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Management control system design, ownership, and performance in professional service organisations

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ABSTRACT

The objective of this study is to investigate the implications for organisational performance of the interplay between ownership and management control system design in professional service organisations. Based on transaction cost economic (TCE) theory, we expect that low ownership by professionals working in a professional services organisation will be more efficiently managed with a boundary MCS archetype and high ownership by an exploratory MCS archetype. Of direct relevance, we predict that a failure to conform to these optimal archetypes will manifest in relatively poorer performance. The study was conducted based on a survey of 120 practice managers of primary healthcare organisations in Australia. These results provide empirical support for the stated prediction.

1. Introduction

We investigate the implications for organisational performance of the interplay between ownership and management control system (MCS) design in professional service organisations. The contextual setting for our investigation is the primary healthcare sector in Australia. Primary healthcare organisations (PHOs) are small 'for profit' organisations where general practitioners (GPs) provide a first point of contact with the healthcare system (DHA, 2013). PHOs present a considerable control challenge because GPs are highly trained professionals who work independently to produce an intangible output and have preferences that conflict with bureaucracy. Early organisational theorists predict that ownership is an effective solution to this challenge (Fama & Jensen, 1983; Greenwood & Empson, 2003).[2] However, in Australia we observe differences in the level of GP ownership across PHOs (IBIS, 2011). The performance implications of this variation have not been investigated to date. A related question is whether differences in the MCS design can mitigate these differences.

We structure our analysis around Transaction Cost Economics (TCE), a holistic MCS design theory that allows for the possibility of misalignment and resultant performance effects (Hakansson & Lind, 2007). We argue, consistent with Speklé (2001), that within the PHO context which exhibits the characteristics of high uncertainty and high asset specificity, the efficient MCS design for organisations with low GP ownership is the boundary archetype and for those with high GP ownership, it is the exploratory archetype. The boundary archetype features administrative controls emphasising behaviours to be avoided whereas the exploratory archetype features less formal controls that are engaged in creating and preserving information sharing. Importantly, we predict that conforming to these archetypes will result in relatively higher performance (Speklé, 2001).

We employ data from an online survey of practice managers that provided 120 useable responses (a 26.6% response rate). We identify the empirical ideal MCS for PHOs that differ in ownership via a two-stage cluster analysis using percentage of ownership and MCS effectiveness (Gerdin, 2005). We measure fit as the Euclidean distance of the organisation's MCS profile from its empirical ideal MCS based on the top performing organisations within the cluster. Since TCE predicts the most efficient MCS given ownership, we measure performance as financial performance relative to peers. The results support our prediction of a positive relationship between fit and organisational performance. Sensitivity analyses using an objective measure of performance based on gross fee revenue and using fit measured relative to the cluster average MCS profile reveal results to be robust to the choice of performance measure and choice of benchmark to define the ideal MCS design. As a by-product, we also find the organisations that self-assess as

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[1] This study is based on Robyn King's PhD thesis completed in the UQ Business School at the University of Queensland.

[2] Limiting conditions are scale, complexity, capital intensity, commodification, litigation and social trends (Greenwood & Empson, 2003).

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having effective MCS conform with Speklé's (2001) theoretical ideal ownership-archetype profiles whereas those that reported an ineffective MCS do not.

Our study extends the MCS literature by investigating ownership as a relevant contextual variable when evaluating the impact of MCS design on performance. Our evidence indicates that there are different optimal combinations of GP ownership and MCS design with similar financial performance outcomes, consistent with the concept of equifinality (Gresov & Drazin, 1997). Our findings also contribute to the ongoing debate about the suitability of TCE as a holistic theory of MCS design (Speklé, 2001). From a practical perspective, our evidence has the potential to assist managers, owners and advisors optimise MCS design for the organisation's given level of ownership. While we conduct our study within the context of the Australian primary healthcare sector given its economic and social significance and the significance of the control problem within this sector, our results are applicable more broadly. Similarities among the primary healthcare sectors in Australia, the U.K., and the U.S. make our findings of interest internationally. Further, since the conceptual foundation of our study is not restricted to one particular context, our findings are also applicable to other professional service sectors.

The remainder of this study is organised as follows. We next discuss the literature on ownership and MCS design in professional services organisations, and describe the Primary Healthcare sector in Australia. The third section develops our hypothesis, and the fourth section describes our research design and sample data. The fifth section reports our results and the sixth section concludes.

2. Control in the professional services sector

2.1. The role of ownership in professional service organisations

Early organisational theorists propose ownership as the ideal control solution for professional service organisations. As owners, professionals will have the residual rights to control and the incentive to make decisions that will create, maintain and improve the organisation (Hansmann, 1996). Ownership also reduces the likelihood of the professional leaving and is a form of cultural control that encourages mutual monitoring (Merchant & Van der Stede, 2007). Consistent with this view, Greenwood, Deephouse, and Li (2007) compare the performance of large management consultancies and find that private corporations and partnerships outperform public corporations.

If these predictions and findings hold, we would expect to see all professional service organisations owned by the professionals working in them.[3] However, there are two arguments as to why, in practice, ownership rights may represent an incomplete solution to their control challenge. First, a necessary condition for ownership to develop as a complete solution is a stable regulatory and institutional setting (Mintzberg, 1979). In a dynamic environment, efficient ownership may not be quickly achieved due to the long term nature of the ownership arrangements, limits to the cognitive abilities of the contracting parties, and the costs of changing arrangements (Richter & Schroder, 2008). Further, if the industry is, in some sense, relatively immature, ownership measured at a point in time can be considered as exogenous (Larcker & Rusticus, 2007).

Second, even given a stable setting, there are a number of limiting factors at the organisational level. These factors include differences in the amount of capital the individual owners can provide, their requirements for division of returns, and their priorities including profit generation, employment security and working time (Greenwood & Empson, 2003). Due to these differences, there will be varying degrees of alignment between personal and organisational goals, leaving a residual control problem (Ittner, Larcker, & Pizzini, 2007). With diffused ownership, there also is the possibility of shirking (Gaynor & Gertler, 1995), as well as the need to co-ordinate decision-making among multiple owners and to control individual activities to achieve efficient outcomes. As a result, Richter and Schroder (2008) propose that internal governance, specifically MCS design, can augment ownership to arrive at a more complete control solution.

Following Richter and Schroder (2008) and Empson and Chapman (2006), we propose a role for the MCS as part of the control solution. If due to constant changes in the environment, ownership is not yet in equilibrium, there should be variation not only in the observable ownership but also in MCS design. In circumstances where ownership is in some sense sub-optimal, the manager can more readily adjust the MCS design to achieve efficient performance. Of direct relevance, if the MCS is designed in such a way that it is optimal for the level of ownership, taken together ownership and the MCS should reduce overall control costs and enhance organisational performance. There is some evidence that professional partnerships and public corporations can be equally effective if systems and structures are suitably constructed, with the caveat that members must be strongly committed to the professional interpretive scheme (Empson & Chapman, 2006). There is also the possibility that a mismatch between the MCS design and ownership might occur in the short run with negative performance implications (Empson & Chapman, 2006).

2.2. Primary healthcare

The Australian health and aged care sector represents one-tenth of the economy and is predicted to grow to one-eighth in the next twenty years (NHHRC, 2009). There is universal health coverage with one main funding body, Medicare. The GP is the first point of contact for a majority of patients, providing 88% of their required care and is the recognised "gatekeeper" as a referral is required to access specialist, secondary and tertiary care (IBIS, 2011). GPs work primarily in small privately held PHOs that employ nurses, administrators and increasingly practice managers (DHA, 2005). Over the last two decades, PHOs have grown from a majority having one or two GPs in 1994, to a majority having five or more in 2010–2011 (AIHW, 2012). Since 1998, there has been a shift towards corporate ownership by publicly listed companies that currently have 12% of the market, and approximately 72% of GPs now work in PHOs they do not own (Kron, 2012). Payment is mostly on a fee-for-service basis, although since 2000 there has been an increase in blended payments known as Practice Incentive Payments (PIPs). PIPs are a group reward for PHOs that require collective action of their GPs and represent 9% of income (ANAO, 2010). To receive PIPs, PHOs must be accredited to Royal Australian College of General Practice (RACGP) standards every three years and meet the requirements of the thirteen PIP categories (DHS, 2011).[4]

[3] There is some evidence of clustering of ownership structures. In a professional services setting, Richter and Schroder (2008) find size, service standardisation, capital requirements and risk to be determinants of ownership, and conclude that it is a combination of these factors that determines the optimal allocation of ownership rights. There are two provisos. First, the difficulty in raising capital and the limited capacity of employees to absorb risk pose limits to internal ownership. Second, internal ownership constrains the size of firms.

[4] The RACGP standards for general practice cover five areas: practice services; rights and needs of patients; safety, quality and improvement; practice management; and physical factors (RACGP, 2011). The amount of the PIP is based on the number of full time equivalent GPs, whole patient equivalents and the meeting of a number of performance measurement targets such as delivery of after-hours care, the use of information technology, teaching, rurality, preventative services for at risk patients, and quality prescribing habits.

The Australian primary healthcare system shares similarities with both the U.K. and the U.S. The U.K. also has a policy of universal health coverage with one main funding body, the NHS, where GPs act as gatekeepers and work in GP-owned PHOs that are increasing in size (Addicott & Ham, 2013). Unlike Australia, it is the PHO and not the individual GP that is entitled to payments which are a mix of capitation, fee-for-service and pay for performance. In the U.S. there is a multi-payer system where the GP is not the gatekeeper (Kirchhoff, 2013).[5] There is mostly fee-for-service but also some capitation payments. Historically, U.S. GPs have operated in small GP-owned PHOs but over the last two decades solo practice and GP ownership has also declined (Kane & Emmons, 2013). In all three countries, GP payments account for approximately 20% of total health care spending but GPs direct as much as 90% of the total (Kirchhoff, 2013). There is also a similar emerging phenomenon of "Lifestyle preferences with younger doctors more willing than their predecessors to work for an outside institution to secure a set schedule and salary... Physicians may be having a harder time finding doctors to buy or join a small practice, as management becomes more complex and average compensation declines" (p. 2, Kirchhoff, 2013).

