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1. Introduction

Neo-liberal reforms have flowed through the public sector since the 1980s, with new public management (NPM) practices resulting in a global cultural and managerial transformation of the sector (Ferlie & Steane, 2002). There has been a dramatic change from a public administration focus to a more competitive, corporate culture that emphasizes results (Parker & Guthrie, 1993; Skalen, 2004). Academic research has focused in particular on changes in health and higher education, identifying not only the politically mandated changes themselves, but organizational responses to a results-oriented approach (Agrizzi, 2008; Broadbent, 2007; Broadbent, Jacobs & Laughlin, 2001; Broadbent, Laughlin & Read, 1991; Fredman & Doughney, 2012; Skalen, 2004; Taylor, 1999; Vaira, 2004; Watty, Bellamy & Morley, 2008). Focusing on the Higher Education Sector (HES), this paper contextualises the changes that have occurred and examines organizational responses to those changes as research performance is built into universities' Performance Management Systems (PMSs).

In 2010, the Australian Research Council (ARC), an Australian Government body, evaluated the research performance of the Australian HES under its new Excellence in Research for Australia (ERA) initiative. However, this was not the first Australian attempt to assess and evaluate research, with a proposed 'Research Quality Framework' (RQF) foreshadowed in 2000 (Larkins, 2011) and advanced through the preparation of an Issues paper "Assessing the Quality and Impact of Research in Australia" in 2005 (Nelson, 2005). The underlying intent of such 'research assessment exercises' (RAEs) is to increase the quality and international reputation of research conducted within the Australian HES.

A change in the Australian Federal Government in 2007 resulted in the abandonment of the proposed RQF and the eventual implementation of ERA. ERA provides the administrative mechanism whereby institutional (i.e., university) research performance is captured, measured, and reported to the ARC for evaluation and assessment. The linking of elements of government funding to research performance incentivizes a strategic and operational response by Australian universities to improve the quality (and quantity) of research and, where appropriate, to develop and implement research PMSs.

Conceptually, RQF and ERA are similar to RAEs implemented in other jurisdictions (for example, the 'Research Excellence Framework' in the United Kingdom (UK) (HEFCE, 2010), and 'Performance Based Research Funding' in New Zealand (NZ) (Northcott & Linacre, 2010), and similar research evaluations undertaken in other countries including Spain, Hong Kong, Sweden, Demark, and so on (Hicks, 2012; Martin-Sardesai, Irvine, Tooley & Guthrie, 2016). Despite any differences in scope and application, each jurisdiction's approach is designed to measure and assess research performance within its respective HES (Martin-Sardesai, Irvine, Tooley & Guthrie, 2017; Whittington, 2000). In each jurisdiction, these changes demand a response from universities, which will necessitate internal organizational changes and arguably, an increasing emphasis on PMSs designed to align university performance with government requirements.

Our emphasis is on research in the Australian HES, because that is the focus of RAEs in Australia. We identify RAEs as a manifestation of the application of key principles of the global NPM phenomenon (Broadbent & Laughlin, 2013; Parker, 2012), undertaken within the broader public sector and aimed at efficiency and effectiveness. With a strong focus on accountability and the associated need for performance measures (Broadbent, 2011; Tooley & Guthrie, 2007), a consequential outcome of NPM is a greater emphasis on accounting and the measurement of performance (Lapsley & Wright, 2004). As highlighted above, NPM has been instrumental in facilitating a change within the public sector, from administrative-action controls (i.e., rules and procedures) (Tremblay, 2012) to more management and numerical forms of control (Broadbent & Guthrie, 2008; Hood, 1995; Irvine, Lazarevski & Dolnicar, 2009).

Consistent with NPM, several national RAEs have been conducted to measure research productivity, quality, and excellence (Martin-Sardesai et al., 2016; Moed, 2011; Wills, Ridley & Mitey, 2013). Within the Australian context, a small number of studies have focused on the impact and implications of RAEs at a macro, or sector, level (e.g., de Lange, O'Connell, Mathews & Sangster, 2010; Hicks, 2012), while others explore the impact of RAEs on academics and academic freedom, and the role of the Vice Chancellor (VC) as an institutional entrepreneur (Martin-Sardesai, 2016; Martin-Sardesai et al., 2016; Martin-Sardesai et al., 2017). However, to our knowledge there is limited research that focuses on the impact of RAEs at an institutional level, that is, at the level of individual universities (Martin & Whitley, 2010; Yokoyama, 2006). This paper aims to fill this gap in the literature by investigating the organizational change undertaken by an Australian university, 'UniA' (a pseudonym used in this paper to preserve the anonymity of the case study university), in anticipation of a signalled RAE (i.e., RQF), and in response to the actual RAE (i.e., ERA). The focus of this study is UniA's research-oriented aspects of its PMSs, developed to manage the externally imposed demands of ERA measurement and reporting requirements.

Taking the perspective that the study of PMSs is an exercise in understanding change in organizations, we analyze both the societal and organizational contexts (Broadbent & Laughlin, 2009), since the nature of organizations' internal PMSs and the way they are implemented are also influenced by external societal structures of control (Agyemang & Broadbent, 2015). Within societal contexts, governments regulate the behaviour of public sector organizations and seek to steer them in particular ways, requiring them to account for the resources they receive. Broadbent and Laughlin's (2013) organizational change model offers a framework to understand the processes and orders of change and highlights the importance of discourse in changing the expectations and values driving the change. We adopt this framework to analyze reactions within UniA to externally imposed performance measures, finding second order (deep and substantial) changes to the vision, mission, and PMSs of the university in anticipation of the imposition of RQF. However, once ERA was implemented, first order (less significant) changes were evident due to the changes that had already been made.

The paper makes three contributions. First, in seeking to study PMSs and organizational change due to changes in government policies such as the anticipated RQF and subsequently

the ERA evaluation, it contributes to the PMSs literature by showing how the control process may be changed by organizational members with competing demands on them (Otley, 2003; Tekavcic & Peljhan, 2010). Second, it provides empirical detail and conceptualizes changes adopted by UniA that may provide useful insights for universities and regulators as the global reach for RAE spreads (Deem, 1998; Parker, 2013; ter Bogt & Scapens, 2012). Third, in investigating the nature and consequences of PMSs within a university setting, it demonstrates the usefulness of Broadbent and Laughlin's (2013) model for analyzing organizational change.

