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South African Accounting academics' conceptualisations of the teaching-research nexus

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research nexus**

Abstract

Purpose

Accounting academics in South Africa (SA) have been criticized for their lack of focus on research, stating that their primary responsibility is the teaching of prospective professional accountants. The purpose of this study is to empirically evaluate the relationship between research and teaching and to consider why accounting academics in SA prioritise teaching over research.

Design/methodology/approach

The paper uses a questionnaire developed in the United Kingdom to assess SA accounting academics’ views of the teaching-research nexus. Cluster analysis is undertaken to identify and describe the patterns of responses of respondents.

Findings

Our findings identify three clusters. The largest subgroup indicates an equal awareness of both the potential benefits and pitfalls of integrating teaching and research. A second subgroup views teaching and research as symbiotic, while the third subgroup sees the two activities as working against each other and competing for scarce resources. This study finds that conflict exists between professional membership and academic research and a focus on teaching a professionally orientated accounting curriculum remains dominant in SA.

Research limitations/implications

The attitudes to teaching and research within SA are likely to be dynamic and subject to change. Our findings have implications for the development of accounting academics and potentially, for addressing the gap between accounting research, practice, and education.

Originality/value

This research contributes to a significant corpus of work considering the teaching-research nexus and a nascent body of work considering the relationship of research to teaching in accounting. The findings may be of interest to policy makers, practitioners, and academics.

Keywords: teaching-research nexus; professional accountants; accounting education

1. Introduction

The relationship between teaching and research has been the source of vigorous debate over the past three decades (Hattie and Marsh, 1996; Tight, 2016; Hancock, Marriott and Duff, 2019). This conversation is generally termed the *teaching-research nexus (TRN)*. The idea of a TRN has become of increasing importance in higher education, proposing that teaching and research should be closely linked. Historically, perceptions of quality in education suggests research and teaching and learning are interdependent (see Elton, 2001; Horta, Dautel & Veloso, 2012; Zimbardi & Myatt, 2012). Within accounting, some work has considered the TRN by the development of theoretical models (Baker & Wick, 2019; Duff & Marriott, 2012); creation of empirical models (Duff & Marriott, 2017a); and the application of empirical models to accounting academics in the developed economies of the United Kingdom and Ireland (UKI) (Duff & Marriott, 2017b) and Australia and New Zealand (ANZ) (Hancock, *et al.*, 2019).

Issues of increasing access to the accountancy profession from lower socio-economic groups are highly topical in the UK (Duff, 2017; Gebreiter, 2019; Wang & Crawford, 2017), with a similar trend in SA with calls for transformation of the profession. The accounting academic in SA is said to be experiencing many challenges caused by the emphasis on accreditation and the professional qualifying exams, combined with an intense teaching load as a consequence of increased student access and diversity (see Lubbe, 2014; Samkin & Schneider, 2014; Van der Schyff, 2008; Venter & De Villiers, 2013; West, 2006). Because of these pressures, accounting academics in SA have been criticised for their extended focus on teaching for the accounting profession (Venter & De Villiers, 2013). At the same time accounting academics in SA are largely disconnected from research (Verhoef & Samkin, 2017), despite the existence of a research component in their employment contracts.

The objective of this study is to consider the TRN in SA, using a research instrument created in the UKI by Duff and Marriott (2012, 2017a) and successfully applied in ANZ (Hancock, *et al.*, 2019) using cluster analysis. Cluster analysis is essentially a means of describing variation within a sample rather than reporting omnibus results or findings for specific demographic variables. The main benefit of applying cluster analysis is to allow the researcher to group similar data together. This provides for the identification of patterns of data between data elements as it reveals associations between the factor scores yielded from the questionnaire, thus assisting in the identification of structures that are not immediately evident.

The aims of this paper are two-fold. First, to undertake a quantitative study to analyse the relationship between research and teaching for accounting academics in SA, using a cluster analysis to identify patterns of responses in comparison to similar studies in UKI and ANZ. Second, to identify why SA accounting academics display the inclination towards teaching and research as described in the literature.

The research has two significant and attendant findings. First, accounting academe in SA is dominated by professional accountants, particularly members of the two national professional accountancy associations, the South African Institute of Chartered Accountants (SAICA) and the South African Institute of Professional Accountants (SAIPA). This contrasts with declining numbers of professional accountants in the accounting academy in developed economies such as the UKI and ANZ (Brown, Jones & Steele, 2007). Second, our findings identify a dominant cluster of academics who identify the significance of both positive and negative aspects of the TRN. This contrasts with prior work undertaken in UKI and ANZ, where cluster analytic work identifies a dichotomy: academics tend to rate the nexus as either a positive or negative phenomenon. Consequently, the cluster analytic method provides a unique insight into a central cluster of academics who have a relatively balanced view of the TRN, which is not evident in ANZ or UKI.

This study provides two important contributions to the accounting education literature. First, it uses a TRN questionnaire that was developed in the UK and applied in both the UK and ANZ to assess accounting academics' views of the teaching-research nexus to observe the TRN perceptions of accounting academics in SA. Second, our empirical study provides an insight into the perceptions of academics on the challenges associated with developing a research agenda when teaching on a professionally orientated programme in SA. The findings identify the perceived primacy of teaching over research and of perceived professional and business needs over research and academic skills. Furthermore, a strong professional identity is evident among respondents.

This paper is structured as follows. Section two discusses the relationship between teaching and research and the development of the accountancy profession with specific reference to SA. The third section provides details of the research method, including the adaptation of the research instrument to the research setting. Section four presents the results. The findings are discussed in section five. Section six concludes.

2. Literature review

The literature review describes TRN studies, followed by its relevance in accounting education. The education of professional accountants in SA is then discussed to provide some background to this study.

2.1 *The teaching-research nexus (TRN)*

Strong opinions against the existence of an affinity between teaching and research in HE have been expressed for many years (see Feldman, 1987, pp. 274-275). Some argue that, as far as the individual academic is concerned, there is no causal relation, no essential congruence; while others argue that these two crucial activities are essentially separate endeavours that just happen to occur in the same place. For example, Elton (1986, p. 303), exploring the links between teaching, research, and scholarship, found that there is little research to support the existence of a link between teaching and research. In their study a decade later, Hattie and Marsh (1996) found no link between teaching quality and research productivity, arguing that the research-teaching nexus is an “enduring myth” and claim that “at best, research and teaching are loosely coupled” (Hattie and Marsh, 1996, p. 526).

