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# How do workers benefit from skill utilisation and how can these benefits be enhanced?

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## Abstract

This article uses national-level data to examine the benefits for workers of better skill utilisation and the question of how opportunities to use skills in the workplace can be enhanced. Analysis of the New Zealand data in the 2005 and 2015 rounds of the International Social Survey Programme confirms that better skill utilisation is generally associated with a broad range of beneficial outcomes, including higher employee income, better opportunities for career advancement, higher job satisfaction, greater organisational commitment and lower turnover intentions. In addition, skill utilisation serves as a significant mediator between work autonomy and employee outcomes, particularly in the 2015 survey. As a general rule, better utilisation of employee skills will occur in organisational climates in which employee autonomy is encouraged.

## Keywords

Employee well-being, high-involvement working, skill utilisation, work autonomy

## Introduction

We live in an era in which employers regularly complain that their businesses are constrained by skill shortages (e.g. European Centre for the Development of Vocational Training (Cedefop), 2015; Hall and Lansbury, 2006). They often report being unable to recruit or develop a workforce with the skills or attributes they seek (Green et al., 1998). When attempts to attract workers by raising wages, or other- wise enhancing employment conditions, end in a failure to recruit, employers need to adjust their employment strategies in some kind of way (Healy et al., 2015). For their part, employees frequently voice a different kind of concern about skills, often telling researchers that the jobs they hold *underutilise* the skills they possess. For example, in the British Workplace Employment Relations Survey (WERS) 2011, 19% reported that their skills were 'much higher' and 33% 'a bit higher' than those needed in their present job (Sutherland, 2013: 82). In Australia, using data from the Household, Income and Labour Dynamics in Australia (*HILDA*) survey, Mavromaras et al. (2007) found that 11.5% of full-time employees rated themselves as severely over-skilled and 30.6% moderately over-skilled.

The need for better utilisation of workers' skills is increasingly highlighted in the public policy debate around skills. Although governments in developed countries have long recognised the importance of skills in enhancing economic performance, this depends not only on skill development through education, training and experi- ence, but on the extent to which skills are actually utilised in work (Buchanan et al., 2010; Payne, 2012). Work processes that rely on generating greater efficiencies through standardisation or routinisation frequently foster a de-skilling dynamic and waste employee potential (e.g. Boxall and Winterton, 2018; Keep, 2013). More analysts are now arguing that government policy interventions need to shift from an obsession with skill supply to addressing issues of skill demand (e.g. Findlay and Warhurst, 2012; Keep et al., 2006; Warhurst and Findlay, 2012). Indeed, in Scotland, this point has been taken on board in *Skills for Scotland – A Lifelong Skills Strategy*, a report that emphasises both skill formation and skill utilisation (Scottish Government, 2007).

It is quite possible, of course, for both employers and employees to have legit- imate complaints in relation to skills. Mismatches are commonplace in labour markets. The challenge, as the New Zealand Productivity Commission (NZPC, 2016: 81) notes, is to improve the quality of matching in the labour market:

The fact that employers report they struggle to find workers with the skills they need, and a substantial number of workers are employed in jobs that are a poor match for their qualifications or skills, suggests there is significant scope to improve matching in the New Zealand labour market.

The focus in this article is on the worker side of the matching process. We are concerned with the benefits that stem from greater use of workers' skills, or that are reduced by skill underutilisation, and with the factors that promote skill utilisation. Using a national workforce sample, we aim to measure the gains to workers from better skill utilisation and to identify how opportunities to use skills can be increased. The article makes use of the International Social Survey Programme (ISSP), which has been running since the 1980s and in which New Zealand participates. The ISSP is the world's largest cross-country survey of individual attitudes. It covers a range of topics on a regular basis, including 'work orienta- tions' (work experiences and attitudes), which are discussed in this article. Based on the 2005 and 2015 surveys, this is the first time these data have been used to investigate skill utilisation in New Zealand. The article is conventionally organised. After an outline of the literature on skill utilisation, in which we develop our hypotheses, we describe our data and methods, report our analyses, discuss our findings and offer our conclusions.

## Skill utilisation: Contributing factors and impacts on workers

Skill utilisation can be defined as 'the degree of match or congruence between an individual's skills and the level of skill required by his or her job' (O'Brien, 1983: 462). Labour markets and careers are dynamic, and some degree of mismatch between what workers can provide and what employers seek is to be expected (e.g. NZPC, 2016). Employers may deliberately recruit workers with skills above those needed for current vacancies for a variety of reasons. Sutherland (2013: 78) argues that decision-making processes in employee recruitment are likely to pro- duce a degree of over-skilling because employers may prefer 'to engage the more highly skilled . . . irrespective of the skill requirements of the jobs the new recruits do'. The entry-level roles assigned to new recruits may not be commensurate with their skills, but may involve them in a process of

learning about the organisation and its culture. Those who show better potential are then more likely to be pro- moted to jobs that more fully utilise their skills (Kalleberg, 2008). Employers may use higher qualifications as a 'signalling device' (Crouch et al., 1999: 6) to select applicants likely to have a greater capacity to learn on the job. Some employers may be anticipating future skills needs, especially in a context of radical techno- logical change (Autor et al., 2003; Bresnahan et al., 2002).

The strategies of employers in changing labour markets can also be expected to create mismatches. Employers have been known to engage in 'skill hoarding' behaviours, particularly when total demand for labour falls, first because more highly skilled workers can also be deployed to less skilled work, but also because the differential cost of re-hiring the more highly skilled encourages the discharge of the less skilled (Biddle, 2014). In some cases, employers may take advantage of 'slack' labour markets, recruiting skilled workers to offset potential skill shortages or recruitment difficulties under improved economic conditions when labour mar- kets become tighter (McKendrick, 1975). Such behaviour by employers was high- lighted in the UK with respect to migrant workers even before the influx of the last decade, where refugees with high-level qualifications were working in jobs not commensurate with their skills and qualifications (Bloch, 2007).

