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Building a proactive engagement culture in asset management organizations

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INTRODUCTION

This paper is about the technical and engineering employees that provide services to ensure that assets (such as power plants, building infrastructure, dams) are in working order. The reason for the paper is because of increasing public awareness about the record of poor asset management (the most recent being, a nuclear power plant meltdown in Japan) combined with a competitive market means that managers need to maximise the return for shareholders. Stakeholders want to maximise the value of assets over the life of the asset to achieve asset sustainability and longevity and avoid the publicity associated with breakdowns in asset management (Qld flood, train derailment, infrastructure degradation). However, the focus of research attention on assets to date has been on the technical aspects of monitoring asset management performance as a means of maximising asset longevity (Hipkin 2001; Hodkiewicz and Pascual 2006; Trevelyan and Tilli 2007), overlooking the important role that employees play in ensuring effective maintenance (or not) (Zuashkiani *et al.* 2011). Over time, there has been a recognition by shareholders, particularly, that employees are a critical element in determining how well an asset is maintained (Woodhouse 2001), and that provides the focus of this paper.

In particular, there is a belief by asset management researchers and many practitioners that there is a reactive, rather than a proactive, asset management culture dominant in many organisations responsible for asset management. Attempts to change the culture have often failed; however, implementing change is difficult even when the conditions are ideal. Evidence based management (as opposed to speculation and well wishing) suggests that almost three quarters of all organisational change programs fail and usually in the implementation phase (Beer and Nohria 2000). That is, in the case of asset management, the failure to implement usually occurs not at the senior management level, rather it happens at the bottom of the organisation where technical and engineering employees are undertaking work tasks every day, under instruction from their supervisor, who in turn gets his/her instructions from management further up the hierarchical line. This paper argues that before asset managers can implement changes to the existing organisational culture of asset management organisations, the issue of how to conceptualise and measure asset management culture must be addressed as a first step.

The second step is to examine what factors are determining the present organisational culture of asset management organisations. Past research suggests that the key to ensuring successful implementation lies with the quality of workplace relationships which affects the clarity of the messages and feedback loops embedded within an organization (Brunetto *et al.* 2011a; Farr-Wharton *et al.* 2011; Wang *et al.* 2005; Yukl 2006), and the organizational culture (the beliefs, values and practices usually followed within an organization) (Hofstede *et al.* 1990; E.H. Schein 1984; Schneider 1990). These factors affect the extent to which employees are engaged with their work (the extent to which employees find work meaningful and therefore energetically undertake tasks) (Brunetto *et al.* in press; May *et al.* 2004).

The argument presented in this paper is that because management values and practices influence the culture of an organisation (Brunetto *et al.* 2008; Brunetto *et al.* 2010; Brunetto *et al.* 2011b; Farr-Wharton *et al.* 2011), it is only when organisational management embeds strategies aimed at developing a culture that promotes and fosters reciprocity within an organisation, that such a culture develops (Cropanzano and Mitchell 2005). Such an argument is based on Social Exchange Theory (SET), which argues that effective workplace relationships benefit both employees and the organisation because employees gain easier access to relevant information, resources, support and respect; which in turn enhances their ability to do their job more effectively, making them more effective in the workplace, and enhancing organizational effectiveness (Åmo 2006; Cropanzano and Mitchell 2005; Maurer *et al.* 2002). In contrast, if an employee perceives that an organisation does not value them or care about their wellbeing, then the employee is likely to reciprocate with work practices typical of those who do not care about the organisation and are not enthusiastic about undertaking activities related to new organisational goals. Achieving an organisational culture that maximises asset management performance by that organisation requires a change in culture because it requires different types of activities to be undertaken (such as fixing a railway track when the monitor indicates the metal is about to fail rather than once it has failed; i.e. a proactive activity). Hence, based on this thinking it is expected that an employee's perception of organisational support will either have a negative or a positive influence on asset management culture, depending on whether the perception itself is positive or negative.

