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**To have and to hold: Modelling the drivers of employee turnover
and skill retention in Australian organisations**

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Abstract

The paper examines the determinants of employee turnover and long-term skill retention in Australian organisations. Three new perspectives are examined: the difference between short-run turnover and long-term retention; the role of different high performance work systems philosophies and human resource practices; and an examination of turnover for various groups of employees based on skill level. The results suggest that the role of learning within organisations is of fundamental importance in reducing short-run turnover and improving long-term skills retention. A series of training and human resources practices have also been found to be important for individual specific skill categories, but general conclusions for all skill categories cannot be readily made. Finally, different drivers to short-term turnover maybe at play when retention is considered from a long-term strategic perspective.

Keywords: employee retention, employee development

To have and to hold: Modelling the organisational drivers of employee turnover and skill retention

Introduction

An extensive body of literature exists on measuring the determinants of employee turnover. The bulk of this literature has focused on individual employees' motivations, attitudes and intentions about leaving their current work environment. In contrast, a small but developing literature is starting to emerge which examines the drivers of turnover from the organisational perspective using the organisation as the unit of analysis (Holtom, Mitchell, Lee and Eberly, 2008). Most of the organisational literature has focused on a series of common factors such as high performance work systems, employee compensation, unionisation and training practices.

Our study seeks to extend the previous organisational literature in three important ways. First, we make a distinction between the conventional measure of turnover and a new measure of skill retention as it pertains to an organisation's long-term goals. The new measure views retention from the firm's long term strategic perspective and possibly uncovers different drivers of retention from those based on shorter term turnover models. Second, the previously demonstrated importance of high performance work systems has generally been based on a single bundled set of measures encapsulating management practices, training, monitoring systems etc. In contrast our study examines the importance of the different management philosophies underpinning high performance work systems and individual human resource

management practices in some detail. Finally, unlike most previous studies, we examine turnover models for four broad employee categories based on skill levels to identify any unique drivers for various groups.

The study involved the survey of over 300 Australian organisations and makes use of structural equation modelling techniques for the analysis of relations between valid and reliable measures. The structure of the paper is as follows: in the next section we outline some previous literature on the determinants of turnover from both the empirical and theoretical perspectives, and then follows the outline of the methods and results, after which follows the discussion and conclusion.

Background

Much of the literature on the causes of employee turnover in organisations has focused on the role of individual differences, the nature of the ????? of and the attitudes of individuals in organisations (Holtom, Mitchell, Lee and Eberly, 2008). These studies identified a large number of factors that affect the propensity of an individual to leave an organisation which have been usually categorised as the level of job satisfaction and the level of organisational commitment (Price and Mueller, 1981; 1986). Price and Mueller (1981;1986) characterised the relationship between job satisfaction and intention to leave as mediated through organisational commitment. This model of individual intention to leave has been the basis for a body of research on the antecedents to job satisfaction including the role of person-organisation fit (Kristof, 1996) emotional exhaustion (Meyer, Allen and Smith, 1993) and stress (Podsakoff, LePine and LePine, 2007) and the development of new models of

turnover which emphasises the importance of external shocks on intention to leave (Lee, Mitchell, Wise and Fireman, 1996; Lee, Mitchell, Holtom, McDaniel and Hill, 1999).

The impact of contextual and organisational factors has been subjected to less scrutiny until recent years. Organisational level factors that have been associated with intentions to leave include diversity (Elvira and Cohen, 2001; Hom, Roberson and Ellis, 2008), levels of pay (Bloom and Michel, 2002), overall levels of job satisfaction in groups (Harter, Schmidt and Hayes, 2002), perceived organisational support (Allen, Shore and Griffeth, 2003) and perceptions of procedural justice in the organisation (Tekleab, Takeuchi and Taylor, 2005). The importance of these organisational level factors suggests strongly that management policies and practices should have a direct impact on employee turnover. This is particularly true for management practices and practices that promote job satisfaction, organisational commitment, diversity and procedural justice in organisations. This is, of course, the area of human resource management (Storey, 2001).

The number of quantitative studies of the impact of human resource management on employee turnover from an organisational perspective are surprisingly few given the central concern of human resource management in the generation of higher levels of employee commitment and the reduction of turnover. In a general sense, unlike the literature from the employee perspective there is no unanimity of agreement regarding the universal drivers of turnover; however, sufficient results exist to comment on some common themes. Batt and Valcour (2003) found that the implementation of certain human resource management practices and

policies could help to alleviate work-family conflicts which were an important source of job dissatisfaction and employee intention to leave. Specifically, the human resource management policies that appeared to reduce turnover included higher pay, employment security and career development opportunities as well as job design that increased decision-making autonomy. Allen, Shaw and Griffeth (2003) found that human resource management practices did not directly impact on turnover but that the relationship is mediated by perceived organisational support and job satisfaction. In their model, supportive human resource management practices such as participation in decision-making, fairness of rewards and opportunities for growth increase perceived organisational support which, in turn, builds organisational commitment and job satisfaction thus lowering turnover and increasing retention. Mitchell, Holtom, Lee, Sablinski and Erez (2001) predict that human resource management practices that increase job embeddedness, the extent to which employees are bound to the social fabric of an organisation, will increase retention by reducing the impact of external shocks that prompt job search in the unfolding model of turnover (Mobley, 1977). Recently, Trevor and Nyberg (2008) have shown that human resource management practices that provide procedural fairness for employees and increase job embeddedness help to increase retention during periods of downsizing, emphasising the impact of human resource management on the shock impact of redundancy and lay-offs.