2.3. The control dilemma for managers in primary healthcare

The primary role for the PHO manager is to ensure that the GP provides the necessary volume and quality of service to achieve and maintain PHO profitability. In Australia, the Medicare fee has not increased in line with inflation and so increasingly PHOs are reliant on blended payments (PIPs) (Richardson, Walsh, & Pegram, 2005). In this funding environment, the focus of 'for profit' PHOs is to provide services that meet the RACGP and PIP standards efficiently.

PHO managers are faced with variance in GP behaviours, a difficult monitoring environment and resistance to bureaucracy. The innate nature of the GP output is heterogeneous as there are differences in work habits and pace that result in differences in the quality and value of services produced and resources consumed (Town, Wholey, Kralewski, & Dowd, 2004). Direct monitoring is impossible as the consultation takes place in a sound proof consulting room and GPs usually treat patients independently. Managers cannot readily assess GP output given its intangible nature (Merchant & Van der Stede, 2007). Influencing GP behaviour is problematic because their preferences conflict with bureaucracy, including a need for autonomy and a need to preserve the social status of their profession (Barley, 2005). A seminal U.S. case study finds employed GPs rely on their professional expertise to achieve sufficient dominance and authority to pursue their own goals, reinforcing the extent of the control challenge facing practice managers (Freidson, 1975).

2.4. The healthcare ownership, MCS and performance literature

Existing literature on MCS and performance within the healthcare sector includes studies of hospitals and primary healthcare organisations. MC studies of hospitals categorise ownership as 'private for profit', 'private not for profit' or 'government owned' and then investigate performance (Eggleston, Shen, Lau, Schmid, & Chan, 2008; Shen, Eggleston, Lau, & Schmid, 2007). These studies have varying results, with some concluding that 'for profit' hospitals adopt more management techniques but with lower quality outcomes. Our construct of ownership, GP ownership, has only recently emerged in the U.S. hospital literature as a potential incentive alignment mechanism.[6]

There is also little evidence of an association between ownership, MCS design and performance in the primary healthcare sector (APHCRI, 2010). Reviews reveal that various components of governance are well documented but there is a lack of systematic mapping of these components on contingent factors and outcomes (Stewart, 2002; Tollen, 2008). Individual characteristics considered include culture (Smalarz, 2006), standardised clinical practice, performance measurement, and transparency (Audet, Doty, Shamasdin, & Schoenbaum, 2005), leadership (Casalino, Devers, Lake, Reed, & Stoddart, 2003), goal setting (Curoe, Kralewski, & Kaissi, 2003), planning and accountability (Rittenhouse & Robinson, 2006), incentive systems (Mehrotra, Epstein, & Rosenthal, 2006), and selection of workforce and patient centeredness (Rittenhouse & Robinson, 2006). However, this research does not combine these attributes, nor does it indicate the directionality between these attributes and efficiency (Tollen, 2008). We extend the literature by empirically examining the relationship between ownership, MCS design and organisational performance appealing to TCE theory to make our predictions.

3. Theoretical foundation and hypothesis development

TCE has been proposed as a theory capable of predicting efficient MCS design while allowing for the possibility of 'misalignment' and its effect on performance (Hakansson & Lind, 2007). Speklé (2001) argues that TCE is useful because it is focused at the micro-analytical level, adopts the behavioural assumptions of bounded rationality and opportunism, and is based on minimising transaction costs, and hence can explain why a particular MCS design is efficient for achieving an organisation's goals without having to specify the goals (i.e., instrumental effectiveness).[7]

The existing TCE intra-organisational MCS research is in its infancy and there is minimal empirical evidence on which to rely when making predictions about MCS design (Macher & Richman, 2008).[8] Speklé (2001) theorises optimal MCS archetypes based on the characteristics of transactions identified in TCE, asset specificity, uncertainty, frequency and post hoc information impactedness.[9] Post hoc information impactedness is a derivative of uncertainty and opportunism, and is related to "the extent to which the organization is able to observe and to assess perceptively the true quality of actually delivered contributions" (p. 431, Speklé, 2001). High information impactedness exists when transaction information is known to one party but is costly or even impossible for others to obtain. This situation might arise if information is withheld opportunistically or if the second party lacks the specialised knowledge to understand the information and there is a high cost to assess the true level of actually delivered inputs.

[5] The U.S. equivalent title for GP is primary care physician. For consistency and clarity, the term GP is used here (Kirchhoff, 2013).

[6] In contrast, in Japan physician hospital ownership studies have associated it with conflicts of interest (Rodwin & Okamoto, 2000).

[7] Principal agent theory is a possible alternative theoretical foundation that takes an ex ante perspective assuming rationality and so predicts organisations are optimising with no direct capacity to test empirically for performance effects (Luft & Shields, 2007). We prefer TCE which takes an ex post perspective assuming bounded rationality allowing for the possibility of 'misalignment' between the chosen ex post solution, the MCS and the transaction characteristics. This ability to provide a causal map has been identified as a desirable attribute of any theory of MCS design (Luft & Shields, 2007).

[8] TCE combined with contingency theory was the basis for a study of the relationship between strategic human capital and MCS design evidencing a positive relationship between personnel, non-traditional results control and use of strategic human capital (Widener, 2004).

[9] These archetypes have been subject to testing by Kruis (2008) who employs a cross-sectional survey to investigate the relationship between the transaction characteristics, five of Speklé's (2001) MCS archetypes and effectiveness. Kruis finds some support for Speklé's arm's length control archetype but small sample sizes precluded testing others. There is also a case study using TCE as its foundation that investigates changes in MCS related to the restructuring of the Shell chemical businesses (Van den Bogaard & Speklé, 2003).

Against this backdrop, we argue that within our setting, the PHO transaction of interest, namely the provision of care to patients by the GP, is characterised by both high asset specificity and high uncertainty. Further, we theorise that information impactedness is directly related to the level of GP ownership. Specifically, asset specificity is high as the GP's knowledge of the patient and the PHO's systems develops over time and is not easily transferred (Sturmberg & Martin, 2008). Further, if the GP leaves the practice, this valuable knowledge asset is lost and is not readily replaced (WHO, 2006). There is also high uncertainty as the organisation cannot ex ante prescribe GP actions within a consultation. Consultations are becoming more difficult due to the increasing incidence of chronic and complex conditions, and the uncertainty surrounding the efficacy of treatment options (Holmberg, 2006). Uncertainty is also increased because at all times, the patient can have "input to or cause disruption in the production process" (p. 139, Chase, 1978).

In terms of an association between ownership and information impactedness, we argue that when all professionals are owners, there are reduced incentives for withholding information, sufficient specialised knowledge to understand the information, and greater incentives to monitor each other's performance. Hence, information impactedness will be low since the knowledge of performance can be spread throughout the organisation at relatively low cost. Alternatively, if ownership is fully allocated to non-professionals, information asymmetry remains high and information impactedness will likely remain high.[10]

Lastly, we present ownership and MCS as acting jointly as part of the control solution. In this regard, Speklé (2001) notes the level of information impactedness is not necessarily an exogenous variable treated as a given transaction characteristic but may be "and often is – the product of control structure choice" (p. 431). However, given the frequent funding policy changes made by successive Australian governments over an extended period, we view the Australian primary healthcare sector as immature in terms of its ownership equilibrium and combined with the manager's inability to directly influence the level of GP ownership, treat ownership as exogenous in our context.[11] This turbulence in the regulatory setting and the resultant variation in GP ownership in Australian PHOs provides a contextual setting to investigate our predictions based on TCE without the need for additional controls for industry effects.

Of direct relevance here, given a setting of high asset specificity and high uncertainty, Speklé (2001) predicts that with high information impactedness (low ownership), the optimal MCS design is a boundary archetype whereas with low information impactedness (high ownership), the optimal MCS design is an exploratory archetype.[12] With high uncertainty, it is not possible to prescribe accurately *ex ante* the actions required of the contributor. If there is also high asset specificity, there are high costs associated with *ex post* monitoring due to the specialised character of the information on contributions. Given this combination, high information impactedness makes explicit contracting for concrete actions infeasible. The aim of control then shifts to the prevention of undesired actions and outcomes. The boundary archetype features administrative controls achieved through interdictions, emphasising behaviour to be avoided including proscriptive codes of conduct and often carrying stringent penalties for non-compliance. In contrast, with low information impactedness, the optimal MCS design is one that facilitates the flow of information within the organisation. This MCS is consistent with an exploratory archetype which features controls that are engaged in creating and preserving information sharing, and in re-adjusting and re-aligning perceptions on progress throughout the life of the contract. Suggested controls include information sharing entrenched in organisational structure and process design, performance evaluation based on emergent standards, rewards through promotion (including periodic salary revision) based on long term performance and little emphasis on formal instruments of control.[13]

In sum, accepting the link between ownership and information impactedness, we reframe Speklé's (2001) predictions as they apply to our setting as follows: *given a setting of high uncertainty and high asset specificity, with low ownership the optimal MCS design is a boundary archetype whereas with high ownership it is an exploratory archetype*.

Finally, predictions based on TCE represent the efficient matches between ownership and MCS design because they minimise total costs and maximise organisational performance. To illustrate, first consider the situation where the professionals retain all ownership rights. Here, the costs of reduced diversification and a limited investment base are best countered by the adoption of the lower cost, less formal, exploratory MCS (Richter & Schroder, 2008). Alternatively, when ownership is opened to outsiders, the higher cost of the more formal, boundary MCS is offset by both the ability of the outside owners to diversify and the greater access to capital. In reality, however, it is possible that not all organisations will have their predicted efficient MCS design at all times. Such a 'mismatch' or lack of 'fit' might occur because of bounded rationality wherein some managers are better able, within a complex setting, to identify their optimal MCS design (Merchant & Van der Stede, 2007). Equally, it might occur because of a "lag" between the recognition of the need for a change in the MCS and the change occurring due to a lack of available resources, because of a 'lumpy' change such as introducing a system with the capacity for future growth, or because there is an unexpected change in the operating environment. Such lags or lumpiness will likely result in periods when the adopted MCS is less efficient (Luft, 1997). Thus, irrespective of cause, the result of a lack of 'fit' will be a control loss, defined as the difference between performance that is theoretically possible and that expected given the MCS in place (Merchant & Van der Stede, 2007). Our hypothesis, stated in the alternate, then directly follows as:

H1. Performance is positively related to the extent of 'fit' between level of professional service worker ownership and MCS design.