In later studies, Marsh and Hattie (2002) clarified their earlier stance commenting that teaching effectiveness and research productivity are nearly uncorrelated (Marsh and Hattie, 2002; Hattie and Marsh, 2004). More recent quantitative studies have addressed matters such as: research performance to students’ evaluations of faculty (Moschieri & Santalo, 2018); the relationship of research to teaching in multitasking environments (Bak, 2015); and students’ perceptions of research integration into their courses (Visser-Wijnveen, Van der Rijst & Van Driel, 2016). Moving away from the quantitative correlation studies of Marsh and Hattie, Neumann (1992, 1993) argues that academics believe a nexus between teaching and research does exist, even if it is not always possible to prove it statistically, such that a quantitative ‘marginal at best relationship’ suggests that the deeply-held values of academics are not being translated into day-to-day teaching practices (Neumann, 1992).

Other studies argue that the relationship between teaching and research is a range where, at one end, research-focused academics disseminate their findings only to their research community, while at the other end, what is taught is isolated from the academic debate of researchers (Brown, 2005; Lai, Du & Li, 2014; Schapper & Mason, 2010). Extending the idea of the TRN, Jones (2013, p.388) developed a Scholarship-Teaching-Action-Research (STAR) framework to integrate research, scholarship, and teaching. More recently, Brennan, Cusack, Delahunt, Kuznesof and Donnelly (2018, p.7) describe academics’ conceptions of teaching and research, stating that it is about creating a community of scholars, which is at the “heart

of a research-intensive university” rather than notions of maximising teaching and research productivity.

2.2 *The relevance of the teaching-research nexus in Accounting*

The education and training of qualified accountants follow the pattern of examining, credentialing, and licensing practices that Hoskin and Macve (1986) identify as central to the creation of the conditions of possibility for the modern profession. The notion of what accounting education ‘is’ and what it ‘ought to be’ has been discussed in a large group of literature (Albrecht & Sack, 2000; Jackling & De Lange, 2009).

Commentators in the accounting education field have pointed to the accounting education challenges in Australia (Evans, Burritt & Guthrie, 2010; Guthrie, Evans & Burritt, 2014; Guthrie & Parker, 2014, 2016). These studies posit that sustainability of the accounting academy to prepare accounting and business professionals for the future relies on the symbiotic relations between the three elements of the profession – practitioners, policymakers, and academics. Similar studies in the UK (Duff & Marriott, 2012, 2017a, 2017b) call for institutional missions to formulate strategies and plans to support the nexus. The past four decades have seen several investigations into linkages between accounting research and practice (Albrecht & Sack, 2000; Gray & Collinson, 2002; Kaplan, 2011). While relatively little research has examined the relationship between accounting research and teaching (Rebele, Apostolou, Buckless, Hassell, Paquette & Stout, 1998; Duff & Marriott, 2012, 2016a,b), some linkage was found between the two with research having minimal influence on what is taught (Duff and Marriott, 2012).

Comparing a developed economy (the Netherlands) and an emerging economy (China) Hu, van der Rijst, van Veen and Verloop (2014 p.607) identify several similarities between Chinese and Dutch academics, however, the Chinese accounting academics scored much lower on how much they valued research and how well they could incorporate research into their current teaching practice. Focussing on the developing region of Anglophone Sub-Sahara Africa, Negash, Lemma and Samkin (2019) noted that factors that promote research tend to be weaker in this region's universities, while the promotion of teaching appears to be stronger. These findings are similar to the findings of the study (discussed below) done in SA (Lubbe, 2015) that accounting academics do not perceive research to inform their teaching and that teaching is prioritised.

A further point of debate refers to the accreditation process by the profession of accounting programmes. In the UK, as indicated above, there is a distant relationship (Hopper, 2013) where individual accounting programmes are granted partial exemption from each professional body based on their syllabus coverage (Wilson, 2011). In ANZ accounting programmes are accredited and graduates can commence the professional programme (Lightbody, 2010; Hancock, *et al.*, 2019). Accounting academics in the UKI and ANZ identified challenges such as that academic research have little influence on professional education and vice versa, and that funding of academic research is for brand recognition (Duff, Hancock & Marriott, 2019). In SA, the TRN is amplified by the relationship between academics and professional bodies. The education of professional accountants in SA is discussed next.

2.3 *Accounting education and research in South Africa*

For several decades, the education of potential chartered accountants (CAs) has been the emphasis of Departments of Accounting of accredited universities in SA and not business schools (West, 2006). The HE system of SA is made up of 25 universities (excluding private institutions) of which 17 universities offer accounting specialisation degree programs that are accredited by SAICA (for some, only their undergraduate programme has accreditation status) (SAICA, 2019a) while nine undergraduate accounting degree programmes are accredited by SAIPA (SAIPA, 2019).

The syllabi of the SAICA accredited undergraduate and postgraduate accounting programmes are developed in line with the SAICA Competency Framework (SAICA, 2016), with one of the criteria for accreditation the requirement that the majority of accounting academics within a department are CAs. In 2019, there were more than 900 CAs employed in education (representing 2.4% of the 37,000 SAICA members resident in SA) (SAICA, 2019b). The academic pressure relating to alumni's performance in the professional examination determines the prestige of Departments of Accounting in SA and has often been cited as the reason for low research output (Van der Schyf, 2008; Venter & De Villiers, 2013). Verhoef and Samkin (2017) argue that, by prescribing and detailing the accounting syllabi required for university accreditation, SAICA exercises direct control over accounting education, stating that "little appetite exists for a discipline based on academic enquiry or engagement with international scholars. While the SAICA claims to support accounting research, this support is conditional on its meeting the professional body's view of scholarship" (Verhoef & Samkin, 2017, p. 1370).

The influence of the profession points to why so many accounting academics in SA are professionally qualified as CAs, but few have a PhD as is usual for a professor (Venter & De

Villiers, 2013). A recent study noted that the culture of accounting departments in SA is beginning to shift from being teaching orientated towards being more research orientated, with accounting academics pursuing doctorates for the purpose of career progression and for intrinsic personal reasons (De Jager, Lubbe & Papageorgiou, 2018). However, research output in SA is lagging that of developed countries such as the UK and ANZ (Samkin & Schneider, 2014).

Research output is challenged by aspects such as the methods that are used to evaluate the quality of accounting research (Nygaard, 2017). Within the developing Anglophone Sub-Saharan Africa region, aspects such as less stringent publication requirements for academic tenure and promotion; publication policies that encourage quantity over quality; lack of qualified research mentors, supervisors and/or co-authors, inadequate research funding, leave and infrastructure; and lack of differentiated compensation for research-active academics are some of the challenges identified for the limited output of accounting research (Negash, et al. 2019). Hopper, Lassou and Soobaroyen (2017) considered the influence on accounting research in the Southern developing countries (compared to the Northern developed countries) and identified that “practices in developing countries are driven by ‘international accounting institutions’ (such as the IASB and IFAC), while the large Northern (often the ‘Big 4’) accounting firms deliver the technical detail” (p. 140). In SA, professional accountants do not consider research produced by academics as useful, stating that the role of accounting academics is “teaching and producing ‘accounting students of a high quality” (Lubbe, 2015, p. 1098).