Recent work on the impact of human resource management on the various aspects of firm performance, including levels of employee turnover, has focused on the “bundling” of human resource management practices into high performance work systems (Butler, Felstead, Ashton, Fuller, Lee, Unwin and Waters, 2004). High

performance work systems often include a range of management practices beyond the confines of traditional human resource management such as the use of teams, information sharing, quality circles, (general, skills and cross based) training, performance based promotion, discretion over work and customer interactions, and performance monitoring (Huselid, 1995; Guthrie, 2001; Batt, 2002). However, there is significant disagreement in the literature about exactly what practices constitute a high performance work system (Becker and Gerhart, 1996). Early studies of high performance work systems noted their positive impact on a range of performance measures including lowering employee turnover (Huselid, 1995; Appelbaum, Bailey, Berg and Kalleberg, 2000). Guthrie (2001) explained the positive impact of high involvement work practices by suggesting that the use of these advanced management practices put the performance of individual employees at the centre of organisational strategy. The retention of this crucial resource in the organisation is a key element in improving overall organisational performance. More recently, Macky and Boxall (2007) have shown that employees exposed to high performance work systems are likely to report higher levels of job satisfaction, organisational commitment and trust in management resulting in lower intentions to quit.

The role of trade unions has also been investigated extensively. Union presence in the workplace has been linked by many studies to a reduction in turnover and higher levels of retention (Brown and Medoff, 1978; Wilson, Cable and Peel, 1990; Wooden and Baker, 1994). This effect has generally been explained in two ways. Firstly, that the presence of unions creates a monopoly bargaining situation in which workers receive higher wages than their non-unionised counterparts and are thus more likely to stay with the organisation. The importance of employee

compensation in reducing turnover rates is consistent with the efficient wage hypothesis (Salop, 1979) in which employees and firms are assumed to be utility maximisers, if employees think they can find a higher compensation package elsewhere they will threaten to or actually quit to find a more highly paid job. The role of employee compensation in the reduction of turnover may be contrasted with studies suggesting both negative and positive associations (Huselid, 1995; Shaw, Delery, Jenkins and Gupta, 1998; Guthrie, 2001; Martin, 2003; Batt and Valcour, 2003). The second explanation relates to the ability of unions to provide employee voice primarily through better procedural mechanisms for handling employee grievances and so on which reduce the occurrence of exit (Freeman, 1980). Freeman's argument has been supported by a number of studies. For instance, in the UK, Martin (2003) found that the presence of unions in workplaces is negatively associated with employee turnover. However, the effect of union voice has been questioned in some studies that have emphasised the importance of the more traditional economic efficiency arguments associated with union bargaining power (Delery, Gupta, Shaw, Jenkins and Ganster, 2000).

The impact to training on turnover has not been fully investigated except as part of more general research on human resource management or high performance work systems. Human capital theory suggests that the impact of training may either increase or reduce turnover rates (Becker, 1974). If the training is job/organisation specific then the specific skills of existing or incumbent employees are enhanced and hence turnover is reduced. On the other hand if workers are trained to be flexible and multi-skilled then their talents are more generally appreciated in industry and hence employees may be able to move to jobs elsewhere more easily (Martin, 2003).

However, the propensity of employers to provide general and transferable training, despite the theoretical risk of losing skills suggests that the general/specific training dichotomy may not be so distinct in practice and employees may remain with employers that provide general training.

The present study seeks to examine the impact of human resource management, high performance work systems, unionisation and training on employee turnover and retention. The research does not take the individual but rather the organisation as its unit of analysis, which places it in the tradition of contextual and organisational studies of turnover (Holtom, Mitchell, Lee and Eberly, 2008). As indicated previously, we extend the research in three ways by: 1) considering both short-term turnover and long-term retention; 2) examining the importance of different high performance work systems philosophies and human resource management practices in some detail; and 3) explicitly considering four employee skill divisions.

Method

Measures and Variables

To facilitate the reliable and valid measurement of various concepts numerous multi-item measurement scales were employed. These scales are derived from previous studies and/or developed from related literature and suitably adapted. A large number of constructed variables for training and human resources practices are taken from the United Kingdom's Workplace Employment Relations Survey (WERS). WERS is a large government organised survey having now been repeated five times. The most

recent survey was conducted during 2004 (WERS5). The employed items and their summary statistics are provided in the appendix and table A1.

We collected data on two different dependent variables: employee turnover and employer confidence in retaining the skills necessary for the achievement of long-term organisational objectives. Employee turnover data was collected for four skill categories: 1) managers, professionals and technicians (e.g., senior/middle managers, ICT professionals, engineering technicians); 2) skilled trade workers (electricians, plumbers); 3) intermediate skills (clerical, sales and service workers); and 4) elementary skills (labourers, machine operators). A key and distinctive feature of this study was the development of a measure of skill retention in order to achieve the long-term objectives of an organisation. This necessitated the development of new multi-item measure of retention. Initially a definition of employee retention as it pertains to long-term organisational goals was provided (see the appendix) and this was sent together with 20 items to seven industry and academic experts. The industry experts relate to the health and manufacturing sectors and also include trade union representatives. These experts were asked to rate each proposed item out of ten on how well the proposed item related to the provided definition. Based on these scores, the best seven items were included in the final questionnaire. The measure for skill retention is further refined to consist of four items after considering the validity and reliability properties of the measure using the survey data. In particular, items which had low factor loadings and/or whose removal significantly improved the reliability of the measure were deleted. All the proposed items for skill retention and those retained for the final analysis are listed in the appendix.

The variables to be used to explain the drivers for the employee turnover and long-term skill retention fall under four groupings: human resource management practices, high performance work systems practices, training practices and organisational/ market characteristics. When employing all the items for the measures proposed below, the measurement properties of constructs proved to be unacceptable in terms of reliability and validity. As a consequence a number of items had to be discarded and refined scales constructed to provide measures with acceptable measurement properties. The items listed in the tables below for the various measures pertain to the retained items only.

