The competitive forces that shape Australian medical education: An industry analysis using Porter’s Five Forces Framework

Structured Abstract

Purpose

Medical education is an evidence-driven professional field that operates in an increasingly regulated environment as compared to other fields within universities. The aim of this paper is to establish the extent to which Porter’s five competitive forces framework (Porter, 2008) drive the management of medical schools in Australia.

Design/methodology/approach

Drawing on data from semi-structured interviews ~~with over 200~~^{with over 20} staff from six case study Australian medical schools, this paper explores Australian medical education, by looking at the current policy context, structure and interactions between organizations within the system.

Findings

The findings provide evidence that environmental forces affect the nature of competition in medical education, and that competitive advantage can be gained by medical schools from a sustained analysis of the industry in which they operate in. Consequently, it is possible to apply a pre-dominantly profit-oriented framework to higher education.

Research implications

As an industry facing increasing pressure toward marketization and competition, the findings provide sufficient evidence that an analysis of higher education as an industry is possible.

Practical implications

The findings provide evidence that strategic leadership and management in higher education should encompass greater levels of delegation and decision making at all levels. Effective

leadership should focus on creating an inspiring vision of the future through a sustained analysis of the industry in which they operate [in](#).

Originality/value

The study has made a key contribution through an industry analysis of Australian medical education, which provide important implications for leadership and management in higher education. The study is of significant value to researchers as well as senior management in higher education.

(No. of words in abstract: 2509)

Key words

Porter's five forces framework; Medical education; Higher education; Strategy; Leadership and management

Introduction

Medical education and research is one of the most highly regulated disciplines in higher education. It is an intensely evidence-driven professional field that operates in an increasingly regulated environment as compared to other fields within universities, which can have an impact on the role and character of an institution’s strategy. From a review of websites, in Australia, some faculties of medicine in Australia have annual revenues larger than some universities, or larger than all faculties put together within their university. Managing medical schools is a task complicated by complex, multistage regulatory processes (Mahat & Pettigrew, 2017). Many organizations, including governments, professional bodies, funding and accreditation agencies play important roles and provide various levels of input or control.

Like any other organizations, medical schools need to learn more about the opportunities that it may be positioned to take advantage of and conditions and events that threaten its performance and survival (Bourgeois, 1980; Lang, Calatone, & Gudmundson, 1997). Despite being a public and non-profit organization, strategic thought and action are increasingly important to the continued viability and effectiveness of medical schools (Mahat & Pettigrew, 2017. In particular, ~~T~~he essence of strategy formulation is to understand and cope with competition, which does not only stem from competitors, but is also influenced by the underlying structures of the industry (Porter, 2008). Porter (1985) stresses competitive advantage which is created and hence can be controlled by individual organizations.

As universities are increasingly operating in a highly turbulent and dynamic environment, where the dual growth of marketization and competition is evident, this study calls for an analysis of higher education as an industry. Drawing on data from semi-structured interviews of over 20 staff from six case study Australian medical schools, this paper explores Porter’s five forces framework (Porter, 2008) in the context of Australian medical education, by

looking at the current policy context, structure and interactions of organizations within the system. The paper concludes with implications for theory and practice, while pertinent to the Australian context, can also be read with broader relevance to other systems and institutions.

Porter's Five Forces Framework

According to Porter (2008), factors that influence the competitive position of a company in an industry or market are: (1) bargaining power of buyers; (2) bargaining power of suppliers; (3) threat of new entrants; (4) threat of substitute products; and (5) rivalry among existing companies. Since an organization cannot be all things to all people, strategy is about making a deliberate and conscious choice to pursue things an organization wants and disregard things it does not want, and in the process be different from other organizations in the industry.

The five forces framework supports a strategic analysis of the interactions between organizations, and the structures that frame their relative success and positions within that structure. Complementing these forces are other factors that need to be considered such as industry growth, technology and innovation, and the relationship with other sectors. **Figure 1** illustrates these forces and factors. These forces and factors, which would differ by industry.