While employers' labour market strategies are undoubtedly implicated in the incidence of skill underutilisation, they offer a limited explanation. An important, long-term causal factor lies in labour processes or in the ways in which skill under- utilisation is connected to work organisation and the design of jobs in firms.

Research on how work practices affect skill utilisation and employee well-being goes back to a landmark study in the US automobile industry, in which Kornhauser (1965) found that the extent to which workers could use their abilities on the job was the strongest predictor of their positive mental health. This study lay largely ignored for some time. However, in a series of studies of workers in South Australia, O'Brien (1982a, 1982b, 1983) built on Kornhauser's (1965) base, finding that skill utilisation was the variable most

strongly associated with job satisfaction. O'Brien's work was seminal. He made an important distinction between skill util- isation and the concept of skill variety contained in Hackman and Oldham's (1980) 'job characteristics' theory, demonstrating that it is the *deployment* of skills 'pos- sessed and valued by the employee' that is critical for higher levels of job satisfac- tion (O'Brien, 1983: 467). An individual may use a variety of skills but still be unsatisfied because they are not able to exercise their preferred skills. In saying this, it is important to bear in mind the degree of porosity of the working day so far as skill use is concerned. From the worker perspective, a key issue is the proportion of time at work that they can use their full complement of skills. Even if a highly skilled worker is needed for key tasks, they may be dissatisfied because they are performing these tasks only rarely.

In terms of the consequences for workers, those who stay, or get stuck, in a job that underutilises their skills are likely to suffer an income disadvantage. Quintini (2011) provides a theoretical explanation for this, arguing that better use of skills improves worker productivity, which subsequently leads to higher wages. Similarly, Allen and Van der Velden (2001) argue that those undertaking a job below their skill level experience a ceiling on their productivity and thus receive lower wages. In their extensive analysis of a range of British surveys, including the Social Change and Economic Life Initiative, Employment in Britain, the Skills Survey and the International Adult Literacy Survey, Green et al. (2002) found evidence of such an effect. Their results indicate that 'over-skilling, like over-education, carries a palp- able wage penalty: if someone with top-level skills moves from, say, a job utilizing top-level skills to a job utilizing skills just one level down, the annual wage loss is more than £1700' (p. 807). Similarly, Mavromaras et al. (2010), in their study of the *HILDA* survey and the 2004 British WERS, found that over-skilling was signifi- cantly related to wage penalties in both countries. Putting the point positively leads to our first hypothesis:

H1: Skill utilisation is positively related to the level of employee wages.

Skill utilisation is also likely to have impacts on career advancement. The logic here, again, is that the fuller use of an individual's skills will enhance their prod- uctivity (Quintini, 2011). This should lead to better recognition of their value by management and enhance their chances of promotion.

Studies on this point are rare. In one of the few empirical analyses, Nabi (2003) examined whether under- employed or underutilised individuals are likely to experience fewer intrinsic and extrinsic career rewards. In a survey of 203 British individuals who had recently completed an undergraduate business degree, he compared skill-underutilised graduates with those whose skills were appropriately matched to their current jobs, finding that those whose skills were underutilised reported lower career sat- isfaction, along with lower earnings, 3–4 years after graduation. The argument is also supported by Skills Australia's (2012) interview-based study of managerial and non-managerial employees from 11 Australian companies, which found that the pathway to advancing to positions that are more senior was widely cited as a primary benefit of better use of skills at work. We therefore anticipate that:

H2: Skill utilisation is positively related to employee opportunities for career advancement.

Given its value to individuals and society, what sort of factors could foster higher levels of skill utilisation? A key argument in a range of work-reform traditions is that jobs offering greater employee autonomy or scope for discretion enable better use of an employee's skills (Gallie, 2007). Better skill matching should occur where there is a higher incidence of worker empowerment or 'high-involvement working' in which workers can influence decisions about work practices and conditions (Boxall and Winterton, 2018; Felstead et al., 2019). The notion of 'responsible autonomy', often mis-attributed to Friedman (1977), originated, as Friedman acknowledged, with researchers at the Tavistock Institute in the 1950s and 1960s who emphasised the concept in studies of British coal mining (Trist and Bamforth, 1951; Trist et al., 1963). In terms of specific theoretical models, autonomy is central to Karasek and Theorell's (1990) theory of job strain, which predicts that 'active jobs', in which employees experience high demands but have a high level of control, provide the conditions that foster learning and a better ability to cope with stress. Autonomy is also fundamental to the German action theory of work psychology, which argues that greater control helps people to develop their skills and assists the general growth of the human personality (Frese and Zapf, 1994; Hacker, 2003). The learning-related predictions of these

theories have not frequently been tested, but have been confirmed in two longitudinal studies in call centres (Bond and Flaxman, 2006; Holman and Wall, 2002).