The teaching–research ‘nexus’ (TRN) has been the subject of continual debate within SA universities. In the first TRN study conducted in SA (Lubbe, 2015), the strong control by the accounting profession of the curriculum offered by accredited universities and the loyalty of accounting academics towards their profession were identified as issues that obstruct the research-role of accounting academics. Findings of this study signified a weak relationship between teaching and research, stating that professional accounting academics found it difficult to reconcile the dichotomy: “firstly to that of the university requirement to be active researchers, and secondly, their loyalty towards their profession” (Lubbe, 2015, p.1103).

These studies foreground the tensions between teaching and research in accountancy, and the specific focus on the education of professional accountants in SA. The next section sets out the research method and the adaptation of the research instrument to the research setting.

3. Method

This study uses a questionnaire to measure the views of accounting academics of the TRN in SA. This section explains the design and origin of the questionnaire, the data collection process, and the instrument validation.

3.1 Questionnaire design

The investigation utilises a short-form of the inventory developed to elicit accounting academics' views of the TRN in the UK (Duff and Marriott, 2012). The research instrument has three sections. Based on validation efforts undertaken in the UK and Ireland (UK) (Duff and Marriott, 2012; 2016; 2017a) and Australia and New Zealand (ANZ) (Hancock *et al.*, 2019) a short-form questionnaire was developed for this study. The original inventory consisted of 61 statements within the first section of the questionnaire, each created from the corpus of literature, largely from the field of HE, examining the TRN. The purpose of using the wider education literature was to examine ideas, theories and findings created by other researchers in other disciplines to ascertain their utility in accounting education. The original questionnaire (Duff and Marriott, 2012) related to a theoretical model consisting of some 19 propositions. These 19 propositions relate to four factors describing: (i) curriculum; (ii) student issues; (iii) faculty issues; and (iv) rewards concerning the TRN (Duff and Marriott, 2012). The final UK empirical model consisted of eleven subscales relating to 37 items. The ANZ model was empirically similar to the UK findings, but consisted of only the most significant nine factors of the UK model and 32 items. Both the eleven factors and the nine factors adequately describe the four factors that describe the TRN model of Duff and Marriott (2012)ⁱ.

The original 61 items used in the UK research were created from the general education literature, rather than that of the accounting education literature, with many of the hypothesised factors and related items found to be irrelevant to accounting education. Long questionnaires typically lead to respondent fatigue and more parsimonious research instruments are generally encouraged (DeVelis, 2016). In addition, each of the items was examined closely to ensure that they would be meaningful and culturally consistent within a South African contextⁱⁱ. Consequently, section one of the inventory administered in this research used the 32 items loaded onto the final ANZ model, with nine subscales. The 32-items aimed to obtain insights into the TRN.

Similar to the ANZ and UKI surveys, a five-point Likert scale was adopted. Example items, classified as positive and negative factors, are illustrated in Table 1ⁱⁱⁱ. Section two considered demographic variables such as age group, gender, number of years worked as an academic,

qualifications and rank. Finally, section three consisted of eight statements made considering the relationship between research and teaching.

Table 1 here

The instrument has two ‘defining’ scales of: Positive Aspects of the TRN and Negative Aspects of the TRN ^{iv}. Each of these ‘defining’ scales are expressed in turn by constituent subscales that measure specific aspects of the Positive and Negative TRN. Throughout the paper we refer to scales and subscales, which are analogous to the terms higher-order factor and lower-order factor per Duff and Marriott (2017a) and Hancock *et al.* (2019).

3.2 Data collection

After obtaining institutional ethical approval, invitations to participate in the research survey were emailed to 412 accounting academics in SA listed as members of the Southern African Accounting Association (SAAA). Even though not specifically verifiable, it is estimated^v that there are between 1,000 and 1,200 accounting academics in SA (the population), of which approximately 900 are CAs (SAICA, 2019b). Accounting academics of most SA universities are members of SAAA (registration is affected per university), however, not all academics are active in attending and presenting at SAAA conferences. The survey was sent to SAAA members, representing approximately 40% of SA accounting academics.

The survey was created using Qualtrics and the aims of the investigation were clearly identified in the link to the questionnaire. Respondents were assured of the confidentiality and anonymity of their responses and that the results of the investigation would only be used for the purpose of academic research. Two emails were sent 14 and 28 days by means of a follow-up after the initial administration. Seventy-nine completed inventories were returned representing a response rate of 19.2% which is comparable with similar investigations of accounting academics (Brinn, Jones & Pendlebury, 2001; Lowe & Locke, 2005; Duff & Marriott, 2012; Hancock *et al.*, 2019).

3.3 Instrument validation

The psychometric qualities of the research instrument have been established (Duff and Marriott, 2016a) identifying two scales that are in turn described by 11 subscales. Further work undertaken with an ANZ sample (Hancock *et al.*, 2019) found the model operated equivalently, although it identified nine subscales, probably because of a smaller sample size.

For the purposes of the present research we adopt similar procedures as Duff and Marriott (2017a, b) and Hancock *et al.* (2019) to aid comparison, facilitate replication and generalisability. Consequently, the presentation of the results is similar to these prior and related studies. Five stages of analysis were used to validate the scores yielded by the inventory and explain variation within the sample. The first stage involves internal consistency reliability coefficients for the posited scales and subscales. Nunnally and Bernstein (1994) suggest that a cut-off of around .6 for coefficient alpha is adequate for measures not intended to be widely used in applied research in different contexts and cultural settings.

As in previous related research (Duff and Marriott, 2017a) the second stage applies confirmatory factor analysis (CFA) to identify how well the inventory items describe a hypothesised factor structure. This consists of an analysis of the relationship between the items and the posited subscales. Specifically, this consists of an examination of the factor loadings for each of the subscales. Items with factor loadings less than .4 are excluded. After careful qualitative consideration of their relationship to other factors, rejected items are offered to other subscales to see how well they load. The items that are retained are used to create a composite measure for each subscale.

In stage four, the relationship between the two 'defining' TRN scales, their associated subscales and their component items was considered by evaluation of the goodness-of-fit of the model to the data. Two goodness-of-fit indices were used to evaluate the fit of the measurement models, as recommended by Hu and Bentler (1998) and MacCallum and Austin (2000), the standardised root mean square residual (SRMR) in combination with the root mean square error of approximation (RMSEA). As in the context of this research, when sample size is less than 500, satisfactory fit is indicated by applying a decision-rule of SRMR < .11 and RMSEA < .08 is applied (Hu and Bentler, 1999 p.26).