The aims of this paper are to develop an instrument to assess asset management culture and to then test the impact of workplace relationships, particularly Perceived Organisational Support (POS) and the manager-technical employee relationship (captured by Leader-Member Exchange (LMX)) on asset maintenance culture and consequently, the impact of

asset maintenance culture on the engagement of asset maintenance workers and engineers. The research is a necessity for asset managers because the majority of organisations that have attempted to change or implement strategies that challenge their existing culture have either failed or found the process too long and laborious to achieve the desired outcomes of the initiative (Langan-Fox and Tan 1997). Asset managers need more information about the factors that facilitate the effective management of assets to achieve asset sustainability (and avoid disasters related to poor management of assets (e.g. nuclear reactor disasters).

This paper is in three parts. The first part provides a targeted literature review, resulting in hypotheses to be tested. The second provides the methods (and testing required associated with developing a new instrument to measure asset management culture) and results of the study and the final part considers implications for asset managers.

Social Exchange Theory (SET)

SET is traditionally used to explain how different workplace exchange relationships benefit multiple stakeholders (including the employee, the organisation, and the public). As stated, the theory argues that both employees and the organisation benefit when workplace relationships are effective. Employees benefit because when they have positive interactions with their supervisor, their colleagues and the organisation as a whole, these positive interactions facilitate the exchange of resources, knowledge, time and emotional support required to undertake work tasks effectively (Wang *et al.* 2005; Yukl 2006). Consequently, Social Exchange theorists argue that employees' attitudes/ behaviour in the workplace improve and this in turn enhances organisational effectiveness and performance (Åmo 2006; Cropanzano and Mitchell 2005; Shaw *et al.* 2009). We examine specifically how POS and manager-technical employee relationship affects the working culture of employees within asset management organisations.

Perceived Organisational Support (POS)

POS is a construct that assumes that when the organisation treats the employee well (access to resources, respect etc.), the employee reciprocates and works hard to improve organisational effectiveness. POS is argued to be the employees' perspective about the extent to which the organization values their work and is concerned about them (Allen *et al.* 2003). POS is an important factor in an organisation because it impacts on the quality of the supervisor-subordinate relationship (Wayne *et al.* 1997), predicts employee engagement (Saks 2006) and organisational commitment, citizenship behaviour and retention (R Eisenberger *et al.* 2001).

Even more important, Yukl (2006) proposed that senior management usually has more influence over organisational culture when compared to other managers. Other researchers also argue that leaders (organisational management) shape organisational culture (House 1971; E. Schein 2010). Research by Gerard, Sleeth and Siders (1999) suggest the importance of understanding the impact of leaders (organisational management) on the nature of organisational culture, arguing that they determine the quality of organisation communication as well as demonstrating and implicitly communicating their real values and objectives in the way they allocate resources, reward practices and promote activities. To the best knowledge of the authors, the impact of POS on the culture and engagement of asset management technical and engineering employees has never been tested. Irrespective of the official messages/communication from senior management, employees will either perceive high or low support from organisational management based on their experiences of everyday organisational activities and processes that both enable the flow of information, resources and support when they need it to complete their tasks or, on the other hand, fail to do so.

Manager-technical employee relationship

There is growing evidence that the quality of the manager-employee relationship is fundamental for ensuring that employees have access to the knowledge, resources and support required to do a job well in the workplace (Cropanzano and Mitchell 2005). However, the power of the manager-employee relationship is still very much dependent on the way senior management manages (Wayne *et al.* 1997). Additionally, research by Graen and Scandura (1987) suggests that the quality of LMX is the essence of leadership behaviour. However, there is a paucity of empirical research about the impact of the manager-employee relationship on organisational culture. Some research suggests that organisational culture predicts the manager-employee relationship. For example, a study by Porter and McLaughlin (2006) included two conceptual articles that discussed the effect of organisational culture on the manager-employee relationship (e.g. Davis and Gardner 2004; Scandura and Lankau 1996). Using SET, we argue that the manager-employee relationship affects culture by affecting the access that technical and engineering employees have to information, resources and support when undertaking their work tasks.

Organizational Culture

Organizational culture is a function of factors - both internal and external to the organisation (Shelton *et al.* 2011). External factors such as nationality (national culture) are not examined in this study because we are more interested in understanding the impact of workplace processes on the work practices of technical and engineering employees. Schein (1990) argues that organizational culture can be conceptualised as comprising a superficial level of culture (capturing the organisational mission and value statements) and a deeper level of culture (capturing the shared language used within the organisation, criteria for allocating status, power and authority, rewards and controls) and Hofstede (1990) extends the meaning of organisational culture to include the practices used every day in the workplace.

