

The Efficacy of Professional Education Programmes in Developing Competencies: A Critical Assessment of the PAS Programme of the Institute of Chartered Accountants of New Zealand

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This paper reports on a study of the efficacy of the Institute of Chartered Accountants of New Zealand's (the Institute) Professional Accounting School (PAS) programme in developing a set of competencies in candidates. The study surveyed Institute candidates' perceptions of their competence levels for 16 specified skills at the commencement and conclusion of the 1999 PAS programme. The findings indicate that candidates perceived their levels of competence, for both cognitive and behavioural skills, to have been significantly improved by the PAS programme. Tests of two secondary hypotheses in the study indicate certain gender- and firm-based differences in the perceived level of competence of candidates. The results of the study provide the Institute with feedback on the PAS programme and facilitate the further development of the programme. Other professional accounting bodies may consider replicating this study using data collected on similar programmes. The results of such studies may then be compared to enhance the existing knowledge of competency development in professional accounting education.

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(1) INTRODUCTION

Over the last fifteen years, there have been increasing debates about the type and levels of competencies required for entry to the accounting profession. While most of these debates originated in the United States of America (USA) (AAA 1986; Perspectives 1989; AECC 1990; AICPA 1999; IFAC 1998; IFAC 2001), similar discussions and reviews have also taken place in New Zealand and Australia (Marrian and Lothian 1992; Birkett 1993). As a consequence of this review process, a new method of examining and admitting prospective chartered accountants to the profession in New Zealand was instituted in 1998. Known as the Professional Accounting School/Professional Competence Examination 2 (PAS/PCE 2), the programme was designed to infuse candidates with certain competencies identified as essential for chartered accountants. This paper describes the background to, and provides an overview of the development of, the programme and assesses the efficacy of the PAS component of the programme in developing the specified competencies in candidates. In particular, the study measures, and reports on candidates' perceptions about the perceived development of their competencies by the PAS programme.

Data for the study were collected by means of questionnaires administered to the candidates at the commencement and conclusion of the PAS programme. Nonparametric tests were applied to test the hypotheses developed for the study. The results of the analysis indicate that candidates perceive significant improvements in their levels of competence as a result of the PAS programme. These improvements are similarly observable across cognitive and behavioural classes of skills.

Statistically significant differences were also found in the post-PAS levels of competence of male and female candidates, mainly in the cognitive skills area, with male candidates perceiving themselves to be better-skilled than their female counterparts. Differences in the post-PAS levels of competence of Big 5 candidates, on the one hand, and their non-Big 5 counterparts, on the other, were not strongly visible in this study.

By providing information about the perceived efficacy of the PAS in developing candidates' competencies, these findings are of importance to those involved in post-graduate professional accounting development in

New Zealand, particularly with respect to the ongoing development of the PAS programme, and in other countries. Furthermore, the findings are of use to other institutions wishing to implement competency-based techniques as part of their accounting admission requirements.

The rest of this paper is structured as follows. The background to the study is described next, along with a review of relevant literature on the subject. This is followed by a presentation of the research design and methodology. The results of the study are then reported and discussed, followed by a summary and conclusion. Suggestions for further research are included in the summary and conclusion.

(2) BACKGROUND AND LITERATURE REVIEW

In 1998, a new professional examination system for accountants was introduced in New Zealand. Known as PAS/PCE 2, the new system was the latest stage in the ongoing development of the accounting examination system in New Zealand. PAS/PCE 2 replaced the Final Qualifying Examination (FQE), which had been introduced in 1989. The FQE, in itself, had been subject to numerous changes since its inception (Hay and Maltby, 1997).

Prior to the introduction of the FQE, a university graduate with a recognised degree (or equivalent), that met certain requirements, and three years of acceptable professional experience, could become an Associate Chartered Accountant (ACA) without further examination. The introduction of the FQE in 1989 was in response to a call for a uniform final examination for admission to the accounting profession (NZSA, 1984). The 1984 study, known as the *Horizon 2000* study, "recommended a uniform final examination in order to provide a "final check" on the quality of new accountants, and make New Zealand admission requirements more consistent with those of other countries" (Hay and Maltby, 1997, p. 171).

The FQE, when compared with admission examinations in other countries, had certain unique features. One of these was that it did not re-examine the technical knowledge previously acquired through university study, but rather emphasised "the conceptual basis of technical

pronouncements and controversial issues relating to them" (Hay and Maltby, 1997, p. 170). The FQE thus represented an approach to teaching that would "reduce the attention given to the procedural complexities of accounting" (Needles and Powers, 1990), which could be acquired in practice as the need arose.

The process of focusing on conceptual and controversial issues was encouraged and facilitated by the FQE's two 3-hour examinations being restricted open book in nature¹. This new direction of accounting education in New Zealand was described by Walker and McClelland (1994) as a model consistent with many changes called for in the USA, saying that, partly because of the FQE:

"The accounting education programs in New Zealand emphasize the development of conceptual understanding, which in turn fosters the life-long learning process" (p. 346).

In 1992, the New Zealand Society of Accountants² (NZSA) commissioned a review of its Admissions Policy, including the FQE. The review was critical of the admission requirements, concluding that they represented "a series of soft, undemanding hurdles" and that:

"The FQE falls well short of the aims and standards required by both society and the international professional accounting community, and if allowed to continue in its present form will condemn the New Zealand Society [of Accountants] to the second division of professional accounting bodies" (Marrian and Lothian, 1992, p. 26).

The Marrian and Lothian report (1992) recommended that more technical material be included in the FQE and that the examination should test professional competence. The NZSA, after careful consideration of the report, and appropriate consultation, developed a new Admission Policy (NZSA, 1994a). The Policy created an additional professional level, a chartered accountant (CA), to be distinct from that of an ACA. To attain the level of a CA would require passing a further professional examination, to be known as Professional Competence Examination 2 (PCE 2). The existing FQE examination, modified appropriately to take account of the Marrian and Lothian 1992 report, was to be retained and renamed Professional Competence 1 (PCE 1³). By providing for two levels of chartered accountants, the NZSA (1994a) envisaged accommodating both those not actively involved in providing accounting services (ACAs),

as well as those involved in providing accounting services and who would require international recognition (CAs).