The importance of job autonomy for employee outcomes is also argued in the 'job characteristics' model (Hackman and Oldham, 1976), which proposes a motivation- based mechanism to explain this relationship. According to the model, work auton- omy can foster one or more of three critical psychological states (experienced mean- ingfulness of the work, experienced responsibility for outcomes of the work and knowledge of the results of the work activities), which engender work motivation and, ultimately, positive employee outcomes such as job satisfaction (Hackman and Oldham, 1980). However, Wall and Jackson (1995) and Parker (2014) argue that a motivational explanation is inadequate for a comprehensive understanding of the relationships between work autonomy and employee outcomes. Consistent with this view, Morrison et al. (2005) posit that in addition to its positive effect on motivation, work autonomy leads to greater opportunities for employees to deploy their knowledge and skills, which in turn generates positive consequences for them. This argument is supported in their surveys of 284 employees from two Australian com- panies, which identify skill utilisation as a significant mediator between job control and employee job satisfaction. We build on this study by examining a greater range of employee outcome variables, proposing a skill-based mechanism to account for the associations between work autonomy on the one hand, and job satisfaction, organisational commitment and turnover intentions on the other.

Two theoretical explanations can be provided to understand the mediating role of skill utilisation in the nexus between work autonomy and employee reactions/ outcomes. One is that having opportunities to apply one's knowledge and skills at work are antecedents of self-efficacy, competence and self-worth (Bandura, 1997; Warr, 1987). The fulfilment of these psychological needs in turn leads to positive attitudinal outcomes (Eatough and Spector, 2014), including job satisfaction, organisational commitment and intention to stay. The other reason accounting for a skill-utilisation-based mediation mechanism is that the development of skills and knowledge may imply that employees have the cognitive and behavioural abilities necessary to deal with job demands. This should

decrease their levels of job-related pressure and strain (Wall and Jackson, 1995).

Empirical studies have found support for these theoretical arguments. For example, Van den Broeck et al. (2015) conducted an intra-individual study among 99 service workers in Belgium and found that workers experiencing greater skill utilisation on a daily basis reported higher levels of work engagement, a con- struct that shares a high level of conceptual similarity with organisational commit- ment (Schaufeli and Bakker, 2010). Similarly, surveying 285 employees from a New Zealand company providing distribution services, Boxall et al. (2015) found that skill utilisation was significantly predictive of job satisfaction. In a survey of 2460 Dutch employees, Allen and Van der Velden (2001) found that employees who feel their skills are underutilised are more motivated to look for another job. Given the evidence that work autonomy is positively related to skill utilisation, which is subsequently associated with organisational commitment, job satisfaction and turnover intentions, we propose the following multi-part hypothesis:

H3: Skill utilisation mediates the relationships between work autonomy and (a) organisa- tional commitment, (b) job satisfaction and (c) turnover intention. That is, employees who perceive higher levels of work autonomy report better use of their skills, which leads on to higher organisational commitment and job satisfaction and lower turnover intentions.

## Data and method

### Sample

The data for the current study were derived from the 2005 and 2015 versions of the Social Attitudes Survey in New Zealand. Using the data from both years enables a stronger test of our hypotheses. If the hypotheses are supported by both waves of data, we can have greater confidence in the reliability and generalisability of the findings. Being part of the International Social Survey Programme, the survey covers a range of topics such as job characteristics, social structure and the attitudes of people living in New Zealand. The present study is based on the subset of the survey data that relates to work orientations (i.e. work experiences and attitudes). This is the first time that the data from this survey programme have been used to investigate the importance of skill utilisation in the New

Zealand workforce. The survey does not include variables on employers' labour market strategies, but it does offer measures that relate to job characteristics and employee outcomes at work. The 2005 ISSP Social Attitudes Survey includes a total of 1309 respondents, of whom 768 work for pay and are not self-employed. Given that our focus is on the extent to which people can use their skills in paid employment, this subgroup of participants constitutes the effective sample size in the present study. Of those in the sample, 46.5% are male and their mean age is 41.92 years (SD ¼ 13.34). Respondents work on average 37.32 hours per week (SD ¼ 13.18). A total of 20% of participants work for the government (which mirrors the general popula- tion), 16% in publicly owned firms and 64% work for privately owned firms. The sample proportions in terms of gender and sectoral status are close to those in the employed population.[1]

The effective sample size of the 2015 ISSP Social Attitudes Survey includes 531 respondents who work for pay and are not self-employed. Some 47.4% of respond- ents are male and their mean age is 52.53 years (SD ¼ 13.70). Respondents work on average 36.08 hours per week (SD ¼ 14.06). A total of 33% of participants work in the public sector, 46% work for New Zealand-owned private companies and 13% for overseas-owned private companies. The remainder of respondents (8%) work for not-for-profit organisations. The sample proportions in terms of gender are close to those in the employed population, but public sector workers are over-represented and the average age of the survey respondents, while reflecting the ageing workforce, is above the median at this time.[2]

## Measures

Personal income was measured with a single question: 'Which category best describes your personal yearly income?' In the 2005 survey, responses were made on a 10-point scale from 1 ¼ '$10,000 or less' to 10 ¼ '$101,000 or more', while in the 2015 survey they were made on a 14-point scale ranging from 1 ¼ '$1–$5000' to 14 ¼ '$150,001 or more'. Opportunities for career advancement were measured using responses to the statement 'My opportunities for advancement are high' (rated from 1 ¼ strongly disagree to 5 ¼ strongly agree). Job satisfaction was measured by a single item: 'How satisfied are you in your job?' Responses were made on a 7-point Likert scale from 1 ¼ 'completely dissatisfied' to 7 ¼ 'completely satisfied'. Turnover inten- tion was gauged with the question 'All in all, how likely is it

that you will try to find a job with another firm or organisation within the next 12 months?'. The response format was a 4-point Likert scale from 1¼'very unlikely' to 4¼'very likely'.

