

SUSTAINABILITY IN AN AUSTRALIAN UNIVERSITY: STAFF PERCEPTIONS

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1. Introduction

The last two decades witnessed a surge of research into sustainability, in particular, corporate social responsibility (CSR) reporting¹. The foci were on the motivations, characteristics, formats and contents of sustainability reporting (Ullmann 1985, Gray et al. 1995a, Deegan et al. 2000, 2002). There has been less research that examines sustainability issues and consequent changes from inside an organization (Adams & McNicholas, 2007), especially a not-for-profit (NFP) entity. This study addresses the implementation of a sustainability policy in a large university in an Australian capital city, identifying the challenges and barriers to that university in the implementation of its sustainability strategy.

The university is a large one, with over 30 000 enrolled students and over 2000 staff. Prior to 2007, sustainability initiatives were mainly focused on the reduction of energy consumption and environmental protection. The university's approach was project-oriented, which meant that it was not integrated into its strategy. Since 2007, however, it has attempted to adopt a holistic approach to sustainability. Changes to its organisational structure were made, which included the establishment of a Sustainability Office. A broader range of sustainability projects were adopted, and in 2009, when this study was conducted, the university launched its first sustainability report and its sustainability strategy.

The introduction of the *National Greenhouse and Energy Reporting (NGER) Act* 2007 and the proposed *Carbon Pollution Reduction Scheme (CPRS)* by the Australian government are considered as key drivers of the increase in sustainability disclosures by many Australian organizations (KPMG 2008). The national context for this study is therefore one in which the enactment of the legislation was anticipated. Further, because the study is conducted in a period

¹ In this study, CSR and sustainability are used interchangeably.

where an aspect of sustainability was moving from being a voluntary to a mandatory practice, this study extends extant theories on CSR beyond their usual realm of voluntary disclosures.

The remainder of the paper is developed in five sections with the first section dedicated to a review of the relevant literatures. The second and third sections present the research method and the study's findings, respectively. The implications of the findings are discussed in section four. Then we conclude.

2. Literature Review

2.1 Theories applicable to sustainability

The concept of CSR recognizes an organisation's commitment to operate in a way that takes into account not only the financial implications of business decisions but also the social and environmental impacts on the community. Debates over the definitions of CSR and sustainability continue unabated because both concepts are "internally complex" (Moon 2007, p.297). As a result, the application of CSR and sustainability is also relatively undefined. In this paper, the terms CSR and sustainability are used interchangeably.

In the CSR literature, the main theories that have been applied are legitimacy and stakeholder theories. Legitimacy theory asserts that the main incentive for an organization to undertake voluntary CSR reporting is to maintain its legitimate status in society, thus preserving its rights to operate and reducing the possibility of future regulation. This theory was used in research to examine the motivations of organizations undertaking voluntary CSR reporting, (Deegan et al. 2000, 2002). Prior research, however, has only started to examine the impact of CSR reporting on the organization, in particular, its implementation and effect on organisational processes. O'Dwyer (2002) thus identifies the need for further research in these areas. Earlier, Buhr (1998) identified two dimensions of the legitimation process at an organisation level. They are action (the activities of an organisation congruent with social

values) and presentation (the activities appearing to be congruent with social values). The validity of these two dimensions is provided by Frost and Seamer (2002), who surveyed the environmental reporting and management practices of 35 NSW public sector entities. The results show a significant association between the development of internal environmental management practices and the level of environmental disclosure. It was then argued that an organisation is more likely to take internal actions and present these efforts to society in order to achieve its legitimate status. Applying a legitimacy theory perspective to this study, it is proposed that a university seeks legitimacy to maintain its status as a worthy recipient of external resources. As an institution competes for government grants and other external funding, it has incentives to go beyond mandatory requirements, alter internal processes toward sustainability and disclose relevant information to maintain or increase its status in society.

An alternative perspective on CSR reporting is provided through stakeholder theory, which views it as an organizational response to satisfy the information demands of key stakeholders. To 'succeed', the potentially conflicting demands of the various powerful stakeholder groups must be satisfied (Ulmann, 1985). Following stakeholder theory, one would view a university's sustainability strategy as a means to satisfy the expectations and requirements of its major stakeholder groups, including government agencies, students, staff and the local community. A university, in this scenario, ideal-typically would engage its stakeholders in sustainability policy formulation and implementation.

These two theories share a common ground. Legitimacy theory explains CSR reporting from a social perspective while stakeholder theory focuses on the organization's CSR strategy as a response to key stakeholders' demands and expectations (Deegan & Islam 2008). However, there are increasing debates over the explanatory power of legitimacy theory (O'Dwyer 2002, Bebbington et al. 2008) and concerns about the possibility that CSR reporting is captured and institutionalised, limiting its empowering potential (Bebbington et al. 2008). As a result, one

emerging explanation of CSR reporting is reputation risk management (RRM) theory, which focuses on organizational reputation (Friedman & Miles 2001, p.528). Bebbington et al. (2008) examine CSR reporting as part of the organizational reputation risk management process and proposes an image restoration framework. Five elements of organizational reputation are summarized as financial performance, quality of management, social and environmental responsibility performance, employee quality and the quality of the goods/services provided (Bebbington et al. 2008, p.340). This approach offers another framework to examine CSR reporting at a strategic and operational level from the inside of an entity. Following RRM, it is proposed that setting a sustainability strategy may be useful for maintaining and improving a university's reputation and image. It also allows the possibility of de-coupling of CSR reporting from internal processes (see Section 2.3).

2.2 Barriers and motivations for sustainability in higher education

Sustainability is also a complex concept that produces numerous internal and external challenges to universities. It challenges the way they act, the way they teach and even the way they think. The literature identifies several barriers to sustainability.

One barrier to sustainability in higher education is the lack of consensus on a definition of sustainability (Tilbury et al. 2005, Velazquez et al. 2005, Bekessy et al. 2007). This has hampered the growth and sharing of knowledge on sustainability initiatives among the various stakeholders of universities. Another barrier is the lack of resources, including financial constraints on the implementation of initiatives (Thomas 2004, Tilbury et al. 2005, Sammalisto & Arvidsson 2005, Velazquez et al. 2005, Bekessy et al. 2007, Evangelinos et al. 2009). Lack of interest, commitment and participation by stakeholder groups is also a hurdle (Tilbury et al. 2005, Velazquez et al. 2005, Evangelinos et al. 2009), more so with the dearth in rewards, incentives or recognition for individual contributions to sustainability (Tilbury et al. 2005; Ferrer-Balas et al. 2008). The lack of effective dissemination of information on sustainability

and training of members are also impediments to sustainability efforts (Thomas 2004, Tilbury et al. 2005, Velazquez et al. 2005, Evangelinos et al. 2009). Other identified barriers are problems relating to organizational structure and management commitment and accountability (Thomas, 2004; Sammalisto & Arvidsson, 2005; Tilbury et al., 2005; Velazquez et al., 2005; Bekessy et al., 2007; Ferrer-Balas et al., 2008; Evangelinos et al., 2009).

