

PERSPECTIVES ON IES 1, ENTRY REQUIREMENTS TO PROFESSIONAL ACCOUNTING EDUCATION PROGRAMS

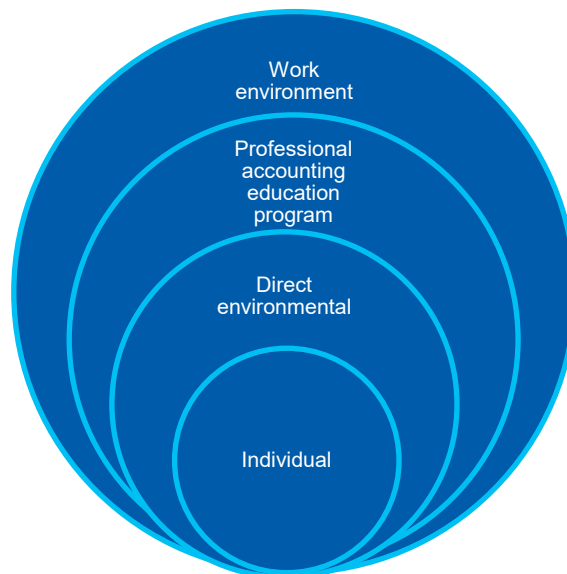
WHAT DO WE KNOW ABOUT THE FACTORS THAT INFLUENCE SUCCESS OR FAILURE WITHIN A PROFESSIONAL ACCOUNTING EDUCATION PROGRAM?

Executive Summary

From July 1, 2014 IFAC member bodies are required to specify educational entry requirements for professional accounting education programs that offer individuals considering a career as a professional accountant a reasonable chance of successfully completing the professional accounting education program, while not representing excessive barriers to entry.

Although this paper has been drafted to assist member bodies in understanding the multitude of factors that influence an individual's success or failure within a professional accounting education program, the paper will also be of interest to a variety of other stakeholders such as funding -agencies, academics, aspiring professional accountants and other parties interested in (1) the setting of entry requirements, and (2) factors that influence success in professional accounting education programs.

The paper utilizes an eco-system perspective that recognizes the various, inter-related contexts within which the aspiring professional accountant operates. By undertaking a review of the literature within each of the contexts shown in the figure below, the paper highlights factors that may be of relevance in providing a reasonable chance of successful completion of a professional accounting education program.



As this approach takes a holistic view of the individual and the context in which they operate, this paper further highlights those areas where member bodies can have an influence by providing educational support with a view to increasing progression rates through and successful completion of the accounting program.

The main findings of the literature within each area are as follows:

Individual factors

Aspects which differentiate performance	Can be used to set entry requirements	Relevance to the setting of entry requirements
Gender, age and race	✘	Need to consider whether and why each of these aspects differentiate and then develop appropriate support mechanisms to maximize progression and overall completion rates.
Personality	✔	Accounts for a significant portion of variance in performance.
Motivation and effort	✔	Key aspect but need underpinning abilities.
Previous academic success such as overall school performance, and/or specific grades in particular subjects	✔	What has been achieved in the past is likely to be a valid predictor of what will happen in the future.
Previous experiential learning	✔	Can be used to grant access to those with experience as opposed to formal learning evidenced by exam results.

Direct environmental factors

Factors	Why	Aspects to consider
Study time	Correlation between time available for study and successful completion of academic programs.	Detrimental impact of work and family commitments.
Peer networks	Engagement with others increases motivation and performance.	Challenges for distance learning students.
Finances	Financial support enhances success.	Well-funded programs can increase social inclusion which is in the public interest.

Professional accounting education program factors

Factors	Why	Aspects to consider
Course design, delivery, support and assessment	<ul style="list-style-type: none"> The mode and language of delivery can influence performance. Programs that are highly resourced, offer high levels of support and real-time feedback have better success rates. Move to computer-based assessments can impact performance. 	<ul style="list-style-type: none"> Engagement of aspiring professional accountants with the mode of delivery. Extra support when delivery and assessment is not in the native language. Importance of sufficient resourcing of program. Providing sufficient support for candidates during any change to the format of assessments.
Alignment of program objectives to career aspirations	Impacts on motivation and subsequently success.	Communicating a clear link between the program objectives and career aspirations to aspiring professional accountants link

Work environment factors

Factors	Why	Aspects to consider
Employer support	Has a direct effect on performance.	Giving students adequate study time, being empathetic with work scheduling and providing support through coaching, mentoring, and counselling.