The paper is structured as follows. Section 2 outlines the Australian HES context of the study. Section 3 reviews the relevant PMS literature, while Section 4 briefly explains the theoretical framework of organizational change, establishing its relevance to the study. Section 5 outlines the research method and provides a brief history of the case study university. Section 6 presents the findings, identifying the impact of ERA on UniA, while Section 7 summarizes the findings, highlights the study's limitations and contributions, and identifies suggestions for further research.

2. The Australian Higher Education Sector Context

Universities, as centres for developing human resources, play a vital role in a country's economic and social growth and development (Abott & Doucouliagos, 2004). The Australian HES is economically and socially significant, educating nearly a million students in 2014 (Norton, 2013), and with international education exports reaching a record-high of AUS\$18.1 billion for the 2014/15 fiscal year (ABS, 2015).[1] In addition, the sector has witnessed unprecedented levels of change since the late 1980s (see e.g. Cameron & Guthrie, 1993; Parker, 2011), with the introduction of NPM reforms (Guthrie & Neumann, 2007; Parker, 2012). Recognizing the importance of research in the Australian HES, and to effectively balance university needs with the public interest (Marginson, 2002), successive Australian governments have steered the system through numerous policies and reviews designed to improve accountability and research performance, in part, using funding as a control mechanism (DEST, 2004a, 2005). This process has established policy settings that ensured resources available to universities for research were increasingly oriented to serving the national interest. Since its establishment in 1987, the role of the ARC, along with other government agencies, has been to provide both research funding and research policy advice for research carried out in the Australian HES (Harman & Meek, 1988).

Over the years, various performance measures and indicators have been introduced by the ARC to account for and measure Australian HES research activities. The Unified National System, which was established in 1987, was followed by the Relative Funding Model in 1990 (Miller & Pincus, 1997), the Research Quantum (Ramsden, 1999), the Institutional Grants Scheme, and other models with a focus on formulae-driven project-based funding and performance-based block research grants. Their use ushered in an era of competition between universities for government research funding (DEST, 2002; Marginson, 2002) and this spirit continued with ERA in 2010.

2.1 Research Quality Framework

A formal research evaluation exercise and a precursor to ERA was the proposed RQF, announced in 2004 by the Howard Coalition Government. With public funds being allocated to universities, the need to assess universities on the quality of their research outputs and the desirability of using such assessments as a tool for allocation was politically driven (Broadbent, 2010; Hicks, 2012), with Australia undertaking a variant of the UK's RAE (DEST, 2004b). In 2005, a 12 member Expert Advisory Group chaired by Sir Gareth Roberts (who had then completed a recent review of the UK's RAE) was established. This group was given responsibility for developing the RQF. A preferred model for the RQF, as identified by the Expert Advisory Group, was a panel, based along broad disciplinary lines, that would assess both excellence and the wider benefits to Australia (Donovan, 2008).

Assessment was to be undertaken at the research group level, utilizing evidence portfolios, and a graded impact rating scale that would lead to the allocation of block grants (Donovan, 2008). The exercise was to be undertaken on a six year cycle, subject to the evaluation of the first round. It was anticipated that the deadline for institutional RQF submissions would be 30 April 2008, with an assessment phase being undertaken in July and August 2008, followed by ministerial approval and announcements in November 2008. Throughout 2007, Australian universities embarked on significant logistical exercises to determine research groupings, creating staff research productivity profiles as required. The policy focus for the Government was on the implementation of the RQF. However, with the defeat of the Coalition Government, RQF was never implemented. Instead, the new Labor Government, elected in 2007, replaced the RQF with ERA (Carr, 2008).

2.2 Excellence in Research for Australia

The stated objective of ERA was to identify and measure the quality of Australian research performance across the spectrum of research activity (i.e., knowledge creation, knowledge dissemination, and knowledge access) in eligible higher education universities (Carr, 2008). In 2008, with a new Advisory Council in place, the ARC was given responsibility by the Australian Government to steer the Australian HES in its research performance consistent with national priorities, by establishing strategies and measures for understanding research performance. It established measures to assess research quality within the Australian HES to provide to the Government, industry, business, and the wider community assurance of the excellence of research conducted (ARC, 2011).

The ARC required the collection of data on four indicators of research productivity (i.e., quality, volume and activity, application, and recognition) from all eligible public sector universities. The data was evaluated by Research Evaluation Committees under eight multidisciplinary clusters using two- and four- digit Fields of Research (FoR) codes aggregated to create four-and two-digit Units of Evaluations (UoE). In the evaluation process, Research Evaluation Committees rated each UoE in the range of 5 down to 1. The outcomes were reported publicly, by institution and by discipline (ARC, 2010). ERA was trialled in 2009 and the first evaluation occurred in 2010, the second in 2012, and a third in 2015. With the implementation of ERA in 2010, the ARC provided a framework within which research

performance had to be measured and reported and quality evaluations and assessments could be conducted. For universities, ERA represented an externally imposed change to the way research performance was to be evaluated and funded, necessitating significant internal change, with the need for individual universities PMSs designed to maximize a universities' ERA rankings. Significantly, ERA 2010 employed weighted categories of journals, where each journal was assigned a single rank of excellence (A*, A, B or C). Thus the ERA ranking of a journal was a gauge of excellence (Lamp, 2009). The ARC considered the ERA journal ranking exercise had the potential to change the landscape of academic publishing in Australia. Although this was just one of the indicators for research evaluation in ERA 2010, it received considerable critical attention across the Australian academic community, as universities forced academics to publish in the ranked journals in a more rigid way than expected (Rowbotham, 2010).[2] Subsequently, since ERA 2012, the journal ranking as a gauge of research evaluation has been removed.

3. Performance Management Systems

Generally, PMSs are designed to implement and monitor strategies, providing feedback for learning and information to be used interactively to formulate strategy further (Berry, Coad, Harris, Otley & Stringer, 2009; Tekavcic & Peljhan, 2010). They are important as they enable an organization to determine how well it is progressing towards its predetermined goals, to identify areas of strength and weakness, and to make decisions on future initiatives, with the goal of improving organizational performance (Otley, 2003, 2012, 2016; Purbey, Mukherjee & Bhar, 2006). People within organizations respond to PMSs in fairly predictable ways, hence the definition and design of PMSs are continuously evolving, employing formal and informal, and financial and non-financial information systems to set objectives and work towards meeting those objectives (Agyemang & Broadbent, 2015; Lau & Martin-Sardesai, 2012; Otley, 2012, 2016). PMSs are thus dynamic, involving managers in continually assessing environmental conditions, and modifying PMSs accordingly to bring about changes (Broadbent, 2011; Otley, 2012, 2016).