4. Research design and sample data

4.1. Operationalising the MCS construct

Our interest is in the MCS as a whole, rather than in sub-groups of controls. Grabner and Moers (2013) propose that "MC practices form a system if the MC practices are interdependent and the

[10] In reality, there will likely be a continuum of ownership ranging from 0% to 100%. We restrict our arguments to the extremes because the form of the relation between ownership and information impactedness is as yet untested. The level of information impactedness is likely also influenced by the size of the organisation as the costs of sharing information on inputs to transactions will increase with the number of professionals working in them (Williamson, 1975). Size is therefore included as a control in our analyses.

[11] For example, starting in the late 1990's, financial incentives were provided for PHOs to amalgamate, resulting in a trend towards larger PHOs (IBIS, 2011), in 1996, the payment system changed from purely fee for service to include PIPs, and since 2000, the RACGP standards have changed substantively three times and there have been 33 key changes to criteria for PIPs (ANAO, 2010).

[12] This line of reasoning applies more broadly to professional service transactions as they are likely characterised by high asset specificity as knowledge of the client and organisation's systems is not easily transferred and not readily replaced and high uncertainty because the organisation cannot *ex ante* prescribe what the professional needs to do in each transaction.

[13] The exploratory archetype is related to Mintzberg's (1979) 'adhocracy' and the 'organic' organisation (Burns & Stalker, 1961).

design choices take these interdependencies into account. In contrast, MC as a package represent the complete set of control practices in place, regardless of whether the MC practices are interdependent and/or the design choices take interdependencies into account" (p. 4). As we are predicting the optimal combination of controls that are efficient for a singular control problem, GP behaviour, it is the MC system design and not a MCS package that is the construct of interest here.

Although Speklé (2001) provides general descriptions of his archetypes of control, he does not provide in detail the individual MC practices that make up each of the archetypes. Since PHOs are small organisations where managers may not have a complete set of formal MC practices in place, we may omit a correlated variable if we simply ask our respondents about the exploratory versus boundary characteristics of their MCS. To operationalise the MCS construct, we therefore adopt the framework proposed by Malmi and Brown (2008) for three basic reasons. First, within our context, the control challenge being investigated is that of directing GP behaviour, not of strategy formulation. We view the Malmi and Brown (2008) definition of MCS ("Those systems, rules, practices, values and other activities management put in place in order to direct employee behaviour") as consistent with the GP control challenge. Second, the Malmi and Brown framework describes an extensive range of controls likely to be present in small PHOs and so provides a comprehensive descriptive framework to ensure survey coverage of our MCS domain. Third, it includes cultural controls as overriding controls able to be affected by management. These controls have been found to be important in professional services settings (Freidson, 1975). Thus, we argue that using the Malmi and Brown (2008) framework provides some assurance of a complete coverage of the domain of the MCS construct.[14]

From the empirical perspective, a critical challenge presented by the Malmi and Brown (2008) framework is that it is purely descriptive of MC types and does not suggest how to measure each control practice. To provide operational context, we enlist the first eight questions from the Ferreira and Otley (2009) PMS framework.[15] Ferreira and Otley state the "general nature of the framework enables other frameworks to be used to complement its interpretations and insights." (p. 265).

4.2. The survey questionnaire

We develop the initial questionnaire from the MCS literature, notably Ferreira and Otley (2009). We also use input from interviews with managers from seven PHOs that differed on ownership and performance. We pretested the questionnaire on thirteen experts including experienced practice managers, GPs, and accounting and health care academics. We then modified the questionnaire and conducted a pilot study on thirty practice managers as a further check of reliability and validity (Van der Stede, Young, & Chen, 2005). We used the analysed pilot results and participant feedback to improve the face and content validity of questionnaire items.

The final questionnaire consists of 111 questions presented in nine panels. A summary is presented in Appendix A. The first five panels relate to the five types of controls (p. 291, Malmi & Brown, 2008). All questions use a 7-point Likert scale and with two exceptions are worded such that higher scores reflect more formal rule-based controls, representative of a boundary archetype of control; the two exceptions are Socialise and Selection.

Following the specific questions relating to each of the five types of controls, we measure two additional summary constructs (Ferreira & Otley, 2009). The first construct is the overall emphasis placed on each control type. To measure emphasis, we ask respondents to reflect upon their answers to the specific questions about control practices within each control type and to indicate the emphasis placed on that control type for managing the behaviour of the GPs. Consistent with the wording of the underlying control practice questions, higher scores are indicative of a boundary archetype. The purpose of including the five emphasis measures is to compare the MCS of different PHOs at the control type level as a summary measure of the theoretical archetypes. For the second construct, we ask respondents to take their responses to the questions on individual control practices into consideration and indicate the effectiveness of each particular control type for managing the behaviour of GPs. This question is designed to differentiate organisations on the perceived effectiveness of their chosen MCS (Chenhall, 2007; Kruis & Widener, 2009) and is a subjective evaluation by the manager about the usefulness of the MCS design.

The final four panels contain questions on organisational performance, contingency factors, and both PHO and manager characteristics. For performance, we collect subjective measures of the PHO's relative profitability, competitiveness, market share, growth, innovativeness and size (Govindarajan & Gupta, 1985). For completeness, we also collect data on measures of learning (Widener, 2007), patient satisfaction (Shortell & Rundall, 2007), accreditation scores and gross fees.

We include questions for the contingency variables 'Size', 'Structure', 'Strategy' and 'Perceived Environmental Uncertainty (PEU)' for use in robustness testing. We sourced the items from the literature as follows: size is the number of full time equivalent employees including GPs (FTE) (King, Clarkson, & Wallace, 2010); structure is measured using six items that ask about the degree of decision making delegated to the manager (Gordon & Narayanan, 1984); strategy is measured using a single item which distinguishes between cost leadership and price differentiation (Govindarajan, 1988); and PEU is measured using four items, two on competition and two on environmental turbulence in the external environment (Gordon & Narayan, 1984).

Finally, we collect manager and PHO characteristics to assist in the testing of possible non-response bias and as controls for the statistical analysis. For managers, we collect their highest level of management qualification, years of experience in managing a PHO, and relationship with the owner(s). For PHOs, in addition to size (FTE), we collect data on years of operations (as a measure of organisational lifecycle), percentage of private billing (as a measure of profit margin), and the percentage of GPs working in the organisation that were owners (as the measure of ownership).

4.3. Sample organisations

4.3.1. The sampling frame

The identified sampling frame is the population of PHOs with three or more GPs in Australia. These organisations likely present a greater potential control problem for managers than smaller solo or dual GP practices (Ittner et al., 2007). Additionally, the trend has been towards increasing practice size and greater prevalence of practice managers which has led to an increased likelihood of MCS implementation (DHA, 2013). We therefore focus on GP

[14] Malmi and Brown (2008) define organisational structure as the degree of functional specialisation. In our pre-survey interviews, we identified organisational structure control practices as the existence and use of an organisational chart and GP position descriptions. In contrast, the contextual variable labelled as 'Structure' is a separate and distinct construct defined as the degree of decentralisation of decision making (Gordon & Narayanan, 1984). The decision on the degree of decentralisation is typically made by the owners and not readily changed by the practice manager. It is therefore not a control practice used by the manager for controlling GP behaviour and hence is not considered a part of the MCS but rather a contextual variable.

[15] We have not selected it as our framework because with its inclusion of strategy reformulation, its definition of control is broader than required here, and cultural controls are not included in the PMS.

groups of three or more due to the greater need for, and capacity of managers to design MCS to direct GP's behaviours (Merchant & Van der Stede, 2007). While there is no publicly available information on how many organisations fit these criteria, the closest approximation is that there were 4502 PHOs with two or more GPs in 2008 (PHCRIS, 2008). The target survey participants are practice managers as they are likely to have the greatest knowledge of the organisation's MCS design and performance.

As ownership information for Australian PHOs is not publicly available, following King et al. (2010), we approached the Australian Association of Practice Managers (AAPM) to assist in identifying and contacting suitable study participants. The AAPM is the only recognised professional body for practice managers in Australia. Because membership is voluntary, subject to an annual subscription, it is likely that AAPM members are interested in current management trends, wish to become part of a professional network and have resources available to pay the fee. From the limited AAPM membership data, it appears that this selection method introduces the potential for bias as AAPM members are likely to be from larger PHOs with greater available resources. Notwithstanding, we consider the advantages of accessing AAPM members and having the AAPM's support to outweigh the potential problem of bias (Dillman, 2000). Further, as discussed in the next subsection, this bias does not, in fact, reveal itself in our data.

4.3.2. The survey process and survey respondents

By request of the AAPM, the survey was conducted as an interactive web-based survey by Ultra Feedback, a commercial survey group. The advantages of online surveys are increased speed of response, lower cost and less data entry than mail surveys (Crawford, Couper, & Lamias, 2001). As recommended by Dillman (2000), the survey was accompanied by an invitation letter with links to an endorsement letter from the AAPM president and a participant information sheet. There were a total of two reminders, the first two weeks after the initial email and another a week later.[16]

E-mail addresses for one practice manager from each of 451 PHOs identified as potentially satisfying the selection criteria were provided to Ultrafeedback by the AAPM. Of these, 193 managers opened the survey, and 178 fit the selection criteria (PHOs with three or more FTE GPs). Fifty-eight responses were identified as having significant missing values, leaving a final sample of 120 respondents.[17] This represents a usable response rate of 26.6% which compares favourably with other management accounting studies (Bisbe & Malagueno, 2012; King et al., 2010).