The original PCE 2¹ comprised of two four-hour examinations, covering five areas of advanced technical knowledge, namely, financial accounting, management accounting, auditing, taxation and finance. The emphasis in the examinations, however, would not be on technical content, but on the acquisition of certain specified competencies, that is, "on testing analytical and interpretive skills in a context similar to the "real world" working environment, and the application of theoretical knowledge and professional attitudes to practical problems likely to be encountered in the business environment" (NZSA, 1994b, cited in Hay and Maltby, 1997, p. 173). Candidates would only be eligible to sit PCE 2, however, if they had previously attended and passed a professional accounting school (PAS), which would develop and assess certain specified competencies, deemed to be required for admission to the profession.

TABLE 1
Professional Competence Programme – Development and Assessment

	Professional Competence Examination 1	Professional Accounting School/ Professional Competence Examination 2
DEVELOPMENT OF COMPETENCIES <i>Resources</i>	<ul style="list-style-type: none"> • Materials • Ethics workbook • Ethics CD ROM 	<ul style="list-style-type: none"> • Candidate study pack for each of three modules • Workshop materials and activities, e.g. cases
DEVELOPMENT OF COMPETENCIES <i>Process</i>	<ul style="list-style-type: none"> • Ethics workshop (4 hours) 	<ul style="list-style-type: none"> • Six workshops (10 hours each, two per module)
ASSESSMENT OF COMPETENCIES	<ul style="list-style-type: none"> • Ethics workshop(25%) • Two hour exam (75%) 	<ul style="list-style-type: none"> • Workshop assessments (60% grade average required to be eligible to sit PCE 2) • Two case study exams (50% each)

Graduates wishing to qualify as chartered accountants are also required to complete a practical experience component, with an approved training organisation, to facilitate the further development of competencies in the work place. Certification as a chartered accountant in New Zealand thus

complies with the three components of the qualifying process identified by IEG # 9 (IFAC 1996) of academic study, practical experience and tests of professional competence, via PAS/PCE 2. The resources and processes for the development of professional competencies and the methodology of assessing these competencies are summarised in Table 1.

The decision to implement a competency-based approach for the New Zealand professional admission requirements continued a trend started in the United States of America (USA) by the Bedford Report (American Accounting Association (AAA) 1986). The report considered numerous aspects of accounting and accounting education in the USA, concluding that major changes were needed in accounting education to prepare accountants for an expanding and changing profession. Key educational recommendations in the report included accountants acquiring, maintaining and continuously enhancing higher levels of competence to meet increasingly diverse demands for services, and pursuing lifelong learning as a means of adjusting to change (AAA, 1986). With respect to the teaching process, the report noted that "many accounting graduates do not know how to communicate, cannot reason logically, and have limited problem-solving ability" (AAA, 1986, p. 177). The report attributes these deficiencies primarily to the then predominant teaching method of lectures together with routine-problem solving, neither of which is conducive to creative thinking. The report recommends that in order to develop students' abilities to use knowledge analytically and in creative and innovative ways, teaching methods need to be supplemented by active learning techniques, such as discussions of concepts and the use of cases.

The recommendations of the Bedford Report were given added impetus by the release by the Big 8^s accounting firms of a White Paper titled "Perspectives on Education: Capabilities for Success in the Accounting Profession" (Perspectives, 1989). Supporting the main theme of the Bedford Report (AAA 1986), the White Paper stated that "education for the accounting profession must produce graduates who have a broad array of skills and knowledge" (Perspectives, 1989, p. 5). The key skills enumerated by the firms were: (1) the ability to use critical thinking and creative problem-solving techniques on unstructured problems in diverse and unfamiliar settings, (2) an understanding of interpersonal and group dynamics, (3) the ability to communicate, both orally and in writing, and (4) the facility to manage change.

The academic community responded to the Bedford Committee Report and the Big 8 White Paper by establishing the Accounting Education Change Commission (AECC, 1990). The AECC specified that "accounting programs should prepare students to *become* professional accountants, not to *be* professional accountants at the time of entry to the profession" (AECC, 1990, p. 307). Focusing on "life-long learning", the AECC states that the base on which this is built "has three components: skills, knowledge, and professional orientation" (AECC, 1990, p. 307). The AECC specifies three categories of skills required by successful accounting graduates, namely, communication⁶, intellectual⁷ and interpersonal⁸ skills. To enable students to acquire these skills and the strategies necessary to become life-long learners, the AECC encourages the use of appropriate instructional methods, stating that "students must become active participants in the learning process, not passive recipients of information. They should identify and solve unstructured problems.... Working in groups should be encouraged" (AECC, 1990, p. 309). Needles and Powers (1990) endorse the need to adopt teaching approaches such as "the use of small group activities, case analyses, written assignments, class presentations..." (p. 264) to achieve these outcomes.

More recently, the American Institute of Certified Public Accountants (AICPA) *Core Competency Framework for Entry into the Accounting Profession* (AICPA 1999) restated, as well as expanded⁹ the list of competencies required for professional accountants that were identified by the Big 8 (Perspectives, 1989) and the AECC (1990). The *Framework* also specifies additional teaching strategies and classroom techniques for the attainment of the competencies. Such strategies and techniques include problem-based learning, by the use of cases, and group learning, by the use of teamwork and cooperative learning (AICPA, 1999). Further impetus to the development of competence-based approaches to the education and training of professional accountants has been provided by the recent release of an exposure draft discussion document by the IFAC (2001).

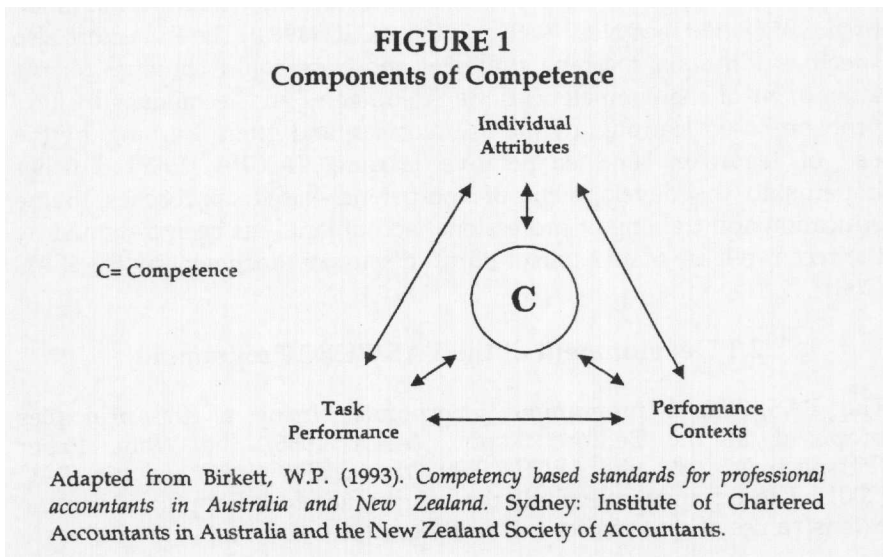
2.1 Development of the PAS/PCE 2 Programme

The PAS/PCE 2 programme incorporates many of the principles proposed in the Bedford Report (AAA 1986), the White Paper (Perspectives 1989), the AECC (1990), the AICPA (1999) and the IFAC (2001). These principles include the competency-based approach and the extensive use of case studies and study groups.