Whilst there is some agreement on the definition of organisational culture, there are many different ways of conceptualising it. Consequently, there is no shortage of research on different conceptualisations of organisational culture (Jung *et al.* 2009; Martins and Treblanche 2003). This confuses what may be considered best practice, because there is no agreement within the literature about how to conceptualise, measure and/or examine organisational culture (Alavi *et al.* 2006). The main implication of culture research is that it is agreed by organisational culture theorists that the organisation's culture affects employees commitment to the organisation and consequently determines the work practices of employees at work (Lok and Crawford 2004), the efficiency and effectiveness of work processes (Denison and Mishra 1995) and how asset management is undertaken every day by technical staff (Murphy 2008; Zuashkiani *et al.* 2011).

The main issue being examined in asset management organisations is whether employees operate in a proactive rather than a reactive asset management culture, which is dominant in many organisations responsible for asset management. Further, as stated, changing the existing culture is not an easy feat, since past practices suggest that the majority of organisations that have attempted to implement culturally based strategies have either failed or found the process to long to achieve the desired outcomes of the initiative (Langan-Fox and Tan 1997). As such, implementing cultural change strategies requires clear messages to employees (Langan-Fox and Tan 1997), and an effectively managed implementation process (Smith 2003). Therefore, considering the difficulty that the majority of organisations have when attempting to align culture with organisational goals and the lack of research about organisational culture and asset management, it is important to develop an understanding about the role that organisational culture plays when attempting to develop effective and efficient asset management processes.

The effective development of processes that maximise asset management performance requires an encouraging and supportive organisational culture (Zuashkiani *et al.* 2011). A supportive culture should provide an environment which supports, rewards, and recognises employees who act or behave in a manner that is aligned with maximising asset management performance and achieving organisational goals. Although with this said, it is important to note that if organisational culture is facilitated and managed effectively it can support and assist the organisation in achieving their mission and goals; however, poorly developed and managed organisational cultures can have a detrimental impact on organisational effectiveness (Martins and Treblanche 2003). Past literature about asset management has suggested that organisations attempting to provide support to maximise the performance of asset management requires, amongst other things, the support of employees involved in the asset management performance (Mardiasmo *et al.* 2008). Additionally, organisations are required to train and educate, communicate asset management requirements and organisational goals, reward and recognise, and motivate top-management support for the asset management process. We argue that the change to a proactive asset management culture is facilitated by effective workplace relationships and is evidenced by the presence of engaged employees enthusiastically doing undertaking their functions and tasks.

Engagement

Many practitioners are seeking the organisational levers (processes, practices) that create engaged employees (Macey *et al.* 2009; Slåtten and Mehmetoglu 2011). The concept of employee engagement is relatively new to management and consequently there is limited empirical research about this new construct and the factors that affect it (Saks, 2006). However, it is important to examine engagement in asset management organisations because it directly and indirectly influences employees' performance, which affects how well technical and engineering employees do their job, which in turn affects the quality of services

the public experiences (the quality of water, sewerage, power, roads, housing etc.) (Harter *et al.* 2002). In this study, we followed Kahn (1990), who defined engagement in the workplace as a work situation where employees are enthusiastic about the work because they find the work meaningful and so they want to, and can, invest in their work to achieve personal and career benefits (May *et al.* 2004).

It is management's responsibility to provide a work context that facilitates the development of engaged employees. Past research suggests that the factors that are the antecedents of employee engagement are effective leadership and co-worker relationships, interesting work tasks and the resources to perform their jobs well, as well as perceived appropriate rewards, and not age, gender or personality (May *et al.* 2004; Richman 2006). In particular, Bakker *et al.* (2008) found that when the organisation and management were supportive, even those employees working in high job demand situations, remained engaged. They argued that this was because the supportive environment helped to reduce stress, thereby addressing potential burnout.