Nonetheless, there is continuing interest in sustainability in higher education with four identified driving forces, namely, (1) government regulation, as in the cases in Sweden and Japan (Sammalisto & Arvidsson 2005, Ferrer-Balas et al. 2008, Evangelinos et al. 2009), (2) reputation management, *viz.* to improve image and create goodwill, as in the case of Swedish universities (Sammalisto & Arvidsson 2005; also see Bebbington et al. 2008), (3) pressure from peer institutions (Ferrer-Balas et al. 2008), and (4) the availability of funding for sustainability (Ferrer-Balas et al. 2008, Evangelinos et al. 2009).

2.3 Sustainability accounting and organization change

There is limited research that investigates the interaction between organizational change and accounting (Gray et al. 1995b, Larrinaga-Gonzalez et al. 2001, Larrinaga-Gonzalez & Bebbington 2001). Gray et al. (1995b) empirically studied environmental accounting and accountants using Laughlin's (1991) organizational framework in UK and New Zealand companies. Larrinaga-Gonzalez et al. (2001) followed suit with nine Spanish firms. Laughlin (1991) begins from a position that organizations are naturally resistant to changes unless forced by an environmental "disturbance". Change is seen as a dynamic process, spawning unpredictable trajectories. Laughlin (1991) identifies three important components within an organization: sub-systems, design archetypes and interpretive schemes as per Table 1 below:

Components	Examples
Sub-systems	Tangible organizational elements such as buildings, people, machines, finance and behaviours
Design archetypes	Organization Structure, Decision Processes, Communication Systems
Interpretive schemes	Beliefs, values, norms, mission, purpose and metarules.

Table 1 Laughlin's Organizational Elements (Laughlin 1991)

The imposition of forces on an organization may cause changes in these components, from which a new balanced state will evolve. The model predicts three states: inertia, morphostatic and morphogenetic. In a state of **inertia**, an organization ignores the environmental agenda and does not change. Here, the organizational environmental management system and reporting practices do not recognise and disclose the true position of an organization. The first order change, **morphostatic** state is when an organization makes changes of appearance but leaves the basic elements untouched. There are two different change models in this state: rebuttal and reorientation, where there is a more limited response to environmental disturbance in the former than the latter. Here design archetypes are modified with no effects on the interpretive schemes of an organization. A rebuttal change “fails to shift the balance and coherence of the organization” (Laughlin 1991, p.217). Environmental disclosure may be used as a tool to divert responsibilities away from the firm. This implies that sustainability reporting could be a legitimizing channel to obscure the lack of changes in the fundamental interpretive schemes of an organization.

A reorientation change occurs when an organization accepts and internalizes the external intervention. An organization changes its design archetypes and some of its sub-systems. However, a fundamental organizational change is not achieved because there is no change in the interpretive schemes. Hence, the organizational system will restore its balance, which is

“business as usual”. Evidence consistent with first order morphostatic reorientation changes are reported by Gray et al. (1995b) and Larrinaga-Gonzalez et al. (2001).

Laughlin (1991) calls those changes which impact the core of an organisation as second order **morphogenetic** changes. At this stage, real changes to the heart, essence or fundamental objectives of an organization can be expected. Two different change models were identified: colonization and evolution. Colonization change appears when an organization is imposed upon by disturbances which require the organization to change its design archetype, subsystems and interpretive schemes. Consequently, a “totally new underlying ethos for the organization as a whole” is formulated (Laughlin 1991, p.219). Gray et al. (1995b) and Larrinaga-Gonzalez et al. (2001) find evidence of colonization changes, which force organizations to make fundamental changes to their interpretive schemes.

Evolution change occurs when an organization voluntarily changes its core elements based on well-accepted values and visions of its organizational participants. The major feature of evolution change, in contrast to colonization change, is that the change arises from free and open discourse without coercion (see Larrinaga-Gonzalez et al., 2001). The two major features of morphogenetic evolution are: (1) fundamental changes to the organizational interpretive schemes and (2) organizational consensus through dialogue which helps to formulate value and vision.

These theories of sustainability, including barriers and drivers, and organisational change, form the basis for the development of sections of the staff survey, and provide frameworks for the interpretation of the results.

3. Research method

3.1 Survey Design

The data for this project was collected from an on-line survey. Survey questions were drawn from prior literature with additional questions constructed from relevant theories (see

Section 2.1) and implications of prior findings. There were mainly close-ended questions with a few open-ended ones to allow respondents to share their views and comments. There were 30 questions grouped into five sections: Section A asked for demographic information, Section B sought for views about sustainability and Section C focussed on staff perceptions of sustainability at the university. Section D elicited staff perceptions of the barriers and challenges that the university faced in the implementation of its sustainability strategy. Section E examined their perceptions of initiatives for implementing sustainability at the university. The survey instrument is included in Appendix A.

Section D, in particular, identifies the following items as possible barriers. They were mainly drawn from prior research.

A. Awareness: Awareness about sustainability is a fundamental element in the pursuit of sustainable development in a university (Tilbury et al. 2005, Evangelinos et al. 2009). The lack of awareness has effects on the attitude, degree of involvement and participation of students, staff and communities (Velazquez et al. 2005, pp.384-385).

B. Information: The provision of information could have positive impacts on participation and cooperation at the employee level (Evangelinos & Jones 2009). Information barriers are the primary disincentive for pursuing resource conservation (Levy & Dilwali 2000, p 261). An increase in information flow is likely to encourage sustainable resource consumption in sustainability efforts on campuses (Levy & Dilwali 2000).

C. Knowledge: The absence of a widely accepted definition for “sustainability” is recognised as a barrier to its successful implementation in a university setting (Dahle & Neumayer 2001, Velazquez et al. 2005, Bekessy et al. 2007) which then affects the success of sustainability initiatives. The lack of knowledge of effective conservation measures is also a key barrier preventing more extensive participation (Levy & Dilwali 2000).

D. Participation: One of the key principles for institutional change, identified by Tilbury et al. (2005, p.24), is the participation of the full range of stakeholders who are actively involved in all aspects of change. Lack of participation by stakeholders was attributed to the lack of time of (Velazquez et al. 2005, p.386) and training for academic staff (Thomas 2004, Velazquez et al. 2005).

E. Attitude: Davis et al. (2009) found that a negative attitude among the non-academic staff had adverse effects on attempts to improve sustainable development at an Australian university. Individual staff attitudes also may impact on the culture of a university.

F. Financial constraints: The pursuit of sustainability in a university requires reallocating its internal resources, adding costs and managing projects. A cost-benefit analysis becomes more challenging as difficulties in measurement and recognition of environmental expenditure emerge. Indeed, the lack of funding for sustainability initiatives was seen to damage the progress of sustainability initiatives in a number of universities (Thomas 2004, Velazquez et al. 2005, Sammalisto & Arvidsson 2005). The lack of financial resources has also increased the complexity of incorporating sustainability into higher education institutions' operations (Dahle & Neumayer 2001, Bekessy et al. 2007, Evangelinos et al. 2009). Sustainability initiatives also challenge traditional views on costs and benefits. Short-run environmental expenditures may bring long-term benefits. In particular, the traditional recognition criteria of accounting transactions which only incorporate benefits in monetary terms could be difficult to apply to sustainability initiatives.