According to Otley (2003), the often quoted adage of "what gets measured, gets done", appears to have considerable validity if one adds the proviso, that this is most evident when senior managers pay attention to the measures produced. PMSs work within organizations, but operate in response to internal and external factors (Otley, 2012), suggesting an inter-connectedness between external pressures and internal responses that will inevitably influence their design and implementation (Agyemang & Broadbent, 2015). It is worth mentioning that what does not get measured does not get done, which points to a shift from a collegial, co-operative culture in the HES to a more corporate and competitive one (Broadbent, 2007; Parker, 2011, 2012), as academics who wish to attain rewards focus on producing outputs that will achieve that. This approach to organisational management emphasizes academic output and engagement in activities that align with organisational goals and aspirations, thus placing increased focus on academic performance and the transparency of that performance. Within this context, the use of management technologies facilitating academic's individual performance planning and reviews have come to the fore.

Thus in the presence of externally mandated change, PMSs are relevant as they can be mobilized in support of more wide-ranging changes, and can be a mechanism to be adapted in support of other change initiatives (Otley, 2001, 2003, 2012). Context is thus particularly relevant in identifying the impact of externally imposed change on internal PMSs. Broadbent and Laughlin (2009) highlight the complexities involved in designing PMSs and call for empirical research to shed light on their design in such complex situations. In response to this call, this paper outlines the way societal context has an impact on an organization and, in the Australian HES context, identifies the impact of change (in the form of RQF and/or ERA) on individual academics.

With the advent of managerialist NPM reforms, increased attention has been paid to PMSs as a means of demonstrating accountability (Angluin & Scapens, 2000), that is "giving account to local publics" for the public funds that are invested in public sector organizations, including public universities (Ferlie, Musselin & Andresani, 2008, p. 337). Managerialism has brought with it new forms of surveillance and self-monitoring mechanisms such as appraisal systems, target setting, benchmarking, and output comparisons, demonstrating its potential to re-organize the public sector and enhance efficiency according to a private sector model. From the broader public sector in the past three decades in Anglo-Saxon nations, managerialist NPM practices have been introduced into the exercise of governmental control of universities.

Consequently, universities, in responding to these externally imposed controls, are also faced with PMSs' challenges (Angluin & Scapens, 2000), linked to the societal/organizational nexus as well as their own internal organizational characteristics. Broadbent, Gallop and Laughlin (2010) identify such government control initiatives as "societal steering media", in the case of the HES, being government departments with responsibility for funding universities. These societal steering media employ 'transactional' steering mechanisms to control the activities of universities, as manifest in a RAE, such as ERA. These external controls that have been imposed on universities then have an impact on universities' internal systems as they seek to achieve the specified outcomes required to obtain desired resources.

Broadbent and Laughlin (2009) highlight the difficulties in designing PMSs. However, their analysis is at a conceptual level and they indicate that their framework needs empirical insights to enable understanding. This study adds empirical insights and thus develops both the conceptualization and understanding of PMSs. It considers how the societal/organizational nexus affects individuals within the organization, and how organizations manage the PMSs deriving from this nexus. We analyze how the societal context affects organizations, and how sub-units within the organization are in turn impacted, finally impacting individual academics.

Our paper considers a specific issue, university research-oriented PMSs, a topic that has already attracted research activity. MacDonald and Kam (2011) and De Lange et al. (2010) argue that a strong emphasis on research may lead to game-playing, consistent with the findings of Otley (2003), and Berry et al. (2009), who noted the likelihood that individuals may manipulate results to satisfy PMSs requirements. Osterloh (2010) considered input and output control mechanisms for assessing research, while Tourish and Wilmott (2015) and

Wilmott (2011) provide a critique of the use of journal ranking in defining quality of research outputs for their use in PMSs. While these are important in examining particular aspects of the impact of PMSs on research activity and their consequences, no studies to date have considered the way an internal PMS changes in response to the imposition of changes from the external environment. We adopt Broadbent and Laughlin's (2013) organizational change model to gain a more nuanced understanding of universities' research PMS.

4. An Organizational Change Model

Drawing on Habermas' (1984, 1987) critical social theory, Broadbent and Laughlin's (2013) organizational change model provides a basis for understanding the effect of change on UniA, including PMSs. This framework interlinks the 'macro' dimension of societal steering media and the steering mechanisms they impose with a 'micro' organizational response as changes are interpreted and embedded in the life and PMSs of an organization (Hassan, 2008). The model thus recognizes the importance of structure and action as well as the role of the external environment in giving legitimacy (Baxter, 1987; Hassan, 2008).

Broadbent et al. (1991) and Broadbent and Laughlin (2013) operationalized the abstract elements of Habermas' theory incorporating his notions of 'life world' as societal norms and values that give meaning to everyday life, 'steering media' as mediating organizations and 'systems' as definable fields of action. They explored the role of steering media and steering mechanisms at the societal level, by evaluating the controls imposed by the Department of Health (steering media) on the British National Health Service (system). They envisaged societal steering media as organizations or collections of organizations, having their own organizational values and beliefs (vision and mission), and mobilizing control through steering mechanisms. At an organizational level, they referred to 'life world' as 'interpretive scheme', 'steering media' as 'design archetypes' and 'systems' as 'sub-systems'. They suggest that within an organization, there is a dynamic balance among these elements, with 'design archetypes' reflecting and being in alignment with the interpretive scheme through sub-systems. However, an external disturbance has the propensity to affect this dynamic balance and cause organizational change.

Any disturbance (external or internal) may force an organization to move away from this dynamic balance, triggering imbalance and inconsistency between the interpretive scheme and the design archetypes and sub-systems, and resulting in internal alternative transitions and transformations (Broadbent & Laughlin, 2013; Pettigrew, 1995). These external disturbances may take the form of changes in government fiscal policies or internal disturbances such as the appointment of a new leader (Bebbington, 2007), precipitating a reaction in which the three elements (i.e., interpretive scheme, design archetypes, and sub-systems) interact (Broadbent & Laughlin, 2013; Richardson, Cullen & Richardson, 1996). The resultant changes as a result of these disturbances can be categorized as either "first order" or "second order" (Bartunek, 1984; Broadbent & Laughlin, 2013). Second order change occurs when a disturbance causes significant and fundamental change in an organization's interpretive scheme, resulting in long-lasting changes. First order change is less significant, producing slight, short scale changes in design archetypes and sub-systems.