The original specification by Advanced Business Education Ltd (ABEL)¹⁰ to UNITEC for the development of the PAS programme comprised the development of three modules¹¹, namely:

- Business Environment (covering strategy and aspects of the external business environment, which provide the context in which accounting decisions are made),
- Compliance (covering external reporting, auditing and taxation), and
- Financial Management (covering management accounting, as well as financial management).

The focus of the programme was to use the resource materials as the context within which to develop the competencies specified by ABEL, rather than to develop a 'stand alone' body of knowledge. The identification and incorporation of competencies into the PAS/PCE 2 programme is based largely on a study by Birkett (1993), which was commissioned by the Institutes of Chartered Accountants in Australia and New Zealand. Birkett (1993) states that competency "relates to the way in which individual attributes (knowledge, skills and attitudes) are drawn on in performing tasks in particular work contexts (job performance).¹² Neither contextual task performance nor individual attributes constitute competence; it is the relation between the two that does" (Birkett, 1993, p. 4). This link is shown diagrammatically by Birkett in Figure 1:



ENDNOTES

- ¹ Candidates were permitted to refer to the Institute's Member's Handbook, containing Financial Reporting Standards and the Institute's Code of Ethics.
- ² The NZSA was renamed the Institute of Chartered Accountants of New Zealand (the Institute) in 1996.
- ³ PCE 1 would focus primarily on ethics and the authority and structure of the profession.
- ⁴ The PCE 2 examination format was changed in 2001 to incorporate one six-hour examination.
- ⁵ The Big 8 firms have since been reduced to the Big 5 (most recently Big 4) as a result of mergers.
- ⁶ Examples of communication skills include "the ability to present, discuss, and defend views effectively through formal and informal, written and spoken language" (AECC, 1990, p. 311).
- ⁷ Examples of intellectual skills include:
- "capacities for inquiry, abstract logical thinking, inductive and deductive reasoning and critical analysis", and
 - ability to identify and solve unstructured problems in unfamiliar settings and to apply problem-solving skills in a consultative process" (AECC, 1990, p. 311).
- ⁸ Examples of interpersonal skills include:
- "ability to work with others, particularly in groups, to influence them, to lead them, to organize and delegate tasks, to motivate and develop people, and to withstand and resolve conflict", and
 - "ability to interact with culturally and intellectually diverse people" (AECC, 1990, p. 311).
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- ⁹ Additional competencies identified include "professional demeanour, interaction and leadership" (AICPA 1999).
- ¹⁰ The Professional Competence Programme is administered by Advanced Business Education Ltd (ABEL), a wholly owned subsidiary of the Institute. The resource materials for the PAS/PCE 2 programme are prepared by UNITEC, New Zealand.
- ¹¹ The modules were completed in sequence over three ten-week periods between February and October. For each module, candidates attended two workshops – one at the beginning and one at the end of each ten-week period. On achieving a 60% grade average or better in PAS, successful candidates sat the two case study-

based examinations, which comprise PCE 2. A candidate with a grade average of 60% or greater in PCE 2 passes PAS/PCE 2.

¹² Birkett's (1993) definition is similar to that of the IFAC (1993), namely, that "Competency is being able to perform a work role to a defined standard with reference to real working environments" (p. 13). Other possible definitions of competency relevant to this study are those by Spencer and Spencer (1993) and IFAC (2001).

¹³ Also called "capabilities" in the IFAC (2001) exposure draft discussion paper.

¹⁴ It is important to note that, in designing the PAS programme, an underlying knowledge of existing discipline-specific content from prior academic study is assumed. The PAS programme does not purport to develop a higher level of content knowledge, but rather to develop certain, specified competencies. Candidates who have developed content-specific specializations subsequent to their academic studies are thus deemed to be neither at an advantage nor at a disadvantage in the PAS programme.

¹⁵ This competency is covered in PCE 1.

¹⁶ Ethical awareness subsequently features prominently as a core competency in AICPA (1999) and IFAC (1996 and 2001) publications.

¹⁷ As this study focused solely on the PAS programme, candidates' perceptions of the PCE 2 examination were not investigated.

¹⁸ "Big 5" firms are referred to as "Top five" chartered accountancy firms in the questionnaire. The "non-Big 5" category includes candidates from all other organisations.

¹⁹ With studies of this nature, there is always the potential for overestimation by the research subjects in their evaluations; candidates may well have been lenient in their assessment of the efficacy of the PAS programme. This is a potential limitation of the methodological approach used in this study.

²⁰ The last two pages of the post-PAS questionnaire, which constitute the main difference from the Pre-PAS one, are included as Appendix 2.

²¹ The organising of the competencies into cognitive and behavioural skills for analytical purposes is based on Birkett's (1993) classification. Note that this classification is not necessarily mutually-exclusive, as some of the skills, such as 'negotiation', may have both a cognitive and behavioural component.

²² The high ranking for "integrate knowledge" could be attributable to the fact that knowledge integration, being a core competency of the PAS programme, is

extensively incorporated into numerous workshop activities. This ranking provides an interesting contrast to candidates' low ranking of knowledge integration as important to a qualified chartered accountant.

- ²³ This result is not surprising, as "ethical awareness", although listed as a core competency for PAS/PCE 2, is emphasized more in PCE 1. "Ethical awareness" is integrated into PAS activities, but to a limited extent.

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Competencies,¹³ or individual attributes, as described by Birkett (1993), consist of:

- cognitive skills, knowledge and abilities, which are a function of the job requirements, and
- behavioural skills or personal characteristics (principles, attitudes, values and motives) which are a function of an individual's personality.

Birkett (1993) specifies that successful workplace performance will require the utilisation of both cognitive and behavioural skills. He developed a taxonomy of cognitive and behavioural skills. Cognitive skills comprise knowledge application skills (competent usage of specialised knowledge), analytical/constructive skills (problem identification and the development of solutions), and appreciative skills (evaluating complicated situations and making creative and complex judgements). Behavioural skills comprise personal skills (how one responds to and handles various situations), interpersonal skills (securing outcomes through interpersonal relationships), and organisational skills (securing outcomes through organisational networks).