Organisational commitment was measured using the simple average score of three items: 'I am willing to work harder than I have to, in order to help the firm I work for succeed', 'I am proud to be working for my firm' and 'I would turn down another job that offered quite a bit more pay in order to stay with this organisation', all scaled from 1¼'strongly disagree' to 5¼'strongly agree'. Exploratory factor analysis sup- ported the unidimensional structure of these three items from both datasets, and reliability analysis indicated an acceptable level of internal consistency (a¼.723 in the 2005 dataset and a¼.731 in the 2015 dataset).

Work autonomy was measured in both datasets with a single item: 'I can work independently.' Responses were made on a 5-point Likert scale, anchored from 1¼'strongly disagree' to 5¼'strongly agree'. This single-item measure is not as comprehensive as a multiple-item measure in terms of capturing the autonomy domain, but is the appropriate item in the survey and is used in Esser and Lindh's (2018) analysis to gauge work autonomy. The variable skill utilisation was measured with different questions in the two datasets. The statement 'In my job I can use my skills and experience' was employed to gauge skill utilisation in the 2015 data. Responses were made on a 5-point Likert scale from 1¼'strongly dis-agree' to 5¼'strongly agree'. This statement is unique to the 2015 survey in New Zealand, and no identical question exists in the 2005 survey. However, a very similar question, 'How much of your past work experience and/or job skills can you make use of in your present job?', was present in the 2005 dataset and was used as the measure of skill utilisation. Participants responded to the question on a 4- point Likert scale (1¼'almost none' to 4¼'almost all'). This response format is less desirable than the format in the 2015 survey because it only contains four scale points, making it difficult to achieve an interval level of scaling and normality (Leung, 2011). Our choices of questions for measuring skill use are similar to those of McGuinness and Wooden (2009) ('I use many of my skills and abilities in my current job') and Allen and Van der Velden (2001)

('My current job offers me sufficient scope to use my knowledge and skills').

In line with the literature, eight variables were included to control for workplace and individual characteristics that may affect the outcome variables (Mavromaras et al., 2009, 2010). These variables are age, gender, supervisory role, weekly working hours, union membership, highest educational attainment, occupations and employ- ment sector (three categories in the 2005 dataset: 'government', 'publicly owned firms' and 'privately owned firms'; and four categories in the 2015 dataset: 'public sector organisation', 'overseas-owned private sector company or firm', 'New Zealand-owned private sector company or firm' and 'non-profit/charity/welfare organisation').

### Statistical analysis

The R package for causal mediation analysis (Tingley et al., 2014) was used to perform the statistical tests. Data analysis involved two steps. The effect of skill utilisation on personal income and career advancement was examined first with both datasets. This was followed by testing the mediating role of skill utilisation in the relationships between work autonomy and (a) organisational commitment, (b) job satisfaction and (c) turnover intentions.

## Results

Table 1 reports the results of testing the effect of skill utilisation on personal income and career development opportunities based on the 2005 dataset. Skill utilisation is significantly and positively related to both yearly income (b¼.120, $p < .01$) and opportunities for career advancement (b¼.125, $p < .01$), confirming both Hypothesis 1 and Hypothesis 2 in the 2005 data. The model accounts for 65.8% of the variance in yearly income and 14.8% of the variance in opportunities for career development. A key observation here is that skill utilisation has these effects despite the inclusion of a wide range of controls, including for occupation. Regarding the control variables, age, gender and weekly

working hours are significantly predictive of income. As one might expect, older workers, men, and people working longer hours report higher incomes. We also see an education premium, as expected (Maani, 1999): university graduates earn more relative to those holding a qualification above the higher secondary level, while those with no formal education or simply above the lowest level earn less than the latter. In terms of occupational comparisons, professional workers earn significantly more than clerks, agricultural and fishery workers, technicians, service and sales workers, craft and related trades workers, machine operators and assemblers, and workers in elementary occupations. There is no significant difference between professionals

and legislators/managers in relation to income.

Fewer of these control variables, including occupation, play a role in predicting opportunities for career advancement. Having a supervisory role at work (b ¼ .090, $p < .05$) and working longer hours (b ¼ .086, $p < .05$) are associated with percep- tions of greater career opportunities, but age (b ¼- .276, $p < .01$) is negatively related to them and has the largest effect. Older workers, of course, are more likely to have reached a career plateau (e.g. Godshalk and Fender, 2015). Regarding occupational comparisons, legislators/managers perceive better chances for career advancement than professionals (b ¼ .087, $p < .10$) whereas service and sales workers perceive lower opportunities (b ¼- .079, $p < .10$). Employees working for publicly owned firms report greater opportunities for career progression than those in privately owned firms (b ¼ .073, $p < .10$).

Table 2 reports the results from the 2015 data, showing once again that skill utilisation is a significant predictor of yearly income (b ¼ .086, $p < .10$) and oppor- tunities for career advancement (b ¼ .222, $p < .01$). Thus, Hypothesis 1 and Hypothesis 2 are supported in the 2015 dataset. The predictor variables in the model account for 64.5% of the variance in yearly income and 24.4% of the vari- ance in opportunities for career development.