3.2 Sample and Data Collection

This survey targetted employees (n=364) at the business faculty at the university, including academic (full-time and sessional) and administrative staff. The survey was delivered via email, and staff were asked to complete the on-line survey on 'SurveyMonkey' in September

2009. Two follow-up emails were sent. 12 employees were excluded because their email addresses were not valid, leaving 352 delivered surveys.

The total number of responses was 111, consisting of 12 partial responses and 99 completed responses. Of all the surveys received, the completion rate was 89.2%. Of the 12 partial responses, two only included responses to the first three and four questions respectively, and so were excluded from the analysis. Of the remaining ten partial responses, three completed 16 questions, two finished 19 questions and five completed 27 questions. These ten partial responses were included in the analysis. The 109 usable surveys represent a response rate of 31% from the 352 delivered surveys.

4. Results

4.1 Demographic information

Demographic information for administrative and academic staff is provided in Table 2. Panel A indicates that responding administrative staff, who are all full-time employees, are relatively senior, with 66.7% positioned from levels 5 to 9 and 11.1% at level 10+ in the university. By gender, 38.9% of responding administrative staff are male, and 61.1% are female. Panel B shows that almost half of responding academic staff are sessional employees (48.4%), with a further 25.3% holding positions at levels A and B. Only 11% and 15.3% of responding academic staff are ranked at level C and levels D-E respectively. By gender, 50.5% of academic staff respondents are male, compared to 49.1% of respondents who are female staff.

Table 2: Demographic Information on Respondents

Levels	Male		Female		Total	
	Numbers	%	Numbers	%	Numbers	%
Level 1-4	0	0.0%	4	36.4%	4	22.2%
Level 5-9	5	71.4%	7	63.6%	12	66.7%
Level 10+	2	28.6%	0	0.0%	2	11.1%
Total	7	100%	11	100%	18	100%

Panel A Administrative Staff Levels by Gender

Levels	Male		Female		Total	
	Numbers	%	Numbers	%	Numbers	%
Casual	23	50.0%	21	46.7%	44	48.4%
Level A-B	7	15.2%	16	35.5%	23	25.3%
Level C	7	15.2%	3	6.7%	10	11.0%
Level D-E	9	19.6%	5	11.1%	14	15.3%
Total	46	100%	45	100%	91	100%

Panel B Academic Staff Levels by Gender

4.2 Perceived drivers of sustainability strategy

When the respondents were asked to provide their perceptions of the three main reasons that the university adopted sustainability as its strategy, 106 responses were received resulting in the top three reasons: “to maintain the University’s image and reputation” (62.3%); “to recognize the impact of its activities on the environment” (48.1%) and “to consider environmental protection” (39.6%).

4.3 Barriers for sustainability

A. Awareness

Most respondents had a low level of awareness of the university's sustainability initiatives. Whilst 61.5% of respondents knew that the university had set sustainability as one of its visions, only 23.9% of respondents were aware that the university had set sustainability targets, and more than half (52.3%) of respondents were not aware of the university's establishment of a Sustainability Office, which is primarily responsible for sustainability projects.

B. Information

Of those respondents who were aware of the Sustainability Office, 63.5% obtained information on sustainability through the university's mail announcements on events and activities, and 46.2% received information via the dedicated webpage on sustainability. Interestingly, emails and internal meetings were mentioned as the most popular methods to receive sustainability information.

Those respondents who had visited the dedicated webpage were asked to evaluate three aspects: "Overall", "Information provided" and "Layout". The majority of these respondents rated each of these features as "Good" ("Overall" 70.8%, "Information provided" 70.8% and "Layout" 54.2%). On the other hand, 75% of respondents thought that the university was communicating its sustainability goals and policies "to a limited extent" and 18.3% believed there was no such communication at all.

C. Knowledge

Mixed results were found regarding knowledge of sustainability among the administrative staff. When respondents were asked how familiar they were with the term "sustainability", a total of 80% chose "Familiar" or "Very familiar". However, when the

respondents were asked about their familiarity with the proposed Australian Carbon Pollution Reduction Scheme (CPRS), 64% believed they were either not familiar or not familiar at all.

Most of the respondents (87.2%, n=95) thought of sustainability as “Protecting natural resources/environment”. Many also thought that sustainability was about “Recycling/conservation/preserving” (81.7%, n=89). The third and fourth most common views were that sustainability was “Reducing greenhouse gas emissions” (69.7%, n=76) and “Sustaining life on earth” (60.6%, n=66). A high proportion of the total number of respondents (70.2%) stated they did not have any sustainability related education or training.

D. Participation

Only 26.0% of respondents indicated that they were willing to participate in the university’s sustainability initiatives as volunteers, with 26.9% clearly not willing to participate and 47.1% undecided. For those who were willing to attend such initiatives, the following top three reasons were given: (1) sustainability initiatives require collective action; (2) personal contribution is important and (3) sustainability is important for the university. The most common reason for non-participation in such initiatives was the lack of time (64.3%).

When the respondents were asked how they contributed to the university’s sustainability strategy, most responses were simple tasks such as “turn off the lights at end of each day” (83.7%), “recycle paper” (82.7%) and “turn off computer at the end of each day” (81.7%). In contrast, more demanding tasks such as the options to “use public transport” (26.9%), “participate in volunteer activities” (12.5%) and “car pool” (9.6%) were rated as the bottom three contributions by respondents.

E. Attitude

In respect of whether there are sustainability issues currently facing the university, 61.5% of respondents believed that the university had sustainability problems, and 82.6% of

respondents indicated that they were supportive of the university adopting sustainability as one of its strategies. Its performance to date on sustainability was not viewed favourably: 34.9% rated it as “Average” and 34.0% chose “Don’t know”.

Appendix B summarizes the results of the responses of rating about general sustainability statements. The results in Panel A show that 83.5% of respondents “Disagreed” or “Strongly disagreed” with the both statements that “It’s only worth doing environmentally friendly things if it saves money” (Statement 1) and “The effects of climate change are too far in the future to worry about” (Statement 2). Statement 3 asked the respondents whether they agreed with the statement, “It’s not worth me doing things to help the environment if others don’t do the same”. 78.9% either “Disagreed” or “Strongly disagreed” with this statement. A total of 86.3% and 86.1% of respondents either “Agreed” or “Strongly agreed” with the statements “We should always strive to protect and conserve the environment for present and future generations” (Statement 5) or “We should move towards renewable and alternative sources of energy right now” (Statement 6). The percentages of respondents who “Agreed” and “Strongly agreed” with the statements that “The community and government should work together to resolve environmental issues” (Statement 7), and “The Australian government should impose regulation to reduce carbon emissions immediately” (Statement 8) are 87.1% and 44.4%, indicating a preference for voluntary and co-operative solutions rather than regulation. Finally, 82.6% of respondent “Agreed” or “Strongly agreed” with the view “It is important to measure and report on sustainability” (Statement 9).