We screened the survey data for possible non-response bias by comparing the first and last 30 responses via *t*-tests (Moore & Tarnai, 2002). We find smaller PHOs with managers having greater experience more likely to respond early, thereby raising the possibility of non-response bias. To address this concern, the chosen cluster analysis solution (Section 5) was scrutinised for differences in the size of PHOs, revealing no statistically significant differences. We also include size as a control variable in the regression analyses. We performed a Harman's one factor test which resulted in a 17-factor solution with the first factor explaining 24.77% of the total variance. As a result, common method variance was not considered a serious threat (Podsakoff & Organ, 1986).

Descriptive demographics for the 120 respondents are provided in Table 1. Data reveal considerable cross-sectional variation in both ownership and gross fee revenue. GP ownership (% *Ownership*) ranges from 0% to 100%, with a mean value of 38% and a standard deviation of 26%. For the 84 PHOs that provided the data, gross fee revenue ranges from $600,000 to $5 million, with a mean value of $2.296 million and a standard deviation of $1.017 million. The mean number of FTE employees is 15.7 and the mean number of GPs working in the PHO is 6.58.

Given the exclusion of PHOs with two or fewer GPs, the sample mean number of FTE employees is greater than the population average of 5.73 (IBIS, 2011). For further comparison, 37.5% of the sample had three or four GPs, and the remaining 62.5% had five or more whereas after excluding solo practices, 38.9% of the remaining population has between two and four GPs, and 61.1% have five or more (IBIS, 2011). Similarly, the sample mean value for gross fees exceeds the population average of $970,934 for the 2009–2010 financial year (IBIS, 2011).

Finally, for the constructs with multiple measurement items, we conducted exploratory factor analysis using PCA with orthogonal rotation for each of the five control types, as well as effectiveness, PEU,[18] and structure (Tabachnick & Fidell, 2007).[19] We eliminated four items, two for insufficient loadings and two for cross loading.[20] In line with expectations, the PCA's revealed 18 components, six for cultural controls, two for planning, three for cybernetic, one for rewards and compensation, and six for administrative controls. While the Cronbach Alphas (CA) were below the recommended limit of 0.6 for three components (Recruit, 0.532; Selection, 0.472; and Policy and Procedures, 0.446), we attribute the results to the small number of measurement items and retain these components keeping the CA in mind (Hair et al., 2010).

Based on the results from the PCA, we create summated scores for each of the components as they can be more easily reproduced in future research (Hair et al., 2010). Table 2 presents descriptive statistics for the summated scores. When compared with the factor scores, there were consistently high correlations. Further, when the sample is split between high and low ownership, a comparison of the summated scores, factor scores and highest loading items reveal the same pattern of differences (Hair et al., 2010). Our analyses are therefore based on the summated scores.[21]

5. Empirical methodology and results

5.1. Empirical strategy

To test H1, we adopt a configuration/contingency approach (Gerdin & Greve, 2004). The underlying assumption of the configuration approach is that there are "only a few states of 'fit' between context and structure, with organisations having to make quantum jumps from one state of 'fit' to another" (p. 304, Gerdin & Greve, 2004). It is similar to the systems approach and takes a holistic view such that multiple variables are retained in the analysis (Venkatraman & Prescott, 1990). In conjunction, a contingency view assumes that rather than only the best-performing organisations surviving to be observed, organisations have varying degrees of 'fit' with their context. Using this approach, the researcher must demonstrate empirically that higher degrees of 'fit' are associated with higher performance.

[16] Copies of the AAPM cover letter and the original survey questionnaire are available from the authors upon request.

[17] Remaining missing data assessed by a *t*-test and Little's MCAR test statistic ($p > 0.10$) as missing completely at random (MCAR) were replaced using the expectation maximisation EM estimation algorithm in SPSS as recommended by Hair, Black, Babin, and Anderson (2010).

[18] Consistent with the literature (King et al., 2010), we extract two factors that we label as PEU1-competition and PEU2-dynamism.

[19] For robustness, we also conducted CFA. Orthogonal rotation was chosen as the controls in the MCS are not necessarily theoretically correlated, and the resulting uncorrelated scores are more suitable for the subsequent analyses (Hair et al., 2010).

[20] Loadings less than |0.50| were considered insufficient and when an item had loadings greater than 0.45 on two factors it was considered as a cross loading (Hair et al., 2010; Tabachnick & Fidell, 2007).

[21] All analyses were also conducted using factor scores with results qualitatively identical.

Table 1
Descriptive profile for a sample of 120 Australian primary healthcare organisations.

Characteristic	*N*	Mean	Median	Std Dev	Min	Max
GP	120	6.576	6.000	3.567	3	27
FTE	120	15.700	14.050	7.979	5	62
% Ownership	120	0.384	0.333	0.255	0	1
Gross Fees ($)	84	2,295,983	2,200,000	1,016,884	600,000	5,000,000
Lifecycle	119	31.910	26.000	24.966	0.30	135
Private Billings	117	42.682	40.000	23.367	0	95
Manager experience	118	11.199	11.000	6.691	1	30

Variable definitions: GP is the number of GP's working in the practice; *FTE* is the number of full time equivalent workers;*% Ownership* is the percentage of FTE GPs working in the organisation who are also owners; *Gross Fees* is the organisation's total gross fee revenue; *Lifecycle* is the years the PHO has been operating; *Private Billing* is the percentage of total gross fees derived from private (non-bulk) billings; and *Manger experience* is the number of years of experience the practice manager has in managing PHOs.

Table 2
Survey questionnaire item response descriptive statistics.

Measure	Mean	Median	Std Dev	0–1.0	1.1–2.0	2.1–3.0	3.1–4.0	4.1–5.0	5.1–6.0	6.1–7.0
Cultural controls										
Socialise	4.786	5.667	2.137	5	13	6	7	13	22	54
Code of conduct	4.501	5.625	1.577	0	7	16	16	30	26	25
Vision and mission	4.562	5.000	1.869	8	5	6	14	21	34	32
Dress code	5.349	5.500	1.050	0	1	2	4	28	42	43
Recruit	2.593	2.000	1.820	15	33	17	16	20	10	9
Selection	4.251	4.000	1.516	0	9	12	18	33	27	21
Planning controls										
Long range planning	3.823	4.000	1.974	10	14	12	18	25	20	21
Short range planning	4.260	4.625	1.853	4	13	8	19	23	29	24
Cybernetic controls										
Budgets	4.486	5.00	2.042	9	9	9	11	19	26	37
Boundary	4.242	4.667	1.999	9	11	4	12	30	22	32
Non-financial	2.478	2.333	1.743	21	29	19	14	24	9	4
Rewards &Comp.	2.892	3.333	1.642	27	4	17	26	38	7	1
Admin. controls										
Rules	3.807	3.800	1.721	8	8	19	30	19	21	15
Position	4.279	5.000	1.589	1	7	10	11	26	35	30
Organisational committees	6.039	6.667	1.421	1	2	3	1	11	15	87
Chronic disease management	4.908	5.333	1.721	1	6	6	9	24	37	37
Policies and procedures	3.787	4.333	2.125	13	17	6	14	22	27	21
Meetings	3.217	3.000	1.446	1	21	27	23	32	9	7
Performance										
Overall performance	4.946	5.000	1.399	3	2	1	14	28	41	31
Relative financial performance	4.450	4.000	1.764	7	2	3	15	36	20	37
More competitive	4.720	5.000	1.704	6	6	9	27	32	21	19
Greater market share	5.030	5.000	1.655	5	5	3	29	23	32	23
Growing faster	5.030	5.000	1.700	7	2	7	20	29	33	22
More innovative	5.400	6.000	1.677	6	2	3	15	22	40	32
Larger in size	5.040	6.000	2.023	11	5	4	22	9	37	32
Gross fees ($ millions; $n = 84$)	2.295	2.200	1.016							
Learning	5.858	6.000	1.285	3	1	2	6	23	42	43
Accreditation ($n = 82$)	4.107	4.000	0.750	0	1	30	23	28	–	–
Patient satisfaction	5.244	5.333	0.863	0	0	0	8	32	49	31
Contextual variables										
Size	15.700	14.050	7.979							
Lifecycle	31.910	26.000	24.966							
Private billings	42.682	40.000	23.367							
Strategy	5.042	5.000	1.266	3	2	4	26	41	31	13
Structure	4.951	5.000	1.343	0	5	7	8	32	35	33
PEU1 – competition	3.009	3.333	1.323	10	14	25	31	34	6	0
PEU2 – dynamism	4.609	5.000	1.448	0	6	8	9	36	35	26
Effectiveness	3.778	3.800	1.449	3	14	16	29	28	24	6

Profile deviation analysis is the method recommended to evaluate the association between 'fit' and performance (Gerdin & Greve, 2004). It assumes that 'fit' is the degree of adherence to an externally specified ideal profile and lack of 'fit' will have performance implications (Drazin & Van de Ven, 1985). Following the majority of literature, we develop the ideal profile empirically. We cannot, however, use performance to cluster because it creates endogeneity (Jermias & Gani, 2004). We therefore develop the ideal profile by forming clusters of PHOs based on GP ownership and perceived MCS effectiveness. As the number of clustering variables increases, it becomes more difficult to interpret which variable has the greatest influence and thus there is greater researcher subjectivity in making the choice of the most valid solution. By using only two clustering variables standardised prior to clustering, we minimise researcher subjectivity in the choice of solution.

After clustering, for the clusters that have scores indicating effective MCS, we identify their ideal empirical MCS profile as the average scores for each of the 18 controls from the top

performing organisations in the cluster, where the top performing organisations are those that received a score of '7' on their relative profitability measure. We then calculate the degree of 'fit' for each organisation in these clusters based on the deviations of their scores on the 18 controls from those of the ideal MCS profile as follows (Drazin & Van de Ven, 1985):

$$EucD_j = \sqrt{\sum_s Dist_{js}^2} \quad (1)$$

where $EucD_j$ is the Euclidean distance of the jth organisation from the ideal MCS profile,

$$Dist_{js} = (x_{js} - x_{is}) \quad (2)$$

and x_{js} and x_{is} are the score of the jth organisation and the average score of the top performing organisations in the cluster, respectively, for the sth control ($s = 1, \ldots, 18$). For organisations within clusters that alternatively identify as having an ineffective MCS, we use the average control scores of the top performing organisations from the effective cluster with the closest GP ownership.