Data was collected on a large variety of human resource management practices derived from the WERS5 survey. The data collected covered selection and recruitment, work time and working arrangements, career planning, compensation, job design, appraisal, employee surveys and frequently used retention strategies such as higher pay, non-monetary rewards etc.

In developing measures for high performance work systems we take into account the disagreement amongst researchers on what practices constitute a high performance work system (Mackey and Boxall, 2007:546). Rather than use lists of practices, many of which coincided with the human resource management and training practices that were already built into the survey, we decided to focus on the underlying management philosophies which are commonly associated with high performance work systems: the learning organisation, total quality management (TQM), lean production and the use of team working. These philosophies reflect the diversity of high performance work systems that exist in practice and the different

emphases that underpin them. The use of a learning organisation philosophy was measured using a multi-item scale that measures the extent of the learning orientation of the enterprise. The TQM and lean production measures were adapted from manufacturing environments. Both the extent and level of autonomy granted to work teams was measured in the survey. A single item measuring the percentage of the workforce involved in teams and a four item measure of autonomy used in WERS5 was employed. For precise definitions and sources of the constructs employed see the appendix.

The training practices variables cover the standard training issues experienced in industry. The survey covers the following areas: training for skill objectives, training for soft (behavioural) skills, training for hard (technical) skills, induction, experienced worker training, training to do other jobs and nationally recognised (accredited) training (NRT). All the items other than NRT are sourced from the WERS5. We also measured the commonly employed human resource practices in industry including recruitment and selection, appraisal, flexible and family friendly working practices, career planning, compensation, job design and the use of employee surveys. The use of particular strategies to retain skilled staff was also examined. All the questions other than measures for compensation, career planning and use of retention strategies are sourced from the WERS.

Finally we considered some organisational/market characteristics which pertain to the nature of the business environment in which organisations operate and any peculiar organisational attributes pertinent to the retention of skills. The survey covers the following areas: market and technological turbulence, competitive

intensity, the organisational life cycle stage and innovation, and the degree of unionisation. The modelling process will also allow for the possibility of industry type, and organisational ownership and location dummy variables.

Data Collection and Sample

The sampling frame employed for this study was derived from the Dun and Bradstreet database of Australian organisations, as of October 2006. The specific sampling frame used in this study relates to those organisations which have an identified human resources decision maker. This sampling frame was chosen because HR decision makers are well positioned to make informed comment upon skill retention, new management practices and human resources practices. However, because specialist HR managers are a feature of larger rather than smaller enterprises, the sampling frame disproportionately focuses upon larger organisations. The complete survey instrument was piloted with a group of HR decision makers drawn from private sector enterprises covering the manufacturing, retail and finance sectors. The instrument was also assessed by the Australian Government statistical clearing house (SCH). A sampling frame of 2500 organisations was employed.

A four-wave mail out was conducted: a pre-approach letter describing the study, motivating and providing incentives for respondents was sent to all organisations; the complete questionnaire with a cover letter and reply-paid envelopes were posted twice (with a two-week gap) to all organisations; and a final selective mail out to an additional 45 organisations who were more likely to respond to the survey. The final selective mail out was based on the need to increase the

representation in the services, finance and wholesale trade sectors and resulted from 370 follow-up phone calls organisations in these sectors. Overall 335 responses were gained, of which seven were grossly incomplete with more than 25% of questions unanswered and were discarded from the analysis. This resulted in 328 usable responses and translates to an effective response rate of 13.1%. In developing models to explain the drivers of turnover and retention, the full maximum likelihood method was employed to recognise any missing data for independent variables. This is a model-based way to account for missing data and represents a consistent and efficient use of all data collected. The number of employed responses for each specific model only depends upon what dependent variable is being modelled and its number of available cases.

Two checks for the adequacy of the sample as it reflects the database were conducted. The first assessed the compatibility between the sample and database characteristics. The second check examined any possible non-response bias. Two chi-square goodness-of-fit tests were conducted to assess whether the sample characteristics significantly differed from database for the two classification types: main industry type and employee size. A statistically significant difference at the 5% level (but not at the 1% level) was identified for primary industry type (chi-square = 19.06, $df = 8$, $p\text{-value} = 0.015$) and no significant difference exists at a 5% level for employee size (chi-square = 5.01, $df = 2$, $p\text{-value} = 0.082$). In a general sense the differences between sample and database percentages for industry type are not alarmingly large.

As a practical check of the importance of the difference for industry type

between the sample and database characteristics, a comparison of descriptive statistics based on the original (unweighted) data and data weighted by the differences between sample and database characteristics, was performed. The differences in descriptive statistics between the weighted and unweighted data are marginal at worst, for example, not greater than 0.1% for mean turnover percentages, while the majority of constructed perception based variable means differed by no more than 0.01 (on a 1-7 scale). These differences are not of practical concern, as a consequence the original and unweighted data is used for further analysis.

As a check for likely non-response bias, independent sample t-tests for differences in the means between responses from the 1st and subsequent (2nd and 3rd) mail-outs were conducted. It is postulated that the respondents to the subsequent (2nd and 3rd) mail-outs are relatively disinterested and require prompting from an additional stimulus, and therefore are similar in nature to non-respondents, see (Armstrong and Overton, 1977). Only nine out of 179 (meaningful) independent mean t-tests comparing early and late respondents tests were statistically significant, eight at the 5% level (4.5% of all questions) and one at the 1% level (0.6% of all questions). These findings indicate the absence of any serious non-response bias.

Analysis

Structural equation modelling (SEM) techniques were employed for identifying the statistically important drivers of the skill turnover and retention. As a first step we examined the measurement properties of all the employed multi-item perception based scales. Note, we did not examine the majority of questions sourced from

WERS5 as they are 'objective' questions measured without error. Initially when all the items proposed for the various constructs were included in the analysis very poor goodness of fit statistics in the confirmatory factor analysis (CFA) models were gained indicating poor construct validity. Further, low reliability values on most measures were obtained. Specific offending items in the measures were deleted from the scales until acceptable goodness of fit and reliability scores were obtained.