Finally, stage five adopts a *k*-means cluster analysis as it has been found a useful means of identifying theoretically meaningful and generalizable clusters in previous related studies (Duff and Marriott, 2017b; Hancock *et al.*, 2019). Cluster analysis is a useful way of exploring variation within the sample, rather than a simple analysis of aggregate scores. Specifically, we examine perspectives of relations between teaching to research and research to teaching within the sample. As not all the scales are measured using the same scale, i.e. scales have different numbers of constituent items, scores are standardised.

The number of clusters was determined by examining two issues. First, to determine the distance between the potential clusters across each measure case, the within-cluster variation plots are examined. Second, to consider whether differences are statistically significant ($\alpha = .05$) comparison of means between cluster scores are compared on each subscale using a Bonferroni-adjustment. Effect sizes (η^2) are also reported for replicability purposes. Per Cohen (1977), $\eta^2 = .02$ is considered small; $\eta^2 = .13$ is interpreted as medium; and η^2 of .26 is considered large. The results and findings of the data collected, and cluster analysis are described in the next section.

4. Results and findings

The results of this study comprise of data collected and analysed using an empirical model. The sample characteristics of the data are first described, followed by the analysis of the data according to the clusters identified.

4.1 *Non-response bias and sample characteristics*

To consider response bias, two matters were evaluated. First, the structure of the sample in relation to its population was assessed to indicate how well it represents the population. Second, as many of the characteristics of the survey population are not easily discerned, we compare early responders (the first 33%) to the late responders (last 33%) as recommended by Dillman (2007). When a Mann-Whitney test was applied to both groups, just one statistically significant difference ($p < .05$) was found across the 32 survey items to which this test was applied^{vi}. Despite the drawbacks of such tests being widely known (Wallace & Mellor, 1988), we consider it unlikely that response bias will compromise our findings.

The sample characteristics are illustrated in tables 2 to 8. These are in line with similar characteristics of the population, for example most SA accounting academics are members of a professional institution, and SA universities have the highest percentage of senior lecturers (Samkin & Schneider, 2014). Table 2 describes the distribution by rank, which is broadly representative of the different levels of employment of the universities sampled. Senior staff (professors and associate professors) represent 19 percent of the sample.

Table 2 here

Table 3 identifies the proportion of time that accounting faculty in SA allocates to different activities at work. Teaching is the most significant activity at 41%. Own research and research-related administration (e.g. supervising research students, peer-review of research,

organisation of conferences) represents the second most time-consuming activity at 28%. Administration (e.g. departmental and university committee work) accounts for 19% of respondents' time. Consulting makes up the balance of 12%. Notably, the standard deviations reported for each of these activities were relatively large, suggesting there is significant variation in how accounting academics in SA occupy their time.

Table 3 here

The research interests of accounting faculty in SA are categorised in table 4. Education and profession ($N=31$) are by far the most popular research category. Other accounting-related ($N=10$), auditing ($N=8$), finance ($N=6$) and financial accounting and reporting ($N=5$) were the more popular categories. Of particular interest is the least popular categories of accounting history ($N=1$), critical, social and environmental ($N=1$) and management accounting ($N=1$), given SA's critical accounting issues and social challenges. These findings are in line with a study that investigated the 2017 SAAA conference proceedings, indicating that many papers and presentations were in Accounting education and profession (Lubbe & Papageorgio, 2019).

Table 4 here

Respondents were relatively young, with 36% being aged from 25 to 35 years of age. A further 31% were aged 36 to 45 years of age, meaning that those aged 45 years or under accounted for two-thirds of the sample. The younger age may translate to some sample bias that has been considered in the interpretation of the findings.

Table 5 here

Experience of working in academe was relatively diverse, with 44% of respondents having worked in universities for ten years or less. However, some seven percent reported having worked in HE for more than 25 years. This is in line with the average age of the respondents.

Table 6 here

A significant finding within the demographics of the sample is that 89% of respondents reported having worked within the profession, or industry and commerce, which is in line with the training component of professional accountants. Indeed, 18% reported as having (non-academic) professional careers that exceeded 10 years in duration.

Table 7

Respondents were also asked about membership of professional bodies. Eighty two percent of the sample reported being a member of a professional body – see table 8. As might be expected, SAICA was the most commonly mentioned professional body with 47 respondents (61% of respondents and 73% of those reporting a professional affiliation). In conclusion, the sample has strong professional connections and significant professional, industrial or commercial experience.

Table 8

These findings point to a generational change in the profile of SA accounting academics taking place that is similar to studies by De Jager *et al.* (2017), and Samkin and Schneider (2014) who found a high level of senior accounting lecturers in SA universities. Given the younger age of the SA sample, a possible sample bias may exist which has been taken into consideration in the discussion of the findings.

4.2 Empirical model

Examination of the alpha coefficients calculated for the eleven hypothesised scales were empirically identified. The residual three scales failed to yield an alpha coefficient of at least .6. Specifically, the hypothesised ‘Development of professional skills’ (subscale IX) is no longer considered. These eight factors correspond identically to the first eight (of nine) subscales in the ANZ survey (Hancock *et al.*, 2019) and the first eight (of eleven) in the UKI survey of Duff and Marriott (2015). Table 9 reports the descriptive statistics, coefficient alphas and correlation matrix for the eight subscales, along with the same for the two ‘defining’ scales of positive TRN and negative TRN.

Table 9

The analysis of the relationship between the items and the subscales is reported in table 10. All the items included in the model are listed, albeit in an abbreviated form, in column 1 and the factor loadings shown in column 2. Each of the calculated factor loadings for each of the eight subscales exceed 0.4 and are retained as they have an ability to represent the underlying factor. Similarly, the factor loadings are reported for the two 'defining' scales in table 11. Strong factor loadings, in excess of .4, are reported for each factor loading on the eight subscales, that are, in turn, loaded onto the two 'defining' scales.

Table 10

Table 11

The expected model, with eight subscales and two 'defining' TRN scales yields a satisfactory data fit to the model ($\chi^2 (617) = 559.842$; $\chi^2/\text{d.f.} = 1.414$ $p < .001$; RMSEA = .060 (.048-.071); SRMR = .104).

Finally, a cluster analysis was conducted on the eight subscales. Applying the methods explained in section 3, considering the overall interpretability of the solution along with the need for parsimony, three clusters were identified (Hair, Black, Babin, and Andersen, 2014). To establish how different the clusters were a MANOVA was undertaken: with the eight subscales as dependent variables and the clusters as the fixed-factor. Significant differences are found between the three clusters on the eight subscales [Wilks' $\lambda = .129$, $F (16, 144) = 16.02$, $p < .001$, $\eta^2 = .64$]. Table 12 contains the standardised means and standard deviations on the eight scales for the three clusters, in addition to the F tests and partial effect sizes. The large F ratio, small observed statistical significance level and large effect sizes identified for each of the eight subscales indicate the three clusters are empirically distinct. Consequently, it is concluded that the three-cluster solution provides sufficient discrimination between clusters and the desirability of parsimony (Hair *et al.*, 2014).