Birkett (1993) orders each category of skills in terms of complexity. The skills are considered to be cumulative in that they would build upon each other. Birkett also recognises that skills development occurs over a period of time, with appreciative and organisational skills developed at an advanced stage of a professional career.

Using his taxonomy, Birkett (1993) carried out a functional analysis (IFAC, 2001), identifying individual attributes (competencies) for five functional areas (auditing, external reporting, insolvency and reconstructions, management accounting, taxation and treasury) and for three levels of practitioner (competent, proficient and expert). Birkett's (1993) analysis did not, however, identify attributes common to all five functional areas. In developing the PAS/PCE 2 programme, a generic approach was taken by ABEL and UNITEC in terms of competency development, rather than one based on functional areas. This approach recognises the diversity of accounting roles of the candidates, their possible areas of post-qualification specialisation¹⁴ and the range in size of the organisations in which they are employed (International Federation of Accountants (IFAC, 1998). The generic competencies, which ABEL decided to use as the basis for competency development in the

PAS/PCE 2 programme, are listed in Table 2.

TABLE 2
PAS/PCE 2 Competencies

Identify and solve business problems in the unstructured business environment
<ul style="list-style-type: none"> • Conceptualise a problem • Solve problems – to identify, analyse and resolve issues • Demonstrate a strategic perspective – see the macro as well as the micro perspective
Communicate orally and in writing
<ul style="list-style-type: none"> • Communicate effectively and appropriately in writing • Express ideas articulately in an oral presentation and in a manner appropriate to the situation
Demonstrate ethical awareness
Research, analyse and synthesise information
<ul style="list-style-type: none"> • Ability to research and analyse data
Work in a team
<ul style="list-style-type: none"> • Work effectively as a team member • Present a viewpoint, justify it and influence others' thinking • Listen and empathise – put yourself in another's shoes • Negotiate • Resolve conflicts • Undertake a leadership role
Integrate accounting sub-discipline knowledge
<ul style="list-style-type: none"> • Identifying what is important – to prioritise • Integrate knowledge
Understand other business disciplines within an organisational context
<ul style="list-style-type: none"> • Evaluate situations from more than one perspective

It is noticeable from Table 2 that the competencies incorporated into the PAS/PCE 2 programme, with the exception of "Demonstrate ethical awareness"¹⁵, closely approximate the competencies specified by the Big 8 (Perspectives 1989) and AECC (1990)¹⁶. The PAS programme employs two main pedagogical techniques, namely, study groups and case-based learning, to facilitate the development of the competencies. These teaching techniques, which are frequently used in conjunction with each other, are strongly recommended by both the AECC (1990) and the AICPA (1999) and are extensively documented in the literature with respect to their ability to develop students' competencies (Weil *et al.* 2001;

Bonner 1999; Ravenscroft *et al.* 1999; Weil *et al.* 1999; Caldwell *et al.* 1996; Saudagaran 1996; Hite 1996; Knechel 1992; Campbell and Lewis 1991).

(3) RESEARCH DESIGN AND METHODOLOGY

The main aim of the study is to determine the efficacy of the PAS programme¹⁷ in developing specified competencies in Institute candidates. Secondary to this main objective, the study is designed to observe and report on:

1. possible practice firm size-based (Big 5 versus non-Big 5) differentials in the candidates' perceptions of improvement in levels of competence; and
2. possible gender-based differentials in the candidates' perceptions of improvements in levels of competence.

To achieve these aims, three hypotheses were developed.

3.1 Hypotheses Development and Statement

Hypothesis 1: Assessment of programme outcomes

The assessment of the impact of PAS programme on candidates' competency level is the primary aim of this study. The programme's purpose is stated as the development of "higher level professional competencies in order that those admitted to the College [of Chartered Accountants] have an enhanced ability to address complex accounting and financial management issues and form judgements relating to those, given a range of business contexts", (ABEL, 1999, p. 1). McCourt-Larres and Oyelere (1999) and Albrecht (1995) provide evidence of a positive impact of carefully-designed training programmes on the development of certain skills in accountants and accounting students. Each training programme, or teaching technique is, however, unique and programme-specific reviews are required before conclusions can be drawn about a particular programme's efficacy. For the purpose of assessing the impact of the Institute's PAS programme on candidates' competency development, a null hypothesis is stated as follows:

H₀1: There were no improvements in candidates' perceived level of competence after undergoing the PAS programme.

The PAS programme is designed to help develop a number of individual competencies, which, according to Birkett (1993), can be classified broadly into cognitive and behavioural skills. The possibility exists that these two classes of skills are not developed to equal and similar extents during the programme. To observe the extent of development of each of these two classes of skills, subsidiary hypotheses are stated, in their null forms, as:

- H₀1a: Candidates' perceived cognitive skills did not improve significantly as a result of the PAS programme.
 H₀1b: Candidates' perceived behavioural skills did not improve significantly as a result of the PAS programme.

Hypothesis 2: Improvements in candidates' levels of competence - the "Big 5" versus others

One of the secondary aims of this study is to assess possible differences in the impact of the PAS programme on candidates from the "Big 5" practising firms on the one hand, and those from all other (non-Big 5) organisations¹⁸, on the other. Arnold and Mackenzie Davey (1994) report that the most frequently mentioned reasons for graduates selecting a particular employer are "the long-term prospects and the training offered". The PAS programme, however, is designed for candidates irrespective of their employment affiliation and does not provide for firm-specific factors, such as entry barriers, which are likely to be higher for Big 5 firms than for non-Big 5. Hence, practice firm-based differentials in levels of improvement are not expected in this study. To test this proposition, a null hypothesis is stated as:

- H₀2: There were no differences in the perceived levels of competence of candidates from Big 5 firms and those from non-Big 5 firms after the PAS programme.

Similar to the main hypothesis of this study (H₀1), H₀2 is sub-categorised to test for possible differences between the two subgroups of candidates with specific reference to cognitive skills (H₀2a) and behavioural skills (H₀2b). These subsidiary hypotheses are stated as follows:

- H₀2a: Big 5 candidates' perceived cognitive skills are not significantly different from those of non-Big 5 candidates after the PAS programme.

H₀2b: Big 5 candidates' perceived behavioural skills are not significantly different from those of non-Big 5 candidates after the PAS programme.