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Governments and government agencies, as societal steering media, have the authority to design funding structures that will steer universities in line with government policies (societal steering mechanisms) (Broadbent & Laughlin, 2013). In an ideal situation, at the organizational level (universities), the design archetypes should be aligned with sub-systems, all acting in harmony with the interpretive scheme (Broadbent & Laughlin, 2013). At the level of a university, the actions of government steering media represent an environmental disturbance. University managers mediate external relations and fashion strategies, becoming "their own switching station, between the external pressures and the internal changes they want to achieve" (Marginson & Considine, 2000, p. 9). The greater the magnitude of the disturbance, the greater is the chance of change. Evaluation of change is most accurate when based on the perspective of active participants in specific organizations at particular points in time (Broadbent et al., 1991). It is this micro level that is the focus of this paper, which analyzes the disturbance caused by ERA to UniA and its academics, and evaluates the type of change (significant second order change or less significant first order change) that occurred over a period of time, 2006-2010.

In this case study, we identify RQF/ERA as a steering mechanism and ARC as a steering media, the vision and mission of UniA as interpretive scheme, UniA's structure as design archetypes, and PMSs as a sub-system. In so doing, we investigate the link between RQF/ERA as it was conceived and operationalized, and the internal PMSs in UniA, to illustrate the connection between the ARC's implementation of 'managerialist' sector-level policies, and the conduct of operational activities in individual universities at the organizational level. This model provides us with a language by which to analyze the relationship between the external environment and the internal workings of a university, particularly focusing on the level of organizational change RQF/ERA precipitated (see Figure 1).

(Insert Figure 1 about here)

As portrayed in Figure 1, this organizational change model enables the identification of the ARC as a societal steering media, since it has an assigned authority, with the positional, economic, and regulatory power to steer changes that affect individual universities such as UniA. ERA is a steering mechanism designed to exercise this power and implement change. Through the steering mechanism of ERA, the ARC aimed to align the interpretive schemes of the Australian HES with those of the Australian Government, according to national priorities, thereby enhancing their research performance. We examine the change within UniA as a result of the imposition of ERA, analyzing it as either second order change that affects the interpretive scheme and design archetypes, or first order change of a lesser significance, that affects UniA's sub-systems.

5. Research Method — A Case Study of UniA

UniA, our case study university, was founded as an independent public sector university and has significantly expanded since its inception, in terms of infrastructure, student numbers, research activity, and income. UniA was chosen as the case study organization because of its location in a competitive environment in a major Australian city, its strong and concerted

research aspirations and achievements, and the researcher's connection to the university, which facilitated access to the university, people, and internal documents. The study covered the period 2006–2014, focusing in-depth on the years 2006–2010, with 2006 the year when a new VC was appointed, and 2010 marking the first iteration of ERA. The appointment of a VC experienced in research assessments indicates UniA Council's awareness of the Australian Government's intention to implement a similar exercise at the time the RQF was proposed. The VC, with his research assessment experience, worked with senior UniA academics and managers to develop his vision for research and teaching. Research is the focus of the paper, and it is the implementation of these plans rather than their conception, that sets the boundaries of the study.

Data for this study included publicly available documents, both policy related at the Australian HES level and university related at the UniA level, face-to-face semi-structured interviews with senior management, and responses to a survey that was administered to all academics within UniA. The publicly available documents provided an overview of the various policies relating to the identification, measurement, and evaluation of research at universities in the lead up to ERA. University documents provided an overview of the university, its mission, goals, and research direction. The interview process provided a means of drawing on the experiences of key actors at UniA, in developing an understanding of the impact of RQF/ERA on their professional role, their views and assessment of ERA, and the processes involved in the implementation of PMSs. In accordance with an agreement with UniA, there were restrictions placed on the number of interviews that could be conducted, and on who was able to be interviewed. The Deputy VC Research provided a list of names of senior academics and professional staff. The survey provided direct input from academics about the impact of ERA and PMSs on their working lives. Email addresses of academics for distribution of this survey were obtained from UniA's website, and the questionnaire was administered to all academics.

Based on the theoretical and methodological foundations of this study, and considering how others have approached similar topics of study (Bazeley, 2010; Yin, 2009), the data collected from public and internal documents, web pages of the university, interviews, and the open-ended question in the survey were managed and analyzed using NVivo Version 10. Interviews averaging between 45 to 60 minutes were conducted in 2012 with 15 senior executives of UniA. Interviewees were asked for their perceptions of how ERA reshaped the university's mission, strategies, and internal PMSs, what role they played in meeting the mission and ERA reporting requirements, whether there were any changes to the way in which academics were measured on research performance with the implementation of ERA, and so on.

To ensure anonymity of the data, a coding system of fictional names for individuals was used. Participants were identified in three categories. 'Alpha' represents a group of three people with long careers in the Australian HES, who at the time of the interview were holding senior management executive positions (e.g., Deputy VCs and Directors). Two of them had been in the current position for less than 10 years but within UniA for over 10 years. 'Beta' represents a group of eight people at the faculty level of UniA with long careers

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in the HES nationally and internationally and who, at the time of interview, were holding management executive positions (e.g., Executive Deans and Associate Deans). All eight of them had been in this position and in UniA for less than 10 years. 'Gamma' represents a group of four people at the department level of UniA with long careers in the Australian HES and who, at the time of interview, held management positions (e.g., Heads of Departments). All four of them had been in this position for less than 10 years, but three had been with UniA for over 10 years. After interviewing 11 executives data saturation was reached (Guest, Bunce & Johnson, 2006), with the remaining four respondents restating similar responses to questions as previous interviewees and revealing no new information.

To gain an understanding of the impact of ERA systems on individual academics, a web-based survey questionnaire was administered to 1,252 academics in March 2013. A total of 202 responses was received, a response rate of 16%. The low response rate is a common feature in management accounting research (Henri & Thibodeau, 2006; Van der Stede, Young & Chen, 2005). In addition to a series of questions, such as academics' perception of ERA, perception of change, PMSs, workload and job satisfaction, the survey included one open-ended question asking academics to provide their reflections about the impact of ERA on their working life. Table 1 provides a snapshot of the respondents to the survey and to the open-ended question.