This high level review of the literature through the eco-systemic lens highlights that there are numerous factors, both internal and external to the student, which will influence the likelihood of their successful completion of a professional accounting education program. The fact that so many factors can be influential is probably the main reason that single measures are, in themselves, not strong indicators of success. Member bodies do, therefore, need to consider this range of factors when setting their entry requirements. Member bodies should, however, also consider what educational interventions, such as additional classes or formative assessment, they can put in place to further support by enhancing progression and overall completion rates. It should also be noted that this literature study presents only the most common factors that have been gleaned from the research. Member bodies should consider additional factors that are unique to their jurisdiction and circumstances.

I. Introduction

1. From July 1, 2014 IFAC member bodies have been required to specify educational entry requirements for professional accounting education programs that will provide a balance between offering individuals considering a career as a professional accountant a reasonable chance of successfully completing a professional accounting education program and not creating excessive barriers to entry.
2. This [Perspectives paper](#) has been created to assist IFAC member bodies in understanding the range of factors that could influence an individual's successful completion of a professional accounting education program. However, this paper will also be of interest to a variety of other stakeholders such as public and private investors in education, academics, individuals considering a career as professional accountants, and any other stakeholders interested in (1) the setting of entry requirements, and (2) factors that influence success in professional accounting education programs. This paper proposes an eco-systemic framework as the lens through which IFAC member bodies may wish to consider educational entry requirements and identifies factors that have been acknowledged in the literature that may be of relevance to IFAC member bodies in their determination and justification of entry requirements. The eco-systemic framework recognizes and accommodates for the fact that IFAC member bodies operate in different jurisdictions and under various regulations with differing mandates and that it is the responsibility of each IFAC member body to reflect on the various elements within the eco-system that impact an individual's performance within their particular educational and training system.

II. The Eco-systemic Framework

3. The eco-systemic framework (Bronfenbrenner 1979, 1992) views education within the context of the broader environment in which the individual exists. Within the context of a professional accounting education program, it highlights the multi-faceted nature of factors that may contribute to the successful completion of a professional accounting education program. The eco-systemic framework incorporates the following factors:
 - **Individual factors**- the potential aspiring professional accountant, which considers their capabilities and traits.
 - **Direct environmental factors** - the immediate environment in which the aspiring professional accountant operates, which includes the aspiring professional accountant's background, home circumstances, finances and other factors that have a direct impact on the aspiring professional accountant.
 - **Professional accounting education program factors** - the professional accounting education program, which would include the nature of the program and the competences that must be successfully demonstrated for successful completion of a program.
 - **Work environment factors** - the world of work and the role that the aspiring professional accountant will eventually play in the field of accountancy. This includes public expectations of the role that the aspiring professional accountant will play in the accountancy profession.

4. The benefits of viewing entry requirements from an eco-systemic perspective are:
 - It ensures that entry requirements are considered within the inter-related context of the individual considering a career as a professional accountant, their environment and the environment in which the professional accounting education program is offered.
 - It allows IFAC member bodies with differing professional accounting education programs, obligations, and public interest responsibilities to consider entry requirements within the context of their unique circumstances.
5. Entry requirements have traditionally focused on the previous achievements and traits of the individual considering a career as a professional accountant, as in many respects these are the factors which can most easily be identified and measured. For example, it is not uncommon for admission requirements to be based solely on academic grades or the attainment of a particular degree or qualification. If IFAC member bodies can identify factors that determine success then entry requirements could be designed around these factors. This identification of factors could be undertaken for each level within the professional accounting education program particularly where aspiring professional accountants can exit at different levels through the program.
6. However, by restricting any examination of determining factors to previous academic performance, valuable experiential and influential factors may be ignored. IFAC member bodies may therefore consider prior experiential learning as a route to access. In addition, IFAC member bodies are encouraged to look at entry requirements more holistically, as this will encourage consideration of the individual within the context in which IFAC member bodies operate. Therefore if environmental or contextual factors can be identified that influence success, interventions can be put in place to enhance success rates. This approach therefore encourages IFAC member bodies to influence the context with a view to creating the greatest opportunity for success. It also provides a platform for setting different entry requirements dependent on the environment or context within which the individual considering a career as a professional accountant operates.
7. The setting of entry requirements should not be static as the context in which the individual operates is likely to change over time. IFAC member bodies could put mechanisms in place to regularly reflect on their entry requirements to ensure that they remain valid on an ongoing basis.