Unfortunately when all three major high performance work systems constructs were included in the analysis (learning orientation (LO) , lean production (LP) and total quality management (TQM)) high degrees of correlation between these measures emerged. It should be noted that the questionnaire design did not present separated items for these constructs, items were intermingled in the survey. When TQM was included in the analysis CFA estimates were not admissible due to a non-positive definite covariance matrix. In particular, estimated correlations were: TQM and LP = 1.026, and TQM and LO = 0.960. The former correlation is meaningless and explains the inadmissibility of the estimates. Effectively respondents were unable to usefully discriminate between TQM, LO and LP. When TQM was omitted from the measurement model analysis admissible solutions were gained. The CFA goodness of fit measures without TQM, are $\chi^2 = 1175.3$ d.f. = 652 $P = 0.000$, $\chi^2/DF = 1.80$, $CFI = 0.915$, $RMSEA = 0.050$ and are acceptable with $CFI \geq 0.9$ and $RMSEA \leq 0.05$. The correlation matrix for the estimated model is presented in table 1. Note for the excluded TQM, $AVE = 0.570$ and $Alpha = 0.843$

Table 1 About Here

Given the acceptable CFA goodness of fit measures and that the overwhelming majority of AVEs exceed 0.5 (indicating that items explain more of the construct than have measurement error) then construct validity has been broadly demonstrated. The majority of alpha coefficients exceed 0.7 indicating good levels of reliability. Market turbulence is the only construct for which the AVE and alpha coefficients are less than acceptable standards. Tests for discriminant validity indicate two instances where the AVE is less than a corresponding square of the correlation, this occurs for LO and LP, and LO and career planning. Again, this suggests that the overwhelming majority of measures demonstrate good discriminant validity, that is, most constructs are sufficiently different once measurement error is recognised.

The inadmissibility results for TQM and discriminant validity tests point to some difficulties when identifying drivers for turnover and retention. In particular only one of the three high performance work systems constructs (LO, LP and TQM) could be usefully employed in the models. When any two constructs were included the significant degree of multicollinearity resulted in both variables being highly insignificant, while when one of the variables was employed strong significance was gained. In all cases, including learning orientation in the models in isolation clearly produced the best modelling results in terms of goodness of fit and theoretical consistency. To some extent this is expected given the employed definitions of TQM and LP (see the appendix) a strong correlation is to be expected. The importance of LO as a management practice is also consistent with the previous research of Smith et al. (2003) on enterprise training.

Results

In identifying the statistically significant drivers for turnover and skill retention both a general-to-specific and specific-to-general modelling approach was employed. That is, all potentially important drivers were included in the model and insignificant drivers reduced one-by-one until only variables which were significant (at the 10% level of significance) were retained. Then a simple model was estimated with one important driver and variables added until no further significant variables were identified. For our dataset, both modelling strategies resulted in the same final models, to this extent the modeling process has not impacted on the identified important drivers.

Table 2 About Here

The estimates for the employee turnover and skill retention models are presented in table 2. All models have acceptable SEM properties as identified by the RMSEA and CFI measures, the amount of variation in turnover explained varies from about 12% to 17%. There appears to be a large variation in the important drivers for the different skill categories. Only learning orientation and unionisation are important drivers for all employee turnover categories and as expected pursuing a learning orientation and having a higher level of unionisation leads to a decrease in turnover. For a one point increase along the (1- 7) scale for learning orientation the strength of the impact varies from a 2.2% turnover reduction for skilled trade workers to a 4.7% turnover reduction for elementary skilled workers. For an increase in unionisation by 1%, the strength of the impact varies from 0.09% turnover reduction for managers, etc., to 0.16% turnover reduction for elementary skilled workers. In addition, there are

other individual important drivers for the various skill categories which we outline below.

For managers, professionals and technicians, turnover increases if the use of teamwork increases, whilst turnover decreases if the organisation uses nationally recognised training, and there are more flexible working time arrangements. For managers, professionals and technicians, after accounting for the other factors, organisations which are in manufacturing and/or are privately owned have lower turnover and organisations in the services have a higher turnover rate.

For skilled trades workers, turnover increases for employees who do other jobs, while after accounting for the other factors, higher turnover is associated with organisations which are large and/or in the wholesale trade sector.

For intermediate skilled workers, turnover decreases for organisations that use nationally recognised training, for organisations which conduct appraisals frequently, for more flexible working time arrangements, and for organisations that use higher pay as their most important retention strategy. For intermediate skills, after accounting for the other factors, organisations which are in the manufacturing sector and/or are privately owned have a lower level of turnover.

For elementary skilled workers, turnover decreases for organisations using formal appraisals and for organisations using more attributes in recruitment. For elementary skills, after accounting for the other factors, organisations in the agriculture and mining sector have a higher turnover and not-for-profit and other

organisational structures have a lower turnover.

For the model of long-term skill retention the amount of variation explained is 48%. This is much higher than that for the employee turnover models as the dependent variable is a multi-item perception based measure. An increase in retaining skills is estimated to occur with increases in learning orientation, more attributes used in recruitment, and when appraisals result in the evaluation of training needs. A decrease in skill retention is estimated to occur when more attributes are covered in training for skill objectives, when organisations are in the growth phase of the life cycle and when technological turbulence is greater. After accounting for the other factors, higher retention occurs for organisations in the retail trade and/or who are medium sized.