(Insert Table 1 about here)

Table 1 indicates that for the entire survey, 50% of the respondents were in Lecturer and Senior Lecturer positions. More than half of the respondents were from the Faculty of Science (57%). The Faculty of Business and Economics had the lowest representation (15%). The open-ended question had 90 academic respondents who identified a range of issues and their responses are analyzed in Section 6 of this paper. A majority (70%) of the respondents who answered the open-ended question were continuing full time academics and 50% were from Lecturer and Senior Lecturer positions, (see, Table 1). Of the 90, 14 were not included in the analysis as they either stated 'no comment' or explained why they were unable to comment, due to reasons that included being recent or contract appointees. Responses to the open-ended question were reviewed in detail, tabulated in an excel spreadsheet and grouped as supportive of ERA (20%), indifferent to ERA (14%), and critical of ERA (66%). This assessment was made based on our NVivo analysis of all responses, by category, and the tenor of the response. Data from the documents, interviews, and the open-ended survey question are analyzed and presented in Section 6.

6. Findings

When ERA was formalized in 2010, it required research to be accounted for and reported through the ARC's 'System to Evaluate Excellence of Research'. The importance given to research performance in ERA 2010 meant that universities needed to strengthen their focus on research. For UniA, this meant that in addition to its historically strong teaching emphasis, there was an increased emphasis on steering academics to produce research outputs that would ensure a favourable ERA outcome. This inevitably placed more pressure on academics to perform (Fredman & Doughney, 2012; Winefield, Boyd, Saebel & Pignata, 2008). UniA

managers therefore needed to have new strategies in place to enhance the research culture and increase the university's research performance. ERA 2010 also meant that UniA needed to have appropriate information technology (IT) systems in place to ensure that its existing systems and research data were compatible with the new reporting requirements, since the requirements of the ERA process in terms of categorization of research outputs into different FoR codes and UoE was new. These research requirements point towards ERA as a potential disturbance to UniA, with the likelihood that the balance between the interpretive scheme, design archetype and the sub-system would be disturbed, and change would flow through the organization over time.

The study findings suggest that the process of change, with the appointment of a VC in 2006 in anticipation of RQF, could be identified as a second order change, since it resulted in significant and long-lasting changes to UniA's vison and mission. As evidenced in the subsequent subsections, the University council accepted the research focused 'vision', as proposed by the new VC, which led to changes to UniA's interpretive scheme, which then flowed through the UniA's design archetype in the form of restructure and the introduction of management accounting technologies for capturing and recording research outputs as required by ERA. This led to changes in the sub-systems where a newly developed 'performance development review' (PDR) process was established and implemented. In addition to the predominantly external environmental disturbances identified by Laughlin (1991) and Bebbington (2007), identified internal events, such as a new appointment in a senior leadership role, or the collective actions of a group of employees, may evidence a disturbance. While the decision to appoint a new VC was made by the council in response to an expectation of upcoming changes in the external environment, we identify that it was the appointment, in anticipation of a future RAE, which caused the more significant organisational disturbance and not ERA per se.

The process of change resulting from the imposition of ERA 2010 could be identified as being in the nature of first order change, a less significant level of change, where the change was accepted and internalized into the workings of the organization (design archetype and sub-systems) in a manner that did not impact upon the organization's core vision and mission (Laughlin, 1991). The interpretive scheme was unaffected by the disturbance of ERA 2010, having already undergone transformational changes since the appointment of a VC in 2006 in anticipation of RQF. However there were, inevitably, impacts on individual academics. While not the major focus of this paper, it is worth noting that these changes elicited some critical responses.

These findings, are analyzed and presented in the following two sub-sections.

6.1 Changes with the appointment of a new VC in 2006 – Second order changes

With research assessment systems for universities already instituted in the UK and NZ, some form of formal government research assessment initiative was anticipated by the Council of UniA. In recognition of this, it appointed a new VC with UK experience of government research assessment to steer the university in a direction that would help it meet the demands of such an assessment. Documentary analysis indicates that the new VC brought about

significant second-level changes to UniA by changing its interpretive scheme, in terms of an anticipated research performance frame work in the form of RQF.

6.1.1 Vision and Mission (Interpretive Scheme)

In analyzing the changes through the Broadbent and Laughlin (2013) organizational change model, we identified significant or second order changes to UniA's vision and mission, that is, its interpretive scheme. These were not as a result of ERA 2010, but due to the fresh vision brought by the new VC driven by an expected external research assessment framework in the form of RQF. Considering the way UniA management defined and promoted its mission, strategy, and effort, surprisingly, we found that a majority of the respondents did not identify ERA 2010 as having an impact on UniA's vision (interpretive scheme). Instead, they identified the establishment of a new vision and mission for the university upon the appointment of a VC in 2006:

> *I think our mission came first and ERA came second. With the new VC, his mission was to break into the top eight nationally and top 200 internationally... (Alpha)*

> *[UniA] was seen as a teaching institution 10 years ago. Research wasn't necessarily a major thing especially in our faculty ... a new VC after having the same VC for a very long time brought in a lot of radical changes. (Gamma)*

> *We were already driven by a new vision with the new VC that was sort of like waking a sleeping giant and we knew that was going to cause massive shifts, whether there was an RQF or ERA. (Gamma)*

These views aligned with the documentary analysis, which revealed that the new VC had meetings and discussions with various internal and external stakeholders, senior management, and student and union leaders during the first months at UniA. A vision and mission for UniA were identified through a consultative process. This was accepted by the University Council in 2006 and subsequently embedded in UniA's research strategic plan in 2007.

> *Upon his appointment as Vice-Chancellor in 2006, he expressed in a document his vision for UniA to be a research-intensive university. (Alpha)*

In 2007, a trial assessment of research quality was conducted jointly between UniA and another university to assess the quality of research produced within UniA. This was part of UniA's benchmarking exercise and a key aspect of preparation for the RQF, which, at the time, was scheduled to be implemented in 2008. The two universities identified 23 research discipline areas for which assessment panels were formed. The panels included senior and experienced researchers with wide knowledge of the relevant disciplines, and drawn from other Australian universities and research organizations within and outside Australia.