[Insert Figure 1 here]

Figure 1: Porter's five forces framework

Within higher education, a number of studies have applied the framework to specific higher education contexts such as the United Kingdom (Webber, 2000), the United States (King, 2008; Martinez & Wolverton, 2009b), Canada (Pringle & Huisman, 2011), and Kenya (Mathooko & Ogutu, 2015), or to higher education generally (Collis, 1999, 2001, Martinez & Wolverton, 2009a, 2009c). Others have applied the framework to particular aspects of higher education such as the effect of Massive Open Online Courses (MOOCs) (see for example

Brewer, Brewer, & Hawksley, 2000; Marshall, 2013). None, as far as reviews of literature, are applied to Australia. Furthermore, there is very limited research that focuses on the medical schools from an institutional perspective (Brosnan, 2010; Mahat, 2016; Mahat & Coates, 2016).

Porter’s five forces framework can help medical schools understand environmental factors which affect the structure of competition within medical education (for a conceptual analysis, see Mahat & Goedegebuure, 2016). As an industry facing increasing pressure toward marketization, competitive dynamics in higher education will force medical schools to “re-consider the very nature in which we are engaged, to re-define the sector within which we understand ourselves to be competing, and to re-examine the ways in which we position our organizations” (Webber, 2000, p. 62) and “have a wider competitive horizon than a day-to-day myopic operational outlook” (King, 2008, p. 11). An analysis of higher education as an industry using Porter’s five forces framework is useful in gaining and maintaining an overall understanding of higher education dynamics.

Research methods

At the time of study, there were 18 medical schools in Australia (MDANZ, 2015a), located within Australia’s universities, of which there are 40 (Tertiary Education Quality and Standards Agency (TEQSA), 2016). Six medical schools were selected in order to gain a range of perspectives from different size and/or groupings of universities in Australia (Maxwell, 2004). Two medical schools were established more than fifty years ago, two were medium term (between 10-50 years), and the last two were set up in the last ten years.

Because the nature of strategy in higher education is complex and highly abstract, a semi-structured face-to-face interview approach was used as this allows for the collection of rich data which can capture that is well suited to the exploration of attitudes, values, beliefs and

motives (Richardson, Dohrenwend & Klein, 1965; Smith, 1975) ~~the body language of~~
~~participants (Minichiello, Aroni, Timewell, & Alexander, 1995; Richards & Morse, 2013),~~
~~provide meaningful commentary about the topic (Yin, 2003), and allow the participants to~~
~~convey their views, experiences, and ‘heart of the stories’ that are valuable and useful for~~
~~subsequent interviews (Marshall & Rossman, 1989; Seidman, 2006). Semi-structured~~
 The interviews were conducted with 21 academic and professional staff who had substantive role in the management of medical schools and/or with specific responsibility in one or more of the following areas: teaching, learning, research and management. A profile of staff interviewed is provided in Table 1.

Table 1: Profile of participants

[Insert Table 1 here]

Analysis of the data took the form of thematic analysis, a method for identifying, analyzing, and reporting patterns (themes) within qualitative data (Braun & Clarke, 2006), which were predominantly researcher-led and respond to the key research question: *What competitive forces structure the medical education industry, and consequently, affect strategy formulation in medical schools?* To preserve the anonymity and privacy of participants and medical schools, participants are denoted by P1 through to P21; and medical schools represented by M1 through to M6.

Findings

As a “tentative theory” (Maxwell, 2004, p. 33), Porter’s five forces framework has been very valuable in investigating the competitive forces that shape medical education, and provided a conceptual map for analysing medical education as an industry. The discussion in this section analyses the medical education industry based on Porter’s five competitive forces of buyers’ and suppliers’ power, threat of new entrants and substitutes, and intensity of

rivalry. ~~This will be discussed in turn,~~ with participants' perceptions interwoven into the discussions.

Threat of new entrants

Porter (2008) argues that it is not necessarily the actual entry of new competitors but the threat of new entrants to the industry which drives competition and impacts the industry's profitability. Medical schools in Australia are confined predominantly to older institutions because of strong resistance to other institutions entering these fields from government and professional associations (Meek & O'Neill, 1996). As a result of restrictive government policies that place barriers to entry into medical education, the threat of private providers and new entrants can be seen as low (P2, P3, P9, P13). Potential new entrants are likely to modify the structure of the industry and hence impact strategy formulation (P13, P21) but competition from new medical schools is also seen as context and location specific (P5).