Table 12 here

In a similar fashion to other related studies (Duff and Marriott, 2017b; Hancock *et al.*, 2019), the clusters were subjected to pairwise comparisons using Tukey’s HSD as a post-hoc test to establish where differences lay between the three clusters. The threshold for statistical significance was reduced to .0167 (.05/3) to control for type 1 error. An examination of the between-subjects’ effects found statistically significant differences between the three clusters on each of the eight subscales.

Considering the Positive TRN scale, cluster 2 yields statistically significantly higher scores ($p \leq .001$) than cluster 1 and 3 for each of its four constituent scales. However, there were no statistically significance differences between clusters 1 and 3 considering three (of four) of the Positive effect of the Nexus scales, the exception being factor II ‘Research-led teaching’.

For the Negative TRN scale, both clusters 1 and 3 have ratings that higher than cluster 2 ($p \leq .001$) on three (of four) constituent scales. Considering subscale IV ‘Tension: research and professional curriculum’ ($p = .04$), Cluster 3 also records a statistically significantly higher score than cluster 2 on subscale IV ‘Tension: research and the professional curriculum’.

The largest cluster is Cluster 1 ($N=43$). Interestingly this cluster produces the highest scores on Positive TRN scale and constituent subscales but also relatively high scores on the Negative TRN scale. This is an unexpected finding in that it suggests group members are aware of both the positive and negative aspects of the TRN. In this sense, unlike research undertaken in other domains (UKI and ANZ) a clear dichotomy does not exist. The factors that define both positive and negative aspects of research teaching relations occur, and academics and students reap the rewards or try to mitigate the negative effects. For this reason, this cluster is labelled ‘Engagement’ implying that members of this cluster are engaged with the concepts behind the teaching-research nexus. The three profiles for the teaching–research nexus identified using the cluster analysis are illustrated in Figure 1.

Figure 1 here

Cluster 2 ($N=18$) produces a pattern that is generally low on Positive TRN subscales and high on Negative TRN scales. Similar to the descriptions of Duff and Marriott (2017b) and Hancock *et al.* (2019) this cluster is labelled ‘teaching-research incongruity’ as identifying the mismatch between academics’ research agenda and their teaching activities.

Cluster 3 ($N=16$) is characterised with Positive TRN subscale scores and correspondingly the lowest scores on the Negative TRN subscales. Applying the descriptions of Duff and Marriott (2017b) and Hancock *et al.* (2019), this cluster is described as 'teaching-research connexion'.

By using an empirical model developed to measure accounting faculty in the UKI to examine research-teaching relations, this study establishes the perceptions of SA accounting academics of the interaction between research and teaching. The empirical model was able to successfully replicate the most significant (in terms of factor loadings) of the eight subscales found in the UKI by Duff and Marriott (2012, 2017a, 2017b) and in ANZ by Hancock *et al.* (2019). Thus, the measurement model developed for the UKI population of accounting faculty, and empirically validated using samples of accounting staff in the UKI and ANZ, is applicable to the population of accounting academics in SA. The findings are discussed in section 5 below.

5. Discussion

The findings of this study are discussed in two parts: first, by comparing the responses of the SA accounting academics to that of the UKI and ANZ, with reference to the results of the cluster analysis and second, drawing from the profile of the SA respondents, describing why there is an inclination towards teaching as opposed to research.

The model that best fits the SA data is a parsimonious eight-factor one, these factors also describe the greatest amount of variation within the UKI and ANZ samples. The high replicability of the model in Duff and Marriott (2017a) and Hancock *et al.* (2019) suggests its widespread applicability in both the developed and developing worlds of accounting education. However, the findings are indicative of variation, relative to the UKI and ANZ samples in two significant ways. First, the SA sample has different demographics to the two developed countries. The SA accounting academy has large numbers of professionally-qualified academics, relative to dwindling numbers of accounting academics with professional qualifications in the UK (Brown *et al.*, 2007; Paisey & Paisey, 2017) and ANZ. Second, the SA sample reports a relatively young academic cohort, compared to the ageing profile in UKI (Duff and Marriott, 2017b) and ANZ (Hancock *et al.*, 2019). The profile of the SA sample has relevance to the cluster analysis discussed below.

5.1 *Comparison of SA results with UKI and ANZ*

The SA survey results indicate the highest ranked factor was Research Dissonance from the Curriculum, a finding that might be expected in a country where the professional accounting curriculum lacks a research component and the national professional accountancy

associations have strong connections with academia and the curricula. This is in contrast with findings in similar studies in the UKI (Duff and Marriott, 2016) and ANZ (Hancock *et al.*, 2019) where Extrinsic Rewards of Research was the most highly-rated factor, reflecting the influence of research-selectivity exercises and financial incentives for academics to be successful in research.

The findings of the cluster analysis applied to the SA sample are markedly different to the cluster profile identified in UKI and ANZ. In the SA sample the dominant cluster rates both the positive and negative effects of the nexus highly, giving equal emphasis to both. This cluster, which we label 'engagement' suggests a relatively mature reaction to the notion of the TRN. That is one where the competing benefits and problems associated with the nexus are equally weighted. The residual two clusters are similar to the 'connexion' and 'incongruity' clusters identified in the ANZ and UKI samples. The younger SA sample representing fewer senior staff may play a role in predicting group membership. In the ANZ and UKI samples, the most senior staff were those most opposed to fostering a teaching-research nexus. In sum, the cluster analytic findings of the SA sample identify some interesting differences compared to the ANZ and UKI surveys. Rather than focus on the dichotomy between the positive and negative effects, a more balanced view of the two is taken. This 'more mature reaction' may be a result of a substantial part of SA accounting academics that do not conduct research with the target to publish in internationally. Conducting such research is in many cases very time consuming and more often leads to a conflict situation, which leads to 'connexion' and 'incongruity' approaches.

5.2 Profile, perceptions, and inclinations of SA accounting academics

The results of the survey profile the SA accounting academic as being younger than 45 years old, employed at senior lecturer or lecturer level, having less than 15 years' experience in the academic environment, while most are members of a professional body. Thus, accounting education in SA universities is dominated by CAs who are novice researchers, as the accredited accounting curricula do not include any research component (Lubbe, 2017). A similar criticism has been made of the UK accounting curriculum by Duff and Marriott (2012); however, the UK now has larger numbers of PhD-qualified academics at the expense of professionally-qualified (see Beattie & Smith, 2012; Duff & Monk, 2006; Paisey & Paisey, 2017).