Discussion and Conclusion

This research bears out the importance of high performance work systems practices in reducing employee turnover noted in previous studies (Huselid, 1995; Batt, 2002; Mackey and Boxall, 2007). However, not all high performance work systems appear to have the same positive effect. Of the high performance work systems measured in this study, learning orientation emerged as the most consistent driver of both employee turnover and skill retention. Neither TQM nor lean production appeared to have an additional significant independent influence on turnover or long-term skills retention. It appears that the elements of the learning organisation (the pursuit of a commitment to learning, shared vision and open mindedness) are critical for ensuring both a short-term reduction in turnover and a long-term increase in employee skill

retention. Elements of learning orientation have previously been found to be turnover drivers, for example, information sharing is a feature of high performance work systems (Huselid, 1995; Guthrie, 2001). Thus it appears that employees are more likely to stay with an organisation that fosters a climate of learning. People stay in organisations if they feel they are learning and progressing in their careers and organisations need to provide opportunities for this employee development. Organisations which recognise the importance of learning to the organisation's competitive advantage and survival foster a culture of learning amongst its workers which in turn places people at centre of the organisation, confirming Guthrie's interpretation of the effect of high performance work systems.

However, despite the emphasis on learning, learning orientation does not necessarily coincide with a greater level of formal training in an organisation. We found that training practices had only a limited impact on turnover and long-term retention. Of all the training practices examined in the study, only nationally recognised (accredited) training appeared to have an impact on turnover and this was confined to the skills categories of managers, professionals and technicians and intermediate skilled workers. This is consistent with the fact that NRT qualifications are job specific and hence enhance the skills of employees in their current positions which in turn promotes retention. NRT also represents an exchange relationship with the organisation in that employees receive a certificate which has recognition in the labour market while the employer gains new skills capacity. However, NRT does not have a long term retention impact. The only important training measure for long term skills retention is training for skill objectives. This suggests that when organisations are not confident of their long-term access to skills to meet their objectives, they will

invest in training which extends and improves the skills of existing workers and allows them to be moved to different jobs in the organisation where managers feel there is a lack of skills cover.

The final management philosophy included in our measurements of high performance work systems was teamwork – divided into the extent of teamworking and the autonomy which teams enjoyed. However, teamworking appeared to have very little impact on either employee turnover or long-term skills retention. Interestingly, if the percentage of employees in formally designed teams in the entire organisation increases then the turnover of managers, professionals and technicians in those organisations also increases. This may suggest that managers, professionals and technicians in general are not committed to teams. In particular, this could reflect the notion that above-average performers prefer not to work in teams as the rewards are spread across teams, rather than returning directly to the individual (Milkovich and Newman, 2005:273.) Our finding is contrary to the general expectation and empirical finding of previous studies that the increased use of high performance work systems (which typically is defined to involve the use of teams) reduces turnover. It is difficult to rationalise our finding with previous turnover studies. It may be the case that the bundled measures employed in previous studies for high performance work systems over emphasised any individual importance of team work for reducing turnover and that the other elements of the employed measures (especially relating to information sharing and human resource practices) drove the relationship. In our case, teamwork in general has very little influence. The extent of teamwork is important for only one of the four skill categories and the other teamwork related measure of teamwork autonomy had no significant impact.

The study also confirmed the often-quoted role of unionisation in reducing turnover. The impact of unionisation is important for turnover for all four skill categories but not for long-term retention. The strongest impact of unionisation occurs for elementary skilled workers and the weakest impact for managers, professionals and technicians. Australian unionisation statistics (ABS, 2004) suggest that the highest levels of unionisation occur for intermediate production and transport workers, skilled trades and professionals, and the lowest levels with managers and administrators. This implies that the strongest impact of unionisation on turnover does not occur where the degree of unionisation is the highest. Thus in general, it appears that by offering a communication channel between workers and employers and by improving work conditions the greater coverage of unionisation reduces short-term turnover. However, these arguments appear to have no impact in improving retention rates consistent with the long-term strategic goals of an organisation. In other words, unions may have positive short term effects but are not particularly important in the long-term for employee retention.

Of the large number of human resource management practices tested in this study, only relatively few appeared to have an impact on turnover or skills retention. Moreover there is no obvious consistency in the impact of human resource practices. Most of the practices that had an effect, impacted only on one group of workers – none had any universal explanatory power. Having more flexible working time arrangements reduced turnover for managers, professionals and technicians, and intermediate skilled workers. Having employees do other jobs apparently increases the turnover of skilled trade workers, perhaps by increasing their attractiveness in the

labour market. Frequently performing appraisal reduces turnover for intermediate skilled workers, while just performing appraisals reduces turnover of elementary skilled workers. Using attributes for recruitment reduces turnover for elementary skilled workers, while following higher pay retention strategies successfully works only for intermediate skilled workers.

Unlike previous studies employee compensation proved to be largely unimportant. The direct compensation measure had no impact and only for intermediate skills did the retention strategy of higher pay have an impact on reducing turnover. To some extent our finding of the relative unimportance of compensation is not totally inconsistent with the employee survey studies of turnover. Even though the comparison to alternatives was found to be one of the best predictors of turnover (Griffeth, Hom and Gaertner, 2000) the direct role of pay was modest with some studies finding no relation between pay and turnover. This result tends to contradict the predictions of the efficient wage hypothesis that increases in pay will reduce turnover and undermine the argument that it is the ability of unions to bargain for higher pay that explains the negative impact of unionisation on turnover (Delery et al, 2000). Taken with the strong impact of unionisation on turnover found in our study, the low impact of pay on turnover suggest that it is the role of unions in providing a voice for employees that explains the role of unionisation in reducing turnover. Improvements in long-term retention occur when attributes are used for recruitment and when appraisal results in the evaluating of training. None of these findings are unexpected, but the inconsistency of the results for human resource management practices highlights the need to be focussed in implementing these policies for specific skill groups and short-term versus long-term outcomes.