Appendix B Panel B shows respondents’ mixed reactions to the following statements. On average respondents agreed that improving sustainability at the university is important (Statement 1), that a sustainability strategy could improve its image and enhance its reputation (Statement 2), and that creating a more sustainable university could lead to long-run cost-savings for the university (Statement 3). The majority disagreed with the statement that the

university should only implement its sustainability initiatives which produced cost-savings (Statement 4). Most respondents were neutral in response to the statement “The university makes its sustainability a priority in decision-making”.

Overall barriers

The respondents’ perceptions of the top five barriers to the university implementing its sustainability strategy are presented in Table 3:

<i>Rating</i>	<i>Barriers</i>
1 st barrier	Lack of interest among members of the university
2 nd barrier	Conflicting goals within the university
3 rd barrier	Lack of time (work load)
4 th barrier	Resistance to change
5 th barrier	Profit orientation by the university

Table 3: Barriers to Implementing Sustainability Strategy

4.4 Sustainability reporting and initiatives

The findings indicate that 78.8% of respondents believed that the university should disclose its sustainability performance. The overall perceptions by respondents of the top five short-term and long-term sustainability initiatives at the university are shown in Table 4. The short term initiatives were mostly concerned with simple tasks that respondents had previously indicated that they were prepared to undertake, purchasing decisions and communication. The long-term initiatives were more concerned with measuring and reporting, and long-term undertakings such as research and reducing carbon emissions.

<i>Rating</i>	<i>Short-term sustainability initiatives</i>	<i>Long-term sustainability initiatives</i>
1 st importance	Recycle all recyclable waste, such as glass, plastic, cartons, aluminum cans, paper/cardboard and e-waste	Encourage and support sustainability research by providing more research grants
2 nd importance	Ensure all equipment purchased maximizes energy efficiency	Incorporate sustainability measures into internal financial reports
3 rd importance	Utilize various media and methods of communication regarding sustainability	Undertake carbon emissions auditing on a regular basis
4 th importance	Stimulate academic debate about sustainability, its meaning, values and approaches to learning and teaching	Reduce air pollution and in particular, greenhouse gas emissions
5 th importance	Promote more use of public transport/Reduce water usage and improve university water conservation	Recycle all recyclable waste, such as glass, plastic, cartons, aluminum cans, paper/cardboard and e-waste

Table 3 Top five short-term and long-term sustainability initiatives (all responses)

4.5 Cross-group statistical analysis

When the results of the survey are analysed by gender, two-sample t-tests and one-way ANOVAs indicate that there are no statistical differences between the two groups. When the results are analysed by position, however, two-sample t-tests and the one-way ANOVAs (see Appendix C) indicate statistical differences between administrative and academic staff² in the following survey responses:

The responses by position to Question 9 Statements 3 and 4 ((3) It's not worth me doing things to help the environment if others don't do the same; (4) It is hard to change habits to be more environmentally friendly) are significantly different at 10% significant level ($p=0.052$). More administrative staff disagreed with both statements while many academic staff agreed with the same arguments. The responses by administrative and academic staff about their perceptions of the university's sustainability issues were also found to be statistically different. There is a significant difference at a 5% significant level ($p=0.042$) (Appendix C). 83.3% of administrative

² Casual staff take sessional academic positions at the faculty, so all responses of casual staff are combined with those of the responding academic staff for the position cross-group analysis.

staff believed there were sustainability issues currently facing the university, compared to 66.0% of academic staff. In addition, no administrative staff chose the “No” option while 8.5% academic staff made such a choice.

A significant difference was also found between the responses of administrative and academic staff when they were asked about their awareness of the university’s sustainability vision (Question 12). There is a significant difference at 1% level between 88.9% of administrative staff who were aware of the university’s sustainability vision, and 44.0% of academic staff who had such an awareness.

When the respondents were asked about their opinions on the statements about sustainability in Questions 19, statistical differences by position were also found. As shown in Appendix C, Tables 7 and 8, there is a significant difference at 5% level between position levels for several questions. For Statement 1, whether it is important to improve university sustainability, the results show that administrative staff strongly agreed whereas academic staff show less than agreement. For Statement 5, that the university makes its sustainability a priority in decision-making, administrative staff agreed, whereas academic staff maintained a neutral opinion.

As shown in Appendix D, significant differences in position were found in responses to Questions 25 and 27. The results show that more administrative staff believed it was worthwhile for the university to report on its sustainability performance compared to academic staff. More academic staff believed they had no experience of sustainability education or training, compared to administrative staff.

Position

There were differences in level of familiarity with the CPRS between administrative and full-time academic staff. As shown in Table 9 Appendix D, there was a significant difference at

10% level between the 55.6% of administrative staff who responded that they were “not very familiar” with the CPRS compared with 40.8% of full-time academic staff who were “familiar”.

Regarding the question of whether the university faces sustainability issues, a significant difference was also found between part-time staff who believed that there was an issue, while sessional staff thought that there were no such issues. In addition, significant differences were found in the awareness of sustainability vision, targets and the Sustainability Office.

5. Discussion and conclusions

5.1 Perceived drivers for the university’s sustainability strategy

The majority of the respondents considered imagery and reputation risk management as the primary driving forces behind the university’s sustainability strategy which is consistent with reputation risk management theory. This is interesting because it is common thinking that a university as a not for profit education institution, will be less concerned than for profit organisations with imagery and reputation. Nonetheless, a concern for the environment was also identified as primary driver (as proposed by Antheaume 2007). Sustainability was also thought to be a managerial tool to enable the university to measure the externalities produced by its activities.

There are also a number of implications from this finding. First, there is no evidence to support the claim that regulation is viewed as a key driving force for sustainability by university employees, contrary to findings by Sammalisto and Arvidsson (2005), Balas et al. (2008) and Evangelinos et al. (2009). The *NGER Act 2007* and proposed CPRS appear not to have had tangible impacts on staff perceptions of university operations. However, the university’s management considered these to be major drivers for the university’s sustainability agenda³. Second, ‘management commitment’ was not considered by respondents to be a major driver for

³ This is indicated in the university’s publication of its annual sustainability report.

sustainability. This finding is consistent with studies on the for-profit sector by Deegan et al. (2000, 2002) who also found that management did not play a pivotal role in making decisions on the formulation of sustainability strategies.

Third, there is evidence to show the two dimensions of the legitimation process identified by Buhr (1998, p.164) operate in this university, as shown in the second and third ranked motivations for the university pursuing its sustainability strategy. The first dimension of legitimation consists of actions taken by the university to align its daily operations with the social values of environmental protection and preservation, energy usage reduction, fair trade and social equality. The second dimension of legitimation is called presentation by Buhr (1998, p.164). It refers to those activities of an organization appearing to be congruent with social values. In this case, such presentation takes the form of its annual sustainability report.