However, there is minimal empirical research to support the notion that organisational culture predicts employee engagement. A review of the extant literature by Wollard and Shuck (2011) proposes that while there is some empirical research suggesting that a supportive organisational culture is an antecedent of employee engagement, such evidence is limited. However, one study by Oakley (2004) found that organisational culture provides a significant influence on the development of employee engagement. Specifically, Oakley examined the impact of four organisational cultural types (constructive, competitive, passive, & aggressive) upon employee engagement. The results from Oakley's study suggest that cooperative and competitive organisational cultural types were positive predictors and passive and aggressive organisational cultural types were negative predictors of employee engagement. Hence, we expect technical and engineering employees reporting high levels of

perceived organisational support are more likely to work in a proactive asset management environment and consequently perceive themselves as engaged in the job. To the best of our knowledge, no study has examined the relationship between workplace relationships, asset management culture and technical and engineering employees' engagement in the job. Hence, we will focus on examining the above mentioned relationships in the current study.

Hypotheses

Based on the literature review, the current study will contribute to the literature by examining the strength and direction of the workplace relationships of technical and engineering employees, to asset management culture and engagement. The hypothesised relationships will be tested by

- H1. POS predicts organisational culture within asset management organisations.*
- H2. LMX predicts organisational culture within asset management organisations*
- H3. Organisational culture within asset management organisations predicts employee engagement.*

METHOD

Data and Sample

A self-complete questionnaire was offered to technical and engineering employees working in asset management organisations within Australia over a period of two weeks. This study had a sample size of 90, which included 46 asset maintenance workers - comprising of 34 (73.9%) males and 12 (26.1%) females and 44 asset management engineers – comprising of 34 (77.3%) males and 10 (22.7%) females. The survey respondents were located in Australia and were distributed within the following states: Queensland 13 (14.4%), New South Wales 29 (32.2%), Victoria 32 (35.6%), South Australia 6 (6.7%), Western Australia 8 (8.9%), Australian Capital Territory 1 (1.1%), Tasmania 1 (1.1%). Survey respondents were

predominantly aged 31 to 45. 23 respondents (25.6%) were aged 30 or less, 44 (48.8%) were aged between 31 and 45, and 23 (25.6) were aged 45 years and over.

This study examines the relationship between workplace relationships, asset management culture and technical and engineering employees' engagement using four reflective measures.

Instruments

We used previously validated scales to operationalise the constructs in the path model, except in relation to organisational culture. These were measured on a six-point Likert-type scale, ranging from '1'=strongly disagree to '6'=strongly agree. **Leader-Member Exchange.** The leader-member exchange (LMX) validated test-bank survey traditionally measures the satisfaction of employees with the quality of the relationship with their supervisor-subordinate relationship (Mueller and Lee 2002). In this study, a seven-item uni-dimensional scale (LMX-7), developed by Graen and Uhl-Bien (1995), was used (composite reliability coefficient of 0.93). An example of a statement is, 'I am certain to what extent my supervisor will go to back me up in my decision-making'. **Perceived Organisational Support.** Perceived organisational support was measured using the validated instrument by Eisenberger et al. (1997) with a composite reliability of 0.88. Sample item included 'My organisation cares about my opinion'. **Organisational culture** was examined by a new instrument. We decided not to use other culture instruments, such as the Glaser et al., (1987) instrument which argues that six factors determine organisational culture: teamwork-conflict, climate-morale, information flow, involvement, supervision and meetings), because they were too generic to capture the work context of asset management organisations. The new organisational culture instrument, which was used to examine asset management organisations, had a good internal consistency with a composite reliability of 0.89. **Employee engagement** was examined using a nine-item scale from Schaufeli and Bakker

(2003). The sample items included, “At my work, I feel bursting with energy” and “I find the work that I do full of meaning and purpose”. This scale has a composite reliability coefficient of 0.94.

Statistical analysis

Survey data was analysed using SPSS v.20 and SmartPLS v.2 (Ringle *et al.* 2005). This study used partial least squares (PLS) based on a number of factors. For example, PLS is not sensitive to sample size and therefore can be used with smaller samples. To ensure an adequate sample size, power analysis theory was used (Green 1991). To achieve a medium effect size of 0.8 ($\alpha = 0.05$), the minimum sample size when using three predictor variables is 76. This study has a sample size of 90, which is adequate to achieve a medium effect size. This research is also more suited to a statistical method such as PLS because it is exploratory in nature as a new instrument has been developed to measure organisational culture within asset management organisations.