Although our findings point to an overwhelming number of SAICA qualified accountants teaching in universities in SA, a shift is observed in the perceptions and focus of SA accounting academics towards research, albeit more prominent amongst the younger

academics. This is supported by recent studies in SA that found an increased focus by accounting academics on research and PhD scholars. Studies by Samkin and Schneider (2014) and De Jager *et al.* (2017) found that SA senior lecturers were more productive than professors in terms of publication-outputs for the period after 2009. De Jager and Frick (2016) found that over the period 2008 to 2014, for four research intensive universities in SA, there was an increase in the number of PhDs in accounting awarded and that a significant portion of those degrees went to staff members and to CAs.

Entry to the SA accountancy profession has, as a prerequisite, an accounting degree obtained at an accredited university. This is different to ANZ and especially the UK, where entry to the accountancy profession does not require an accounting-related degree, with large numbers of graduates from other disciplines and increasingly, school-leavers, hired and trained by private-sector training firms for the seven professional UK-based accountancy associations.

SA accounting academics display an inclination towards teaching, as indicated by several studies (Venter & De Villiers, 2013; Samkin & Schneider, 2014; Verhoef & Samkin, 2017) that have criticized SA accounting academics for focussing on teaching technical skills and allowing the profession to dictate what is taught. The respondents display a strong connection with the professional accountancy associations and a professional curriculum that lacks a research component. They see a dissonance between research and teaching, especially since teaching is considered 'valued' by the profession (Lubbe, 2015) and the teaching component is strongly framed within the professional curriculum which is considered 'distant' from their research interests.

Challenges associated with developing a research agenda may include systemic issues, for example lack of research funding and qualified research mentors (Duff *et al.*, 2019; Negash, *et al.*, 2019), and a perception amongst SA accounting academics that their research has limited impact or is not considered valuable (Hopper, *et al.*, 2017; Lubbe, 2015). From the responses there seems to be a shift amongst SA accounting academics towards research, albeit slow. The typical 'push vs pull' situation emerges – initially, by reasons such as not being exposed to research during formal university studies, SA academics are reluctant to value and engage with research; however, a slow shift is observed. The possible motivation for the shift may be caused by research output demands by universities and the need to be internationally competitive: an avenue for future research.

The research has two limitations that restrict its generalisation. First, attitudes to teaching and research are dynamic and subject to change. For example, periodic exercises of professional

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3 accreditation and research evaluation mean accounting academics will be subject to different
4 pressures at different points in time which are likely to affect attitudes to different academic
5 activities. Second, the study is predicated on a survey. Survey-based research sets out to
6 measure attitudes to a range of variables that have been created from extant research.
7 Psychometric-based research has no capacity to explore the narratives of accounting
8 academics in SA who may have perspectives on teaching and research relations which have
9 hitherto not be captured by prior research undertaken in other settings.
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16 The findings suggest two potential research avenues. First, further studies could include a
17 more detailed analysis of the motivations for the shift towards research, away from teaching
18 and the promotion of professional practice. Second, it would be useful to examine and
19 compare the TRN within an accounting setting in other, less developed, African economies,
20 particularly those with fewer faculty members of the accountancy profession.
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25 Two significant implications of this research are apparent. First, an inventory created to
26 measure accounting academics' views of teaching and research relations in the UKI is equally
27 applicable in SA, i.e., demonstrates similar measurement qualities. This suggests that the
28 forces and pressures facing accounting academics are similar to their peers in the UK and
29 also ANZ (Hancock et al., 2019). Second, what is different are the findings of the cluster
30 analysis. Both the ANZ and UKI samples demonstrate a stark negative 'gestalt' cluster: a
31 group of academics that see few positives in teaching-research relations and lots of
32 negatives. This cluster is not apparent within the SA sample. Where a positive 'gestalt' is
33 evident, but its antonym is not visible. We consider this offers hope for accounting education
34 in SA in that resistance to including research ideas, research-informed teaching and students
35 as active creators of knowledge has potential. In addition, the relatively academic
36 inexperience of the SA sample relative to ANZ and UKI suggests that could develop in a new
37 and positive manner where teaching and research are conceived as mutually beneficial,
38 rather than competing and alien activities.
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49 **6. Conclusion**

50 This study contributes to the literature considering teaching and research relationships in
51 accounting education by measuring the views of accounting academics' conceptions of the
52 relationship between research and teaching in SA. Notably, SA is an emerging economy,
53 where research in accountancy and accounting education is generally less developed and
54 available than in developed Western settings.
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In this paper, we have consistently referred to teaching and research relations as the TRN. This contrasts with Duff and Marriott (2017a, 2017b) and Hancock *et al.* (2019) where they consistently use the term 'gestalt', rather than nexus, implying a clear dichotomy and contrast. The label 'gestalt' is new to the voluminous corpus of the TRN literature, which generally looks for ways in which teaching and research are mutually reinforcing, rather than a source of tension and discord. This divergence is less apparent in the SA sample where the largest cluster identified tends to rate positive and negative aspects of the TRN equally. Two reasons are apparent. First, it seems likely it reflects the relatively nascent role of research in the SA accounting academy. For example, many professionally-qualified accounting academics in SA are studying for doctoral qualifications later, after being an academic for some time; not unlike the situation in the UK, for example, 20 or 30 years ago (Beattie & Smith, 2012; Duff & Monk, 2006; Paisey & Paisey, 2017).

Second, the accounting profession holds an imperial position in SA accounting education, relative to UKI and ANZ. Within SA, the education of professional accountants is dominated by its native professional accountancy association, SAICA, which, through the accreditation process, enforces strict compliance with its professionally-led curriculum at the expense of traditional university learning. This domination has been supported in many studies, however, recently there has been an increased focus on and engagement with research and research output, as evidenced by the large increase in papers submitted for conference proceedings at the recent biennial SAAA conferences (SAAA, 2015, 2017). SAICA and SAIPA acknowledge the current tension experienced by accounting academics and supports a national research collaboration amongst academics. Even though such a collaboration is welcomed, it remains ironic that research topics are initiated by the professional institutions, thereby enabling accounting academics to emerge in the role of local research leaders and in local research rankings.

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ⁱ Specifically, some of the 19 propositions are found empirically not to be distinct and are aggregated with other propositions. For example, the four propositions underlying the rewards factor are combined to make one factor.

ⁱⁱ For example, the UKI survey made reference to accounting faculty and staff, using the two terms interchangeably. The South African survey referred to accounting and finance academics, reflecting the more widespread use of the term academics and a larger pool that included finance academics.

ⁱⁱⁱ Eight subscales are described in table 1 as the subsequent empirical testing found only limited empirical evidence for the ninth hypothesised subscale used in the UKI and ANZ surveys 'Development of professional skills'.

^{iv} Duff and Marriott (2017a, b) and Hancock *et al.* (2017) refer to these two defining scales as a gestalt, i.e. implying a strong dichotomy. In the context of our research study, in an emerging economy where research is less developed, the term 'gestalt' seems inappropriate.