Finally, following Ittner and Larcker (2001), we investigate the relationship between 'fit' and organisational performance using the following model:

$$Perf = \alpha + \delta_1 EucD + \Sigma_k Control_k + v \quad (3)$$

where *EucD* is the Euclidean measure of distance (fit) from Eq. (1), and *Perf* and *Control* are the measure of performance and a vector of five control variables, respectively, both discussed below. Based on H1, we expect the sign of δ_1 to be negative ($\delta_1 < 0$). Since *Perf* is measured using a 7-point Likert scale, we use ordinal logistic regression to estimate the model.[22]

For *Perf*, we use the profitability item from the measurement instrument of Govindarajan and Gupta (1985) that asks the respondent whether, when compared to similar organisations, their organisation is more profitable. Use of a subjective measure is well established in the literature (King et al., 2010; Miller & Cardinal, 1994) and has been argued as preferable to archival data when there is the possibility of differences in accounting presentation (Powell, 1995), a situation that is likely with PHOs. Miller and Cardinal (1994) provide further support, arguing "It may be that informant data, which individuals typically give under conditions of promised anonymity for their firms, basically reflect true performance, but archival data to a substantial degree reflect public relations, tax, and other extraneous considerations that create noise in the data." (pg. 1661)

For robustness purposes, since this subjective performance measure may be subject to leniency bias, we also consider a measure based on Gross Fees for the subset of the respondents who provide the figure (Brownell, 1982).[23] In so doing, we concede that Gross Fees is not well suited for our purposes as it is a recognised proxy for size and thereby critically, not a measure of efficiency. A more appropriate objective measure within our context would be a measure such as the expenses-to-income ratio. Unfortunately, when we attempted to collect this measure in the pilot survey, we received an exceedingly low response rate and so did not include it in the full survey. Given our inability to access our preferred measure we revert to Gross Fees. Further, we rely on the subjective measure as our primary measure following the argument advanced by Merchant (1985) that subjective measures are defensible when it is not possible to get properly matched objective data.

Finally, the five control variables we include in the model are emphasis, GP ownership, size, private billings, and life cycle. We include measures of emphasis and ownership, arguing that these could potentially be main effects that directly influence performance. Emphasis (*Emphasis*) is measured as the mean of the emphasis scores across the five types of controls in the MCS. As described, GP ownership (*% Ownership*) is measured as the proportion of FTE GPs working in the practice who are owners. We include size (*Size*) given the possibility that it has a direct relationship with organisational performance (Chenhall, 2007). We include lifecycle (*Lifecycle*) under the expectation that organisations with longer operating histories are more likely to have found operational efficiencies. Finally, we include private billings (*Private Billings*) under the expectation that organisations with a higher proportion of fees from private billings will exhibit better performance given the higher profit margin per consultation.

5.2. Cluster analysis

We conduct a two-stage cluster analysis classifying the sample organisations according to ownership and overall effectiveness of their MCS to identify the empirical ideal profile of MCS when GP ownership varies.[24] Overall effectiveness is measured as the mean of the effectiveness scores across the five types of controls in the MCS. We screened the data and the Pearson bivariate correlation (-0.220, $p < 0.01$) reveals no threat of multi-collinearity (Hair et al., 2010). Calculation of Mahalanobis distance revealed eight cases as potential outliers. Analyses conducted after their exclusion revealed results to be qualitatively unaffected and hence they were retained.

We first perform hierarchical clustering using the agglomerative approach and Ward's method (Everitt, Landau, Leese, & Stahl, 2011), and assess the output using the dendrogram, the agglomeration schedule, the graph of the cluster numbers versus agglomeration coefficients and the Duda–Hart method. There was support for a four cluster solution and this was subsequently profiled via an ANOVA. We then conduct a non-hierarchical analysis via K-mean clustering prescribing a four cluster solution using cluster seeds from the hierarchical cluster analysis (Everitt et al., 2011). Again, there is support for a four cluster solution from ANOVA, MANOVA and one-way discriminant analyses.

To provide context, we compare our four-cluster solution with Speklé's (2001) theorised optimal MCS archetypes using Multiple Comparison Procedures (MCP) with Games–Howell tests (Hair et al., 2010; Toothaker, 1991). The results are presented in Table 3. A more formal proscriptive system, indicative of a boundary archetype of control, is the theoretical ideal for the two clusters with the low member ownership, Clusters #3 and #4, relative to the two with higher GP ownership, Clusters #1 and #2. To frame our expectations, we appeal to the mean values of the overall effectiveness and ownership measures reported in Panel A to classify clusters as either 'effective' or 'ineffective'. Based on the wording of the control questions where, in the main, high scores are indicative of boundary archetypes of control, our expectation is that the mean overall MCS effectiveness score will be lower for clusters that have high GP ownership since their managers are expected to rely less on formal controls and hence likely to consider formal controls as less effective. On this basis, we first note that the mean value of the effectiveness measure for Cluster #4 at 1.800 is not only low in absolute terms, it is also significantly lower than its counterparts for the other three clusters based on the Games–Howell test.

[22] As explained by Borooah (2002), use of the less restrictive multinomial logit "would mean that the information conveyed by the ordered nature of the data was being discarded."

[23] Reassuringly, there is also evidence that objective and subjective measures of performance are correlated (Dess & Robinson, 1984).

[24] The advantage of using two stages is that the hierarchical analysis partitions the data to determine the acceptable number of clusters and identifies cluster centres, while the non-hierarchical analysis fine tunes the membership of the clusters (Hair et al., 2010).

Table 3
Cluster and profile analysis results.

		Cluster					
		#2	#1	#3	#4	ANOVA	G-H
		n = 18	n = 43	n = 38	n = 21		MCP
Effectiveness/Ownership Profile		Med/High	Med/Med	High/Low	Low/Low		
Panel A: Mean values for the primary measures							
% Ownership		0.825	0.453	0.171	0.248	1115.848***	2 > 1 > 4 > 3
Effectiveness – overall (1–7)		3.158	3.849	5.083	1.800	62.208***	3 > 1 > 2 > 4
Culture		3.830	4.420	5.390	2.240	24.929***	3 > 1, 2 > 4
Planning		3.350	4.260	5.390	1.760	31.707***	3 > 1, 2 > 4
Cybernetics		2.720	3.410	5.230	1.000	25.259***	3 > 1, 2 > 4
Rewards/compensation		2.110	2.700	3.680	1.670	25.259***	3 > 4
Administrative controls		3.780	4.470	5.710	2.330	24.840***	3 > 1, 2, 4:1 > 4
Performance (relative profitability) (1–7)		4.440	4.700	4.380	4.050	0.674	1, 2, 3, 4
Emphasis – overall (1–7)		3.144	4.008	5.207	2.162	47.214***	3 > 1, 2 > 4
Culture		3.830	4.490	5.740	3.050	17.228***	3 > 1, 2, 4; 1 > 4
Planning		3.500	4.440	5.550	2.000	23.576***	3 > 1, 2 > 4
Cybernetics		2.780	3.630	5.420	1.240	26.379***	3 > 1, 2 > 4
Rewards/compensation		1.940	2.670	3.610	1.710	5.002***	3 > 2, 4
Administrative controls		3.670	4.810	5.760	2.810	20.539***	3 > 1 > 2, 4
Panel B: Mean values for the 18 MC practice variables by MC type							
Culture (1–7)							
Socialise	+	3.819	4.727	5.182	3.393	8.631***	1, 3 > 2, 4
Code of conduct	–	4.167	5.132	5.386	3.508	4.796***	1, 3 > 4
Vision and mission	–	4.741	4.476	5.307	3.239	6.361***	3 > 1 > 4
Dress Code	–	1.889	3.081	2.860	1.714	4.124***	1 > 2; 1 > 3 > 4
Recruit	–	4.847	5.485	5.743	4.786	6.106***	3, 1 > 2;3 > 4
Selection	+	4.811	4.419	4.382	3.191	4.966***	1, 2, 3 > 4
Planning (1–7)							
Long range planning	–	4.263	4.191	4.426	1.838	11.862***	1, 2, 3 > 4
Short range planning	–	4.333	4.380	5.155	2.333	14.082***	1, 2, 3 > 4
Cybernetics (1–7)							
Budgets	–	4.482	4.329	5.654	2.698	12.324***	3 > 1 > 4; 2 > 4
Boundary	–	2.370	2.667	2.912	1.397	3.941***	1, 3 > 4
Non-financial	–	4.185	4.250	5.105	2.715	7.513***	1, 2, 3 > 4
Rewards/compensation (1–7)							
Rewards/compensation	–	2.185	3.333	3.360	1.746	7.693***	1 > 2, 4; 3 > 4
Administrative controls (1–7)							
Rules	–	4.417	4.901	5.461	3.321	10.669***	1, 3 > 4
Position	–	3.685	4.212	3.772	3.032	1.491	1, 2, 3, 4
Organisational committees	–	3.944	4.042	4.437	2.067	11.609***	1, 2, 3 > 4
Chronic disease management	–	5.222	4.744	5.553	3.810	7.042***	2, 3 > 4; 3 > 1
Policies and procedures	–	3.167	3.326	3.645	2.262	4.639***	1, 3 > 4
Meetings	–	5.796	5.876	6.605	5.556	3.377**	3 > 1, 4
Panel C: Performance measures and contextual variables							
Performance							
Relative profitability (1–7)		4.440	4.700	4.380	4.050	0.674	–
More competitive (1–7)		4.610	4.720	5.180	4.000	2.259*	–
Greater market share (1–7)		5.280	5.000	5.370	4.290	2.144*	–
Growing faster (1–7)		4.940	5.070	5.570	4.050	3.911***	3 > 4
More innovative (1–7)		5.060	5.260	6.050	4.810	3.329***	3 > 1
Larger in size (1–7)		4.390	5.090	5.710	4.290	3.143***	–
Gross Fees ($ millions)		2.188	2.342	2.284	2.084	0.209	–
Learning (1–7)		6.224	6.064	6.540	5.012	8.676***	3 > 1, 4
Accreditation (1–5)		4.160	3.986	4.186	4.148	0.374	–
Patient satisfaction (1–7)		5.130	5.059	5.421	5.397	1.534	–
Contextual variables							
Size (FTE)		14.014	15.497	18.072	13.270	2.103	–
Lifecycle		45.056	33.700	24.792	29.524	2.942**	2 > 3
Private billings		39.694	46.333	41.500	40.429	0.514	–
Strategy		5.390	5.210	5.290	3.950	7.395***	1, 2, 3 > 4
Structure		5.046	4.950	5.614	3.675	12.077***	1, 2, 3 > 4; 3 > 1
PEU 1		3.093	3.023	3.152	2.651	0.681	–
PEU 2		4.493	4.390	4.962	4.524	1.145	–