5.2 Challenges and Barriers for sustainability

These findings of this survey confirm that overall there is a limited level of awareness about sustainability among university staff. This lack of awareness could reflect ineffective communication channels. The lack of awareness of sustainability targets and structural establishments also indicates that staff did not explore this university's dedicated webpage on sustainability. This could mean that there is a need to employ multi-media to increase staff's level of awareness. Interestingly, the most cited communication channels by respondents are email and internal meetings.

The findings also indicate that there is limited and different knowledge and understandings of sustainability. This evidence supports a view that there is a lack of a well-accepted definition of sustainability, which is consistent with recent findings by Tilbury et al. (2005), Velazquez et al. (2005) and Bekessy et al. (2007). This confusion was confirmed by a number of comments put forward by the respondents, such as "the usage of sustainability is largely undefined", "preserving for the future" and "being responsible and accountable for

resource selection/use/disposal and their effects on the lives of others around the globe”. There is also apathy toward individual participation in university sustainability initiatives. However, the reasons identified differed between academic and administrative staff. Academic staff stated lack of time whereas administrative staff lack of interest.

In regard to the question on whether the university is currently facing sustainability issues, a negative opinion about its current sustainability position was found. However, a strongly positive attitude was identified when the respondents were asked whether they were supportive of the university’s sustainability strategy. Most of the respondents were concerned with climate change and believe that its effects are current. However, overall, the respondents were ambivalent toward the ability of staff to change habits to support sustainability initiatives. This result is inconsistent with the findings of Davis et al. (2009).

Overall barriers

The first important barrier identified is lack of interest among members of the university, which undermines the personal commitment and participation that are crucial for the successful implementation of sustainability. The lack of interest among university members may arise for a number of reasons. First, it may be due to lack of knowledge about sustainability. Second, the lack of interest of the university members may come from the lack of awareness, which is consistent with evidence found by Tilbury et al. (2005) and Velazquez et al. (2005). The overall results suggest that the level of awareness among staff is limited. Third, the lack of interest and lack of awareness may affect staff members’ willingness to participate in sustainability initiatives.

The second important barrier provided is the conflicting goals within the university. This could suggest that sustainability could be further embedded in the structure and processes of university internal management systems. Staff also alluded to the lack of performance indicators

at faculty, departmental and individual levels as signalling that goals relating to sustainability are only for imagery because they did not cascade down to operational level.

The third important barrier rated is lack of time (work load). This finding is consistent with Thomas (2004) and Velazquez et al. (2005). The lack of time may be caused by the seeming lack of staff training, incentives and individual performance metrics on sustainability initiatives. The fourth barrier found in this study is resistance to change, which could be a result of a difficulty in changing individual and organisational habits. To redress this, promoting a supportive culture could be required. Indeed the experiences at other Australian universities show that negative attitudes and a culture of resisting the introduction of greening initiatives cause significant adverse impacts on the implementation of sustainability (Thomas 2004; Davis et al. 2009). Therefore, building a positive culture based on sustainability development is an important task for the university in pursuing sustainability.

The fifth barrier identified in this study is the profit orientation of the university (also see Velazquez et al., 2005). The perceived focus on the financial bottom line was seen to result in a neglect of environmental and social bottom lines. Interestingly staff viewed sustainability initiatives as important regardless of cost.

In conclusion, the overall results indicate that there is lack of awareness of, knowledge of and information on sustainability at the Australian university studied here. These results reflect the difficulty in conceptualizing sustainability at an individual level (Tilbury et al. 2005, Gray 2009).

5.3 Organizational change and sustainability accounting

From the perspective of the staff, the university's sustainability strategy is viewed as an imposition by top management and thus following Laughlin (1991) is an environmental disturbance. As such this external disturbance cannot be ignored by staff and impose pressure on the organizational border. In other words, these disturbances could not be rebutted, thus

coercing the staff to make organizational changes. Evidence to support this observation is found in changes in the faculty's sub-systems. There are changes in organizational infrastructures, including an environmentally friendly designed faculty building and a move to recycle paper. However there is no compelling evidence to suggest that there is a change in the behaviour of staff with admission to a material degree of lack of knowledge, awareness and willingness to participate among staff. This is despite claims that sustainability issues must be pursued by the university regardless of cost. There is also not sufficient evidence to show changes in the design archetype of the faculty. The most important but only change to date is in the organizational structure which established sustainability representatives at departmental levels. Indeed staff indicated that there are no metrics at a faculty or individual level to compel staff to purposefully engage in the university's environmental agenda. Staff also would want performance metrics to be made available by the university supporting the view that the university should pursue its environmental agenda regardless of costs.

Applying Laughlin's organizational change model, the faculty is likely to be in the stage of first order change. In this stage, there are two possible avenues for the future: staying in the first order reorientation change or change in the interpretive schemes. Given that the faculty cannot ignore a university imposition, it cannot 'rebut' but rather has to accept such disturbances and internalize sustainability interventions. However, at present, there is little evidence of change in the faculty's structure and communication system (design archetypes) and tangible elements (sub-systems). Survey results indicate that there is a gap in beliefs and values between staff and university top management suggesting that there are yet no changes in the staff's interpretive schemes.

It is anticipated that the university-driven imposition of an environmental agenda will eventually change the faculty's design archetype. Consequently, it is expected that a new design archetype will be formed in order to internalize the sustainability strategy at faculty level. In

order to restore its sub-organization to a balanced state, some changes in the faculty's sub-systems are expected to happen. The major issue is that of the faculty's interpretative schemes, as at present, there is a lack of well-accepted beliefs, values and missions about sustainability at the individual level.

Another possible future organizational change is a second order change of the colonization stage. In the colonization change, it is expected that the organization will change its design archetype, subsystems and interpretive schemes. As a result, a new underlying organizational "ethos" would have to be formulated. There has to be change at the highest level of beliefs of its members resulting in the formation of new interpretative schemes. On the basis of the survey results, it is plausible that that the faculty is at the beginning of changing its design archetype. The original sub-organizational balance was disturbed by the university's sustainability strategy. The possible movements, starting from new design archetypes, may lead to a reorientation or a colonization change and organizational balance will be achieved. However, according to Laughlin's models, the faculty may not be in a second order change of the evolution stage, which occurs when an organization voluntarily changes its core elements based on well-accepted values and visions of its organizational participants. Evolutionary change should start from a change of interpretative schemes. The survey results show no consensus regarding sustainability values and norms. In addition, as the adoption of sustainability is a major cultural change, a successful implementation of sustainability will require a transformation of the whole fabric of the organization (Gray et al. 1995b, p.220). Gray et al. (1995b) propose that a morphogenetic change is required for the achievement of anything approaching sustainability. There is no empirical evidence from this survey to suggest that this is present in the university examined here.