Threat of substitute products

The move to the Doctor of Medicine (MD) by the University of Melbourne in 2011 (the first Australian professional entry masters level program) changed the underlying structure of Australian medical education. The highly regarded strategic institutional position of the University of Melbourne resulted in other medical schools to copy through repositioning itself to match the superior performer or to match the benefits of a successful position while maintaining its existing position (DiMaggio & Powell, 1983; Porter, [19852012](#)). Medical schools are increasingly switching to the graduate-entry program, with two out of the six case study medical schools offering a graduate-entry MD, and another two offering a combination of undergraduate- and graduate-entry options. Only one medical school (M2) [do](#)es not see any immediate plans to shift into an MD. For this medical school, international students are

not a key market (P5), it does not fit with the mission of the school (P6), and the graduate outcomes of a Bachelor of Medicine Bachelor of Surgery (MBBS) are similar to one with an MD although the latter is assessed –at a higher level on the Australian Qualifications Framework (P6, P7). From the industry analysis, the move to MD seems to be related to the recruitment of international students and the employability of graduates in the global market (P2, P7). From this perspective, the threat of substitutes can be seen as a competitive force more globally, rather than one that is local.

Bargaining power of buyers

Students can be considered as ‘buyers’ ~~in higher education~~ (Martinez & Wolverton, 2009a; Pringle & Huisman, 2011) or ‘consumers’ (Hemsley & Brown & Oplatka, 2006) in higher education. In medical education, the distinction between domestic and international student is important because of the regulation around domestic student numbers. As a result of capping the student numbers and hence funding by the Federal government, medical schools do not compete among themselves for domestic students. There are also many more applications than there are places in medical programs. The lack of competition between medical schools for domestic students was echoed by a number of participants (P3, P5, P17). It would seem that as a competitive force, domestic students as ‘buyers’ have little or no bargaining power. Despite the limited student bargaining power, ~~there is little strategic agency that a medical school can enact~~ medical schools have little strategic agency due to R restrictive government policies which dampen competition between medical schools. Students have limited choices and hence buyer power in medical education is low.

~~Unlike domestic student intake, which is constraint by the Federal government,~~ The number of international students is determined by individual medical schools. This is contrary to domestic student intake, which is determined by the Federal government.

Consequently, changes that affect international students impact the structure of the medical education industry and consequently have an impact on how medical schools formulate strategy in this area. For most medical schools, the biggest issue with regard to the international student intake is clinical internships (P3, P4, P6, P10, P17, and P20). Clinical internships in Australia are compulsory for new graduates, there are more applicants for internships than there are available positions, and that domestic students are generally prioritized above other students in the allocation of internships. Hence the ability of international students to gain an internship in Australia is limited, and this impacts greatly on how medical schools formulate strategies for their recruitment of international students. Additionally, participants from three medical schools (M1, M3 and M6) commented on the effect the other environmental factors, such as the economy (P4), and legislation and policies in other countries and systems (P2, P10), have on their international student intake.

For medical schools, having an international cohort of students is seen as providing flexibility, increased income, enhancing the quality of medical education, and improving the culture of the medical school. It would seem that medical schools have agency to develop strategies around the recruitment and intake of international students. Despite this, as a buyer, international students do not seem to garner a lot of power. As a result, of national and international legislation around clinical placements and student numbers, and economic factors, international students tended to have low bargaining power.

In addition to students, it would seem that within the medical education context, patients and the wider community/society can also be considered as ‘buyers’. There is a notion that society plays a role in medical education, and accordingly affects strategy formulation in schools such as in the initial establishment of the medical schools (P6) and the development of its admission criteria (P20). The wider community and society has a moderate bargaining

power by demanding better quality healthcare or more service. As a result, they have much influence in the structure of the medical education industry. Achieving alignment, where strategy, goals, and meaningful purpose reinforce one another to the needs of the patient and society, provides a medical school a clear sense of their 'existence' at any given time.

Bargaining power of suppliers

In industry analysis, Martinez and Wolverton (2009a, 2009c) argue that suppliers are defined as those organizations or individuals that allow an organization to produce its good and/or services. It would seem that organizations and individuals which provide funding to medical schools can be seen as a form of supplier, who can restrict or expand the competitive nature within medical education (P1, P2, P6, P9, P12, P16). Designing strategy around critical resources and capabilities imply that medical schools may limit its strategic scope to those activities where it possesses a clear competitive advantage (Grant, 1991). A third of the cost of medical education is obtained from the government and student contributions, which are controlled by the government. Participants noted the uncertainty surrounding funding affects their strategy formulation, particularly in terms of managing resources such as staff (P1, P2), and in some cases, are context-specific as well, such as rural funding (P6). In terms of government funding, medical schools seem to have very limited strategic agency (P1, P2, P6).