Since Cluster #4 has a relatively low mean ownership measure (24.8%), comparable with that for Cluster #3 (17.1%), we would expect its mean effectiveness score to in fact be higher, not lower, than those for the high ownership clusters, #1 and #2. We therefore label Cluster #4 as 'ineffective'. For the remaining three clusters, while the mean values for Clusters #2 and #1 at 3.158 and 3.849, respectively, are statistically smaller than the mean value for Cluster #3 at 5.083, given their higher mean ownership measures, we argue that this is to be expected. Thus, we label these three clusters as 'effective'.

Turning to the comparison, given the nature of our sample PHOs, we view it as unlikely that they will each activate all 18 controls within the five control types; rather, each will likely select the subset of controls best suited to its situation. As such, we argue that it is the overall emphasis measure that will best reflect MCS choice (boundary or exploratory archetype) and we turn our primary attention to the results for this measure in Panel A. Here, the mean value is 5.207 for Cluster #3, 4.008 for Cluster #1, 3.144 for Cluster #2, and 2.162 for Cluster #4. The *F*-statistic for the difference in mean values is 47.214 ($p < 0.001$). Importantly, consistent with Speklé's (2001) theorised optimal MCS archetypes, the Games–Howell test reveals the mean value for Cluster #3 to be significantly higher than for the two other 'effective' clusters (Clusters #1 and #2) that have higher levels of member-ownership. Further, all three 'effective' clusters place significantly greater emphasis on formal proscriptive controls than the low effectiveness cluster, Cluster #4. As additional support, the results for the 18 individual control variables across the five control types presented in Panel B are largely consistent with theoretical ideal profiles for the three effective clusters while the mean values for Cluster #4 are almost universally in contrast.

In sum, we view the findings for the first three clusters as providing reassurance regarding the ability of our cluster analysis to identify the ideal empirical MCS profiles on which to base our deviation measure. Importantly, the existence of Cluster #4 also indicates that our sample comprises PHOs that exhibit a significant degree of misfit with their theoretically ideal MCS profile.

5.3. Results for tests of H1

Table 4 presents results for our test of H1. Panel A presents descriptive statistics for *EucD* and related univariate results. Following, we formally test H1 using Eq. (3), considering four variants of the model. The first, Model 1, only includes *EucD* while Model 2 additionally includes *Emphasis* and % *Ownership*. Model 3 extends the model to include *Size* and Model 4 further includes *Lifecycle* and *Private Billings*. All analyses are conducted using ordinal logistic regression.

As revealed in the first row of Panel A, for the effective clusters, there are four top performing organisations in Cluster 2, two in Cluster 1, and five in Cluster 3. These organisations are used to define their ideal MCS profiles. For Cluster 4, the ineffective cluster, the top performing organisations in Cluster 3 are used to define the ideal MCS since it has the closest ownership level.

The next set of rows in Panel A present descriptive statistics for *EucD*. As revealed, this measure exhibits considerable cross-sectional variation, both for the pooled data and within each cluster. The *F*-statistic for the difference in mean values (not tabulated) is 16.705 ($p < 0.001$). Of note, based on the post hoc tests, the mean value for the ineffective cluster (Cluster #4) is significantly different from the mean value of the effective cluster that also has low ownership, Cluster #3 ($p < 0.001$). In conjunction, the minimum value of *EucD* is noticeably higher for Cluster #4 than for any of the three effective clusters. Finally, the last row of Panel A presents the pairwise correlations between *Perf* and *EucD*. As implied by H1, the correlations are uniformly negative and significant at the 5% level or better for the pooled sample and the three effective clusters. Alternatively, while negative, the correlation for the ineffective cluster, Cluster 4, is not significant at conventional levels (although it is significant at the 10% level for a one-tailed test). Thus, overall, these univariate results provide preliminary support for H1.

More formally, turning to the ordinal logistic regression results for Eq. (3) presented in Panel B, of central interest the coefficient on *EucD* is negative as predicted and significant at better than the 1% level across all four models. Thus, consistent with H1, the results suggest that greater misfit is associated with reduced performance. Given consistent findings for *EucD* and all control measures, for parsimony we only detail the results for the complete model, Model 4. To begin, the chi-square for testing the proportional odds assumption is insignificant at conventional levels ($\chi^2 = 37.416$; $p = 0.165$), thereby indicating that the assumption the model has parallel slopes is met and use of an ordered model is appropriate (Borooah, 2002). Next, the null hypothesis that the coefficients are simultaneously equal to zero is rejected at less than the one percent level ($\chi^2 = 20.429$; $p = 0.002$). Of greatest interest, the coefficient on *EucD* is −0.269 ($p = 0.001$). Lastly, for the remaining measures, only the *Size* variable is statistically significant. Its coefficient is 2.698 ($p = 0.004$). The coefficients on the remaining control variables are insignificant at conventional levels.[25]

Finally, notwithstanding its limitations, for sensitivity purposes we re-ran Eq. (3) after replacing the dependent variable with an objective measure of performance based on 'Gross Fees' for the 84 sample organisations that report this figure. Since 'Gross Fees' is a recognised proxy for size and thereby not directly a proxy for the underlying construct of interest, relative profitability, we initially regress the natural log of 'Gross Fees' (*lnGF*) on *Size* and then use the residual as the dependent variable. The results, run using OLS, are presented in Table 5. Model A includes only *EucD*, Model B extends the model to include *Emphasis* and % *Ownership*, and Model C adds *Lifecycle* and *Private Billings*. Again, the results provide consistent support for H1. Focusing on Model C, the coefficient on *EucD* at −0.007 is negative and significant ($p = 0.026$). Thus, results and conclusions appear robust to the use of an objective performance measure based on 'Gross Fees'.[26]

5.4. Alternative performance measures

Within our setting the relevant notion of performance is financial performance relative to peer organisations. Notwithstanding, we also included five questions that related to non-financial dimensions of the PHO's performance, asking whether compared with similar practices, the PHO is more competitive, has greater market share, is growing faster, is more innovative and is larger. We also asked for the accreditation score, patient satisfaction, and the importance of learning. To gain a sense of whether the degree of 'fit' impacts these dimensions of performance, we re-ran Eq. (3) alternatively with each of the measures as the dependent variable using ordinal regression.[27]

The results, presented in Table 6, are largely consistent with expectations. We find negative and significant coefficients on *EucD* for the models based on competitiveness (−0.161; $p = 0.027$), market share (−0.132; $p = 0.071$), growth (−0.276; $p = 0.001$), innovation (−0.189; $p = 0.011$), size (−0.186; $p = 0.014$), and learning (−0.147; $p = 0.050$). Thus, organisations with better 'fit' indicate that they view themselves as more competitive, having a greater market share, growing faster, being more innovative, larger, and fostering learning. Alternatively, we find the coefficient in the

[25] To consider the potential influence of outliers, we trim the data at the 2.5% and 97.5% level for *Dist* and re-run Model 4. Here, the coefficient on *EucD* 4 is −0.272 ($p < 0.001$). If we trim at the 5% and 95% levels, the coefficient on *EucD* is −0.186 ($p = 0.026$). To provide further assurance, we set $AbsD_j = \sum_s |Dist_{js}|$ and re-ran Model 4, finding a coefficient on *AbsD* of −0.075 ($p < 0.001$).

[26] Results are robust to the inclusion of organisation and cluster fixed effects, and to trimming at the 2.5% and 97.5% level for *Dist*.

[27] For competitiveness, market share, growth, innovation, and size, the dependent variable is the response to the relevant single item, for learning and (patient satisfaction, it is the average summated score across the underlying questions rounded to the next highest integer value, and for accreditation, it is the score obtained.

Table 4
Results for the relation between relative performance and 'Fit'.