To determine if the construct is valid, this study will examine both convergent and discriminant validity. To ascertain that there are no issues with convergent validity, the average variance extracted (AVE) will be calculated and should be equal to or greater than .5 (Hair *et al.* 2010). To examine discriminant validity, items should load appropriately onto their respective factors, there should be an absence of cross-loadings, and the square-root of the AVE should be equal to or greater than 0.5 (Fornell and Larcker 1981). Additionally, the square root of the combined AVE for each construct should be greater than the correlation estimate between the constructs (Chin 1998). The PLS overview results (see table 2) outline that the data is both reliable and valid.

To ensure the stability of the structural model we used the blindfolding procedure in *SmartPLS* and calculated the global goodness-of-fit criterion (Tenenhaus *et al.* 2005). The blindfolding procedure uses the Stone-Geisser Q-square test (Chin 2010), which suggests that

communality and redundancy Q-square indices should be greater than zero. In this study we used the blindfolding procedure at 10 and 25 omission distances. The results indicated stability of the structural model because all values were greater than zero. The analytical process for this study will include an exploratory factor analysis using SPSS and a path analysis using SmartPLS. The significance of the hypothesised paths will be calculated using a bootstrap procedure, a bootstrap sample of 500 will be used.

As previously mentioned, this study is cross-sectional in nature, so Harman's ex-post one-factor test was used to determine if there was a common method bias (Podsakoff *et al.* 2003). The results from an unrotated principal component factor analysis extracted seven components with eigenvalues greater than one and explained 73.66 per cent of the variance. One component did not explain the majority of the variance, indicating that there appears to be no concern of a common method bias.

RESULTS

Factor analysis

A review of the correlation matrix revealed that there were a number of correlations that exceeded .3, which indicates that the data is suitable for factoring. The Kaiser-Meyer Olkin measure of sampling adequacy equaled .832, exceeding the required value of .6. The Bartlett's test of sphericity was significant (chi square = 2309.87, $p < .001$, $df = 528$). The results from a principal axis factor analysis with a varimax rotation, depicted in table 1, highlight that the majority of items loaded adequately onto their respective constructs. However, there did appear to be issues with some items (indicated by a dash). As a result, these items were removed from the study.

Insert Table 1 about here

Descriptive statistics and correlations

The means, standard deviations, Cronbach's alphas and correlations for all variables proposed in this study are presented in Table 2.

Insert Table 2 about here

Testing the hypotheses

Table 3 depicts the PLS analysis results. The results depict that the path model explained 26.4 per cent of the variance of asset maintenance culture and 6.7 per cent of the variance of engagement. As depicted in table 3, there is support to accept all hypotheses.

Insert Table 3 about here

Hypothesis 1 proposed that POS predicts the organisational culture within asset management organisations. The results provide support for hypothesis 1 outlining a positive and significant relationship (path coefficient = .25, t-statistic = 2.01, $p < .05$). Hence, the results indicate that hypothesis 1 should be accepted. Hypothesis 2 proposed that LMX predicts the organisational culture. The results provide support that hypothesis 2 should be accepted (path coefficient = .30, t-statistic = 2.29, $p < .05$). Hypothesis 3 postulated that organisational culture predicts the engagement of asset management employees, including engineers and technical maintenance staff. The results provide support for the acceptance of hypothesis 3 (path coefficient = .26, t-statistic = 4.14, $p < .001$).

DISCUSSION

This paper examined the organisational culture of technical and engineering employees employed with asset management organisations. Past research has tended to focus on the technical issues associated with asset management and neglected the important role of

technical and engineering employees in ensuring assets are maintained adequately to ensure longevity and sustainability (Zuashkiani et al., 2011; Woodhouse, 2011). In particular, many asset management researchers and practitioners argue that the organisational culture of asset management organisations tends to be reactive rather than proactive in its approach to asset management. However, there are a broad array of definitions, conceptualisations and measurements of organisational culture (Jung *et al.* 2009; Martins and Treblanche 2003) (Jung et al, 2009; Martins et al, 2003), but none are specific to asset management (Brunetto and Xerri 2011). The first task in this study was to develop a new instrument to test the organisational culture of asset management organisations. Hence, the first contribution of this paper is that we have developed and tested an instrument to measure asset management culture (See Table 1 for loadings). The advantage of this instrument is that it is specifically based on the work practices of asset management employees and therefore captures their “underlying” culture (as argued by Schien, 1990; Hofstede, 1990).