As with the 2005 data, older workers, men and those working longer hours report higher yearly income. However, having supervisory responsibilities is also associated with higher income. In terms of educational effects, both postgraduates and

Table 1. Effects of skill utilisation on income and career advancement opportunities in the 2005 dataset.

| Opportunities for | Yearly income | | career advancement | |
|---|---|---|---|---|
| Predictors | $b_{standardised}$ | Standard errors | $b_{standardised}$ | Standard errors |
| Age | .100*** | .025 | .276*** | .039 |
| Female | .202*** | .027 | .050 | .043 |
| Have supervisory role | .013 | .026 | .090** | .040 |
| Weekly working hours | .494*** | .028 | .086** | .043 |
| Union membership | .037 | .027 | .036 | .042 |
| Education[a] – no formal qualification | .072*** | .027 | .027 | .043 |
| Education[a] – lowest formal qualification | .016 | .024 | .016 | .037 |
| Education – above lowest qualification | .043* | .025 | .029 | .039 |
| Education – higher secondary qualification | .002 | .027 | .041 | .043 |
| Education – university degree | .101*** | .029 | .014 | .045 |
| Sector[b] – government | .011 | .028 | .034 | .044 |
| Sector – publicly owned firms | .040 | .024 | .073* | .038 |
| Occupation[c] – legislators or managers | .024 | .030 | .087* | .048 |
| Occupation – clerks | .173*** | .029 | .017 | .046 |
| Occupation – agricultural and fishery workers | .184*** | .025 | .010 | .039 |
| Occupation – technicians | .130*** | .030 | .014 | .048 |
| Occupation – service and sales workers | .178*** | .028 | .079* | .045 |
| Occupation – craft and related trades workers | .142*** | .028 | .053 | .045 |
| Occupation – machine operators and assemblers | .143*** | .028 | .001 | .044 |
| Occupation – elementary occupations | .207*** | .028 | .001 | .045 |
| Skill utilisation | .120*** | .025 | .125*** | .038 |

*Note*: $R^2$¼ .658 in the model predicting yearly income; $R^2$¼ .148 in the model predicting opportunities for career advancement.

[a]The reference group is: education being 'above higher secondary qualification'.

[b]The reference group is: industry being 'privately owned firms'.

[c]The reference group is: occupation being 'professionals'.

*$p < .10$; **$p < .05$; ***$p < .01$.

undergraduate degree holders have an edge over those simply holding a school cer- tificate (as do diploma holders). Sectoral effects are also now apparent, with those in non-profit organisations worse off than those in the domestic private sector. Those working as professionals enjoy higher income than agricultural and fishery workers, service and sales workers, and machine operators and assemblers. In neither 2005 nor 2015 is there an income premium associated with union membership.

As in 2005, fewer controls play a role in predicting perceptions of career pro- gression. As before, age is negatively related to positive career perceptions (b¼-.179, $p < .01$) and having a supervisory role is positively related to career

Table 2. Effects of skill utilisation on income and career advancement opportunities in the 2015 dataset.

| Predictors | Yearly income | | Opportunities for career advancement | |
|---|---|---|---|---|
| | $b_{standardised}$ | Standard errors | $b_{standardised}$ | Standard errors |
| Age | .154*** | .047 | .179*** | .069 |
| Female | .177*** | .048 | .067 | .069 |
| Have supervisory role | .116*** | .049 | .132* | .071 |
| Weekly working hours | .490*** | .051 | .045 | .074 |
| Union membership | .001 | .047 | .018 | .068 |
| Education[a] – no formal education | .050 | .048 | .059 | .071 |
| Education – trade certificate | .024 | .052 | .012 | .075 |
| Education – diploma below degree level | .102** | .049 | .035 | .071 |
| Education – undergraduate | .100* | .055 | .096 | .080 |

| | | | | |
|---|---|---|---|---|
| Education – postgraduate and higher | .203*** | .056 | .186** | .082 |
| Sector[b] – public sector | .032 | .053 | .045 | .076 |
| Sector – foreign-owned private sector | .041 | .045 | .033 | .065 |
| Sector – non-profit organisations | .163*** | .048 | .158** | .068 |
| Occupation[c] – legislators or managers | .034 | .054 | .009 | .078 |
| Occupation – clerks | .042 | .052 | .018 | .077 |
| Occupation – agricultural and fishery workers | .195*** | .045 | .075 | .064 |
| Occupation – technicians | .041 | .050 | .045 | .072 |
| Occupation – service and sales workers | .162*** | .054 | .013 | .077 |
| Occupation – craft and related trades workers | .075 | .048 | .079 | .070 |
| Occupation – machine operators and assemblers | .154*** | .048 | .006 | .069 |
| Occupation – elementary occupations | .075 | .049 | .038 | .072 |
| Occupation – armed forces | .016 | .044 | .198*** | .063 |
| Skill utilisation | .086* | .046 | .222*** | .068 |

*Note*: $R^2$¼ .645 in the model predicting yearly income; $R^2$¼ .244 in the model predicting opportunities for career advancement.

[a]The reference group is: education being 'school certificate'. [b]The reference group is: industry being 'domestic private sector'. [c]The reference group is: occupation being 'professionals'.

*$p$ < .10; **$p$ < .05; ***$p$ < .01.

advancement (b ¼ .132, $p$ < .10), but working longer hours does not now reach significance. A negative factor now is working for a not-for-profit organisation (b ¼- .158, $p$ < .05), while those holding a postgraduate degree (b ¼ .186, $p$ < .05) perceive better advancement opportunities than those only holding a school cer- tificate. Those in the armed forces perceive better career opportunities than those in the professions (b ¼ .198, $p$ < .01). In neither 2005 nor 2015 do union members perceive better opportunities for career advancement than non-members.