5.4 Conclusions

This paper has explored staff perceptions of the challenges and barriers to implementing a sustainability strategy at a large Australian university. The key drivers of sustainability are perceived to be imagery and reputation risk management, and measurement of externalities for costing purposes to improve profitability. These also represent aspects of legitimisation: action and presentation. Key barriers to sustainability are lack of staff awareness, and lack of knowledge and understanding about sustainability. Lack of time by academic staff and lack of interest by administrative staff contribute to resistance to change. In spite of the university reporting of a holistic transformation approach, staff perceptions are that the sustainability strategy is more rhetoric than reality, due to it not being embedded in performance criteria at faculty, departmental or individual levels.

In order to implement a sustainability strategy successfully, organisations need to effect a major cultural change. One way to achieve this is to embed changes in sub-systems and design archetypes, so that employee interpretative schemes reflect the new values. For the university studied in this paper, the survey results report on sustainability initiatives that would align staff and top management values. These involved fundamental inclusion of sustainability in all university activities and decision-making, including teaching, research, purchasing and reporting. This is the challenge that the university faces.

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APPENDICES

Appendix A: A full copy of the on-line questionnaire

SECTION A: YOUR DEMOGRAPHIC PROFILE

(Please respond to the following questions so that a profile of respondents can be developed.)

Personal information (Please choose the most appropriate response)

1. **Gender** Male Female

2. **Status**

- Full-time
 Part-time (Logic skip to Question 6)
 Casual (Logic skip to Question 6)

3. **Position**

- General staff (Logic link to Question 4)
 Academic staff (Logic link to Question 5)
 Other (please specify) (Logic skip to Question 6)

4. **Level: for general staff**

- Level 1-4 Level 5-9 Level 10+
(Logic skip to Question 6)

5. **Level: for academic staff**

- Level A-B Level C Level D-E

SECTION B: GENERAL INFORMATION ON SUSTAINABILITY

In this section of the survey, we would like to learn more about your general views about sustainability.

(Please select the most appropriate answer for the following questions)

6. **How familiar are you with the term “sustainability”?**

- Very familiar Familiar Not very familiar Not at all familiar

7. **How familiar are you with the proposed Australian Carbon Pollution Reduction Scheme (CPRS)?**

- Very familiar Familiar Not very familiar Not at all familiar

8. **When you hear the term “sustainability” which of the following do you think of? (You may tick more than one item.)**

- A. Recycling/conservation/preserving
 B. Protecting natural resources/environment
 C. Having enough of something
 D. Reducing greenhouse gas emissions
 E. Maintaining status quo
 F. Sustaining life on earth
 G. Don't know
 H. Other (please specify)

9. Please rate the extent to which you agree or disagree with the following statements.

Statements	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
(1) It's only worth doing environmental friendly things if it saves money.	1	2	3	4	5
(2) The effects of climate change are too far in the future to worry about.	1	2	3	4	5
(3) It's not worth me doing things to help the environment if others don't do the same.	1	2	3	4	5
(4) It is hard to change habits to be more environmentally friendly.	1	2	3	4	5
(5) We should always strive to protect and conserve the environment for present and future generations.	1	2	3	4	5
(6) We should move towards renewable and alternative sources of energy right now.	1	2	3	4	5
(7) The community and government should work together to resolve environmental issues.	1	2	3	4	5
(8) The Australian government should impose regulation to reduce carbon emissions immediately.	1	2	3	4	5
(9) It is important to measure and report on sustainability.	1	2	3	4	5

SECTION C: SUSTAINABILITY@XX

In this section of the survey, we would like to learn more about your views on sustainability at XX University.

10. Do you believe that there are SUSTAINABILITY issues currently facing XX University?

Yes No Not sure

11. Are you supportive of XX University adopting a sustainability strategy?

Yes No Not decided

12. Has the university made you aware that XX University has set its vision for sustainability?

Yes No

13. Has the university made you aware that XX University has set its sustainability targets?

Yes No

14. Has the university made you aware that XX University has a Sustainability Office?

- Yes (Logic link to Question 15)
- No (Logic skip to Question 17)

15. How has XX University made you aware about sustainability issues?

- A. Sustainability@XXwebsite (Logic link to Question 16)
- B. XX University's events and activities (Logic skip to Question 17)
- C. Lectures /tutorials /seminars/workshops (Logic skip to Question 17)
- D. Other (please specify) (Logic skip to Question 17)

16. How do you rate the Sustainability@XX website?

	Excellent	Good	OK	Needs some improvement	Needs a lot of improvement
Overall	1	2	3	4	5
Information provided	1	2	3	4	5
Layout	1	2	3	4	5

**17. In your opinion, what are the 3 main reasons that XX University has adopted a sustainability strategy?
(This question requires THREE options)**

- A. To protect its environment
- B. To measure its carbon footprint for internal purposes
- C. To recognise the impact of its activities on its environment
- D. To reduce its operating costs in the long run
- E. To satisfy demands from members of the University and the local community
- F. To maintain the University's image and reputation
- G. To meet external regulatory requirements (e.g. Australian Carbon Pollution Reduction Scheme, CPRS)
- H. To respond to pressure from other Australian universities
- I. To compete for more government funding
- J. To meet a management commitment
- K. Other (please specify)

18. How would you rate the sustainability performance of XX University so far?

- Poor
- Below average
- Average
- Above average
- Excellent
- Don't know

19. To what extent do you agree with the following statements?

Statements	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
(1) Improving university sustainability is important.	1	2	3	4	5
(2) Adopting a sustainability strategy can improve XX University's image and enhance its reputation.	1	2	3	4	5
(3) Creating a more sustainable university can lead to long-run cost-savings for XX University.	1	2	3	4	5
(4) XX University should only implement sustainability initiatives that produce cost-savings.	1	2	3	4	5
(5) XX University makes its sustainability a priority in decision-making.	1	2	3	4	5

SECTION D: SUSTAINABILITY@XX: Barriers

In this section, we would like you to identify the barriers for XX University to implement its sustainability strategy.

20. In your opinion, what are the TOP 5 barriers which would affect the implementation of a sustainability strategy by XX University?

(Choose one option from the list below, where 1st barrier=top-ranked barrier. Please do NOT repeat options!)

Possible barriers:

- A. Results are too far in the future**
- B. Lack of data/information**
- C. Lack of interest among members of university**
- D. Conflicting goals within the university**
- E. Lack of resources**
- F. Lack of delegation of responsibility for specific aspects of sustainability**
- G. Lack of knowledge among members of university**
- H. Communication problems**
- I. Lack of time (work load)**
- J. Lack of policies to promote sustainability on campus**
- K. Lack of performance indicators**
- L. Lack of research evidence supporting sustainability development**
- M. Lack of rigorous regulations**
- N. Resistance to change**
- O. Profit orientation by the university**

Options:

- 1st barrier (Drop-down box of A-O)
- 2nd barrier (Drop-down box of A-O)
- 3rd barrier (Drop-down box of A-O)
- 4th barrier (Drop-down box of A-O)
- 5th barrier (Drop-down box of A-O)

Additional comments:

21. Are you willing to participate in sustainability initiatives by XX University as a volunteer?

- Yes (Logic link to Question 22)
- No (Logic link to Question 23)
- Undecided (Logic skip to Question 24)

22. Why are you willing to participate in sustainability initiatives by XX University? (You may tick more than one item.)