The second contribution of this paper is that the findings show that workplace relationships predict the organisational culture of asset management technical and engineering employees. One advantage of using PLS instead of SEM is that it not only shows correlation between factors, it also shows the casual links and therefore it can be used to show what factors predict others (Tenenhaus *et al.* 2005; Chin, 2010). In this study, the findings evident in Table 3 show that POS and manager- technical and engineering employee relationships are predictors of the organisational culture of asset management employees. The findings from this study suggest that the asset management culture in place in asset management organisations is very much a function of the quality of workplace relationships between management and employees. This finding has implications for managing asset management organisations because the results show that organisational management (POS) and manager-employee relationship determines what and how tasks are undertaken by

technical and engineering employees. Based on SET, positive workplace relationships improve employees' attitudes and behaviours and in turn enhance organisational effectiveness and performance (Cropanzano & Mitchel, 2005). Hence, if asset management organisations have a reactive culture, then the way to make the culture proactive begins by changing the messages and support emanating from the organisation generally and specifically from line managers.

The third contribution of the paper is that the findings indicate that the asset management culture predicts the level of engagement by employees. The findings are important because organisations want and need engaged employees because their enthusiasm and work performance enhances organisational effectiveness (May *et al.* 2004). The findings support previous research by Bakker *et al.* (2008) that identified that supportive management promotes engaged employees. However, the findings from this study demonstrate a weak correlation between asset management culture and employee engagement suggesting that employees are somewhat satisfied with support from the organisation or their managers and are barely engaged with their job. These are worrying evidence-based findings for any manager of an asset management organisation because they suggest that technical and engineering employees working in such organisations perceive minimal support from their organisation and their managers. Such conditions are hardly ideal for ensuring the sustainability of assets, especially because asset management organisations in a modern competitive environment require highly engaged staff to attain the highest quality standards in both technical/engineering and client/customer and stakeholder needs satisfaction.

Limitations and future directions

This study has a number of limitations. The main limitation in this research is the use of self-report surveys which can cause common method bias. However, Spector (1994) argues that the self-reporting method is legitimate for gathering data about employees' perceptions; as

long as the instrument reflects an extensive literature review and pattern- matching is used to support interpretation of the data. In addition, the Harman's ex-post one-factor test was used to determine if there was a common method bias (Podsakoff *et al.* 2003). Another limitation relates to the sample, which did not include senior managers in order to provide further depth to the exploration of relationships, organisational culture and engagement. A further limitation is the lack of qualitative data, which again is necessary to provide depth, colour and meaning to the examination of organisational culture. Further research should include all areas of asset management organisations and should also include qualitative methods.

Implications

For asset management organisations to become more proactive and less reactive, more customer focused and less technically focused, more successful in terms of asset management performance and less driven by cost management, a change in organisational culture will be necessary. Such changes will need a long-term focus because cultural change cannot be mandated nor driven by short-term tactics and management fiat (Lockwood 2007; Katzenbach, Steffen & Kronley, 2012). Culture change strategies need to honour and build upon the strengths of the organisation while at the same time, facilitating a few key changes that carry with them the values and behaviours of the new culture. This present research shows that the organisational culture in the asset management firms studied needs to be strengthened by enhanced POS and LMX to provide the basis for a more proactive, risk-taking and customer centred culture with a clearer focus on optimising long term asset performance and saving down time and money for the customer.

It is not that the asset management firms studied do not have such aspirations or do not attempt to operate in such a fashion. However, the research findings of a weak correlation between organisational culture and employee engagement indicates that only partial success is being achieved and that the organisational cultures studied do not strongly support

employee engagement with the workplace and the work that they do. High levels of engagement in the workplace means that people enjoy their workplaces, enjoy their workplace relationships, are proud of and have high levels of commitment to their organisations (May, Gilson & Harter, 2004). Engagement with the work itself entails pride in the work that they undertake, facing the challenges of that work, such as pleasing their customers/clients and solving the technical and operating problems of their working days. In order to create a culture that supports employee engagement and a proactive approach to meeting client needs, senior management must strengthen POS and organisational two-way communication with employees who are in the front line of meeting organisational and client needs. Research has suggested that leaders can influence organisational culture by using quality communication (e.g. two-way communication) to implicitly communicate the organisational values and goals demonstrated by the organisational practices and activities (Gerard, Sleeth & Siders, 1999).