	Pooled (n = 120)	Cluster 2 (n = 18)	Cluster 1 (n = 43)	Cluster 3 (n = 38)	Cluster 4 (n = 21)
Panel A: Descriptive Statistics					
# top performers	n/a	4	2	5	n/a
EucD					
Mean	9.177	8.114	10.331	7.388	10.961
Median	9.114	6.809	10.434	7.315	10.741
Std dev	2.272	3.357	2.096	1.599	2.692
Minimum	3.866	3.856	4.113	4.966	6.146
Maximum	15.258	15.258	14.246	10.863	14.686
Correlation (*Perf*, *EucD*)	−0.345 (p < 0.001)	−0.693 (p < 0.001)	−0.368 (p = 0.015)	−0.355 (p = 0.029)	−0.295 (p = 0.194)
Variable	Model 1	Model 2	Model 3		Model 4
Panel B: Regression results, full sample (n = 120)					
Intercept 1	−4.873 (<0.001)	−4.453 (<0.001)	−2.363 (0.087)		−2.373 (0.096)
Intercept 2	−4.540 (<0.001)	−4.119 (<0.001)	−2.014 (0.142)		−2.021 (0.153)
Intercept 3	−3.529 (<0.001)	−3.105 (0.004)	−0.975 (0.472)		−1.018 (0.468)
Intercept 4	−2.123 (<0.001)	−1.692 (0.112)	0.492 (0.717)		0.450 (0.748)
Intercept 5	−1.397 (0.018)	−0.959 (0.365)	1.271 (0.349)		1.257 (0.371)
Intercept 6	−0.102 (0.865)	0.344 (0.746)	2.632 (0.056)		2.717 (0.056)
EucD	***−0.241**** ***(<0.001)***	***−0.240**** ***(0.001)***	***−0.269**** ***(<0.001)***		***−0.269**** ***(0.001)***
Emphasis	–	0.040 (0.756)	−0.051 (0.703)		−0.096 (0.493)
% Ownership	–	0.667 (0.319)	0.669 (0.318)		0.937 (0.182)
Size	–	–	***2.459**** ***(0.006)***		***2.698**** ***(0.004)***
Private Billings	–	–	–		−0.001 (0.874)
Life cycle	–	–	–		−0.007 (0.344)
Chi Square	13.651*** (p < 0.001)	14.543*** (p = 0.002)	22.327*** (p < 0.001)		20.429*** (p = 0.002)

Panel A presents the number of top performing organisations in each cluster, descriptive statistics for *EucD* (Eq. (1)), and the correlation between *EucD* and *Perf*. In Panel B, the results are for variants of Eq. (3) based on the full sample of 120 PHOs.
Variable definitions: The dependent variable, relative performance (*Perf*), is the response value to the single item asking whether, relative to similar practices the practice more profitable (see Part F of Appendix A); *EucD* is the Euclidean distance of the organisation's MCS from the ideal empirical profile; *Emphasis* is the summated score of the five emphasis items;*% Ownership* is the percentage of FTE GPs working in the organisation who are also owners; *Size* is the number of full time equivalent workers; *Private Billing* is the percentage of total gross fees derived from private billings; and *Lifecycle* is the years the PHO has been operating.
** Significant at the 5% level (two tailed).
* Significant at the 10% level (two-tailed test).
Coefficient estimates (other than for the intercepts) significant at the 5% level or better are identified by ***bolditalics***.
*** Significant at the 1% level (two-tailed test).

models based on the accreditation score and patient satisfaction to be insignificant at conventional levels.[28]

5.5. Robustness tests

As a final step, to explore the sensitivity of our results and conclusions to several of our design and econometric decisions, we undertook a number of additional analyses, finding in each instance, the coefficient on *EucD* remains negative and significant as predicted by H1. First, while appealing to the top performing organisations to identify the ideal empirical MCS profile may initially give the appearance of introducing a bias towards H1, *a priori* we do not believe that this is necessarily the case. We argue that simply by having a lower relative performance measure, it does not necessarily mean that the organisation has placed more or less weight on any particular control, or in aggregate across the 18 controls. This is, in fact, the empirical question being addressed in the study – do organisations with lower performance exhibit greater distance measures? Notwithstanding, to provide a degree of assurance that our results are not being driven by use of the top performing firms, we repeated all analyses reported in Tables 4–6 using an alternative measure of *EucD* calculated using the average score for each of the 18 controls across all organisations within a cluster. Here, we find the results to be qualitatively similar. To illustrate, the coefficient on the recalculated *EucD* for full model in the primary analysis (Model 4) is again negative and significant (−0.205;

[28] The accreditation score reflects dimensions such as the quality of facilities and systems which may represent an overinvestment that is not reflected in financial performance (efficiency). For patient satisfaction, while the coefficient on *EucD* has the predicted sign, it is only significant at the 10% level one-tailed (−0.105; p = 0.078, one-tailed).

Table 5
Results for the relation between a gross fees based measure and 'Fit'.

Variable	Model A	Model B	Model C
Intercept	0.315 (<0.001)	0.448 (0.005)	0.554 (0.001)
EucD	−0.004* (0.074)	−0.005* (0.066)	***−0.007***** ***(0.026)***
Emphasis	–	−0.023 (0.393)	−0.034 (0.235)
% Ownership	–	0.006 (0.625)	0.009 (0.941)
Private Billings	–	–	−0.002 (0.116)
Life Cycle	–	–	0.000 (0.908)
Fixed effects	**Y**	**Y**	**Y**
Adjusted R^2	0.031	0.014	0.022

The results are for a variant of Eq. (3) based on the sample of 84 PHOs which provided 'Gross Fee' data. The dependent variable is the residual from a regression of the natural log of '*Gross Fees*' on *Size* which captures the dimension of '*Gross Fees*' orthogonal to size.
Variable definitions: EucD is the Euclidean distance of the organisation's MCS from the ideal empirical profile; *Emphasis* is the summated score of the five emphasis items; *% Ownership* is the percentage of FTE GPs working in the organisation who are also owners; *Private Billing* is the percentage of total gross fees derived from private (non-bulk) billings; *Lifecycle* is the years the PHO has been operating; *Gross Fees* is the organisation's total gross fee revenue; and *Size* is the number of full time equivalent workers.
Coefficient estimates (other than for the intercepts) significant at the 5% level or better are identified by ***bolditalics***.
** Significant at the 5% level (two tailed).
* Significant at the 10% level (two-tailed test).

$p = 0.006$). Further, the coefficient on *EucD* using gross fees as the alternative performance measure (Table 5) is also again negative and significant (−0.018; $p = 0.016$), and the coefficients on the alternative performance measures remain negative and significant in all but the accreditation model (not significant) and the satisfaction model (negative and significant at the 10% level, one-tailed). Thus, taken together, we view these results as providing reasonable assurance that our results are not sensitive to the choice of benchmark organisations in determining the ideal empirical MCS profile.

Second, notwithstanding the non-significance of the test of the proportional odds (parallel lines) assumption, we repeated the analysis using the less restrictive multinomial logistic regression. Of direct interest, the parameter estimates on *EucD* are uniformly positive and significant at the 1% level, indicative that the probability of scoring a lower measure of *Perf* relative to the top performing category score of '7' increases with 'lack of fit' for all comparisons. Third, while there is no conceptual reason for its exclusion, we re-ran the model after dropping Cluster #4 given the finding that many of its organisations lack formal MCS. However, based only on the remaining three clusters, the coefficient on *EucD* is −0.274 ($p = 0.001$).

Fourth, we added the additional contingency variables (structure, strategy and perceived environment uncertainty) to the model, finding a coefficient on *EucD* of −0.264 ($p = 0.001$). Finally, relatively few responses to the survey indicated low values ('1' or '2') for the relative profitability question or the high value ('7'). We therefore combined values of '1' or '2' into a single category and also values of '6' or '7', and re-ran the model, finding a coefficient on *EucD* of −0.212 ($p = 0.005$).

6. Summary and conclusions

In this study, we seek insights into ownership and MCS design, and the implications of this choice for organisational performance in professional service organisations. We conduct our study within the Australian primary healthcare context given the observed variation in ownership resultant from a constantly changing regulatory environment. We undertake a broad-based survey of practice managers sourced from the AAPM. As our primary measure of performance, we use a subjective measure of relative profitability and for sensitivity purposes, an objective measure based on gross fees. Our findings uniformly support the prediction (H1) that a lack of fit between MCS design and ownership will result in reduced organisational performance. We also extend the analysis to consider a series of non-financial measures of performance, with similar findings in the main.

This study extends the literature by investigating this relationship in a setting that provides an opportunity to compare MCS in professional service organisations that differ in ownership. Greenwood et al. (2007) previously found a relationship between the locus of ownership and performance in large management consultancies but overlooked the MCS design. We present evidence that rather than one level of ownership being optimal for all PHOs, there are different combinations of ownership and MCS design with similar performance outcomes, consistent with the concept of equifinality of organisational design (Gresov & Drazin, 1997). On this basis, we suggest that ownership should be considered as a contextual variable in future studies of MCS in professional services organisations.

From a theoretical perspective, this study is one of the first attempts to shed light empirically on Speklé's (2001) archetypes of control. Kruis (2008) previously attempted to empirically assess all five of Speklé's (2001) MCS archetypes but had insufficient survey data. This study provides some preliminary evidence that both the exploratory and boundary archetypes can be optimal and thereby contributes to the ongoing debate about a holistic theory of MCS design within the management accounting literature. From a practical perspective, it provides some of the first empirical evidence of the characteristics of efficient MCS design for PHOs (APHCRI, 2010). This evidence has the potential to assist primary healthcare owners, managers and their advisors better understand the relationship between ownership and MCS design, and thereby improve the effectiveness and efficiency of delivery of primary care.

Finally, the identification and analysis of lower performing PHOs is a further contribution, suggestive that this industry has not reached a long-term equilibrium (Larcker & Rusticus, 2007). Here, it could be that the frequent policy changes are impeding the industry from reaching a state where both ownership and MCS design are optimised (Empson & Chapman, 2006). In light of these findings, policy makers may need to consider not only the direct effects of frequently changing policy but also the indirect effect being the uncertainty that policy change creates.

Clearly, the study is not without its limitations. The use of AAPM members as participants means there is potential for selection bias, although it is not revealed within our sample data. The use of a single respondent from within each organisation also has the potential to introduce memory and interpretation biases. Finally, the primary results were based on self-rated measures of performance which raises the possibility of leniency bias. We argue in support of the manager's subjective assessment of relative performance because it indirectly controls for the effects of strategic choice on organisational performance. Reassuringly, we also find support for our conclusions using an objective measure of performance based on gross fees.

Our finding that patient satisfaction is at best only weakly (10%, one-tailed) associated with fit may be of interest to professional service organisations with the competing goals of high quality service and cost efficiency. It is not clear why a PHO with an efficient MCS design for its given level of ownership does not exhibit greater patient satisfaction. One possible explanation is that patients' perceptions of the quality of the care are not impacted by the

Table 6
Results for the relation between alternative measures of performance and 'Fit' (*Dist*).

