,

construction/sustainability, planning/property development, real estate/property management, real estate investment/finance, and research. However, divergences were noticed in areas of professional practice, business operations and law which are considered as key to the operations of industry. Therefore, findings support the views of Manning and Epley (2006) that real estate academic curriculum are not teaching modules that addressed the vital needs of industry, and contribute to the debate on the review of real estate curriculum.

There may be arguments in favour of academia on grounds that substantial parts of the curriculum met the need of industry, however the mapping process revealed that areas considered as key to the operations of industry were not adequately covered. Prominent amongst these was business operations where activity nodes relating to:

- Discuss brief with clients to identify their needs (number 5 on the mapping process)
- Ensure all aspects of operational work comply with internal process and professional standards (number 7 on the mapping process) and
- Network with business, clients, and other professionals to be aware of their concerns and see opportunities (number 13 on the mapping process).

These activities, in addition to a fourth – "develop new professional products and services" (not included in the mapping process because it did not achieve consensus) were regarded as highly crucial to real estate practice by Boyd et al. (2014). While figure 6 shows greater range in divergence in business operations and professional practice when compared to other activities, the reasons behind the lack of adequate attention by academia is not covered within this paper but may not be far from the points suggested in previous section that the activities were considered as practice related and could best be covered by industry itself.

The findings from this paper however support the views of Callanan and McCarthy (2003); Manning and Epley (2006); Tu et al. (2009) and D'Arcy and Taltavull (2009) that curriculum is not doing enough to address the needs of industry. The debate over how the gap in knowledge may be bridged remains highly controversial as

supporters of industry based training may continue to argue in favour of placement opportunities and practical training while those in favour of reform in curriculum may point to the responsibility of academia as the primary educators of graduates. This paper contributes to the debate by identifying aspects of the curriculum that align with industry and aspects where there are gaps in knowledge.

It is recommended that real estate curriculum should be reformed to offer students opportunities to develop, assess and reflect on their employability skills and attributes. This may be incorporated in the curriculum as a personal development plan similar to annual review that takes place in industry in order to develop a culture of self-assessment for graduates. Also, skills that can build self-confidence and improve interaction would benefit real estate students. Though this is already being encouraged through group assignments and presentations, more can be done to create such opportunities in social environment rather than within the learning environment. This could be achieved through local conferences that bring students in close contact with industry practitioners.

6.   Limitations

As with most research, the findings of this present research need to be interpreted in relation to methodological limitations, especially with regard to the mapping process. The re-categorisation of modules into broad categories attempts to allocate credit units for each module based on the extent to which it inter-relates with the individual module specifications of the respective real estate programme. The allocation was carried out by the researchers and as such subject to bias and individual interpretation. This is not so much a limitation but rather a characteristic of the qualitative framework guiding the research. While this limitation necessitates caution to be exercised in the interpretation of the findings, it is important to emphasise that this is an inherent limitation, which could only be eliminated using standard guidelines as to what curricular contents constitute a credit unit. This type of guidelines presently do not exist. A further limitation of this research is that it was limited to only four cases. Due to this, the study could not be considered an exhaustive one.

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Appendix A

Real estate modules/courses of selected University

Case A				Case B		
S/N	**Year 1 Modules**	**Credit Units**		**S/N**	**Year 1 Modules**	**Credit Units**
1	Profession in context	15		1	Professional, Academic and Business Skills	20
2	Real Estate Economics	15		2	Surveying Skills	20
3	Business and Accounting	15		3	Construction	20
4	Building Construction and Inspection	15		4	Economics and Valuation	20
5	Principles of Valuation	15		5	Law	20
6	Agency and Marketing	15		6	Planning and Land Use	20
7	Law for the Built Environment	15				
8	Professional Practice Project 1	15			**Year 2 Modules**	
				7	Valuation	20
	Year 2 Modules			8	Real Estate Economics	20
9	Professional Practice project 2	15		9	Property Management and Agency	40
10	Planning and Development Appraisal	15		10	Property Development: Principles and Practice	20
11	Residential Surveying	15		11	Employability and Commercial Awareness	20
12	Law for Property and Planning	15				
13	Landlord and Tennant Law Practice	15			**Final Year Modules**	
14	Applied Valuation	15		12	Investment Appraisal and Valuation	20
15	Property Investment and Finance	15		13	Portfolio and Fund Management	40
16	Professional Practice Project 3	15		14	Corporate Real Estate	40
				15	Research Project	20
	Final Year Modules					
17	Inter Professional Project	15				
18	Corporate Real Estate Management	15				
19	Portfolio Decision Making	15				
20	Professional Practice and Managerial Skills	15				
21	Advanced Applied Valuation	15				