III. Factors that Contribute to Success

8. In order to set appropriate entry requirements into a professional accounting education program, IFAC member bodies can identify the range of factors that contribute to successful completion of the professional accounting education program. Once the factors that underpin success have been identified, IFAC member bodies will be better positioned to set entry requirements that are relevant to their specific professional accounting education program and manage potential aspiring professional accountants' expectations coming into the program.
9. In order to assist IFAC member bodies, an overview of relevant literature has been provided. This literature reveals a set of common themes that appear to predict academic success and successful completion of academic and professional programs. This review has not been limited to professional accounting education programs as there is very limited literature within this particular setting, but has been extended to consider a broader view of academic and professional programs. Please be

advised that this is not an exhaustive list and IFAC member bodies take their own unique circumstances into account when setting entry requirements.

10. The literature review results have been grouped into the eco-systemic framework identified in Section II above, although due to the multi-faceted nature of these various elements there is an evitable crossover between these different sections.
 - Individual factors
 - Direct environmental factors
 - Professional accounting education programs factors
 - Work environment factors

Individual Factors

Gender, race and age

11. Several studies have considered gender as an explanatory variable in university accounting education but the results have been contradictory. Some studies have found gender does not significantly impact performance (Buckless et al., 1991; Carpenter and Friar, 1993; Gist et al., 1996; Keef and Roush, 1997; Jackling and Anderson, 1998; Naser and Peel, 1998; Gammie et al., 2003; Byrne and Flood, 2008; Guney, 2009). However, work conducted by Tho (1994) and Arthur and Everaert (2012) found that females perform better than males, whereas the studies by Doran and Bouillon (1991) and Koh and Koh (1999) found the opposite and concluded that males outperform females in early years of university study. In professional accountancy examinations, Harvey-Cook (1995) did not find a significant relationship between performance and gender. Gammie (2000), however, found that females performed better but this was only significant for graduates holding an ordinary degree and not for graduates holding an honours degree¹. Roos (2009) also found females performed better in CIMA² examinations but this differential performance was not significant. Brahmasrene and Whitten (2001) found males outperformed females in the US CPA³ examination.
12. Research into age has also been inconclusive. At university level accounting education, Lane and Porch (2002) and Guney (2009) found performance improved as age increased but this contrasts with Koh and Koh (1999) who found younger students performed better. However, Naser and Peel (1998), Rankin et al. (2003) and Gammie et al. (2003) all concluded that age had no significant impact on performance in university level accounting education. Likewise, in professional accountancy examinations, Gammie (2000) and Howell and Heshizer (2006) found no significant relationship between age and performance. However, again this is not conclusive as Roos (2009) found younger students performed better in CIMA examinations and Brahmasrene and Whitten (2001) found older students performed better in the US CPA examination.

¹ The British undergraduate degree classification system includes First Class Honours, Second Class Honours, Upper Division, Second Class Honours, Lower Division, Third Class Honours, Ordinary degree (pass).

² Chartered Institute of Management Accountants

³ Certified Public Accountant

13. Regarding race, Carpenter and Friar (1993) found that the majority (white) students outperformed minority students, significantly so for males in the US. White students also outperformed black students in the South African study undertaken by Coetzee et al. (under consideration). In contrast, in other jurisdictions there is evidence of an Asian-White achievement gap whereby Asian Americans have superior academic attainment than their white counterparts (Hsin and Xie, 2014; Zhou and Lee, 2014). However, neither Keef and Roush (1997) nor Guney (2009) found race to have a significant impact on performance in university level accounting education.
14. Although it would not be appropriate for IFAC member bodies to use gender, age or race as part of their admission criteria, it is important for IFAC member bodies to consider performance differentials within each of these categories and reflect on why this is the case. This reflection may encourage IFAC member bodies to develop appropriate support and thus maximize the progression and overall completion rates within professional accounting education programs.