In addition to these factors, for long-term skill retention being in the growth stage of the organisational life cycle and experiencing a high degree of technological turbulence reduces skills retention. Falling retention in the growth phase is similar to Martin's (2003) finding of expanding markets and the notion that where demand is strong and profits high, employees are willing to 'shop around' to take advantage of exciting and dynamic work opportunities and that rival employers are willing to offer these attractive work environments. This argument also applies to our finding of falling long-term retention when technological turbulence is high, that is, when technological changes are major and big opportunities exist in the sector then it is harder to retain employees who are willing to accept and take advantage of new and exciting opportunities.

In conclusion, our study has provided some new insights into the factors driving employee turnover and skill retention. The role of learning within organisations has been shown to be of fundamental importance in making employees stay in organisations both in the short and long term. This contrasts with the more general previous finding that high performance work systems are an important driver of lower turnover. High performance work systems based on quality assurance (TQM) or on lean production do not appear to have any additional impact on short and long term employee retention. The study confirmed the degree of unionisation as an important driver of turnover although it has no impact on long-term skill retention. The lack of importance of pay suggests that the role of unionisation is through the provision of a channel for employee voice. A series of training and human resources practices were also found to be important for individual specific skill categories but

no universal impact was found for any human resource management or training practices. The most important human resource management practice in reducing turnover was the use of flexible working time arrangements and the most important training practice was the use of nationally recognised training. But these practices only impacted on managerial, professional and technician workers and on intermediate skilled workers. Neither was important for long-term skills retention. An important finding of our study is that different drivers of retention may be at play when retention is considered from a long-term strategic perspective. In particular, using appraisal results to evaluate training needs is a unique long-run positive driver, while training for broad skills, being in the growth phase of the organisational cycle and experiencing high degrees of technological turbulence are unique negative drivers of long-term retention.

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Appendix Variable Measurement and Definitions

Dependent Variables

Employee turnover: Percentage annual average based on past three years, measured for the four skill categories.

Skill retention, alignment with long-term goals: The extent to which an organisation has continuous access to the employee skills it believes it requires to achieve its long-term goals. Proposed items were (those retained are denoted by *):

- Our organisation has no difficulties in accessing appropriate skills.
- The range of skills we retain suits our long-term objectives.*
- The available skill set in our organisation is sufficient to achieve our long-term objectives.*
- The skills we have are inadequate for our purpose.
- Our performance is not compromised by a lack of skills.
- We have no problems in keeping the skills we need.
- Rarely do we lose employees whose skills we value.
- Our available skill set will permit us to achieve our long-term objectives.*
- Our organisational goals will not be achieved with our existing skill base.
- Retaining skills is not seen as a problem in our organisation.
- We lose skilled employees more than the industry average.
- We do better at retaining skilled employees than other organisations in this region.
- Our organisation is losing skilled people faster than many other organisations.
- Our long term objectives are not compromised by poor access to skills.
- We have easy access to the skills we need.
- Our available skill set is always inadequate
- Our organisation is constrained by our inability to retain skills
- We have continuous access to all the skills we need.*
- Our organisation is losing skills more quickly than other organisations.
- Our organisation develops a skill capacity for the long-term rather than immediate use.

Independent Variables

Human resource management practices

Recruitment, internal focus: Vacancies filled by only using or giving preference to internal applicants. Source: WERS5

Recruitment, attribute based: Counts over four attributes used for recruiting: skills; qualifications; experience; motivation. Source: WERS5

Personality or attitude test used for recruitment: Any type of personality and/or attitude test when filling vacancies. Source: WERS5

Flexible working time arrangements: Counts over six arrangements: work from home; reduce hours; increase hours; job share; flexitime; change shifts; compressed hours. Source: WERS5

Reduced working hours for at least some employees: All or some employees have

the option of reduced working hours. Source: WERS5

Flexitime for at least some employees: All or some employees have the option of flexitime. Source: WERS5

Family friendly working arrangements: Counts over five arrangements: school term-time only; workplace linked nursery; help with child care; help with older adult care; leave for carers of older adults. Source: WERS5

Career planning: The clarity and usage of a career planning system. Source: Singh (2004). Retained items were:

- Individuals in this organisation have clear career paths.
- Employees in our organisation have more than one potential position for promotion.
- Our organisation plans for the career development of employees.

Compensation: The extent to which compensation is linked to performance. Source: Singh (2004). Retained items were:

- The compensation for all employees is directly linked to performance.
- Job performance is an important factor in determining the incentive compensation of employees.
- In our organisation, compensation is decided on the basis of the ability of the employee.

Job design: The extent to which employees have discretion over, can control the pace of and are involved in decisions about their work. Source: WERS5

Employees do jobs other than their own at least once a week: Percentage of employees who actually do other jobs. Source: WERS5

Formal survey of employees: Organisation or third party conducted a survey during the past two years. Source: WERS5

Formal survey results communicated in writing: Results of survey made available in writing to those who took part. Source: WERS5

Appraisal frequency, half yearly or less: Formal appraisals counted very half year or more frequently. Source: WERS5

Formal appraisal, non-managerial employees: Percentage of non-managerial employees appraised. Source: WERS5

Appraisal results in evaluation of training needs: Does appraisal result in an evaluation of training needs? Source: WERS5

Appraisal linked to pay: Is pay linked to the outcome of performance appraisal? Source: WERS5

Retention strategies: Top ranked strategy directly employed to retain skilled employees.

High performance work systems practices

Learning orientation: Learning orientation refers to organisation-wide activities of creating and using knowledge to enhance competitive advantage. It consists of three sub-constructs: commitment to learning, open-mindedness, and shared vision. Source: Sinkula, Baker and Noordewier (1997). Retained items were:

Commitment to Learning

- Managers basically agree that our organisation's ability to learn is the key to our competitive advantage.
- Learning in my organisation is seen as a key commodity necessary to guarantee organisational survival
- The sense around this organisation is that employee learning is an investment,

not an expense.