Hypothesis 3: Gender-based differences in candidates' levels of competence

Possible gender-based differences in candidates' levels of competence are also investigated in this study. Studies of self-assessment on a gender basis indicate that males tend to over-rate their performance, whereas females' self-assessments are close to the assessment of employers (Rainsbury, Hodges, Sutherland and Barrow, 1998; Strebler, 1997) and superiors (Stybel and Peabody, 1998). Similarly, in another perception-based study, Weil *et al.* (2001) report that males perceive that case studies facilitate the development of critical thinking ability and pertinent questioning more than do females. It could be suggested from the findings of these studies that females would rate their performance lower than males. Not all research findings, however, are consistent with this hypothesis (see, for example, Daley and Naff, 1998). Given these conflicting findings, this study examines this issue further by observing possible differences in the candidates' perceived levels of competency on the basis of gender. The relevant null hypothesis is stated as follows:

H₀3: There were no differences in the perceived levels of competence of male and female candidates after the PAS programme.

H₀3 is also sub-categorised to investigate possible differences in levels of cognitive (H₀3a) and behavioural (H₀3b) skills of male and female candidates. The two sub-hypotheses are stated as follows:

H₀3a: Female candidates' perceived cognitive skills were not significantly different from those of male candidates after the PAS programme.

H₀3b: Female candidates' perceived behavioural skills were not significantly different from those of male candidates after the PAS programme.

3.2 Data Collection

Data were collected by means of a survey questionnaire administered twice to all candidates enrolled in the PAS/PCE 2 programme in 1999.

The candidates were initially surveyed at the first workshop, which was held in the second week of the programme, during February. A similar survey was administered at the end of PAS, at the sixth workshop, held about three weeks before the PCE 2 examination in October. On both occasions, the questionnaire was completed as part of a workshop activity in which candidates focused on their personal development.

The questionnaire survey at the beginning of the PAS programme (the pre-PAS instrument - Appendix 1) consists of 9 questions. The first 6 questions collected details of candidates' personal profiles, such as age, gender and work experience. Question 7 questioned candidates on their perception of the importance of each of the skills and competencies identified in this study. Candidates were required to indicate the level of importance for a qualified chartered accountant of each skill on a Likert-like scale of 1 (not important) to 5 (important). Candidates were also asked to identify any other competency that they considered to be important, but which was excluded from the list (Question 8). Question 9 was designed to collect data on the candidates' perception of their level of competence in each of the listed skills *prior* to completing the PAS programme. A Likert-like scale was again used, candidates being required to choose a response from 1 (I do not meet the competence requirement) to 5 (I significantly exceed the competency requirement).

With the exception of Question 9, which required candidates to rate their perceived level of competency *after* completing the PAS programme¹⁹, the post-PAS survey instrument was similar to the pre-PAS questionnaire. Candidates were also asked to assess the contributions made by the PAS programme to the development of the listed skills (Question 11) and which of the two elements of PAS (Workshops or Candidates' study pack) contributed more to their development of those skills (Question 10).²⁰

TABLE 3
Profile of Respondents

	Pre-PAS	Post-PAS
Gender: male	52.8% (216)	53.3% (244)
Gender: female	47.2% (193)	46.7% (212)
Average age	25 years	25.6 years
Employed by 'Big 5'	212 (51.8%)	227 (49.8%)
Total responses	409	456
Total enrolled	478	478

A total of 409 candidates completed the pre-PAS questionnaire, while 456 completed the post-PAS one. This represents a usable response rate of 85.6 per cent (Pre-PAS) and 95.4 per cent (Post-PAS), respectively, relative to the number of candidates (478) enrolled for the 1999 programme. The respondents' profile is presented in Table 3.

About 53 per cent of the respondents in both surveys are male, compared to 47 per cent who are female. Big 5 practice firms employed about 52 per cent of the respondents to the pre-PAS questionnaire (post-PAS 50%). The average age of respondents to the pre-PAS survey was 25 years (post-PAS = 25.6 years).

3.3 Data Analysis

Given the categorical nature of the data collected for this study, nonparametric statistical techniques were considered the most appropriate (Siegel and Castellan, 1988) and were employed for analysing the data. For each competency²¹, the mean rating by candidates of the competency's perceived importance for a chartered accountant was determined. These mean ratings, both Pre- and Post-PAS, together with the ranking of each competency, are presented in Table 4 (Panel A).

The mean of candidates' perceived level of their competence for each of the specified competencies was also determined for pre-PAS and post-PAS responses. These are reported in Panel B of Table 4. The same statistics are reported in Panels C and D of Table 4, on the basis of Big 5 versus non-Big 5 organisations' and gender classifications respectively.

The *Mann-Whitney U test*, a nonparametric version of the independent sample *t-test*, was employed to test the hypotheses in this study. The results of the test are reported in Tables 5 to 7.

(4) DISCUSSION OF RESULTS

As a prelude to the substantive issues examined in this study, the survey required candidates to indicate how important they feel the 16 skills and competencies examined in the study are to a chartered accountant. Table 4 (Panel A) presents an analysis of the candidates' pre-PAS and post-PAS responses.

TABLE 4
Candidates' Perceived Importance and Ranking of Competencies

Competency	Pre-PAS			Post-PAS		
	Mean importance *	Ranking	Standard Deviation	Mean importance *	Ranking	Standard Deviation
Cognitive skills						
Identify a problem	4.42	5	.725	4.47	6	.625
Solve a problem	4.45	4	.798	4.52	3	.646
Analyse a problem	4.48	3	.835	4.52	2	.636
Research skills	4.56	2	.729	4.58	1	.635
Present and justify a viewpoint	4.32	9	.993	4.45	7	.752
Identify what is important	4.41	6	.851	4.26	10	.789
Integrate knowledge	3.97	16	.888	4.01	16	.765
Evaluate a situation from different perspectives	4.33	8	.754	4.27	9	.732
Behavioural skills						
Communicate in writing	4.09	12	.781	4.15	12	.755
Communicate verbally	4.09	13	.823	4.20	11	.747
Ethical awareness	3.99	14	.859	4.10	14	.763
Work effectively as a team member	3.98	15	.915	4.02	15	.813
Listen & empathise	4.14	11	.850	4.11	13	.756
Negotiate	4.57	1	.650	4.50	4	.646
Resolve conflicts	4.37	7	.882	4.48	5	.686
Undertake a leadership role	4.26	10	.832	4.32	8	.730

TABLE 4 – continued

Competency	Pre-PAS		Post-PAS	
	Mean**	Standard Deviation	Mean**	Standard Deviation
Cognitive skills				
Identify a problem	3.06	.771	3.65	.595
Solve a problem	3.15	.819	3.69	.617
Analyse a problem	3.06	1.799	3.56	.736
Research skills	3.24	.844	3.72	.732
Present and justify a viewpoint	2.83	.960	3.61	.812
Identify what is important	3.44	.868	3.77	.741
Integrate knowledge	3.07	.820	3.57	.723
Evaluate a situation from different perspectives	3.55	.791	4.02	.709
Behavioural skills				
Communicate in writing	3.05	.902	3.69	.744
Communicate verbally	3.31	.883	3.79	.714
Ethical awareness	2.93	.897	3.48	.764
Work effectively as a team member	2.89	.884	3.46	.749
Listen & empathise	2.97	.957	3.63	.789
Negotiate	3.36	.876	3.87	.680
Resolve conflicts	3.05	.842	3.72	.673
Undertake a leadership role	3.01	.825	3.68	.657

* On a Likert-like scale of 1 to 5, where 1 = not important and 5 = important.