Management needs to institute regular informal workplace meetings (e.g. tool-box meetings) in order to involve all employees in their natural work groups in sharing information, solving problems, making suggestions and planning the various aspects of the work of their team, recognising that every maintenance team is more than a collection of individuals. Research has demonstrated a link between the availability of resources (training, technology and autonomy) employee engagement and customer loyalty (Salanova, Agut & Peiró, 2005). Supervisors and managers must be trained in the processes and techniques of participative, informal tool-box meetings, which are an important avenue for strengthening LMX and developing a proactive work culture.

Regular, say monthly meetings involving multiple workgroups and senior managers should be held with a focus, not on telling or informing (important though keeping employees informed actually is), but on two way communication in order to provide asset management

employees and their supervisors with access to management thinking (views, policy and plans) – and vice versa. The interchange of views, which represent the multiple view-points present in the organisation, are vital to enable asset management companies to meet quality management challenges at all levels and by transforming, over time, their low engagement cultures into high trust, high performance and high team-working cultures to satisfy stakeholder needs for a low mistake, reliable performance asset utilisation environment.

These are difficult organisational changes which require determined and skilled leadership who can match organisational strategies with the organisational culture (Katzenbach, Steffen & Kronley, 2012). Many change initiatives have failed because the change strategy was not matched with the organisational culture and employees suffered from ‘cultural dissonance’, in which the old culture invariably wins. To express this in practitioner language – “Culture trumps strategy” (Schein, 2010), and employees are left asking themselves – “why change?” with the inevitable result. Another important issue for organisational leaders (at all levels of the organisation) is to focus change on the things that make the difference – the few critical issues and behaviours that will begin to move the cultural assumptions, beliefs and values. Change in these few matters, such as the workplace meetings described above which entail real changes of behaviour in management and workplace alike, will be the levers for ongoing and lasting change. However, in driving and supporting such changes, managers must affirm the positive values of the existing culture (‘we have many strengths to build on’) and ensure that formal and informal change processes honour the positive achievements of the organisation as well as establish new directions and values. Another aspect of leading and managing change processes is to ensure that progress and achievements are monitored, marked and celebrated at workplace level and all organisational levels. For instance, at the overall organisational level, a regular monitoring of cultural change, using the instrument that we have developed for the purpose (which is the

basis of this present study), and a dissemination of results and celebration of progress will support and encourage further change at all levels of the organisation.

As a last comment on cultural change processes, it is almost certain that senior management must take the lead in engaging in individual and group development processes, usually with the support of external skilled resource people who can help the leadership team to develop skills and insights towards the creation of a high engagement, proactive organisational culture in terms that are specific for the asset management context. Research suggests that effective leadership and the quality of workplace relationships can enhance employee engagement (May, Gilson & Harter, 2004). The ongoing strong support of the organisation's HRM staff is likely to be required which will require that this function has the right mix of skills and capabilities.

Conclusion

This paper has developed and tested a new instrument for assessing the asset management culture of technical and engineering employees working in asset management organisations. In terms of SET, the findings from this paper suggest a far from ideal work context, especially because of a low level of employee engagement. Using SET, the findings suggest that employees are receiving only some support, information and resources required to do their job efficiently and effectively. Consequently, the findings provide evidence as to why the asset management culture is reactive rather than proactive. Further research is required to ensure generalisability of these findings.