- The basic values of this organisation include learning as a key improvement.

Shared Vision

- There is a commonality of purpose in my organisation.
- There is total agreement on our organisational vision across all levels, functions, and divisions.
- Employees view themselves as partners in charting the direction of the organisation.
- All employees are committed to the goals of this organisation.

Open Mindedness

- Employees in this organisation realise that the way they perceive the marketplace must be continually questioned.
- We reflect critically on the shared assumptions we have made about our customers.

Total Quality Management: TQM is the management philosophy that seeks continuous improvement in the quality of performance of all processes, products and services of an organisation. Source: Snell and Dean (1992) and Flynn, Sakakibara and Schroeder (1996). Retained items were:

- Everyone in this organisation understands their role in quality.
- Continuous improvement is a key element in our approach to quality.
- Senior managers display visible and effective leadership on quality in this organisation.
- We emphasise prevention rather than inspection in our approach to quality.

Lean production: LP combines the features of TQM and teamwork into a system of work organisation that allows enterprises to run their operations with a minimum of resources. Source: Youndt, Snell, Dean, and Lepak (1996). Retained items were:

- Information on productivity is readily available to employees.
- Information on quality performance is readily available to employees.
- All major department heads within our organisation accept their responsibility for quality.
- Our suppliers are actively involved in our new product development process.
- Quality is our number one criterion in selecting suppliers.
- Managers provide personal leadership for quality products and quality improvement.

Teamwork autonomy: Counts over five attributes of team autonomy and flexibility. Source: WERS5

Teamwork employed: Percentage of employees in formally designed teams. Source: WERS5

Training Practices

Training for skill objectives: Counts over four training skill objectives: skills needed to move to different jobs; quality standard; extend skills; improve skills. Source: WERS5

Training for specific soft skills: Counts over training for six soft skills: team working, communication, leadership, customer/service liaison; problem-solving; deadlines. Source: WERS5

Training for specific hard skills: Counts over training for four hard skills:

computing; operation of new equipment; health and safety; quality control. Source: WERS5

Induction activities: Hours for a new employee. Source: WERS5

Experienced workers given time off for training: Percentage of workers given time off normal duties to undertake training over past 12 months. Source: WERS5

Experienced workers, days of training: Number of days of training for experience workers over past 12 months. Source: WERS5

Formally trained to do other jobs: Percentage formally trained to do jobs other than their own. Source: WERS5

Employees have received nationally recognised training: Percentage of employees who have received recognised training based on training package qualifications.

Organisational/Market Characteristics

Unionisation: Percentage of employees unionised in different skills categories.

Market turbulence: The extent to which the composition and preferences of an organisation's customers tended to change over time Source: Jaworski and Kohli (1993). Retained items were:

- In our kind of business, customers' product preferences change quite a bit over time.
- Our customers tend to look for new products and services all the time.

Competitive intensity: Measures the behaviour, resources, and ability of competitors to differentiate. Source: Jaworski and Kohli (1993). Retained items were:

- Competition in our industry is cut-throat.
- Price competition is the hallmark of our industry.

Technological turbulence: The extent to which technology in an industry was in a state of flux. Source: Jaworski and Kohli (1993). Retained items were:

- The technology in our industry is changing rapidly.
- A large number of new product ideas have been made possible through technological breakthroughs in our industry.
- Technological changes provide big opportunities in our industry.
- Technological developments in our industry are rather minor. (reverse coded)

Growth stage in life cycle: Identified growth as stage of organisational life cycle from the options: start-up, growth, maturity and decline.

Organisational innovativeness: The innovation of the organisation from both the market and strategy perspectives. Source: Deshpande, Farley and Webster (1993). Retained items were:

- In a new product and service introduction, how often is your organisation first to market with new products or services.
- In a new product and service introduction, how often is your organisation at the cutting edge of technological innovation.

Other organisational characteristics (measured using binary dummies): industry type, organisational ownership type and employee size.

Table 1
Correlations: Multi-Item Latent Constructs

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
(1) Learning Orientation	1									
(2) Lean Production	0.923	1								
(3) Retention	0.639	0.626	1							
(4) Career Planing	0.742	0.608	0.416	1						
(5) Job Design	0.523	0.330	0.369	0.401	1					
(6) Market Turbulence	0.132	0.238	0.042	0.083	0.177	1				
(7) Technological Turbulence	0.322	0.202	0.071	0.302	0.274	0.476	1			
(8) Competitive Intensity	0.058	0.201	-0.041	0.006	-0.017	0.638	0.109	1		
(9) Organisational Innovativeness	0.438	0.384	0.285	0.297	0.211	0.304	0.576	-0.061	1	
(10) Compensation	0.569	0.436	0.295	0.624	0.338	0.173	0.193	0.189	0.216	1
<i>AVE</i>	0.598	0.434	0.562	0.516	0.573	0.483	0.555	0.614	0.589	0.562
<i>Alpha</i>	0.909	0.834	0.846	0.738	0.804	0.594	0.836	0.761	0.701	0.791

AVE: average variance extracted. Alpha is Cronbach's reliability alpha coefficient.