^v This estimate is based on 23 SA universities that offer accounting programmes, each comprising of circa 50 full-time accounting faculty members. Even though some universities may have larger faculty numbers, others comprise of smaller faculties. Further, some universities combine Accounting with other disciplines such as Finance and Law. This estimate is reasonable considering Samkin & Schneider's (2014) 963 SA accounting academics identified in their study at that time.

^{vi} Simultaneously testing multiple hypotheses, as here, creates an issue of false discovery rates (or family-wise error), whereby a Type 1 error is more likely to occur. To control for false discovery rates when α is reduced to .01, the one item ($p=.04$) is no longer statistically significant.

Table 1: Description of research instrument scales for eight empirically-identified subscales

Scale/Subscale	No of Items	Description	Example item
Scale A: Positive TRN scale			
II: Research promoting critical analysis	4	Research, and researchers, develop(s) critical thinking in learners	‘Research-active academics provide students with an exemplar of a questioning approach to learning’
V: Research-led teaching	3	Research-active teachers are more effective in a range of ways than non-researchers	‘Research-active academics adopt a more holistic and interpretative approach to their teaching’
VI: Researcher stimulation of ideas	5	Teaching stimulates the researcher’s thinking	‘Teaching and research are mutually beneficial’
VIII: Students value contact with researchers	2	Researchers are enthusiastic about their work allowing a course to be up-to-date	‘My students perceive me as enthusiastic about my course because of my research activity’
Scale B: Negative TRN scale			
I: Extrinsic rewards of research	7	Successful researchers have better career prospects than non-researchers	‘Academics who seek promotion, publish in academic journals at the expense of other activities’
III: Research dissonance from curriculum	5	Research is frequently remote from the technical accounting curriculum	‘Increased specialisation of knowledge means research is remote from what students need to know’
IV: Tension between research and professional curriculum	2	Including contemporary research within the curriculum is at odds with the professionally-led syllabus	‘The inclusion of research, at the expense of professional syllabus coverage, leads to gaps in the curriculum’
VII: Research and teaching: Different attributes	2	Research and teaching require different attributes and an individual may not possess all the qualities required for success in both	‘Teaching and research are different roles, requiring different qualities’

Table 2: Seniority of position of respondents and country worked in

<i>Job Title/Country worked in</i>	<i>No in sample</i>	<i>% of respondents</i>
Professor/Associate Professor	15	19.4
Senior Lecturer	31	40.3
Lecturer/Assistant Lecturer	31	40.3
Total	77	
Unknown	2	

Table 3: Percentage time spent on work activities

<i>Work activity</i>	<i>Mean %</i>	<i>Std. Dev. %</i>
Administration	19	9
Research and related	28	10
Consulting	12	8
Teaching	41	18

Table 4: Research area of respondents

<i>Research area</i>	<i>In sample</i>	<i>% of respondents</i>
Accounting history	1	1%
Accounting education and profession	31	40%
Auditing	8	10%
Corporate governance	4	5%
Critical, social and environmental	1	1%
Financial accounting and reporting	5	6%
Finance	6	8%
Management accounting	1	1%
Other accounting-related	10	13%
Other business-related	5	6%
Unknown	10	13%

Note: n=77, with some respondents having multiple research interests

Table 5: Age group of respondents

<i>Age group</i>	<i>N=</i>	<i>%</i>
25-35	28	36.4
36-45	24	31.2
46-55	13	16.9
56-65	11	14.3
65+	1	1.3
Total	77	100.0
Unknown	2	

Table 6: Experience of working in an academic environment

<i>Years</i>	<i>N=</i>	<i>%</i>
<5	17	22
5-10	17	22
11-15	21	28
16-20	7	9
21-25	9	12
26-30	4	5
31-35	1	1
36+	1	1
<i>Total</i>	<i>77</i>	<i>100</i>

Table 7: Experience of working in a professional and/or commercial environment

<i>Years</i>	<i>N=</i>	<i>%</i>
0	8	11
1-5	43	57
5-10	11	14
10+	14	18
Unknown	1	
<i>Total</i>	<i>77</i>	<i>100</i>

Table 8: Membership of professional bodies

<i>Body</i>	<i>N=</i>	<i>%</i>
SAICA	47	61
SAIPA	8	10
IIA	7	9
CIMA	5	6
ACCA	1	1
Other	8	10

Table 9: Descriptive statistics and correlation matrix for eight subscales ($n=79$)

Subscale, coefficient alpha	# Items	Mean	Std. Dev.	I	II	III	IV	V	VI	VII
<i>I: Extrinsic rewards of research, $\alpha = .81$</i>	7	3.92	.75							
<i>II: Research promoting critical analysis, $\alpha = .76$</i>	4	3.65	.84	-.07						
<i>III: Research dissonance from curriculum, $\alpha = .75$</i>	5	4.04	.58	.41	-.19					
<i>IV: Tension between research and professional curriculum, $\alpha = .63$</i>	2	3.74	.81	.40	-.14	.50				
<i>V: Research-led teaching, $\alpha = .82$</i>	3	3.15	1.01	.02	.65	-.11	-.09			
<i>VI: Researcher stimulation of ideas, $\alpha = .73$</i>	5	3.43	.77	-.11	.58	-.17	-.15	.38		
<i>VII: Research and teaching: Different attributes, $\alpha = .69$</i>	2	3.65	1.10	.32	-.34	.39	.38	-.39	-.19	
<i>VIII: Students value contact with researchers, $\alpha = .89$</i>	2	2.96	1.00	-.05	.57	-.12	.04	.50	.49	-.11

Note: Standardized means and standard deviation, from 5 = strongly agree to 1 = strongly disagree
 $p < .05, r > .22$; $p < .01, r > .34$

Descriptive statistics and correlation matrix for two higher order factors

Scale (subscales)	Mean	Std Dev	A
A (II, V, VI, VIII)	3.37	0.70	
B (I, III, IV, VII)	3.78	0.60	-.20