Personality

15. Individuals' personality traits are identified as important factors in successful completion of academic and professional programs. Many personality researchers have argued that personality traits account for a significant portion of variance in academic performance (Chamorro-Premuzic & Furnham, 2003; Duff et al., 2004).
16. Conscientiousness has been considered as the basic trait most closely linked to the "will to achieve" (Digman, 1990). Recent analysis of data points to conscientiousness being the strongest predictor of academic performance at both the secondary and tertiary levels of education, even after taking into account intelligence (Poropat, 2009). It is associated with sustained effort and goal setting (Barrick et al., 1993), both of which contribute to (1) academic success (Steel, 2007), (2) compliance and concentration on homework (Trautwein et al., 2006), and (3) time management and effort regulation in learning (Bidjerano & Dai, 2007).
17. Openness has also been cited as a major correlate of academic achievement and success (Asendorpf & Van Aken, 2003; Bidjerano & Dai, 2007), effective learning style (Duff et al., 2004), higher academic aspirations (Rottinghaus et al., 2002), strategies that emphasize critical thinking (Bidjerano & Dai, 2007), approach to learning (Vermetten, Lodewijks, & Vermunt, 2001), intelligence and intellectual curiosity (Chamorro-Premuzic and Furnham, 2003) and learning motivation (Tempelaar et al., 2007).
18. McCollum and Kajs (2007) assert that without motivation, very little learning or performance occurs. Thus, motivation is central to an individual's success. Motivated people have an innate sense of success and modify their behavior to achieve their desired result. The behavior demonstrated by individuals who are motivated usually includes: goal-setting, time management, dedicated study time, self-discipline and effort. Increased effort subsequently results in increased performance (Porter and Lawler, 1968; Wooten, 1998).

Motivation and effort

19. Vroom's (1964) theory highlighted three variables that influence an individual's motivation towards certain goals. The first of these, is the value of the reward that accrues from the performance. Individuals who value the reward of their endeavors will exert greater effort (Ott et al., 1988; Wooten,

1998). The second, expectancy is the belief that extra efforts will result in better performance, therefore individuals who are of the view that the harder they work the better they will do will actually work harder (Geiger and Cooper, 1996). The third influence is instrumentality, which is the belief that the rewards of performance will actually be gained. How much an individual values the reward on offer, can be either extrinsic, such as a financial incentive, or intrinsic, such as personal satisfaction (Porter and Lawler, 1968). In addition to valuing the reward on offer, for an individual to exert additional effort they must also believe that exerting additional effort will lead to the reward(s) on offer, this is known as the perceived effort-reward probability (Porter and Lawler, 1968) and is based on the 'expectancy' element of Vroom's (1964) theory.

20. Individuals also need to consider how best to exert additional effort. In relation to this, Porter and Lawler, (1968) identified a further factor which impacts performance: role perception. Role perception relates to the kind of activities and behaviors an individual believes they should engage in to improve performance (Parry, 1990) or the 'best way to study' (Parry, 1990 p.225). If an individual's perception of how to study results in their effort being effectively directed in what is required by the examination, this will result in improved performance. Studies at university level have given consideration to the different ways in which students study (Naser and Peel, 1998; Rankin et al., 2003) and specifically to role perception (Ott et al., 1988; Parry, 1990) and evidence from professional accountancy students indicate that those individuals who had undertaken a review course as part of their study plan had a superior performance in the US CPA examination in comparison to those who had not undertaken the review course (Howell and Heshizer, 2006; Brahmasrene and Whitten, 2001).
21. Although motivation and effort may initially be regarded as an intrinsic individual factor, it is clear that the environment and context within which the individual undertakes their training will also have an impact on their motivational levels and subsequent performance. In addition, irrespective of how motivated an individual is to exert effort into their studies, any effort exerted may not lead to successful performance if the individual does not have the required abilities or traits (Porter and Lawler, (1968). Indeed, Guney (2009), measured effort through the hours spent each week on modules and found a negative co-efficient with performance, which led to the suggestion that individuals, who have difficulty understanding work, may work harder but fail to get a grade that reflects their additional effort as they did not have the requisite ability in the first place. An individual's ability is therefore critical and many studies have been undertaken trying to predict future performance on the basis of past results.

Previous academic success

22. The view held by psychologists that what we have done in the past is a valid predictor of what we will do in the future still holds true (England, 1971; Mael, 1991; Nickels, 1994; Breugh, 2012; Sackett, Paul, 2012). Thus the predictive value of previous academic performance in determining an individual's subsequent academic performance is widely acknowledged and there is a plethora of literature by accounting education researchers who have attempted to predict or explain undergraduate performance from first year (Eskew and Faley, 1988; Gul and Fong, 1993; Rankin et al., 2003; Duff, 2004; Byrne and Flood, 2008) to final year (Gammie et al., 2003; Natoli et al., 2013; Coetzee et al (under review)) and professional examination level (Titard and Russell, 1989; Harvey-Cook, 1995; Gammie, 1999; Kapoor and Islam, 2005; Roos, 2009; Douglas and Gammie (under consideration).