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TABLE 1: FACTOR LOADINGS

	Asset maintenance culture	Leader- member exchange	Perceived organisational support	Engagement
Culture_10	.783			
Culture_11	.741			
Culture_12	.723			
Culture_13	.478			
Culture_14	-			
Culture_15	.709			
LMX_32		.578		
LMX_33		.673		
LMX_34		.799		
LMX_35		.786		
LMX_36		.721		
LMX_37		.669		
LMX_38		.594		
POS_39			.565	
POS_40			.621	
POS_41			.591	
POS_42			.628	
POS_43			.606	
POS_44_R			-	
POS_45_R			-	
POS_46			.708	
Eng_92				.756
Eng_93				.839
Eng_94				.790
Eng_95				.806
Eng_96				.748
Eng_97				.729
Eng_98				-
Eng_99				.543
Eng_100				.723

Note: culture = organisational culture, LMX = leader-member exchange, POS = perceived organisational support, Eng = employee engagement

TABLE 2: MEANS, STANDARD DEVIATIONS, COMPOSITE RELIABILITY, AVE AND CORRELATIONS

Variables	Mean	S.D.	α	AVE	1	2	3	4
Organisational culture	4.13	.90	.828	.88	(.94)			
Leader-member exchange	4.36	.80	.908	.68	.46**	(.82)		
Perceived organisational support	4.21	.70	.787	.51	.45**	.70**	(.71)	
Engagement	4.31	.83	.925	.73	.21*	.49**	.54**	(.85)

Note: Diagonal elements in the parentheses are the square root of the average variance extracted (AVE).

** . Correlation is significant at the 0.01 level (2-tailed).

* . Correlation is significant at the 0.05 level (2-tailed).

TABLE 3: RESULTS OF PATH ANALYSIS

Hypothesis	Paths (hypotheses)	Path coefficients	t-statistics	Level of significance
H1	POS → Organisational culture	0.25	2.01	.05 *
H2	LMX → Organisational culture	0.11	2.29	.05 *
H3	Organisational culture → engagement	0.19	4.14	.001 ***

*** t-value $\geq 3.29 / .001$

** t-value $\geq 2.58 / .01$

* t-value $\geq 1.96 / .05$

FIGURE 1: PROPOSED PATH MODEL

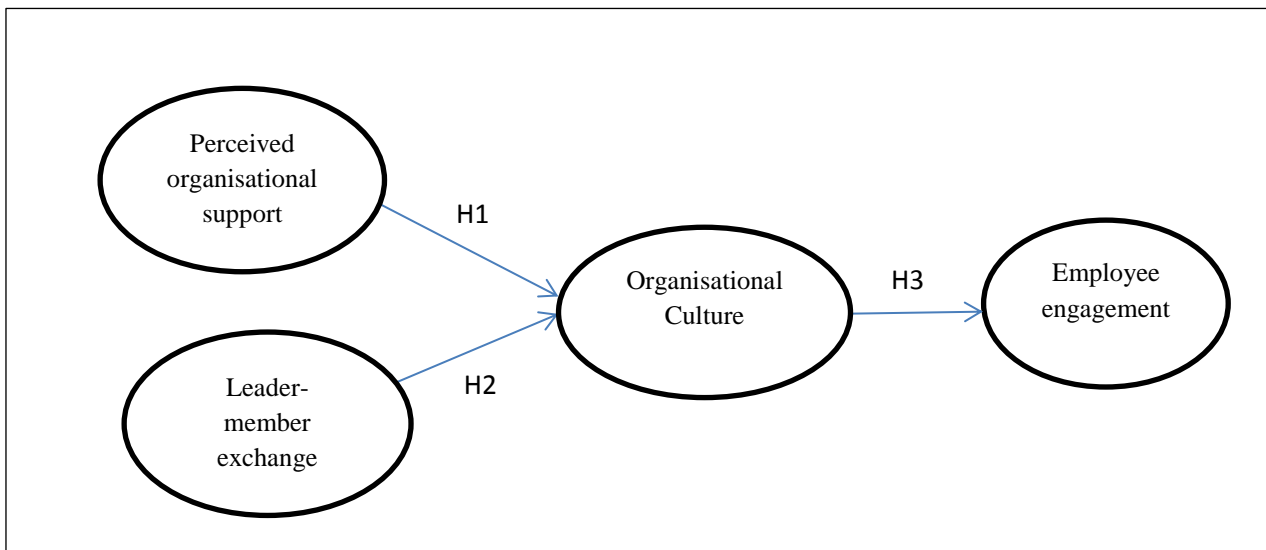


FIGURE 2: RESULTS OF PROPOSED PATH MODEL