Case C

S/N	Year 1 Modules	Credit Units
1	The Evolution of the Built Environment	20
2	Construction Technology	20
3	Professional Surveying Skills Project	10
4	Law for Surveyors	20
5	Principles of Valuation	20
6	Business and Economic for Surveyors	20
7	Corporate Occupiers Project	10
	Year 2 Modules	
8	Career and Professional Development	10
9	Urban Planning and City Development	20
10	Applied Valuation	20
11	Property Asset Management	20
12	Property Marketing and Agency	20
13	Surveying Buildings	10
14	Real Estate Economics	10
15	Interdisciplinary Project	10
	Year 3 Modules	
16	Professional Placement	40
	Final Year Modules	
17	Urban Regeneration (Optional)	10
18	Commercial Real Estate Appraisal	20
19	Real Estate Development	20
20	Compulsory Purchase and Compensation (Optional)	10
21	Corporate Real Estate Management	20
22	Real Estate Investment and Finance	20
23	Dissertation	30

Case D

S/N	Year 1 Modules	Credit Units
1	Investment appraisal	20
2	Economics for Managers	20
3	Introduction to Property	10
4	General Introduction to Law	10
5	Introduction to Planning and Building	20
6	Projects in Real Estate and Planning	20
	Year 2 Modules	
7	Applied Property Law	10
8	Management in Real Estate Sector	20
9	Planning Law and Practice	20
10	Projects in Real Estate and Planning (2)	30
11	Property Valuation	20
12	Real Estate Economics and Investment	20
	Final Year Modules	
13	Applied Valuation	10
14	Appraisal and Management Projects	40
15	Property Development Appraisal and Finance	10
16	Real Estate Management	20

Re-categorisation of module/courses of selected Universit

Case A				
S/n	**Real Estate Curricula Modules**	**Credit Units**	**Related Modules fro**	
1	Valuation	67.5	2,5,14,21,22	
2	Planning and Property Development	22.5	10,12	
3	Real Estate Management	37.5	6,13,18	
4	Business Operations	22.5	3,20	
5	Construction and Sustainability	30	4,11	
6	Law	37.5	7, 12, 13, 22	
7	Professional Practice	82.5	1, 8,9,16,17,20	
8	Real estate Investment and Finance	37.5	2,15,19	
9	Research	30	23	

Case B				
S/n	**Real Estate Curricula Subjects**	**Credit Units**	**Related Modules fro**	
1	Valuation	50	4,7,8,12	
2	Planning and Property Development	40	6,10	
3	Real Estate Management	80	9,14	
4	Business Operations	30	1,11	
5	Construction and Sustainability	40	2,3	
6	Law	20	5	
7	Professional Practice	10	1	
8	Real estate Investment and Finance	70	4,8,12,13	
9	Research	20	15	

Case C				
S/n	**Real Estate Curricula Subjects**	**Credit Units**	**Related Modules fro**	
1	Valuation	55	5,6,10,14,20	
2	Planning and Property Development	55	1,9,17,19	
3	Real Estate Management	70	7,11,12,18,20	
4	Business Operations	20	6,8	
5	Construction and Sustainability	55	1,2,3,13,17	
6	Law	25	4,20	
7	Professional Practice	55	8,15,16	
8	Real estate Investment and Finance	50	6,11,14,18,22	
9	Research	30	23	

Case D				
S/n	**Real Estate Curricula Subjects**	**Credit Units**	**Related Modules fro**	
1	Valuation	40	2,11,12,13	
2	Planning and Property Development	60	5,6,9,10,15	
3	Real Estate Management	60	3,6,8,10,16	
4	Business Operations	10	8	
5	Construction and Sustainability	10	5	
6	Law	25	3,4,7	
7	Professional Practice	40	6,9,10	
8	Real estate Investment and Finance	45	1,2,12,15	
9	Research	40	14	