The other two thirds of the cost are sourced from research funding agencies, the university and philanthropic sources. However, due to the limits or difficulties associated with university (P3, P10), research funding agencies (P12, P17, P18) and philanthropic funding (P7, P13, P17), medical schools are increasingly looking at other sources of income. Medical schools would tend to have strategic agency in the way they plan for resources, for instance, through emphasis on distinctive research areas and funding streams, or their

relationship with the university, or the way they plan for endowments. In that sense, it would seem that the organizations and individuals, who provide funding, should be recognized as ‘suppliers’, and have high bargaining power in the medical education context.

Highly skilled labor in the form of academic staff is another form of supplier power (Pringle & Huisman, 2011). There are more positions than there are qualified staff. There is not only a nation-wide shortage of doctors, but the overall distribution of doctors is skewed heavily towards the major cities such that regional, rural and remote areas assume a disproportionate workforce shortage burden. There is a strong preference amongst much of the current medical workforce to live and work in major cities, not only for the lifestyle and the relatively higher pay, but also for the reputation of the more established medical schools and hospitals in metropolitan areas. Competition for staff are ‘vicious’ (P7) and issues such as funding (P9), poaching (P12), quality of staff (P17), and attrition (P5, P15) are of paramount importance.

Staff would seem to have considerable supplier power, from the point of choice of locations to work in, their pay and their working conditions, as well as the availability of good facilities and infrastructure. Their supplier power would also seem to apply to teaching and learning, and research within medical schools (P15). Research staff have more bargaining power than teaching staff, particularly those who conduct good quality renowned research in specific specialties. With shortage of doctors and medical researchers across the board, staff as suppliers have considerable bargaining power in medical education.

Intensity of rivalry

The intensity of rivalry depends on the object of competition. In the Australian medical education context, this includes specifically, clinical placements (P3, P5, P7), funding, in particular, for research (P12)—for some although important, quite low on their priorities (P2,

P3, P5), and academic reputation, particularly associated with rankings (P5, P12, P15, P20).

Competition can also come in the form of academic staff, particularly those with specialist knowledge and or renowned research. The intensity of rivalry is very much context and focus specific—not all Australian medical schools collectively compete in these things and at the same time. Some forms of competition are state-specific or dependent on the medical schools' 'playing field', i.e. global or local. Hence, the intensity of rivalry is variable. Additionally, collaboration among medical schools was emphasized by many participants, discussed next.

The collaborative nature of medical schools was highlighted by many participants. The more established medical schools, for instance, have provided curriculum (albeit for a price) and provided active support for the initial set-up of new medical schools (P20). Particularly through its peak body, Medical Deans Australia and New Zealand (MDANZ), medical schools collaborate on a number of projects and activities covering clinical training placements, workforce planning, Indigenous health, policy guidelines and recommendations, benchmarking, competencies, and rural and regional health. It is interesting to note that participants seemed to emphasize collaboration rather than competition among medical schools. Because medical schools do not compete for domestic students and because competition for clinical placements, research income, and academic reputation is context and focus specific, the extent to which the effect competitors have on strategy formulation is not homogeneous across the medical education sector. Consequently, while rivalry as a competitive force within the environment can affect strategy formulation in medical schools, the degree of effect will vary between medical schools.

Regulatory bodies

The role of regulation seems to have a large influence on the competitive forces within the medical education industry. In the context of medical education, regulatory influence does not only stem from the government but also from health agencies, the Australian Medical Council (AMC) as an accrediting agency, and the broader university. Regulatory bodies affect reporting and compliance requirements in medical schools, which is in line with their funding agreements (P1, P3, P12); minimum standards in teaching and learning as set by the AMC; changes in policy (P20); and managing relationships between external stakeholder agencies (P19). The lack of coherent coordination in all aspects of medical education and training observed a decade ago (Dowton *et al.*, 2005; McGrath *et al.*, 2006), still seem to be quite apparent. Between agencies, communication seems to be inept, processes uncoordinated and objectives misaligned (P10, P21). For many participants, the broader university's governance and leadership "*drives our activities*" (P5), for which staff spend significant amount of time trying to "*put out the fires*" (P1) and "*bridge the two worlds*" (P17), and a "*bit like fighting with your hands tied behind your back*" (P19). In some medical schools (M1, M2 and M6), there may be tensions between the visions or ideals of leaders at the university and medical school levels (P4, P5, P19, P20).