Table 3. Path coefficients for the mediation model in the 2005 dataset.

| Predictors | Job satisfaction | Organisational commitment | Turnover intention |
|---|---|---|---|
| Age | .093** | .048 | .221*** |
| Female | .020 | .073* | .042 |
| Have supervisory role | .040 | .100** | .033 |
| Weekly working hours | .041 | .056 | .011 |
| Union membership | .077* | .103** | .074* |
| Education[a] – no formal qualification | .061 | .004 | .027 |
| Education[a] – lowest formal qualification | .060 | .015 | .042 |
| Education – above lowest qualification | .008 | .053 | .021 |
| Education – higher secondary qualification | .034 | .002 | .116*** |
| Education – university degree | .065 | .022 | .010 |
| Sector[b] – government | .089** | .029 | .099** |
| Sector – publicly owned firms | .080** | .023 | .012 |
| Occupation[c] – legislators or managers | .011 | .112** | .014 |
| Occupation – clerks | .019 | .101** | .008 |
| Occupation – agricultural and fishery workers | .010 | .030 | .036 |
| Occupation – technicians | .019 | .039 | .068 |
| Occupation – service and sales workers | .078* | .059 | .043 |
| Occupation – craft and related trades workers | .054 | .010 | .001 |
| Occupation – machine operators and assemblers | .069 | .038 | .038 |
| Occupation – elementary occupations | .066 | .050 | .033 |
| Work autonomy | .235*** | .272*** | .170*** |
| Skill utilisation | .169*** | .059 | .042 |
| $R^2$ | .161 | .151 | .120 |

[a]The reference group is: education being 'above higher secondary qualification'.

[b]The reference group is: industry being 'privately owned firms'.

[c]The reference group is: occupation being 'professionals'.

*$p < .10$; **$p < .05$; ***$p < .01$.

Table 3 shows the standardised path coefficients in the mediation model esti- mated with the 2005 data. A number of the control variables are significantly related to the outcome variables. Specifically, we found that age is positively related to job satisfaction (b ¼ .093, $p < .05$) and negatively related to turnover intention (b ¼- .221, $p < .01$). As people grow older, they are generally more likely to be satisfied with, or resigned to, their jobs, and less likely to leave their organisations (e.g. Clark, 1996). Union membership is significantly and negatively associated with both job satisfaction (b ¼- .077, $p < .10$) and organisational commitment (b ¼- .103, $p < .05$), and positively related to turnover intentions (b ¼ .074, $p < .10$). Such results are consistent with the strong tendency for union members to have a poorer perception of their employer's performance (e.g. Freeman and Medoff, 1984), while having a supervisory role at work is positively related to organisational commitment (b ¼ .100, $p < .05$). Female workers report higher levels of organisational commitment than male workers (b ¼ .073, $p < .10$). Respondents with a higher secondary qualification tend to have lower turnover intentions than those with a qualification above the higher secondary level (b ¼- .116, $p < .01$).

Regarding the effects of occupation on employee work-related attitudes, legis- lators/managers (b ¼ .112, $p < .05$) and clerks (b ¼ .101, $p < .05$) report higher levels of organisational commitment than professionals. Service and sales workers report lower levels of job satisfaction than professionals (b ¼- .078, $p < .10$). In addition, employees working for the government report higher levels of job satisfaction (b ¼ .089, $p < .05$) and lower levels of turnover intention (b ¼- .099, $p < .05$) com- pared to those working in privately owned firms. Similarly, those working in pub- licly owned firms report higher job satisfaction than those working in privately owned firms (b ¼ .080, $p < .05$).

Turning to the results of the 2015 data (Table 4), age is once again positively related to job satisfaction (b ¼ .214, $p < .01$), and negatively related to turnover intention (b ¼- .346, $p < .01$) and union membership is

once again negatively related to organisational commitment (b ¼- .187, *p* < .05). Occupation starts to play a role in 2015, with service and sales workers reporting significantly lower levels of job satisfaction than professionals (b ¼- .172, *p* < .05) but craft and trades workers significantly better levels (b ¼ .147, *p* < .05). Technicians report signifi- cantly lower levels of organisational commitment than professionals (b ¼- .178, *p* < .05). Agricultural and fishery workers report higher levels of turnover intention than professionals (b ¼ .129, *p* < .10).

To examine the mediating role of skill utilisation, we estimated the 95% bias- corrected bootstrap confidence intervals for the indirect effects based on 1000 bootstrap samples. This was adopted as the criterion for judging the statistical significance of the mediation effects. A mediation effect is indicated when the 95% confidence interval of the indirect effect excludes zero (Hayes, 2013). Table 5 displays the results of testing the indirect effects with the 2005 data. As can be seen from the table, the indirect effect of work autonomy on job satisfaction via skill utilisation is statistically significant at the 5% level (b ¼ .02, 95% CI ¼ [.006, .04]), supporting Hypothesis 3b. In this relationship, skill utilisation serves as a partial mediator because the direct effect of work autonomy on job satisfaction is also significant (b ¼ .28, 95% CI ¼ [.20, .37]). In contrast, the other two indirect effects relating work autonomy to organisational commitment (b ¼ .005, 95% CI ¼ [ .002, .01]) and turnover intention (b ¼- .004, 95% CI ¼ [ .02, .00]), respectively, via skill utilisation, are all non-significant. Therefore, Hypotheses 3a and 3c are rejected in the 2005 data.