Variable	More competitive	Greater market share	Growing faster	More innovative	Larger in size	Learning	Accreditation	Patient satisfaction
Intercept 1	−1.032 (0.475)	1.095 (0.462)	−3.370 (0.021)	−2.070 (0.162)	1.942 (0.190)	−3.246 (0.013)	–	–
Intercept 2	−0.117 (0.934)	2.048 (0.158)	−3.041 (0.035)	−1.668 (0.254)	2.484 (0.094)	−2.925 (0.021)	−2.502 (0.134)	–
Intercept 3	0.636 (0.203)	2.402 (0.097)	−2.288 (0.109)	−1.221 (0.400)	2.750 (0.064)	−2.449 (0.048)	1.572 (0.259)	–
Intercept 4	1.921 (0.177)	4.153 (0.005)	−1.146 (0.419)	0.013 (0.993)	4.160 (0.006)	−1.577 (0.190)	2.922 (0.040)	−2.578 (0.031)
Intercept 5	3.323 (0.021)	5.204 (0.001)	0.063 (0.964)	1.030 (0.476)	4.560 (0.003)	−0.003 (0.998)	–	−0.632 (0.590)
Intercept 6	4.479 (0.056)	6.776 (0.001)	1.646 (0.246)	2.702 (0.064)	6.327 (<0.001)	1.640 (0.172)	–	0.318 (0.037)
EucD	***−0.161**** ***(0.027)***	−0.132* (0.071)	***−0.276***** ***(0.001)***	***−0.189**** ***(0.011)***	***−0.186**** ***(0.014)***	***−0.147**** ***(0.050)***	0.110 (0.224)	−0.105 (0.156)
Emphasis	***0.385***** ***(0.008)***	0.206 (0.149)	***0.283**** ***(0.048)***	***0.340**** ***(0.020)***	0.163 (0.262)	***0.462***** ***(0.002)***	0.152 (0.370)	0.120 (0.407)
% Ownership	0.648 (0.355)	1.000 (0.159)	0.142 (0.840)	−0.144 (0.839)	−0.701 (0.329)	−0.082 (0.911)	0.323 (0.797)	−1.387* (0.060)
Size	***2.465***** ***(0.009)***	***4.507***** ***(<0.001)***	1.527* (0.099)	***2.093**** ***(0.029)***	***5.657***** ***(<0.001)***	0.033 (0.201)	***0.076**** ***(0.031)***	***−0.071***** ***(0.003)***
Private Billings	−0.010 (0.165)	−0.001 (0.842)	−0.008 (0.280)	−0.010 (0.186)	−0.006 (0.436)	−0.010 (0.222)	***−0.024**** ***(0.012)***	0.005 (0.491)
Life Cycle	−0.005 (0.482)	−0.005 (0.478)	−0.006 (0.391)	−0.001 (0.842)	−0.003 (0.720)	0.011 (0.133)	0.011 (0.237)	0.003 (0.667)
Chi Square	28.190*** ($p < 0.001$)	35.388*** ($p < 0.001$)	33.660*** ($p < 0.001$)	29.662*** ($p < 0.001$)	49.410*** ($p < 0.001$)	29.708*** ($p < 0.001$)	13.538** ($p = 0.035$)	18.193*** ($p = 0.006$)

The results are for Eq. (3) based on the full sample of 120 PHOs. The model is run alternatively with each of the eight non-financial measures of performance identified in the survey questionnaire (see Part F of Appendix A).
Variable definitions: EucD is the Euclidean distance of the organisation's MCS from the ideal empirical profile; *Emphasis* is the summated score of the five emphasis items; *% Ownership* is the percentage of FTE GPs working in the organisation who are also owners; *Size* is the number of full time equivalent workers; *Private Billing* is the percentage of total gross fees derived from private (non-bulk) billings; and *Lifecycle* is the years the PHO has been operating.
Coefficient estimates (other than for the intercepts) significant at the 5% level or better are identified by ***bolditalics***.
*** Significant at the 1% level (two-tailed test).
** Significant at the 5% level (two tailed).
* Significant at the 10% level (two-tailed test).

organisation's financial efficiency. Alternatively, Lueg and Norreklit (2012) suggest that the effect of customer satisfaction on financial performance can become negative for very high values of customer satisfaction because the marginal cost of satisfying the last customers may exceed its marginal benefits. Irrespective, this finding appears worthy of further study.

In terms of other opportunities for future research, the findings for the contextual control variables from the cluster analysis may be helpful in understanding the relationship between the MCS design, ownership and organisational performance. The organisations in the three clusters identified as having more effective MCS designs each had a more decentralised structure than the low effectiveness cluster. This leads to a number of questions about MCS design. For example, is the ineffective MCS design due to insufficient managerial decision making power? Further, is there some consistent trait of the owners which might explain the lesser decentralisation and subsequent MCS design? Alternately, could the managers of these organisations be less capable of designing an effective MCS? Future research that answers questions such as these has the potential to improve our understanding of the antecedents to optimal MCS design in professional service organisations and in turn, improve performance outcomes. Finally, there is little evidence regarding the time, information, and resources required to optimise MCS design for an existing ownership level, or to change the ownership level. Future research could usefully investigate this empirically using longitudinal data from organisations undergoing changes in MCS design and/or level of ownership.

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Appendix A

Overview Summary of the Survey Questionnaire

Practice Size For the purpose of this study we would like to explore the experiences of managers of practices with 3 or more FTE GPs.

1. Does your practice contain 3 or more GPs?
2. What is the approximate number of FTE employees in: Admin/Reception? Practice Manager?; Nursing/Allied Health? Medical GPs?; Other?

3. How many (FTE) GPs working in the business are owners?

Part A: Practice Culture – In our organization:
- GPs share the same values norms and beliefs
- The manager strives to achieve the same values norms and beliefs
- There is a written vision and mission statement
- All GPs were involved in developing the vision/mission statement
- Emphasis is placed on the vision mission statement in communications with GPs
- There is a written code of conduct for GPs
- Code of conduct describes unacceptable behaviour
- Emphasis is placed on the code of conduct for managing GPs behaviour
- There is a compulsory dress code for GPs
- The GP dress code is actively reinforced by management
- All GPs socialise regularly together
- There is emphasis on social activities for GPs to reinforce shared values, norms and beliefs
- Recruitment of GPs is by word of mouth and in-house training
- There is emphasis on similar shared values, norms and beliefs in the recruitment of GPs
- There is involvement of all existing GPs in the selection process
- There is emphasis on selection as a method of ensuring GPs share the same values, norms and beliefs
- There is a formal mentoring and peer support program for GPs
- There is emphasis on mentoring as a method of ensuring GPs share the same values, norms and beliefs

Part B: Planning – In our organization:
- There is a written long term plan (>12 m)
- All GPs are consulted when prepare LR plan
- Emphasis is place on the LR
- Key success factors are identified
- Consideration is given to LR and KSFs when managing GPs
- There is an operational level action plan
- All GPs are consulted when preparing the operational level action plan (OLAP)
- Extensive emphasis is placed on communication of the OLAP to all GPs
- Consideration is given to the goals in the OLAP in managing the day to day activities of the GP

Part C: Rewards and Compensation – In our organization:
- Regular performance evaluations are conducted on GPs (including owners)
- Financial rewards are based on evaluation of GPs performance
- How would you best describe the performance evaluation of GPs? 100% Objective/100% Subjective

Part D: Budgets and Targets (Cybernetics) – In our organization:
- There are written/formal budgets
- Actual results are compared to budgets systematically
- If a GP does not meet budgets action is taken
- Other non-financial targets are set systematically
- Actual results are compared to financial targets systematically
- It is important to meet financial targets
- If a GP does not meet financial targets action is taken
- Other non-financial targets are set systematically
- Actual results are compared to non-financial targets
- It is important to meet non-financial targets
- If a GP does not meet non-financial targets action is taken

Part E: Administration Systems – In our organization:
- There is a formal organisational chart
- GPs refer to the organisational chart extensively
- GPs have input to organisational chart
- There are written position descriptions for all GPs
- The position descriptions are very detailed and comprehensive
- There are formal meetings for all GPs with an agenda and minutes
- There is emphasis on ensuring regular attendance of all GPs at meetings
- GPs have input to agenda and minutes at meetings
- There are many formal committees for decision making
- GPs contribute to these committees
- GPs refer to the policy and procedures manual
- Policy and procedures describe what is not to be done
- There are rules for GPs (holidays hours of work)
- There is monitoring of GP compliance with rules
- Action is always taken if there is GP non-compliance
- There are systems to ensure a consistent approach to chronic disease management
- All GPs comply with systems
- Action is always taken if there is non-compliance with systems. There is GP staff training on the rules

Part F Performance
- Compared to key competitors (similar practices) generally my organisation is:
  - More competitive
  - Has greater market share
  - Growing faster
  - More profitable
  - More innovative
  - Larger in size
- Is the organisation accredited? What was the most recent rating achieved? (1–5)
- Please indicate the overall percentage score received for your most recent patient survey conducted as part of accreditation (0–100%)
- In our organisation:
  - The patients are extremely satisfied with the service they receive
  - Patients never make complaints
  - Patients praise the service we provide
- In our organisation
  - Learning is a key to improvement
  - Basic values include learning as a key improvement
  - Once we quit learning we endanger our future
  - Learning is viewed as an investment not an expense

Part G Contextual Factors
- Indicate to what extent authority has been delegated to the manager for the decision
  - initiate new ideas and service
  - the hiring and firing of personnel
  - Selection of large investments
  - budget allocations
  - pricing decisions
- Most operating decisions are made at which level? 1 – owner 7 – Manager

(*continued on next page*)

- How would you describe the strategic emphasis?
- 1. Low cost/Low price 7. High quality/High Price
- How intense is each of the following in your industry?- Bidding for purchases- Price competition 1. Negligible 7. Intense
- How stable/dynamic is the external environment? – Economic Environment – Technological Environment 1. Very stable 7. Very dynamic
  How would you classify the market activities of your competitors? 1 = becoming less predictable;7 = Becoming more predictable

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