It would seem that the influence of regulation is a force within the medical education environment that shape the form and level of strategy formulation in a medical school. The current government policies and legislation affect organizational effectiveness, and policy changes brought about by the government has the potential to re-structure the medical education industry. This seems to be the case for health agencies as well. Medical schools tend to align their teaching and learning strategies to the AMC, because not doing so may have adverse consequences. For most medical schools, the broader university, as an

environmental force, provides the most significant effect in terms of their ability to develop strategy.

Other environmental factors

Participants see the environment factors as influential and important but are not necessarily affected by them in direct ways. For these participants, they view changes within such environmental factors, for example, immigration laws (P9, P18), the labor market (P18), societal changes (P19), and technology (P20), as something medical schools have to keep an eye on, in order to assess their impact on the competitive forces within medical education. The strategic significance of these environmental factors are best understood through the lens of the five forces (Porter, 2008).

Discussion

Various schools of strategic management suggest that the environment is of primary importance to strategy formulation (Mintzberg, Ahlstrand, & Lampel, 1998). This is the central tenet of Porter's analysis of competitive positioning. In line with this, In order for medical schools to gain and sustain their competitive advantage, the continuous review of the external environment should be central to any strategic planning and strategy formulation. the external environment of a medical school is, or should be, central considerations in strategy formulation.

The results of the empirical analyses provide evidence that environmental forces affect the nature of competition in medical education, and that competitive advantage can be gained by medical schools from a sustained analysis of the industry in which they operate in. The findings provide evidence that it is possible to apply Porter's five forces framework to a substantially public and more institutionalised higher education sector. Porter's five -forces framework includeincludes threat of new entrants, bargaining power of suppliers, bargaining

power of customers, threat of substitute products, and intensity of rivalry. Complementing these forces are other factors that need to be considered such as industry growth, technology and innovation, and the relationship with other sectors.

Seen from the lens of Porter’s framework, the analysis of the interview data found that the threat of new entrants can be seen as *low*, as a result of restrictive government policies that place barriers to entry into medical education. The threat of substitute products is *moderate*, ~~and moderate~~ and can be seen as a competitive force in the global context, rather than one that is local. Students, both domestic and international, and the patient and the wider community/society can be considered as ‘buyers’ in medical education industry. As compared to students, the wider community and society has a somewhat *moderate* bargaining power through demanding better quality healthcare or more service. Suppliers of labor, i.e. staff and organizations and individuals who supply resources in the form of *of* funding have *high* bargaining power within the medical education context. Rivalry comes in the form of competition for clinical placements, research funding, and academic reputation. However, the intensity is very much *context specific*. In addition, environmental factors such as the economy and labor market, changing social norms, and technology have the potential to shift competitive forces over time and the resulting changes in structure may reconfigure the medical education industry.

The industry analysis of medical education has identified two additional elements in the buyers’ and suppliers’ perspectives. First, the findings recognized patient and wider community/society as one of the ‘buyers’ in medical education, and has a somewhat moderate bargaining power. Second, organizations and individuals which supply resources in the form of funding were acknowledged as ‘suppliers’ in medical education. They have high

bargaining power and consequently, have the potential to structure the competitive forces within medical education.

Unlike environmental factors such as economy and technology, the analysis found that regulatory bodies, both locally and overseas, exert legitimate influence in medical education and affect nearly all of the five forces. As such, they play a major role in structuring the competitive nature within the industry. Various governmental levels influence the medical education industry by funding institutions, assessing and accrediting medical schools, and potentially empowering students if fee-deregulation occurs. One normally perceives government involvement as stifling market mechanisms, but in the medical education context, changes in legislation and policies will have a significant impact to the underlying structure of medical education industry through expansion, creation, or enabling the market (Martinez & Wolverton, 2009a, 2009c). By the same token, the broader university, as a source of regulation for medical schools, has the potential to modify how medical schools compete with one another. While Porter (2008) sees government as an attribute, in line with previous research (Martinez & Wolverton, 2009c; Mathooko & Ogutu, 2015), the findings have provided sufficient evidence to extend Porter's five forces framework to include government and other organizations that regulate the industry.