** On a Likert-like scale of 1 to 5, where 1 = do not meet requirement and 5 = significantly exceed requirement.

TABLE 4 – continued

Competency	Big 5				Non-Big 5				
	Pre-PAS		Post-PAS		Pre-PAS		Post-PAS		
	Mean**	S.D	Mean**	S.D.	Mean**	S.D	Mean**	S.D.	
Panel C: Candidates' perceived pre- and post-PAS levels of competence: Big 5 versus non-Big 5 candidates									
Cognitive skills									
Identify a problem	3.08	.736	3.68	.578	3.03	.810	3.63	.613	
Solve a problem	3.14	.827	3.74	.610	3.17	.815	3.65	.622	
Analyse a problem	3.12	2.328	3.53	.748	2.99	.947	3.60	.725	
Research skills	3.26	.805	3.71	.695	3.22	.888	3.74	.762	
Present and justify a viewpoint	2.91	.919	3.72	.776	2.75	1.000	3.52	.832	
Identify what is important	3.52	.783	3.70	.740	3.36	.942	3.85	.738	
Integrate knowledge	3.11	.776	3.65	.683	3.03	.868	3.50	.754	
Evaluate a situation from different perspectives	3.58	.742	4.04	.755	3.52	.844	4.00	.661	
Behavioural skills									
Communicate in writing	3.08	.888	3.73	.714	3.02	.920	3.65	.774	
Communicate verbally	3.33	.830	3.78	.733	3.29	.940	3.81	.696	
Ethical awareness	2.99	.856	3.48	.754	2.86	.939	3.49	.777	
Work effectively as a team member	2.91	.838	3.47	.754	2.87	.935	3.46	.747	
Listen & empathise	3.06	.969	3.71	.749	2.88	.939	3.55	.814	
Negotiate	3.37	.832	3.85	.641	3.35	.925	3.89	.718	
Resolve conflicts	3.06	.805	3.71	.660	3.05	.885	3.73	.687	
Undertake a leadership role	3.06	.811	3.64	.660	2.97	.841	3.73	.654	

TABLE 4 – continued

Competency	Female						Male					
	Pre-PAS		Post-PAS		Pre-PAS		Post-PAS		Pre-PAS		Post-PAS	
	Mean**	S.D.	Mean**	S.D.	Mean**	S.D.	Mean**	S.D.	Mean**	S.D.	Mean**	S.D.
Cognitive skills												
Identify a problem	2.93	.727	3.57	.568	3.17	.791	3.73	.609				
Solve a problem	3.06	.781	3.62	.559	3.24	.845	3.75	.658				
Analyse a problem	3.00	2.413	3.48	.671	3.11	.968	3.63	.783				
Research skills	3.27	.791	3.76	.703	3.21	.890	3.68	.757				
Present and justify a viewpoint	2.74	.929	3.56	.816	2.91	.982	3.66	.808				
Identify what is important	3.54	.779	3.84	.693	3.35	.933	3.72	.778				
Integrate knowledge	3.01	.793	3.56	.654	3.12	.843	3.59	.778				
Evaluate a situation from different perspectives	3.55	.707	3.97	.681	3.55	.861	4.05	.732				
Behavioural skills												
Communicate in writing	2.88	.835	3.56	.730	3.20	.933	3.80	.740				
Communicate verbally	3.34	.809	3.82	.652	3.29	.946	3.77	.764				
Ethical awareness	2.81	.842	3.37	.764	3.03	.935	3.58	.752				
Work effectively as a team member	2.76	.791	3.42	.753	3.01	.945	3.50	.745				
Listen & empathise	2.85	.896	3.52	.829	3.08	.997	3.71	.742				
Negotiate	3.42	.821	3.94	.624	3.31	.921	3.81	.720				
Resolve conflicts	2.96	.782	3.67	.671	3.13	.887	3.76	.674				
Undertake a leadership role	2.93	.796	3.60	.656	3.10	.844	3.76	.650				

* On a Likert-like scale of 1 to 5, where 1 = not important and 5 = important.

** On a Likert-like scale of 1 to 5, where 1 = do not meet requirement and 5 = significantly exceed requirement.

Generally, candidates attach a high level of importance to all of the 16 skills, with perceived pre-PAS mean importance ranging from 3.97 to 4.57 on a Likert-like scale of 1 (not important) to 5 (very important). This range improved slightly (4.01 to 4.58) post-PAS. In both surveys, candidates appear to attach a greater level of importance to cognitive skills, as against behavioural skills, with the exception of negotiation (classified as a behavioural skill), which was ranked highest pre-PAS and fourth highest post-PAS. The high ranking of negotiation skills may be due to negotiation being deemed to comprise elements of both cognitive and behavioural skills. Candidates in both surveys appear to place a lot of emphasis on research skills (a cognitive skill), which were ranked second pre-PAS and first post-PAS. Other cognitive skills that consistently received high ranking were problem analysis, problem solving and problem identification. Knowledge integration, a cognitive skill, was ranked lowest (out of 16) by candidates in both surveys. This is an interesting finding, suggesting perhaps that candidates perceive chartered accountants as working in a specialised environment, in which knowledge integration is not an essential competency for success.

Further, candidates were asked in the pre- and post-PAS surveys to indicate their perceived levels of competence. Preliminary analysis, as presented in Panel B of Table 4, indicates that on a scale of 1 (do not meet requirement) to 5 (significantly exceed requirement), pre-PAS candidates' responses ranged between 2.83 (for present and justify a viewpoint) and 3.55 (evaluate a situation from different perspectives). Of the sixteen competencies, only four received a mean of below 3 out of 5, which is the grade average required to pass PAS. The candidates' responses improved to a range of between 3.46 (work effectively as a team member) and 4.02 (evaluate a situation from different perspective) post-PAS.