23. Previous academic success, measured by secondary school results, such as UCAS⁴ points in the UK or SAT scores in America, is a common explanatory factor for performance level in university level accountancy education (Doran and Bouillon, 1991; Bartlett et al., 1993; Ward et al., 1993; Gist et al., 1996; Jackling and Anderson, 1998; Wooten, 1998; Koh and Koh, 1999; Gammie et al., 2003; Rankin et al., 2003; Duff, 2004; Byrne and Flood, 2008; Al-Twajry, 2010, Maksy, 2012). Previous academic performance is also identified as an explanatory factor in professional accountancy education with explanatory factors being identified from both secondary school (Harvey-Cook, 1995; Gammie, 2000; Brahmasrene and Whitten, 2001; Kapoor and Islam, 2005; Howell and Heshizer, 2006) and university (Harvey-Cook, 1995; Gammie, 2000).
24. Consideration has also been given to previous academic performance in specific subjects. Undertaking secondary school accounting has been identified as resulting in superior performance in first year university accountancy education (Lynn et al., 1994; Tho, 1994; Naser and Peel, 1998; Rankin et al., 2003; Rowbottom, 2013). However, this benefit appears to be lost in later years' of university with no significant relationship identified between secondary school accounting and performance in later years' study of accountancy at university (Doran and Bouillon, 1991; Jackling and Anderson, 1998; Bartlett et al., 1993; Gammie et al., 2003). The performance in accounting subjects in earlier years at university has, however, been found to be a significant predictor of later degree performance (Byrne and Flood, 2008; Bealing and Baker, 2012; Maksy, 2012). Although contradictory evidence in this regard was found at the professional level whereby accounting performance at university did predict performance in the ICAS⁵ examinations (Gammie, 2000) but not for ICAEW⁶ (Harvey-Cook, 1995).
25. At university level, consideration has also been given to previous performance in Mathematics (Gul and Fong 1993; Ward et al., 1993; Tho, 1994; Koh and Koh, 1999; Bartlett et al., 1993; Naser and Peel, 1998; Guney, 2009; Coetzee et al (under consideration), English Language (Gul and Fong, 1993; Ward et al., 1993; Naser and Peel, 1998; Coetzee et al, under consideration) and Economics (Bartlett et al., 1993; Tho, 1994). However, contradictory results means that no overall conclusions can be drawn on whether or not there is a significant link between the performance of these subjects at secondary school and subsequent performance in university level accountancy education. In professional accountancy education program examinations, performance predictors in Mathematics and Language (English and Foreign) were identified by both Harvey-Cook (1995) and Gammie (2000) but not by Douglas and Gammie (under consideration).
26. Although the literature in this area highlights particular background factors that may be of relevance it is clear that the factors differ dependent on the setting. Each IFAC member body can therefore use these factors to help identify what determines success for their particular professional accounting education program.
27. Setting entry requirements on the basis of previous academic success could, however, be overly restrictive. IFAC member bodies may therefore want to consider allowing different pathways into

⁴ Universities and Colleges Admissions Service, UK

⁵ Institute of Chartered Accountants of Scotland

⁶ Institute of Chartered Accountants in England and Wales

professional accounting education programs as this is an effective way to widen access to professional training (Scottish Government, 2007; DBIS, 2009).

Previous experiential learning

28. Recognition of prior learning (RPL) is the practice of reviewing, evaluating and acknowledging the knowledge and skills that have their source in experience and/or previous formal, non-formal and informal contexts (Thomas, 2000). The recognition of formal learning usually involves the transfer of credit from one learning environment to another, as evidenced, for example, through articulation agreements between tertiary education providers such as colleges and universities. Recognition of non-formal and informal learning, on the other hand, reflects on past experiences and accepts that learning gained in these environments can be utilized in a post-secondary school context for admission, advanced standing and accelerated progress (Harris and Wihak, 2011). It is this non-formal and informal learning that is of relevance to granting access to professional accounting education programs.
29. RPL is not a new concept as it was first articulated in the late 1930s (Dewey, 1938). However, RPL gained more prominence in the early 1980s when educators highlighted how experience can develop capabilities (see, for example, Schön, 1983, 1987 and Kolb, 1984) and subsequently how this experience can form the starting point for future learning (Conrad, 2010). However, there is evidence to suggest that institutions will only include RPL in their organizational activity if it can explicitly help to achieve their organizational priorities (Whittaker, 2006; Wihak and Wong, 2011). Indeed, it is only recently that governments are increasingly embracing RPL as part of public policy to widen access to subsequent education opportunities (Harris and Wihak, 2011) and this may also be a new concept to many IFAC member bodies.
30. How to integrate the recognition of informal and non-formal learning into subsequent education programs, including professional accounting education programs, can be a challenge (Whittaker, 2011). For example, this type of learning does not readily fit into the traditional structures of learning found in tertiary education institutions, such as universities (Bradwell, 2009) or indeed professional accountancy programs and it is naive to assume that knowledge can transfer successfully between different contexts (Harris, 2006). Although a qualifications framework such as that developed by the SCQF⁷ helps to show how different qualifications and learning programs relate to each other, therefore facilitating credit transfer or access opportunities (SCQF, 2007), a learning outcome model such as this can also present barriers (Harris, 2006; Whittaker, 2011). This is particularly the case when an attempt is made to directly match the experience gained with the outcomes of formal learning rather than undertaking a broader comparison of competence and capacity (Whittaker, 2011). IFAC member bodies could therefore endeavor to define the learning outcomes required for admission in a way that supports a variety of different ways of achieving them (Whittaker et al., 2006). In order to do this, IFAC member bodies would need to understand the different processes through