> *The RQF trial tended to be quite useful for UniA. It was really good for the subsequent ERA processes because we engaged our staff through that process*

*much prior to ERA when compared to universities who had done absolutely
nothing. So that exercise was really useful for us in terms of heightening
awareness to staff and the importance of their participation. (Alpha)*

The responses outlined above, along with the documentary analysis, indicate that UniA, as a corporate-style entity, had established a new mission, vision and strategies with the appointment of a new VC in 2006. With his experience of the UK HES, and in particular, RAEs there, he was well positioned to anticipate RQF, and subsequently ERA. Thus, ERA 2010, with its research measurement and evaluations, did not necessarily bring about changes to the interpretive scheme of the university. The strategic orientation was set under the new VC in 2006 in anticipation of RQF in 2008 and continued with ERA in 2010. It could thus be contended that the disturbance from ERA 2010 did not cause significant change to the existing interpretive scheme of UniA, because RQF preparation had already brought about these changes.

6.1.2 Structure and PMSs (Design Archetype and Sub-systems)

We found significant changes to the design archetype and sub-systems of UniA. For example, in outlining goals and strategies to improve UniA, the VC also set himself a set of KPIs against which he would be measured (to maintain the anonymity of the university, these documents cannot be cited). These KPIs were aligned to the overall goals of UniA, and subsequently to the Deputy VC's KPIs, following through to the Executive Deans, and down through to the performance targets of individual academics. While not necessarily indicating endorsement or adoption of these targets, one respondent acknowledged an awareness of the proposed changes:

> *The change was communicated through a vision statement. You align KPIs at
> the very highest levels….all the Executive Deans came in and their KPIs were
> very clear … We knew what our Executive Dean's KPIs were and what the
> Provost's KPIs were … (Gamma)*

For a university such as UniA, which had been a teaching-focused university, significant changes were thus required in order for it to be successful in any RAE. Since government funding was to be allocated, based on universities' performance in ERA, it was a very competitive environment. In identifying any changes to the structures and systems within UniA interview respondents indicated the establishment of a specific strategy called "X" (for this paper) as having an impact on the university. The X strategy was pursued within UniA to enhance its research profile:

> *I don't think that our whole research strategy has been shaped by ERA. I think
> that our X strategy is about investing in a number of areas where we can
> actually really develop a profile for being world class and excellent … ERA
> reinforced that in fact in some areas we were excellent and in those areas we
> got 5s and 4s … it reinforced that in fact as a strategic intervention by the VC
> and as a strategic priority for UniA it was a smart investment (Alpha).*

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The X strategy was to hire small teams of researchers who would have the required publication record and grants to obtains 5s and 4s. This was a new strategy that allowed UniA to recruit up to 90 research only positions between 2006 and 2009.

Respondents stated that the research output within the university had been strong and UniA's aspirations to enhance its research output existed prior to any performance evaluation measures such as ERA:

> *I have been here for over six years, and I was very aware that our university before ERA had a culture that valued quality in research (Beta).*

> *I don't think ERA changed the focus of research within the university. UniA had spent a huge amount in IT and X strategy prior to ERA as it had set its strategies to enhance the quality of research within the university (Beta).*

Other changes included the introduction and communication of strategic PMSs for faculties, departments and individuals. Consistent with a NPM managerialist approach to the management of academics, a PDR process, forming part of an electronic human resource system for academic and professional staff, was initiated for the first time in 2006, piloted in 2007, and implemented in 2008. Training was given to all staff prior to implementation. In the context of the expectations of ERA 2010, or a similar R by which the research quality of the outputs of Australian universities would be judged, and government funding allocated, it was considered by UniA management to be imperative that the research goals of individual academics were established and aligned to department and faculty goals in consultation with academic supervisors. Thus PMSs were developed to ensure that academics established research goals consistent with the goal of UniA management to attain a good ERA ranking, and therefore access to government research funding.

> *PDR was non-existent up until 2007. It was introduced in 2008 which put academics in the spotlight (Gamma)*

The progress of academics was monitored twice during the year by their supervisors. Individuals were supported with additional training, changes to workload allocations, and other areas with which they needed help, so as to enable the accomplishment of their goals. For instance, as a part of this heightened research focus, specific targets were set to increase UniA's research income by 60% in 2014, and this was aligned to success in competitive grants. A range of incentives were developed to support staff in seeking external research funding, with internal budget and various funding mechnisms established.

The responses from UniA's senior management indicated changes that came about with the appointment of the new VC were significant. The appointment of a new VC was a disturbance in response to changes in the external environment, and caused an internal disturbance to UniA's environment. It seems that the VC's awareness of a qualitative RAE in the form of RQF formed the basis of his strategies for UniA. The new VC had been a major participant in the UK RAE before his arrival in Australia (Martin-Sardesai, 2014). The second order changes adopted within UniA after the appointment of the new VC in 2006 in anticipation of RQF and the first order change adopted with the implementation of ERA in 2010 are presented in Table 2.

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6.2 Changes with the implementation of ERA 2010 - First order changes

The implementation of ERA 2010 brought about a less significant level of change. This process of change is identified as first order change

6.2.1 Vison and Mission (Interpretive Scheme)

There were no changes to the vision or mission of UniA with the implementation of ERA 2010, as these were being put into place after the appointment of a new VC in 2006, in anticipation of RQF. Hence, the implementation of ERA 2010 within UniA (as outlined in Table 2) did not warrant any second-level changes as defined by Broadbent and Laughlin (2013).

(Insert Table 2 about here)

6.2.2 Structure and PMSs (Design Archetypes and Sub-systems)

In consequence of the second-level changes initiated by the new VC in anticipation of RQF, ERA 2010 produced less significant, first-level changes in UniA's design archetypes and sub-systems, in the form of changes to structure and in particular PMSs. According to an Alpha respondent, the operationalization of ERA 2010 called for a restructuring as per the ERA codes and reporting requirements within the university *management structures* to ensure the strategic collection, compilation, and submission of research data. The organizational structure incorporated research managers in every faculty responsible for the collection and compilation of research data from individuals within the various departments in the faculties. The design archetypes within UniA acted as communication structures to convey the requirements of ERA 2010 to UniA's members.

In particular, an internal ERA project team was put in place within the Deputy VC-Research office, to deal with and fulfill the requirements of the ERA submission process within the university (as stated by an Alpha respondent). FoR code champions, Associate Deans (Research), and Research Manager positions were established to deal with the strategic alignment of the research grouping process, consistent with the requirements of ERA categories. These people were in charge of collating and allocating appropriate FoR codes for research outputs within their own specific disciplines. These groups can be seen as having a unique position within UniA in filtering environmental disturbances, ensuring functioning systems in place, and in providing leadership for the organization as well as guiding the direction of the full expression of the values of the interpretive scheme in the actual and future requirements of ERA 2010 for UniA. They can be seen as the personification of the Habermasian 'steering media' and the key foundation stone of all design archetypes in organizations (Broadbent & Laughlin, 1998).