- A. Sustainability initiatives require collective action
- B. My personal contribution is important
- C. Sustainability is important for XX University
- D. Other (please specify)

23. What is the main reason preventing you from participating in sustainability initiatives by XX University?

(You may tick more than one item.)

- A. Lack of time
- B. Lack of information and knowledge
- C. Lack of organized activities
- D. Lack of interest
- E. Other (please specify)

24. In what ways do you contribute towards XX University's sustainability strategy?

(You may tick more than one item.)

- A. Turn off lights at the end of each day
- B. Turn off computer at the end of each day
- C. Car pooling
- D. Recycle paper
- E. Participate in volunteer activities
- F. Use of public transport
- G. Provide online teaching materials to students
- H. Other (please specify)

25. From your perspective, do you think it is worthwhile for XX University to report on its sustainability performance?

- Yes Not sure No

26. How effectively has XX University communicated its sustainability goals and policies across the university?

- Not at all To a limited extent To a great extent

27. Have you experienced any sustainability related education/training at XX University?

- Yes Not sure No

SECTION E: SUSTAINABILITY@XX: initiatives

In this section, we would like to know your opinion on the various sustainability initiatives set by XX University.

28. From the list below, please choose the Top 5 most important sustainability initiatives for XX University’s sustainability development in the short-term and long-term.

(Where 1st importance=top ranked initiative.)

- A. Utilise various media and methods of communication regarding sustainability**
- B. Encourage and support sustainability research by providing more research grants**
- C. Ensure that Fair Trade certified products are served at all meetings hosted by the University**
- D. Undertake carbon emissions auditing on a regular basis**
- E. Ensure all equipment purchased maximizes energy efficiency**
- F. Incorporate sustainability measures into internal financial reports**
- G. Stimulate academic debate about sustainability, its meaning, values and approaches to learning and teaching**
- H. Comprehensively account for the cost of its carbon footprint**
- I. Enhance the curriculum with sustainability issues**
- J. Reduce air pollution and in particular, greenhouse gas emissions**
- K. Encourage and reward participation in sustainability actions and initiatives**
- L. Reduce water usage and improve university water conservation**
- M. Produce an annual sustainability report**
- N. Promote more use of public transport**
- O. Recycle all recyclable waste, such as glass, plastic, cartons, aluminium cans, paper/cardboard and e-waste**

Options	1st importance	2nd importance	3rd importance	4th importance	5th importance
Short-term targets:	Drop-down box of A-O	Drop-down box of A-O	Drop-down box of A-O	Drop-down box of A-O	Drop-down box of A-O
Long-term targets:	Drop-down box of A-O	Drop-down box of A-O	Drop-down box of A-O	Drop-down box of A-O	Drop-down box of A-O

Additional comments:

29. Thank you for taking the time to complete this survey. Your assistance is very much appreciated.

Appendix B: Rating Statements (all responses)

Statements	Strongly disagree	Disagree	Neutral	Agree	Strongly agree	Mean ⁴	N
(1) It's only worth doing environmentally friendly things if it saves money.	37.6% (41)	45.9% (50)	13.8% (15)	0.9% (1)	1.8% (2)	1.83	109
(2) The effects of climate change are too far in the future to worry about.	50.5% (55)	33.0% (36)	11.0% (12)	3.7% (4)	1.8% (2)	1.73	109
(3) It's not worth me doing things to help the environment if others don't do the same.	35.8% (39)	43.1% (47)	9.2% (10)	10.1% (11)	1.8% (2)	1.99	109
(4) It is hard to change habits to be more environmentally friendly.	4.6% (5)	39.4% (43)	11.9% (13)	39.4% (43)	4.6% (5)	3.00	109
(5) We should always strive to protect and conserve the environment for present and future generations.	6.4% (7)	1.8% (2)	5.5% (6)	41.3% (45)	45.0% (49)	4.17	109
(6) We should move towards renewable and alternative sources of energy right now.	3.7% (4)	3.7% (4)	16.5% (18)	43.1% (47)	33.0% (36)	3.98	109
(7) The community and government should work together to resolve environmental issues.	5.5% (6)	2.8% (3)	4.6% (5)	38.5% (42)	48.6% (53)	4.22	109
(8) The Australian government should impose regulations to reduce carbon emissions immediately.	6.4% (7)	7.3% (8)	26.6% (29)	37.6% (41)	22.0% (24)	3.61	109
(9) It is important to measure and report on sustainability.	5.5% (6)	2.8% (3)	9.2% (10)	50.5% (55)	32.1% (35)	4.01	109

⁴ Numbers were assigned to different options. "Strongly disagree"=1, "Disagree"=2, "Neutral"=3, "Agree"=4 and "Strongly agree"=5. The mid-point is 3.

Statements	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Mean ⁵	N
(1) Improving university sustainability is important.	2.8% (3)	2.8% (3)	10.4% (11)	56.6% (60)	27.4% (29)	4.03	106
(2) Adopting a sustainability strategy can improve the university's image and enhance its reputation.	2.8% (3)	2.8% (3)	15.1% (16)	50.9% (54)	28.3% (30)	3.99	106
(3) Creating a more sustainable university can lead to long-run cost-savings for the university.	4.7% (5)	1.9% (2)	22.6% (24)	55.7% (59)	15.1% (16)	3.75	106
(4) The university should only implement sustainability initiatives that produce cost-savings.	24.5% (26)	34.9% (37)	28.3% (30)	9.4% (10)	2.8% (3)	2.31	106
(5) The university makes its sustainability a priority in decision-making.	6.6% (7)	17.9% (19)	43.4% (46)	26.4% (28)	5.7% (6)	3.07	106

⁵ For calculations, numbers are assigned to different options: Strongly Disagree=1, Disagree=2, Neutral=3, Agree=4 and Strongly Agree=5.