The analysis of the interview data concurs with previous studies (Collis, 1999, 2001; King, 2008; Martinez & Wolverton, 2009a, 2009c; Mathooko & Ogutu, 2015; Pringle & Huisman, 2011), in that it is possible to apply a pre-dominantly profit-oriented framework to higher education. The findings of the study have shown that a revised framework that incorporates regulatory bodies as a sixth and equivalent force, and includes two additional elements to the buyers' and suppliers' perspectives provide a more comprehensive view of medical education. **Figure 2** provides a revised framework.

[Insert Figure 2 here]

Figure 2: Porter’s revised framework

Conclusion and Implications

The higher education world is undergoing rapid transformation, and is operating in a highly turbulent and dynamic environment that calls for medical schools to plan and anticipate uncertainties by developing appropriate and sustainable response strategies. Despite previous research, which has argued that strategy, in the business sense, does not apply to a substantially public and more institutionalized sector such as higher education (Amaral, Jones, & Karseth, 2002; Gumport, 2001) and is not achievable in complex, loosely coupled organizations such as universities (Leslie, 1996; Musselin, 2007), the findings of this study has shown the contrary, and accordingly challenge these assertions.

The results of the empirical analyses provide evidence that environmental forces affect the nature of competition in medical education, and that competitive advantage can be gained by medical schools from a sustained ‘business-oriented’ analysis of the industry in which they operate in. The findings of the study have shown that a revised framework that incorporates regulatory bodies as a sixth and equivalent force, and includes two additional elements to the buyers’ and suppliers’ perspectives provide a more comprehensive view of medical education. By extending the framework, medical schools can gain a complete picture of the competitive influences in the environment and recognize and respond to structural changes in the competitive environment. In doing so, they can exploit and work around constraints and even reshape the forces in their favor.

A number of implications abound. For instance, regulatory bodies seem to exert legitimate influence in medical education. As a result, there is an expectation that staff manage relationships, expectations and engagement with regulatory health agencies, which

would mean that there is a requirement for business and commercial capabilities, such as negotiation skills, intercultural awareness, and collaborative leadership (Mahat & Coates, 2016). Additionally, the use of simulation in medical education is increasing in an attempt to reduce the number of safety concerns (Issenberg, Gordon, Gordon, Safford, & Hart, 2001) as well as provide realistic scenarios for student engagement (Khan, Pattison, & Sherwood, 2011). Consequently, technology has the potential to replicate much of the education experience at marginally lower cost, and hence reduce entry barriers (Mahat & Pettigrew, 2017).

As higher education becomes more complex, the old hierarchical model that depended mostly on only a few people at the top for leadership simply does not work anymore. [As analysis using Porter's Five Force framework has shown that various environmental factors affect the strategic management of higher education, more so in medical education.](#) In today's more volatile, uncertain and ambiguous higher education landscape, decentralized controls and leadership through networks of people at all levels is imperative for success. Strategic leadership and management in today's medical schools should encompass greater levels of delegation and decision making at all levels. Effective leadership, [in the midst of a volatile environment](#), should, [more than ever](#), focus on creating an inspiring vision of the future, guiding and communicating that vision, motivating and inspiring staff to engage that vision and managing the overall delivery of the vision.

Figure 1: Porter’s five forces framework

Figure 2: Porter’s extended framework

Table 1: Profile of participants

	N = 21 n	Percent
Gender		
Female	7	38%
Male	14	62%
Function type		
Academic	19	90%
Professional	2	10%
Position type		
Heads/Deans of medical schools	6	29%
Clinical Deans	1	5%
Heads of others schools/departments	3	14%
Associate Dean or similar (with specific responsibility)	3	14%
Professors/Chairs	5	24%
Senior lecturer	1	5%
Professional staff	2	10%

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(No. of words (paper only): [454140024484](#))

(No. of words (including [abstract](#), references and figures/tables): [601648925836](#))

Table 1: Profile of participants

	N = 21 n	Percent
Gender		
Female	7	38%
Male	14	62%
Function type		
Academic	19	90%
Professional	2	10%
Position type		
Heads/Deans of medical schools	6	29%
Clinical Deans	1	5%
Heads of others schools/departments	3	14%
Associate Dean or similar (with specific responsibility)	3	14%
Professors/Chairs	5	24%
Senior lecturer	1	5%
Professional staff	2	10%

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Porter's five forces framework
225x150mm (150 x 150 DPI)

Porter's extended framework

259x173mm (150 x 150 DPI)