ERA was an expensive exercise for all Australian universities, necessitating both direct and indirect costs (Gable, 2013; Hicks, 2012). It was operationalized at UniA through improving the IT systems, with initial investments of between AUD\$500,000 and AUD\$1 million (as informed by an Alpha respondent during interviews). Internal funding was re-routed from teaching related areas of activity to specific disciplines or groups of researchers identified as having the most potential to enhance the overall research profile of the university. There was no need for every discipline or FoR code to receive a 5 or 4 rating, as only a few would

indicate that UniA was world class. ERA was constantly referenced as a key in framing the academic promotion policies, by incorporating the ERA factor in the PDR forms:

> *When you look at promotion forms, academics are now requested to provide metrics which are similar to ERA metrics ... (Beta)*

Over the period 2008–2010, UniA embedded ERA indicators into its internal PMSs. Academics were required to highlight their performance in terms of research grants and research publications. While similar in principle, this represented a refinement of the PMSs previously in place, in order to cater for the specific requirements of ERA 2010. Two levels of change were evident as university management responded to the disturbances in 2006 and 2010, as outlined in Table 2.

6.3 Academics' Responses

Other insights from the survey included academics' perceptions of a reduction in research freedom, onerous reporting requirements draining research time, and a huge administrative burden. As indicated earlier, PMSs introduced within UniA were explicitly intended to bring about a change in culture by changing attitudes towards research, making all academics more research oriented, and enhancing the overall research performance of the university. University senior managers and Deans were placed in a 'quandary' (Agyemang & Broadbent, 2015) about how to manage research. As the processes that have been developed have met with resistance, there will continue to be discussion about the extent to which the ERA exercise is driving academic activity in particular ways.

Academic responses to the open ended question were grouped as supportive (20%), indifferent (14%) and critical (66%), we interpret the indifferent responses to be supportive as well, thus dividing the supportive and critical responses at 34% and 66% respectively.

6.3.1 Supportive Responses

Several academics worked on their own strategies, focusing on what they value and perceive as important to them. These comments are viewed as supportive as 34% of the survey respondents do not seem to be threatened by the changes introduced by the university concerning research:

> *My own research strategy is that I will continue to do research that I feel has value and publish in journals that have influence.… (Level E)*

> *What matters to me is the quality and impact of my research.… (Level C)*

6.3.2 Critical Responses

The critical views of ERA (66%) are reflected in the following comments:

> *I find my greatest obstacle is the [performance review] process itself, which is highly unsatisfactory and a waste of time. I also have a manager who is unaware of my needs and is driven purely by achieving the goals of the ERA for the discipline.… (Level C).*

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Academics identified various issues such as the ERA exercise, journal rankings, managerialism, workload, PMSs, and job satisfaction. Since the focus of the study is on the impact of RAEs and PMSs on the working life of academics, a summary of the responses on PMSs, based on NVivo analysis was undertaken. All but one of the 15 respondents expressed concerns with UniA's PMSs.

Lack of transparency and flexibility within the performance review process were seen as an obstruction in the accomplishment of PMSs driven towards achieving ERA objectives:

> *There is no transparency within the process to change one's manager for performance review purposes in the event of issues/disputes, and as a consequence I feel that I am unable to be honest and open during the process as my manager is not sympathetic to my needs and goals.... (Level C).*

Other comments on the PDR process highlighted an emphasis on quantitative as against qualitative indicators, and its poor design:

> *... too high an emphasis on grants in [performance reviews] is wrong I believe. Quality outputs should be the most significant factor as not all high quality research achieves external grant funding, or even needs it (Level E).*

The oppressive managerial approach to research in UniA and its departments was identified by one of the academics:

> *For my discipline ... the ERA exercise 'defined away' most of the research work that I do ... they were not counted as part of my discipline ... The fact that UniA obtained a 2 for my discipline then seems to be used by others (at university, faculty and department level) as an indication that we are doing a bad job... (Level D)*

Other brief comments critical of the effects of ERA included:

> *It provides no motivation and wastes time! (Level C)*

> *It's just served to undervalue the importance of teaching even more! (Level D)*

> *No work-life balance! (Level A)*

7. Conclusion

As the HES globally undergoes significant change with the implementation of research assessments, universities are faced with the need to develop research-oriented PMSs that will enable them to achieve their research objectives. The objective of this paper was to investigate the organizational change undertaken by UniA, in anticipation of, and in response to RAEs in the form of RQF and/or ERA. Adopting the model of Broadbent and Laughlin (2013), we analyzed UniA's reactions to external imposed performance measures in the form of ERA. The findings indicate that UniA underwent significant or second order changes, not with the implementation of ERA in 2010, but with the appointment of a new VC in 2006, and

his anticipation of RQF. There were significant and long lasting changes to UniA's vision and mission (i.e., its interpretive scheme), brought about by the new VC in 2006 in anticipation of RQF. These changes then led to changes in the design archetypes (i.e., structures within UniA) in the form of KPIs, 'X' strategy, budgets and funding, which further drove changes to the systems (i.e., PMSs), in terms of PDRs for individual academics. With the requirements of ERA in 2010, first order changes are evident within UniA as there were no changes to the vision and mission statement. However, there were changes to PMSs to align with the requirements of ERA 2010. Although these changes were implemented and UniA's outcome in the first ERA evaluation in 2010 was favourable, the findings from the survey reveal a level of discontent among academics as a whole, potentially threatening the university's interpretive scheme. Academics voiced concern that the concentration on ERA inhibits and constrains their work. Academics also perceived that the focus on research had affected their teaching adversely. They were critical of the effects these PMSs had on their day-to-day work. It is crucial that the potential consequences of the increasing use of PMSs in universities are recognized.

Internal PMSs are portrayed as organizational steering mechanisms, precipitated by ERA 2010 (external PMSs), and integrated into the steering media and mechanisms of UniA. The arguments in the paper are developed in the context of internal PMSs used to manage research in an Australian university as they respond to the proposed RQF in 2008 and the implementation of ERA 2010. There were external PMSs undertaken by ARC on behalf of the Australian Government. As an external PMS, ERA implemented by the ARC assesses the quality of research groupings to allocate some Government research funding to the University as a whole. For UniA, the results of ERA have been powerful and have acted not just as an allocator of resources, but also as an indicator of prestige for individual groupings and institutions alike.