⁷ The Scottish Credit and Qualifications Framework (SCQF) provides a way of comparing qualifications in Scotland and ranges from level 1 (the most basic learning) up to level 12 (very complex learning). The Framework facilitates an understanding of the relationship between different qualifications and learning programs and thus allows individuals to identify progression routes between qualifications and helps to make the credit transfer opportunities between different learning environments more visible (SCQF, 2010)

which knowledge and expertise is acquired in the workplace and base their entry criteria to a professional accounting education program on this knowledge (Pokorny, 2006).

31. The recognition of RPL as a route to entry is best achieved through the development of an RPL framework (Whittaker, 2011) whereby IFAC member bodies can identify the specific knowledge or capabilities that they wish to validate in the determination of granting access and articulate this by way of learning outcomes (Donald, 1995). Individuals considering a career as a professional accountant would then need to articulate and document evidence to demonstrate the achievement of the learning outcomes specified in the framework (Wong, 2011). This demonstration could, for example, be recorded in an e-portfolio (Wihak and Wong, 2011).

Direct Environmental Factors

Study time

32. The literature supports the view that there is a correlation between the amount of study time and a student's successful completion of an academic program. In a study by Schmelzer et al., (1987) they found that persistent and active study was the most common reason that students gave for their academic success. Setting appropriate goals, a good study environment and effective time management were also considered important. Although study time is clearly linked to a student's motivation and effort as discussed above, any barriers that prevent a student from dedicating sufficient time to their studies is also of relevance here.
33. One of the key barriers in relation to this is the impact of any other activities such as work commitments which have been found to have a negative impact on university level performance (Stinebrickner and Stinebrickner, 2003; Hunt et al., 2004; Siebert et al., 2006). Work commitments could be of particular relevance in the professional accounting environment as this environment has a reputation for demanding long hours from its employees (Dambrin and Lambert, 2008; Gallhofer et al., 2011; Gammie and Whiting, 2013). If, as many employers and IFAC member bodies note, accounting trainees are expected to be given 'plenty of responsibilities from the onset' (ICAS, 2010) then this working commitment is likely to encroach on study time.
34. Family commitments could also be considered as a barrier to study time as there is evidence to suggest family commitments have a negative impact on performance particularly for individuals aged over 25 (Wooten, 1998), although (Roos, 2009) found that neither marital status nor number of children affected CIMA examination results in South Africa.

Peer networks

35. An increasing amount of research has examined the role of peer networks. A peer network is a large group of peers with whom individuals associate. In an academic context, students in peer networks tend to be highly similar to each other (Cairns et al., 1989), which enhances the likelihood of influence by modelling. Kindermann, & Gest (2009) found that peer groups tended to support or disapprove of peers' behaviors depending on whether the behaviors were consistent with group norms. Students with higher academic motivation and achievement tended to be members of groups more motivated for academic work and they received group approval for positive academic behaviors. Students who were in academically motivated groups were extrinsically motivated because when academic success was achieved, the group's approval acted as a reward. They concluded that peer

networks played a significant and direct role in affecting academic success. This can pose a problem for students who undertake their studies on a distance learning basis as their inability to socialize and develop peer networks can compromise their performance levels which is why many students prefer classes undertaken on a face-to-face basis (Harley et al., 2002; Guri-Rosenblit, 2005).

36. Indeed, the support, or lack of support from peer networks can be particularly challenging for part-time, distance or on-line programs where high rates of attrition are often attributed to feelings of isolation or abandonment and subsequent failure or drop-out (Hoskins & van Hooff; 2005). Students may experience feelings of isolation (Brown, 1996; Allen et al., 2002), frustration and anxiety (Hara and Kling, 2000; Piccoli, 2001; Broad et al., 2004) and reduced interest in the subject matter (Maki et al., 2000) as they struggle to cope with the higher degree of learner control in this type of learner environment (Gall and Hannafin, 1994; Simon et al., 1996).