Results from the 2015 data shown in Table 6 provide full support for all of the three hypothesised indirect effects. Specifically, Hypothesis 3a states that skill util- isation significantly mediates the positive relationship between work autonomy and

Table 4. Path coefficients for the mediation model in the 2015 dataset.

| Predictors | Job satisfaction | Organisational commitment | Turnover intention |
|---|---|---|---|
| Age | .214*** | .108 | .346*** |
| Female | .057 | .001 | .033 |
| Have supervisory role | .008 | .122 | .007 |
| Weekly working hours | .005 | .016 | .055 |
| Union membership | .086 | .187** | .047 |
| Education[a] – no formal education | .023 | .053 | .047 |
| Education – trade certificate | .069 | .020 | .075 |
| Education – diploma below degree level | .039 | .037 | .038 |
| Education – undergraduate | .095 | .013 | .062 |
| Education – postgraduate and higher | .024 | .049 | .074 |
| Sector[b] – public sector | .064 | .027 | .099 |
| Sector – foreign-owned private sector | .009 | .102 | .012 |
| Sector – non-profit organisations | .028 | .036 | .005 |
| Occupation[c] – legislators or managers | .031 | .024 | .105 |
| Occupation – clerks | .016 | .084 | .017 |
| Occupation – agricultural and fishery workers | .081 | .082 | .129* |
| Occupation – technicians | .053 | .178** | .013 |
| Occupation – service and sales workers | .172** | .038 | .089 |
| Occupation – craft and related trades workers | .147** | .110 | .057 |
| Occupation – machine operators and assemblers | .072 | .002 | .103 |
| Occupation – elementary occupations | .002 | .078 | .044 |
| Occupation – armed forces | .036 | .086 | .032 |
| Work autonomy | .028 | .085 | .095 |
| Skill utilisation | .249*** | .228*** | .222*** |
| $R^2$ | .233 | .203 | .209 |

[a]The reference group is: education being 'school certificate'. [b]The reference group is: industry being 'domestic private sector'. [c]The reference group is: occupation being 'professionals'.

*$p < .10$; **$p < .05$; ***$p < .01$.

organisational commitment. This is supported by the fact that the confidence inter- val for this indirect effect (b ¼ .05, 95% CI ¼ [.01, .10]) does not include zero. The direct effect of work autonomy on organisational commitment after statistically controlling for skill utilisation was non-significant (b ¼ .08, 95% CI ¼ [ .06, .23]). This indicates that skill utilisation fully mediates between work autonomy and organisational commitment. Hypothesis 3b predicts that work autonomy is posi- tively related to job satisfaction via the mediating role of skill utilisation. This was also supported by our results, which showed that the corresponding indirect effect

Table 5. Testing the indirect effects of work autonomy on organisational outcomes via skill utilisation in the 2005 dataset.

| Predictor | Mediator | Outcome | Standardised direct effect | Standardised indirect effect | Mediation supported |
|---|---|---|---|---|---|
| Work autonomy | Skill utilisation | Organisational commitment | .23 95% CI [.16, .30] | .005 95% CI [ .002, .01] | No |
| Work autonomy | | Job satisfaction | .28 95% CI [.20, .37] | .02 95% CI [.006, .04] | Yes |
| Work autonomy | | Turnover intention | .20 95% CI [ .29, .11] | .004 95% CI [ .02, 0.00] | No |

Table 6. Testing the indirect effects of work autonomy on organisational outcomes via skill utilisation in the 2015 dataset.

| Predictor | Mediator | Outcome | Standardised direct effect | | Standardised indirect effect | | Mediation supported |
|---|---|---|---|---|---|---|---|
| Work autonomy | Skill utilisation | Organisational commitment | .08 | 95% CI [ .06, .23] | .05 | 95% CI [.01, .10] | Yes |
| Work autonomy | | Job satisfaction | .03 | 95% CI [ .15, .22] | .09 | 95% CI [.02, .16] | Yes |
| Work autonomy | | Turnover intention | .11 | 95% CI [ .06, .25] | .06 | 95% CI [ .12, .01] | Yes |

was statistically significant (b ¼ .09, 95% CI ¼ [.02, .16]). There was evidence that skill utilisation serves as a full mediator in this relationship because the direct effect relating work autonomy to job satisfaction while holding skill utilisation constant was non-significant (b ¼ .03, 95% CI ¼ [ .15, .22]). Similarly, the indirect effect of work autonomy on turnover intention via skill utilisation was significant at the 5% level (b ¼- .06, 95% CI ¼ [ .12, .01]). This result leads to the conclusion that Hypothesis 3c is supported. The direct effect of work autonomy on turnover inten- tion was non-significant (b ¼ .11, 95% CI ¼ [ .06, .25]), which implies that skill utilisation is a full mediator in this relationship.

## Discussion and conclusions

Drawing on data from the 2005 and 2015 ISSP surveys, this article has examined the benefits of skill utilisation for New Zealand workers. The results showed that skill utilisation is positively related to employee income in both 2005 and 2015. This provides some support for the wage benefits of better skill utilisation, in line with the analysis of Mavromaras et al. (2007). The findings are also consistent in terms of the benefits for career advancement prospects. Skill utilisation is positively related to opportunities for career advancement in both 2005 and 2015, and is the strongest positive factor in each survey, controlling for a large range of vari- ables. This is the first quantitative study, as far as we know, to demonstrate this effect with large national workforce samples.

Interestingly, it was found across the two waves of data that our hypothesised model explained more variability in income than in career advancement. Similar results were reported by Ng et al. (2005), who found in their meta-analyses of 140 studies that most of the predictors had consistently larger effect sizes in predicting salary than career advancement. On this basis, Ng et al. (2005) concluded that we need different approaches to predicting income and career advancement. The former is more strongly determined by factors related to individual competence and value, while the latter is better predicted by variables that recognise the pol- itical reality of promotion decision-making (e.g. the quality of internal and external networks) and types of individual attributes (e.g. proactivity and extroversion) that enable some employees to increase their visibility in an organisation (Ng et al., 2005). That is, in addition to the predictors included in our model, a wider range of variables (e.g. political support, individual dispositional traits) should be statistic- ally controlled in order to maximise the explained variability of career advancement.