Although the new VC introduced the changes, it is evident that these strategies were implemented in anticipation of RQF. In line with the literature, ERA 2010, as a PMS, has driven strategy and planning (Berry et al., 2009; Tekavcic & Peljhan, 2010), the identification of research activities, and the monitoring of research performance of groupings. Whilst there is a need to respond to external controls and the regulatory environment, there is also the need to consider the internal context of the organization itself and the objectives it wants to achieve. UniA had set itself a goal to be among the top research universities. Thus in assessing the environmental conditions (implementation of ERA 2010), UniA's PMSs were modified accordingly to bring about changes into its internal PMSs (Otley, 2001, 2003). The objective of UniA was to achieve favourable ERA 2010 outcomes and that objective was met, with further improvements in ERA 2012 and ERA 2015 results.

The paper makes three contributions, to academic literature, to practice, and to theoretical understanding of change. First in examining PMSs and organizational change due to changes in government policies such as the proposed RQF and the implementation of ERA, it contributes to the PMSs literature. Second, it provides useful insights for both regulators who devise assessment exercises and universities that are required to respond to them (Deem,

1998; Parker, 2013; ter Bogt & Scapens, 2012). Third, it highlights a useful organizational change model.

Despite its many advantages, the case study method has its limitations, as it relates to a single project or small clusters of projects. However, insights from this research study on the effective management of change in the HES are of relevance to other university organizations nationally and internationally.The restrictions placed in the data collection process in terms of the number, and the people to be interviewed should be considered a limitation of this study. Interviews and surveys alike elicit the *opinions* of respondents, and provide valuable insights. An extension of this research to include a comparison of the impact of government reforms across additional public sector universities would provide further insights. An interesting focus would be an examination of the way universities' leaders entrepreneurially attempted to manage their universities by anticipating the changing demands within the HES.

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[1] In this study the AHES refers to 41 universities, 39 public and two private (Australian Catholic University and Bond University).

[2] After establishing its list of more than 22,000 acceptable journals for ERA 2010, and ranking them as A*, A, B or C, following feedback the ARC later removed the rankings, but retained the list of journals. Senator Kim Carr, the Minister for Innovation, Industry, Science and Research, stated there was evidence that the rankings had been used "inappropriately", in a way that could produce "harmful outcomes" (Rowbotham, 2010).

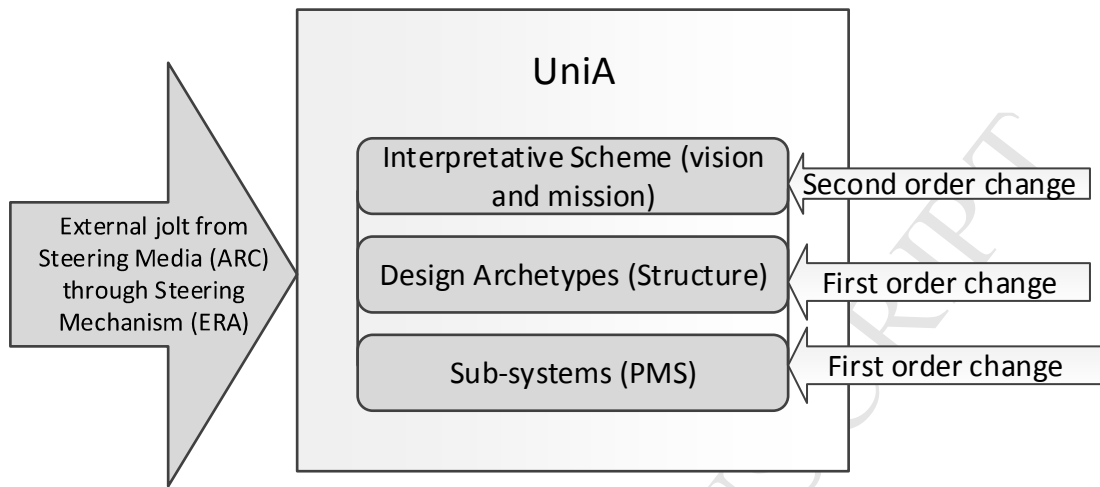**Table 1: A Snapshot of Academic Respondents to Survey**

Category	Survey respondents		Open-ended question respondents	
	No.	%	No.	%
Nature of academic appointment:				
Continuing full time*	130	64	63	70
Continuing part time	9	5	1	1
Fixed Term	58	28	26	29
Emeritus	5	3	-	-
Total	**202**	**100%**	**90**	**100%**
Employment Level:				
Associate Lecturer	18	9	7	8
Lecturer	49	24	18	20
Senior Lecturer	53	26	27	30
Associate Professor	32	16	12	13
Professor	26	13	19	21
Postdoc	19	9	7	8
Emeritus	5	3	**-**	**-**
Total	**202**	**100%**	**90**	**100%**
Age:				
Age 25-34	31	15	11	12
35-44	62	31	25	28
45-54	60	30	27	30
>55	49	24	27	30
Total	**202**	**100%**	**90**	**100%**
Length of time at UniA:				
At UniA<5 years	72	36	28	31
5-10 years	57	28	26	29
10-20 years	51	25	22	24
>20 years	22	11	14	16
Total	**202**	**100%**	**90**	**100%**
Faculty:				
Faculty of Arts	57	28	33	37
Faculty of Business and Economics	30	15	9	10
Faculty of Science	115	57	48	53
Total	**202**	**100%**	**90**	**100%**

* This meant academics had tenured positions, rather than being part-time or fixed term appointees.

Table 2: Change in UniA

Environmental Disturbance	Evidence of UniA's Response	Level of Change
Appointment of a new VC in 2006	Interpretative Scheme – changed mission and values: move from a teaching focused to research focused university.	Second Order change (significant and long-lasting)
	Design Archetype – changed structures and management systems, new KPIs for VC and Executives, new PDR for all staff, new MIS for timely performance reporting and monitoring, aligned to Interpretative Scheme.	
	Sub-systems – new PDR processes for departments/academics aligned to Design Archetype.	
Implementation of ERA in 2010	Interpretative Scheme – no change to mission and values – continued to have a research focus.	First Order change (less significant)
	Design Archetype – improved IT systems, funding systems to support research, changed PMS with specific ERA focused performance indicators (research publications and grants) included.	
	Sub-systems – changed structures applied to departments and academics, PDR process changed to include changed PMS aligned to Design Archetype.	

Figure 1: Organizational Change Model for UniA