Finances

37. A number of research papers have cited financial support as a factor that influences an individual's successful completion of a professional accounting education program. According to Hommandai (1990) inadequate allocation of funds in developing nations has become an obstacle to graduate and post-graduate studies. Anderson and Cole (2001) stated that, in addition to other factors, financial pressures may cause stress, which in turn may cause adverse academic performance and cause students to suffer exhaustion.
38. Zeghal and Mhedhbi (2006) used economic growth in their study arguing that where a country's level of economic growth is high, the social function of accounting becomes important. A high demand for professional accountants may lead to government agencies and other interested stakeholders to provide funding and other financial rewards for individuals to follow a professional accounting education program. Such funding often leads to better social inclusion which is in the public interest.
39. It is clear from the literature in this environmental section that various factors also have an influence on the successful completion of professional accountancy education programs and these factors can be taken into consideration when entry requirements are being set by IFAC member bodies.

Professional Accounting Education Program Factors

Course design, delivery, support, and assessment

40. Another factor contributing to course completion is that of course design and delivery. Race (1994) in his seminal work identified that individuals learn best when they can study (1) at their own pace, (2) at times and places of their own choosing, (3) when they are in control of their own learning, and (4) often with other people around, especially fellow learners. These criteria are increasingly met through the use of technology enhanced distance or blended learning as the newer generation of learners are technologically savvy, (Evuleocha and Ugbah, 2007; Manville and Schiel, 2008), utilize an array of technologies for studying and social networking (Kvavik and Caruso, 2005; Junco and Mastrodicasa, 2007) and are adept at multi-tasking (Attwood, 2008). Thus, the traditional approach to training using lectures and text-filled manuals will not resonate with these learners (Inspired Training Institute, 2005).

41. However, learner achievement using e-learning has been questioned with poor individual performance being reported (Brown, 2002; Mottarella et al., 2004; Macedo-Rouet et al., 2009). Although this is not conclusive as other studies have identified that there is no statistical difference between learner achievement obtained via e-learning and traditional face-to-face instruction (Russell, 1999; Machtmes and Asher, 2000; Piccoli, 2001; Thirunarayanan and Aixa, 2001; Shachar and Neumann, 2003; Broad et al., 2004; Cakir and Simsek, 2010) and other work suggests that technology mediated learning environments may improve individual achievement (Alavi, 1994; Hiltz, 1995; Schutte, 1997; Maki et al., 2000; Lowe, 2001; Brown, 2002; Allen et al., 2002; Liao, 2007; Sun, 2014; Song, 2014; Nikou and Economides, 2016).
42. Distance program providers report that individuals who participate in on-line discussions and other interactive forums achieved better progression rates than those who do not participate, therefore the characteristics of the individuals who engage with the process need to be considered. For example, the literature suggests that individuals need to possess self-directed learning characteristics for successful web learning and must be encouraged to be active learners (Dringis, 2000). Hence a learner on the web must establish comfort with a higher level of self-direction than in a traditional class-room setting (Conrad and Donaldson, 2004). An individual's aptitude to do this is dependent on six factors; effective learning, fondness for learning, learning motivation, active learning, independent learning and creative learning (Guglielmino, 1977). Subsequent studies highlight the link between maturity and motivation to academic success (Hiltz, 1993; Leidner and Jarvenpaa, 1995; Hoskins and van Hooff, 2005). Although a later study by Schniederjans and Kim (2005) reported that conscientiousness, openness to experience, emotional stability and agreeableness were all significant predictors of grade performance in a course delivered entirely on-line.
43. Another factor to consider is the influence on performance in a professional accounting education program when the delivery and assessment of the program is not in the first language. Work in this area, undertaken within the context of South Africa where there are eleven official languages (Coetzee et al., under consideration), indicates that individuals who receive instruction and are assessed in a different language from their first language (most often in English) can be at a disadvantage from those who are taught and assessed in their first language (Coetzee and Schmulian, 2013; Coetzee et al., 2014; Janse van Rensburg et al., 2014; Coetzee et al., under review). In these circumstances IFAC member bodies may want to consider providing additional support to those aspiring professional accountants who have the added complication of language to add to the technical requirements of their professional accounting program.
44. What is not in doubt is that professional accounting education programs that are highly resourced, offer high levels of support and real-time feedback are more capable of accommodating less prepared aspiring professional accountants than programs that lack resources and are less accessible. The literature further indicates that individuals benefit from strong support from their tutors or lecturers (Tinto, 1993) and this has particular resonance in the setting of assignments and activities. These can encourage self-directed learning behaviors (Chang, 2006; Nikou and Economides, 2016) as individuals can evaluate their learning and focus their study effort accordingly (Derouza and Fleming, 2003; Fritz, 2003; Johnson, 2008; Looi et al., 2015). Thus timely feedback on assignments is highlighted as a critical success factor for an educational program (McVay et al., 2005).