Candidates' responses were segregated by firm size and gender. The preliminary results of their perceived pre- and post-PAS levels of competence are respectively presented in Panels C and D of Table 4. Substantive tests were undertaken to test the hypotheses developed for this study. The results of the tests are presented in Tables 5 to 7.

Null hypothesis 1, which anticipated no improvements in the level of competence of candidates after undergoing the PAS programme, is rejected with respect to all of the 16 skills investigated in this study. The results of the test of H_01 (presented in Table 5) indicate that there are statistically significant improvements, at the 1% level, in the perceived

skills of candidates at the end of PAS programme, compared to their perceived levels of competence before commencing the PAS. Candidates believe that they have benefited significantly from undertaking the PAS programme. This applies similarly across the two broad classes of skills (cognitive and behavioural), leading to the rejection of both H_{01a} and H_{01b} as well. Candidates believe that both their cognitive and behavioural skills have improved significantly as a result of the PAS programme.

TABLE 5
Mann-Whitney U Test of Differences in Candidates' Perceived Pre- and Post-PAS Competency Levels

Competency	Mean rank		Corrected for ties	
	Pre-PAS [*]	Post-PAS ^{**}	Z	M-W sig. (p)
Cognitive skills				
Identify a problem	333.79	520.82	-12.082	.000 [*]
Solve a problem	344.85	510.92	-10.713	.000 [*]
Analyse a problem	350.09 [*]	504.32 ^{**}	-9.765	.000 [*]
Research skills	353.09 [*]	502.43	-9.515	.000 [*]
Present and justify a viewpoint	343.07	512.52	-10.660	.000 [*]
Identify what is important	356.59	500.42	-9.200	.000 [*]
Integrate knowledge	331.95	522.47	-12.108	.000 [*]
Evaluate a situation from different perspectives	330.99	523.32	-12.270	.000 [*]
All cognitive skills	303.96	547.51	-14.353	.000[*]
Behavioural skills				
Communicate in writing	360.66 [*]	495.67	-8.565	.000 [*]
Communicate verbally	330.43	523.83	-11.999	.000 [*]
Ethical awareness	384.66	475.30	-5.771	.000 [*]
Work effectively as a team member	359.53	497.79	-9.083	.000 [*]
Listen & empathise	360.99	495.68 ^{**}	-8.585	.000 [*]
Negotiate	355.22	501.64	-9.234	.000 [*]
Resolve conflicts	352.32	504.24	-9.670	.000 [*]
Undertake a leadership role	344.12 [*]	510.44	-10.384	.000 [*]
All behavioural skills	315.97	536.77	-13.012	.000[*]

* Prior to undertaking the PAS programme; unless otherwise stated, n = 409.

** After undertaking the PAS programme; unless otherwise stated, n = 456.

n = 408.

n = 455

^a indicates that differences are significant at the 1% level.

The three skills which candidates perceive to have been improved most by the programme are candidates' ability to "evaluate a situation from different perspectives" (from 3.55 to 4.02), "integrate knowledge"²² (from 3.07 to 3.57) and "identify a problem" (from 3.06 to 3.65), all of which are key skills specified by the AECC (1990) and the AICPA (1999). The smallest improvements were recorded in the development of candidates' level of "ethical awareness"²³ and their ability to "listen and empathise".

It is possible to conclude, from the result of the test of the main hypothesis of this study, that the PAS programme is perceived by candidates as being highly effective in improving their levels of competence of the 16 core skills identified and examined in the study.

4.1 Big 5 versus non-Big 5

A secondary aim of this study is to compare post-PAS levels of perceived competence of candidates from the Big-5 firms with those from non-Big 5 firms. The results of a *MW-U* test (Table 6) indicate differences in 5 of the 16 skills investigated in the study. Big 5 candidates believe they possess greater post-PAS skills in the areas of research, verbal communication and undertaking a leadership role. Their superior verbal communication skills are statistically significantly different from those of non-Big 5 candidates at the 1% level, while their perceived ability to undertake leadership roles and research skills are significantly superior at the 5% level. Non-Big 5 candidates, on the other hand, have greater post-PAS skills in evaluating situations from different perspectives and perceive themselves to be more ethically aware. Some of these differences may be attributable to possible variations in organizational culture and training in a Big 5, as opposed to a non-Big 5, environment. Entry barrier differentials may also account for some of these differences. With regards to the remaining 11 areas of competency, there are no statistically significant differences between Big 5 and non-Big 5 candidates.

The two subsidiary hypotheses (H_{02a} and H_{02b}), which predict no differences in the levels of cognitive and behavioural skills respectively, of Big 5 and Non-Big 5 candidates, cannot be rejected in this study. No significant differences were found between the two groups when the 16 areas of competency were classed and aggregated under these two broad types of skills.

TABLE 6
Mann-Whitney U Test of Firm Size-Based Differences in
Candidates' Perceived Post-PAS Competency Levels

Competency	Mean rank		Corrected for ties	
	Big 5*	Non-Big 5*	Z	M-W sig. (p)
Cognitive skills				
Identify a problem	232.16	224.87	-0.681	.496
Solve a problem	233.91	223.14	-1.004	.315
Analyse a problem	221.83	234.14 ^a	-1.104	.270
Research skills	240.34	216.76	-2.121	.034 ^b
Present and justify a viewpoint	232.27	224.76	-0.668	.504
Identify what is important	224.33	232.63	-0.765	.444
Integrate knowledge	226.08	230.90	-0.438	.661
Evaluate a situation from different perspectives	218.77	238.15	-1.767	.077 ^c
All cognitive skills	229.09	227.91	-0.096	.924
Behavioural skills				
Communicate in writing	224.79	232.18	-0.658	.511
Communicate verbally	245.32	211.83	-2.911	.004 ^a
Ethical awareness	215.04	241.84	-2.366	.018 ^b
Work effectively as a team member	234.18	222.87	-1.043	.297
Listen & empathise	224.59	231.39 ^a	-0.616	.538
Negotiate	225.57	231.40	-0.515	.606
Resolve conflicts	226.97	230.02	-0.271	.786
Undertake a leadership role	240.98	216.13	-2.183	.029 ^b
All behavioural skills	229.32	227.69	-0.133	.894

* Unless otherwise stated, n (Big 5) = 227 and n (Non-Big 5) = 229

n = 228.

a, b and c indicate that differences are significant at 1%, 5% and 10% levels respectively.