There is a relatively high degree of consistency between the two surveys in terms of the impact of control variables on income and opportunities for career advance- ment. For example, older workers earn more, but they are more likely to consider themselves plateaued. Professionals tend to earn more, but they do not report better opportunities for advancement when other variables are taken into account. The education premium is present in both the 2005 and 2015 surveys. As found in the United States (Lindley and Machin, 2016), where postgraduates are likely to have superior skills and more likely to carry out non-routine tasks, we see evidence of a distinct postgraduate premium in the most recent New Zealand data.

The results also indicate how work autonomy relates to the outcome variables, including through the medium of skill utilisation. In 2005, greater job autonomy is associated with better job satisfaction, higher organisational commitment and lower turnover intentions. While having this direct relationship with job satisfac- tion, the mediation analysis showed that autonomy also impacts on job satisfaction through better skill utilisation. In the 2005 data, then, an individual's satisfaction at work is directly improved by greater autonomy, while also being enhanced through lower levels of skill underutilisation. However, skill utilisation does not function as a significant mediator transmitting the effects of work autonomy on organisational commitment and turnover intention, even though the two corresponding indirect effects are very close to reaching the 5% significance level. By contrast, in the 2015 data, the link from autonomy to all the outcome variables, (higher) satisfaction, (greater) commitment and (lower) turnover intentions, is entirely transmitted through better skill utilisation. A possible explanation for these inconsistent results lies in the better psychometric properties (i.e. reliability and validity) of the scale measuring skill utilisation in the 2015 data than those of the scale used in 2005. This is so because the question adopted to gauge skill use in 2015 contains five scale points, whereas its counterpart in 2005 includes only four response categories. Reducing the number of response options leads to decreased variability in the scale, which contributes to weaker psychometric properties (M u n˜iz et al., 2005). Under such circumstances, it becomes more difficult to identify the indirect effects of work autonomy on employee outcomes. Overall, while the results are supportive of the predictions of the job characteristics model (Hackman and Oldham, 1980), which argues for autonomy as a critical motivating factor, the study confirms the importance of a skill-based mechanism in the relationship between work autonomy and employee outcomes (Parker, 2014; Wall and Jackson, 1995), particularly in 2015.

Using two national workforce samples, the findings lend strong support to studies in particular organisations that have identified skill utilisation as a mediator between autonomy and job satisfaction, both in Australia (Morrison et al., 2005) and New Zealand (Boxall et al., 2015). Consistent with the predictions of Karasek and Theorell's (1990) job demands-control model and German action regulation theory (Frese and Zapf, 1994; Hacker, 2003), among others, these findings imply that higher levels of work autonomy are associated with greater opportunities for individuals to apply their skills and experience.

There are two primary limitations in the current study. First, while the data come from two surveys 10 years apart, they are cross-sectional, and therefore no causal interpretation should be made. Future research would benefit from a long- itudinal design that enables the examination of the causal order in the relationships between job autonomy, skill utilisation and employee outcomes. Second, most of the study variables are measured with a single item. This may have affected the breadth of the domain coverage of the construct measures. In addition, it is also not possible to partial out and remove measurement errors with the observed variables used in our study (Kline, 2011). However, given that our measures are similar to those of prior studies (e.g. Allen and Van der Velden, 2001; McGuinness and Wooden, 2009) and that our study has identified findings consistent with pre- vious research (e.g. Morrison et al., 2005), we believe that our measures have adequate reliability and validity, and our findings add New Zealand-specific evidence to the literature on the effects of skill utilisation. Having said that, if possible, future studies should use multi-item measurement scales and apply struc- tural-equation

modelling techniques to test the model. And, as noted earlier, scales with at least five intervals would be likely to perform better than those with fewer.

To conclude, this is the first study to investigate the antecedents and consequences of skill utilisation at the level of the New Zealand workforce, adding to the literature on skill mismatches in countries such as the UK, the Netherlands and Australia (Quintini, 2011). Our study confirms that better skill utilisation is generally asso- ciated with a broad range of beneficial outcomes, including higher employee income, better opportunities for career advancement, higher job satisfaction, greater organ- isational commitment and lower turnover intentions. It has both extrinsic and intrin- sic benefits for individuals. The study supports and extends O'Brien's (1982a, 1982b) important body of research, which underlines the impact of skill utilisation on job satisfaction. Furthermore, our finding that skill utilisation serves as a mediator between work autonomy on the one hand, and job satisfaction (in both 2005 and 2015), organisational commitment (in 2015) and turnover intention (in 2015) on the other, underlines the importance of a skill-based mechanism linking job character- istics to employee outcomes, and not simply a motivational one. The benefits to employees, and to organisations in which management wishes to enhance commit- ment and reduce employee turnover, can be expected to flow not only from better motivation but from better use of individual capabilities. From a societal perspective, our results support the arguments of those who call for public policy to include due emphasis not only on skill supply, but on the way that labour processes affect skill demand (e.g. Keep et al., 2006; Payne, 2012; Warhurst and Findlay, 2012). As a general principle, better utilisation of employee skills will occur in organisational climates in which employee autonomy is encouraged.

According to Statistics New Zealand, male employment was 48.24% of total employment at Q4, 2005, which is close to the 46.5% in the survey. Public sector employment was 20.23%, virtually identical to the 20% in the survey.

According to Statistics New Zealand, male employment was 48.93% of total employment at Q4, close to the 47.4% in the survey. Public sector employment was 20.29% at this date whereas the sample has 33% in the public sector. The 45–54 age group was the largest group in the New Zealand workforce in 2015, but the sample average age is somewhat higher than the median employee age of 43 years.

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