45. It is also important to consider the impact of the increasing shift from traditional paper and pencil assessments to computer-based assessments (Scherer and Siddiq, 2015) on progression and completion rates. Comparisons of test scores across different assessment types has produced contradictory results (Nikou and Economides, 2013; Jeong, 2014). Some studies have indicated that individuals score better on computer-based compared to paper-based assessments (Wallace and Clarian, 2005; de Marcos et al., 2010; Sun, 2014), whereas others have indicated that individuals perform better on paper-based rather than computer-based assessments (Fitzpatrick and Triscari, 2005; Keng et al., 2008; Jeong, 2012) and others have found no difference (Jeong, 2012; Piaw, 2012; Chua and Don, 2013). IFAC members bodies may wish, however, to consider carefully any transition from paper-based to computer-based assessments as there is evidence to suggest that reading questions on a screen to solve problems may require more concentration than reading questions on paper as the instructions may be more complicated (Jeong, 2012). Aspiring professional accountants may therefore need time to acclimatize to this new technique.

Alignment of program objectives to career aspirations

46. The reputation, status and relevance of the professional accounting education program for the country and economy become significant factors in the choices and motivation of aspiring professional accountants. The manner in which the program is marketed and valued will determine the caliber and type of individual that will want to participate in the professional accounting education program.
47. Research has shown that individuals who are motivated by the final outcome of a program (i.e. the credentials or monetary reward) are more likely to succeed than those who are still unsure of their own career aspirations (Lent et al., 1994). Research in professional accounting education programs has identified a relationship between the value of the reward and successful completion of the professional accounting education program (Ott et al., 1988; Douglas and Gammie, under review).
48. The literature in this section again highlights the influence of the institutional and program factors on the successful completion of individuals within the professional accounting education program and IFAC member bodies may need to also consider these factors in their determination of entry requirements.

Work Environment Factors

Employer support

49. The amount of support provided to aspiring professional accountants on a professional accounting education program from their employer has a direct effect on their chance of successfully completing a professional accounting education program (Perna & Dubois, 2010). Supportive employers are available for coaching, mentoring and counselling. Employers who provide aspiring professional accountants with sufficient study leave and remain empathetic to the needs of aspiring professional accountants when scheduling work, generally lead to sufficient time for study which results in a higher probability of success.

IV. Applying Holistic Thinking when Establishing Entry Requirements

50. This high level review of the literature through the eco-systemic lens highlights that there are numerous factors both internal and external to the aspiring professional accountant that will influence and have an impact on the probability of their successful completion of a professional accounting education program. The fact that so many factors can be important is probably the main reason that single measures are, in themselves, not strong indicators of success. IFAC member bodies do, therefore, need to consider this range of factors when setting their entry requirements. IFAC member bodies could, however, also consider what educational interventions they can put in place to further support aspiring professional accountants as they progress through the professional accounting education program to enhance progression and overall completion rates. It should also be noted that this literature study only presents the most common factors that have been gleaned from the research. IFAC member bodies can also consider additional factors that are unique to their jurisdiction and circumstances.

V. Conclusion

51. The setting of entry requirements into a professional accounting education program is a matter of judgment and should always be done with the public interest at heart. By specifying entry requirements IFAC member bodies endeavor to set entry requirements that are fair to aspiring professional accountants, society and in the public interest. When setting entry requirements, IFAC member bodies do so with a full understanding of the environment in which the aspiring professional accountant and IFAC member body operate so that an informed judgment can be made.
52. IFAC member bodies are encouraged to identify the individual characteristics that are pertinent in the determination of successful completion of professional accounting education programs. Viewing entry requirements holistically highlights the importance of the multi-faceted context within which the aspiring professional accountant operates and the resulting influence the context has on their individual success. IFAC member bodies can be cognizant of these influences when setting entry requirements. Using an eco-systemic framework encourages IFAC member bodies to reflect on the areas that they can influence and thereby enhance the outcomes, such as higher throughput rates, better allocation of resources and flexible pathways to admission into the accounting profession.

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