Table 10: Summary of measurement results for TRN subscales

<i>Factor label and Item</i>	<i>Factor loadings</i>
Factor I: Extrinsic rewards of research [-ve]	
Research, rather than teaching is rewarded by promotion at my institution	.766
Research is valued more highly at my institution	.677
Teaching is not a significant factor in faculty rewards	.499
Promotion policies fail to recognise good accounting and finance teaching	.689
Faculty who publish research are better rewarded than those who spend their time on teaching	.734
Faculty who seek promotion, publish in academic journals at the expense of other activities	.729
As a result of the demands of research activity, I cannot spend as much time supporting my students	.427
Factor II: Research promoting critical analysis [+ve]	
Integrating research into teaching promotes students' critical enquiry	.820
Using research as part of a holistic approach to learning assists students' critical thinking skills	.704
Research-active academics provide students an exemplar of a questioning approach to learning	.814
Research activity contributes to updating the curriculum	.771
Factor III: Research dissonance from curriculum [-ve]	
Increased specialisation of knowledge means research is remote from what students need to know	.723
Inclusion of an academic's research overloads an already cramped curriculum	.709
Researchers can distort the curriculum with their own research at the expense of subject coverage	.573
Including specialised research leads to lecturers pitching the course too high	.605
Students rarely see staff research as valuable to their own learning	.506
Factor IV: Tension between research and professional curriculum [-ve]	
Accounting profession's influence on the curriculum creates tension if linking research to teaching	.780
Inclusion of research at the expense of professional syllabus coverage leads to gaps in the curriculum	.603
Factor V: Research-led teaching [+ve]	
Teaching staff involved in research are more committed to student learning	.875
Teaching staff who are involved in research are more enthusiastic about their teaching	.798
Research active staff adopt a more holistic and interpretative approach to their teaching	.708
Factor VI: Researcher stimulation of ideas [+ve]	
Teaching can stimulate research	.667
Integrating teaching and research increases research productivity	.648
'Some of my best research ideas have come out in the course of teaching in an area..'	.479
Teaching and research are mutually beneficial	.729
Time devoted to teaching is conducive to research output	.524
Factor VII: Research and teaching: Different attributes [-ve]	
It is unreasonable to expect good teachers to be good researchers and vice-versa	.870
Teaching and research are different roles requiring different qualities	.626
My students consider my course is up-to-date because of my research activity	.862
My students perceive me as enthusiastic about my course because of my research activity	.922
Factor VIII Students value contact with researchers [+ve]	
My students consider my course is up-to-date because of my research activity	.889
My students perceive me as enthusiastic about my course because of my research activity	.895

Table 11: Summary of measurement results for two 'defining' TRN scales

<i>Scale and constituent subscales</i>	<i>Factor loadings</i>
Scale A: Positive nexus	
<i>II: Research promoting critical analysis</i>	.946
<i>V: Research-led teaching</i>	.799
<i>VI: Researcher stimulation of ideas</i>	.811
<i>VIII: Students value contact with researchers</i>	.711
Scale B: Negative nexus	
<i>I: Extrinsic rewards of research</i>	.637
<i>III: Research dissonance from curriculum</i>	.877
<i>IV: Tension between research and professional curriculum</i>	.844
<i>VII: Research and teaching: Different attributes</i>	.721

Goodness of fit statistics for 2 second-order factor, eight first-order factor model

χ^2 (617) = 559.842; $\chi^2/\text{d.f.}$ = 1.414 p < .001; RMSEA = .060 (.048-.071); SRMR = .104.

Table 12: Comparisons among the three-cluster profiles

Clustering variable	Cluster 1 (56%) Engagement		Cluster 2 (23%) Teaching-Research incongruity		Cluster 3 (21%) Teaching- Research connexion		F, (2, 249). p	Partial η^2	Inequality
	Mean	St. Dev	Mean	St. Dev	Mean	St. Dev			
Panel A: Positive nexus									
II Research promoting critical analysis	4.13	1.00	1.67	1.33	3.92	1.52	36.022, <.001	0.13	2 > 1, 3
V Research-led teaching	3.58	0.75	2.33	1.12	2.85	0.87	46.194, <.001	0.28	2 > 1, 3; 3 > 1
VI Researcher stimulation of ideas	3.77	0.55	2.58	0.70	3.47	0.63	14.664, <.001	0.11	2 > 1, 3
VIII Students value contact with researchers	3.23	0.98	2.22	0.69	2.97	1.04	40.255, <.001	0.25	2 > 1,3
Panel B: Negative nexus									
I Extrinsic rewards of research	4.08	0.44	4.56	0.44	2.84	0.55	276.216, <.001	0.67	1, 3 > 2; 1 > 3
III Research dissonance from the curriculum	4.01	0.53	4.37	0.52	2.83	0.69	55.221, <.001	0.31	1, 3 > 2; 1 > 3
IV Tension: research and professional curriculum	3.76	0.75	3.97	0.78	3.41	0.99	5.349, .013	0.04	3 > 2
VII Research and teaching: Different attributes	3.46	1.20	4.47	0.56	3.72	0.84	24.501, <.001	0.17	1, 3 > 2; 1 > 3

Figure 1: Cluster analytic findings

Appendix – items included in questionnaire and factor to which they relate

Factor	Item
1	Teaching is not a significant factor in faculty rewards and publishing research is the most valued activity
1	Research is valued more highly than teaching at my institution
1	As a result of the demands of research activity, I cannot spend as much time supporting my accounting students as they would like
1	My institution's promotion policies fail to recognise good accounting teaching
1	Accounting faculty who publish research are rewarded more than peers who spend most of their time on teaching.
1	Accounting faculty who seek promotion, publish in academic journals at the expense of other academic duties.
1	Research, rather than teaching, is rewarded in the promotions system at my institution.
2	Accounting research activity contributes to updating the curriculum
2	Integrating accounting research into teaching promotes critical enquiry on the part of students
2	Research-active academics provide accounting students with an exemplar of a questioning and research approach to learning
2	Using research as part of a holistic approach to learning assists in developing accounting students' critical thinking skills
3	Students rarely see staff research as relevant to their own learning
3	Including specialised accounting research in the curriculum leads to lecturers pitching the course too high
3	Accounting researchers can potentially distort the curriculum with their own research, at the expense of providing broad coverage of the subject area.
3	Increased specialisation of knowledge means accounting research is remote from what students need to know, leading researchers to separate their research from their teaching.
3	The inclusion of an academic's accounting research overloads an already cramped accounting curriculum.
4	The influence of the accounting profession on the curriculum to impart professional skills creates a tension when attempting to link research with teaching
4	The inclusion of research at the expense of syllabus coverage demanded by professional bodies leads to content gaps in the professional curriculum
5	Teaching staff who are involved in research are more enthusiastic about their teaching
5	Teaching staff who are involved in research are more committed to student learning
5	Research active faculty adopt a more holistic and interpretative approach to their teaching
6	Time devoted to teaching is conducive to accounting research output
6	Teaching and research are mutually beneficial
6	Teaching accounting can stimulate research in this area.
6	Integrating accounting teaching and research increases the research productivity of the academic.
6	Some of my best research ideas have come out in the course of teaching in an area that is not necessarily something I do a lot in, but I'm reading it up for my teaching and think 'oh that would be really interesting, why don't we do that?'
7	Accounting teaching and research are different roles requiring different personal qualities
7	It is unreasonable to expect good teachers to be good researchers, and vice-versa
8	My students consider the courses I deliver to be up to date because of my research activity
8	My students perceive me as enthusiastic about the course material because of my research activity
9	<i>Students undertaking professionally-oriented courses should focus their learning on 'how to do the job'</i>
9	<i>Accounting students need professional skills, not research skills</i>

Note: Items in *italics* excluded from analysis after factor analysis