Appendix C: Statistical analysis (position)

Table C.1 Two-Sample T-Test (position)

Subject	N	Mean	Standard Deviation	SE Mean	T-Value	P-Value
Q6 Administrative staff Academic staff	18 91	1.833 2.011	0.618 0.723	0.15 0.076	-0.97	0.332
Q7 Administrative staff Academic staff	18 91	2.889 2.714	0.676 0.807	0.16 0.085	0.86	0.392
Q9 S1 Administrative staff Academic staff	18 91	1.778 1.835	0.732 0.860	0.17 0.090	-0.26	0.792
Q9 S2 Administrative staff Academic staff	18 91	1.500 1.81	0.786 1.01	0.19 0.11	-1.24	0.217
Q9 S3 Administrative staff Academic staff	18 91	1.611 2.13	0.778 1.07	0.18 0.11	-1.97	0.052*
Q9 S4 Administrative staff Academic staff	18 91	2.444 3.09	0.856 1.09	0.20 0.11	-2.36	0.020**
Q9 S5 Administrative staff Academic staff	18 91	4.333 4.08	0.970 1.16	0.23 0.12	0.88	0.381
Q9 S6 Administrative staff Academic staff	18 91	4.111 3.96	0.963 1.02	0.23 0.11	0.59	0.554
Q9 S7 Administrative staff Academic staff	18 91	4.28 4.20	1.02 1.09	0.24 0.11	0.29	0.774
Q9 S8 Administrative staff Academic staff	18 91	3.72 3.58	0.92 1.27	0.23 0.12	-0.49	0.624
Q9 S9 Administrative staff Academic staff	18 91	4.06 3.99	0.88 1.04	0.22 0.11	-0.30	0.766
Q10 Administrative staff Academic staff	18 91	1.333 1.824	0.588 0.902	0.18 0.10	2.06	0.042**
Q11 Administrative staff Academic staff	18 91	1.222 1.363	0.418 0.567	0.15 0.079	0.74	0.462
Q12 Administrative staff Academic staff	18 91	1.111 1.451	0.105 0.250	0.0756 0.052	2.76	0.007***
Q13 Administrative staff Academic staff	18 91	1.667 1.780	0.235 0.173	0.11 0.044	1.03	0.30637
Q14 Administrative staff	18	1.444	0.261	0.12	0.81	0.419

	Academic staff	91	1.549	0.250	0.052		
Q19 S1	Administrative staff Academic staff	17 89	4.412 3.944	0.257 0.826	0.12 0.096	-2.06	0.042**
Q19 S2	Administrative staff Academic staff	17 89	4.294 3.944	0.346 0.895	0.14 0.10	-1.47	0.144
Q19 S3	Administrative staff Academic staff	17 89	3.882 3.730	1.110 0.790	0.26 0.094	-0.63	0.532
Q19 S4	Administrative staff Academic staff	17 89	2.059 2.326	0.809 1.040	0.22 0.11	1.00	0.317
Q19 S5	Administrative staff Academic staff	17 89	3.529 2.955	0.515 0.930	0.17 0.10	-2.33	0.022**
Q21	Administrative staff Academic staff	16 88	2.438 2.136	0.796 0.671	0.22 0.087	-1.33	0.185
Q22	Administrative staff Academic staff	10 41	2.200 1.878	0.622 0.710	0.25 0.13	-1.10	0.278
Q23	Administrative staff Academic staff	1 30	4.000 1.833	0.000 1.592		-1.69	0.102
Q24	Administrative staff Academic staff	54 290	3.037 3.348	3.168 4.394	0.24 0.12	1.02	0.306
Q25	Administrative staff Academic staff	16 88	1.063 1.307	0.063 0.330	0.062 0.061	1.67	0.099*
Q26	Administrative staff Academic staff	16 88	2.063 1.852	0.329 0.219	0.14 0.050	-1.59	0.114
Q27	Administrative staff Academic staff	16 88	2.323 2.648	0.629 0.415	0.20 0.069	1.85	0.068*

*** Significant at $p < 0.01$

** Significant at $p < 0.05$

* Significant at $p < 0.1$

Table C.2 One-way ANOVA (position)

Subject	Df	Sum of Squares	Mean Square	F	Sig.
Q6	1	0.474	0.474	0.95	0.332
Q7	1	0.458	0.458	0.74	0.392
Q9 S1	1	0.049	0.049	0.07	0.792
Q9 S2	1	1.474	1.474	1.54	0.217
Q9 S3	1	4.08	4.08	3.87	0.052*
Q9 S4	1	6.22	6.22	5.56	0.020**
Q9 S5	1	0.99	0.99	0.77	0.381
Q9 S6	1	0.36	0.36	0.35	0.554
Q9 S7	1	0.10	0.10	0.08	0.774
Q9 S8	1	0.29	0.29	0.24	0.624
Q9 S9	1	0.090	0.090	0.09	0.766
Q10	1	3.621	3.621	4.25	0.042**
Q11	1	0.296	0.296	0.545	0.462
Q12	1	1.731	1.731	7.62	0.007***
Q13	1	0.200	0.200	1.06	0.306
Q14	1	0.166	0.166	0.66	0.419
Q19 S1	1	3.126	3.126	4.23	0.042**
Q19 S2	1	1.751	1.751	2.16	0.144
Q19 S3	1	0.330	0.330	0.39	0.532
Q19 S4	1	1.018	1.018	1.01	0.317
Q19 S5	1	4.709	4.709	5.44	0.022
Q21	1	1.228	1.228	1.78	0.185
Q22	1	0.833	0.833	1.20	0.278
Q23	1	4.54	4.54	2.58	0.102
Q24	1	4.41	4.41	1.05	0.306
Q25	1	0.808	0.808	2.78	0.099*

Q26	1	0.599	0.599	2.54	0.114
Q27	1	1.521	1.521	3.41	0.067*

*** Significant at $p < 0.01$

** Significant at $p < 0.05$

* Significant at $p < 0.1$

Appendix D: Statistical analysis (status)

Table D.1 One-way ANOVA (status)

Subject	Df	Sum of Squares	Mean Square	F	Sig.
Q6	2	0.573	0.287	0.57	0.568
Q7	2	3.597	1.799	3.02	0.053*
Q9 S1	2	0.046	0.023	0.03	0.968
Q9 S2	2	0.377	0.189	0.22	0.807
Q9 S3	2	2.326	1.163	1.19	0.308
Q9 S4	2	0.21	0.10	0.09	0.918
Q9 S5	2	2.36	1.18	1.04	0.358
Q9 S6	2	3.965	1.982	2.06	0.133
Q9 S7	2	2.25	1.12	1.02	0.363
Q9 S8	2	3.58	1.79	1.48	0.233
Q9 S9	2	2.99	1.50	1.47	0.235
Q10	2	8.766	4.383	5.54	0.005***
Q11	2	1.088	0.544	1.05	0.352
Q12	2	3.576	1.788	8.52	0.000***
Q13	2	1.908	0.954	5.65	0.005***
Q14	2	2.720	1.360	5.89	0.004***
Q19 S1	2	1.005	0.502	0.66	0.517
Q19 S2	2	10274	0.637	0.78	0.460
Q19 S3	2	1.220	0.610	0.74	0.480
Q19 S4	2	1.99	0.99	0.92	0.400
Q19 S5	2	2.049	1.025	1.11	0.334
Q21	2	0.194	0.097	0.14	0.872
Q25	2	0.213	0.106	0.39	0.676
Q26	2	1.446	0.723	3015	0.047**
Q27	2	0.474	0.237	0.51	0.599

*** Significant at $p < 0.01$

** Significant at $p < 0.05$

* Significant at $p < 0.1$