4.2 Gender-based Differences

The results of a test of hypothesis 3 (Table 7) reveal statistically significant differences between male and female candidates' perceived levels of competence at the end of the PAS programme. Male candidates perceive themselves to be better skilled than female candidates in eight of the sixteen areas of competence investigated in this study, while female candidates perceive themselves to possess greater competence only in their ability to "identify what is important". This perceived superiority by female candidates is demonstrated at the 10% level of significance.

TABLE 7
Mann-Whitney U Test of Gender-Based Differences in
Candidates' Perceived Post-PAS Competency Levels

Competency	Mean rank		Corrected for ties	
	Female*	Male*	Z	M-W sig. (p)
Cognitive skills				
Identify a problem	209.44	245.06	-3.321	.001*
Solve a problem	216.00	239.36	-2.174	.030 ^b
Analyse a problem	212.86	241.21 ^a	-2.538	.011 ^b
Research skills	221.86	234.27	-1.113	.266
Present and justify a viewpoint	206.93	247.24	-3.576	.000*
Identify what is important	239.38	219.04	1.871	.061 ^c
Integrate knowledge	218.35	237.32	-1.722	.085 ^c
Evaluate a situation from different perspectives	211.31	243.43	2.921	.003*
All cognitive skills	211.01	243.69	-2.651	.008*
Behavioural skills				
Communicate in writing	236.33	221.70	-1.300	.194
Communicate verbally	219.07	236.69	1.528	.126
Ethical awareness	237.21	220.93	-1.434	.152
Work effectively as a team member	219.60	236.24	-1.531	.126
Listen & empathise	230.26 [#]	226.05	-0.380	.704
Negotiate	208.84	245.58	-3.236	.001*
Resolve conflicts	218.93	236.81	-1.587	.113
Undertake a leadership role	211.94	242.89	-2.713	.007*
All behavioural skills	218.17	237.48	-1.566	.117

* Unless otherwise stated, n (female) = 212 and n (male) = 244

n = 243.

n = 211

a, b and c indicate that differences are significant at 1%, 5% and 10% levels respectively.

Areas in which male candidates perceive themselves to be better-skilled than their female counterparts include their ability to "identify a problem", "present and justify a viewpoint", "evaluate a situation from different perspectives", "negotiate" and "undertake a leadership role", the differences being statistically significant at the 1% level. The differences between male and female ability to analyse and solve problems were statistically significant at the 5% level, while male candidates perceive themselves to be more competent at integrating knowledge at the 10% level. The predominantly higher ratings by male

candidates are consistent with some existing literature in this area (Weil *et al.*, 2001; Rainsbury *et al.*, 1998; Strebler, 1997).

Further gender-based analyses reveal that the significant divergence between the perceived levels of competence of male and female candidates is largely restricted to the cognitive skills. The test of subsidiary Hypothesis H_{03a} indicates statistically significant differences in the post-PAS cognitive skills of members of the two genders, with male candidates perceiving themselves to be better skilled at the 1% level of significance. This is in contrast to the results of a test of H_{03b} , where statistically insignificant differences were found in the post-PAS behavioural skills of male and female candidates at the 10% level or greater.

The results of these gender-based analyses have implications for the design of future PAS programmes. Further research, however, is needed to determine the exact nature and causes of these differences.

(5) SUMMARY AND CONCLUSION

This study investigated the efficacy of the Institute's PAS programme in developing and improving a set of competencies in candidates. Candidates' pre-PAS perceptions of their levels of competence in 16 skill areas were assessed and compared to determine the contribution of the PAS programme to their improvement. The 16 competencies were also broadly classified into two classes, cognitive and behavioural, to examine whether improvements, if any, were equal and similar for the two classes of skills. Secondary to the main objective of this study, the post-PAS levels of competence of candidates were also assessed across size of firm (Big 5 versus non-Big 5) and gender.

The results of the study indicate that the PAS programme has greatly improved candidates' perceptions of their competence in the 16 skills investigated in this study. Candidates perceived that both their cognitive and behavioural skills benefited from their participation in the PAS programme. Based on the results of this study, the perceived efficacy of the Institute's programme by candidates is proven, with regards to improving certain important competencies in candidates.

A measure of differences was found in the competence of male and female candidates. These differences were mainly in the area of cognitive skills, with male candidates, in most cases, perceiving themselves to be better skilled than their female counterparts. Comparatively fewer such differences were found between candidates from Big 5 firms compared with those from non-Big 5 organisations.

The benefits of this study are considerable, especially in this period when accounting education is undergoing great changes. For one, the results of the study will provide the Institute with much-needed feedback on the PAS programme. It is gratifying to note that the programme has been perceived as being successful in improving candidates' competency levels. The gap in perception between the genders, and to a lesser extent between Big 5 and non-Big 5 candidates, will, nonetheless, need to be addressed. It is, however, possible that the noted gaps are the results of previously documented differences in the perceptions of the identified groups of candidates. Females, when compared to their male counterparts, have been reported as being more likely to understate their abilities (Rainsbury, Hodges, Sutherland, Barrow 1998; Strebler 1997; Stybel and Peabody 1998). Whatever improvement is made to the programme as a result of the findings of this study will be of great benefit to future candidates in their competency development. Other professional accounting bodies with similar programmes may also benefit by reviewing the results of this study.

The results, however, should be interpreted with caution, given that each programme of this nature is unique and needs to be treated as such. Hence, future studies may consider replicating this study using data collected on other similar programmes. The results of such studies may then be compared, possibly across national boundaries, to enrich the existing knowledge of the international dynamics of accounting education. Another possible limitation of this study is that respondents to the study could have been lenient in their assessment of the efficacy of the PAS programme. While this potential for leniency in evaluation exists for most studies of this nature, some factors that help minimise overestimation bias were an inherent part of the design of this study. These factors include guarantee of anonymity, clear and unambiguous test dimensions, purpose of the evaluation and respondent's level of expertise (Van Vliet *et al.* 1994).

This study has focused on candidates' perceptions. It should be noted, however, that the use of candidate perceptions is just one facet in the evaluation of the efficacy of a programme. A comprehensive programme review may be expected to include all relevant stakeholders, including candidates' employers, supervisors, clients and the relevant professional body. Furthermore, the study has not examined whether, and the extent to which, the teaching techniques employed in the PAS programme, namely, study groups and case studies, have facilitated the development of professional competencies. These issues are subjects for possible further studies.