Table 2
Employee Turnover and Skill Retention Models

Variable	Managers, Professionals, Technicians Turnover	Skilled Trades Turnover	Intermediate Skills Turnover	Elementary Skills Turnover	Long- Term Skill Retention
	Coeff (t-value)	Coeff (t-value)	Coeff (t-value)	Coeff (t-value)	Coeff (t-value)
High performance work systems practices					
Learning orientation	-2.321** (-2.05)	-2.217* (-1.71)	-3.052** (-2.34)	-4.733*** (-2.64)	0.753*** (7.97)
Teamwork employed	0.080*** (2.98)				
Training Practices					
Employees have received nationally recognised training	-0.081** (-2.30)		-0.105** (-2.55)		
Training for skill objectives					-0.141*** (-2.60)
Human resource management practices					
Employees do jobs other than their own at least once a week		0.175*** (2.91)			
Flexible working time arrangements	-1.342*** (-2.61)		-1.035* (-1.83)		
Appraisal frequency: half yearly or less			-6.135*** (-2.58)		
Appraisal results in evaluation of training needs					0.292* (1.93)
Formal appraisal: non-managerial employees				-0.081** (-2.04)	
Recruitment: attribute based				-3.203** (-2.02)	0.111* (1.94)
Retention strategy top rank: higher pay			-4.512* (-1.77)		
Organisational/Market Characteristics					
Unionisation	-0.090** (-1.97)	-0.122** (-2.54)	-0.141*** (-2.75)	-0.157** (-2.50)	
Growth stage in life cycle					-0.327*** (-3.04)
Technological turbulence					-0.149*** (-3.10)
Organisation/Industry Dummies					
Industry Dummy (Manufacturing)	-4.121* (-1.78)		-6.837*** (-2.69)		
Industry Dummy (Services)	4.427* (1.95)				
Industry Dummy (Wholesale Trade)		7.488* (1.87)			
Industry Dummy (Retail Trade)					0.427** (2.05)
Industry Dummy (Agr & Mining)				14.743*** (2.84)	
Employee Size Dummy (large over 199)		5.255** (2.09)			
Employee Size Dummy (medium 20-199)					0.216** (2.09)
Organisation Ownership (Privately owned)	-5.038** (-2.32)		-6.416** (-2.51)		
Organisation Ownership (NFP, others)				-8.973* (-1.95)	
N	307	197	298	222	328
R²	0.149	0.117	0.167	0.170	0.477
RMSEA	0.051	0.063	0.053	0.063	0.049
CFI	0.958	0.949	0.956	0.943	0.945

***, ** and * denote statistical significance at the 1%, 5% and 10% levels respectively.

Table A1
Sample Mean Statistics for Observed and Latent Measures

Annual Turnover (%) Managers, Professionals, Technicians	13.5 (17.0)	Recruitment: Internal Focus (scale 0-1 or proportion)	0.519 (0.50)
Annual Turnover (%) Skilled Trade Workers	12.7 (17.7)	Recruitment: Attribute Based (scale 0-4)	3.10 (0.93)
Annual Turnover (%) Intermediate Skills	17.0 (19.2)	Personality or attitude test for recruitment (scale 0-1 or proportion)	0.376 (0.49)
Annual Turnover (%) Elementary Skills	21.9 (24.4)	Flexible Working Time Arrangements (scale 0-6)	3.09 (2.00)
Skill Retention (scale 1-7)	4.63 (1.17)	Reduced Working Hours: some employees (scale 0-1 or proportion)	0.748 (0.44)
Learning Orientation (scale 1-7)	4.70 (1.10)	Flexitime: at least some employees (scale 0-1 or proportion)	0.533 (0.50)
Total Quality Management (scale 1-7)	5.09 (1.14)	Family Friendly Working Arrangements (scale 0-5)	0.41 (0.73)
Lean Production (scale 1-7)	4.59 (1.18)	Career Planning (scale 1-7)	4.30 (1.27)
Teamwork Employed (%)	63.1 (36.7)	Compensation (scale 1-7)	4.78 (1.40)
Teamwork Autonomy (scale 0-5)	2.87 (1.04)	Job Design (scale 1-7)	4.30 (1.20)
Training for Skill Objectives (scale 0 to 4)	2.68 (1.01)	Employees do jobs other than their own at least once a week (% of employees)	17.9 (21.4)
Training for Specific Soft Skills (scale 0 to 6)	2.48 (1.85)	Formal Survey of Employees (scale 0-1 or proportion)	0.486 (0.50)
Training for Specific Hard Skills (scale 0 to 4)	1.64 (0.95)	Formal Survey Results Communicated in Writing (scale 0-1 or proportion)	0.749 (0.44)
Induction Activities (hours)	22.3 (48.8)	Appraisal Frequency: half yearly or less (scale 0-1 or proportion)	0.294 (0.46)
Experienced Workers: Given time off for Training (% of employees)	43.7 (33.3)	Formal Appraisal: Non-managerial Employees (% of employees)	67.3 (39.6)
Experienced Workers: Days of Training (days)	16.6 (39.8)	Appraisal results in evaluation of training needs (scale 0-1 or proportion)	0.852 (0.36)
Formally trained to do other jobs (% of employees)	25.6 (26.3)	Appraisal Linked to Pay (scale 0-1 or proportion)	0.579 (0.49)
Employees have received nationally recognised training (% of employees)	29.4 (28.2)	Retention Strategy: Higher Pay (proportion 1 st ranked)	0.321 (0.47)
Growth Stage in Life Cycle (scale 0-1 or proportion)	0.486 (0.50)	Retention Strategy : Engendering a 'Happier' Workplace (proportion 1 st ranked)	0.236 (0.43)
Market Turbulence (scale 1-7)	4.09 (1.45)	Retention Strategy: Improved Working Conditions (proportion 1 st ranked)	0.166 (0.37)
Competitive Intensity (scale 1-7)	4.77 (1.68)	Retention Strategy: Better Career Progression (proportion 1 st ranked)	0.152 (0.36)
Technological Turbulence (scale 1-7)	4.49 (1.44)	Retention Strategy: Other Non-Monetary Benefits (proportion 1 st ranked)	0.051 (0.22)
Organisational Innovativeness (scale 1-7)	4.23 (1.46)	Retention Strategy : Improved Fringe Benefits (proportion 1 st ranked)	0.022 (0.15)
Unionisation (% of employees)	15.6 (24.2)		

Standard deviations provided in parentheses