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Workers' Willingness to Participate in Training and Education: A Comparison

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Introduction

Rhetoric surrounding the urgent need for a highly skilled and flexible labour force circumscribes contemporary debate over the provision of workplace training in Australia. Economic restructuring, demographic change, reduced government financial assistance, an altered industrial landscape and a changed economic policy paradigm are variously cited as stimulants in the drive for lifelong learning. Related to these themes has been the continued debate about the appropriate apportionment of the financial burden of this education and training. Substantial attention has been focussed on the role and proclivity of the enterprise in fostering the uptake of education and training programs amongst their workers (Smith & Billett 2005). However, an under-researched area remains the role of the individual in planning, financing and undertaking education and training, and the relative strengths of the various motivations, stimulants and barriers to participation in education and training programs. This is perhaps surprising in a public policy environment where the emphasis has arguably fallen more heavily upon individuation and is buttressed by a seemingly unshakable faith in concepts underpinning the sovereignty of the consumer and the efficacy of the market.

This paper draws upon results from research that developed particular models of public sector workers' training and education participation choices. More specifically, employing choice modelling techniques, this work uncovered substantial differences between the manner in which training decisions are made vis-à-vis decisions to undertake further education in a workplace context. The paper itself comprises of six parts. Section 2 briefly summarises the theoretical

literature on participation in education and training. Section 3 provides a synoptic review of the literature that seeks to explain employee participation decisions, particularly in the Australian context. Section 4 explicates the choice modelling methodology as it applies in the current context. Section 5 introduces the models themselves, in particular highlighting the points of difference between the decisions to participate in education vis-a-vis training programs. Section 6 discusses some of the implications of this decision-making process from the perspective of the enterprise that aims to maximise participation amongst its workers. The paper ends with some brief concluding remarks in section 7.

Theoretical Understanding of Participation in Education and Training

The theory of human capital (Becker 1964; Mincer 1970) represents the most widely used theoretical paradigm in the general field of the economics of education and training¹. This approach, which conceptualises the accrual of increased levels of education and training as akin to investment in physical capital, is firmly rooted in neo-classical economics. According to human capital theory, education and training is an important economic and social tool (see, for instance, Becker 1964; Mincer 1993), thus providing a compelling argument in

¹ Despite the broad acceptance of the basic tenets of human capital theory, it has not been without its detractors. In particular, Adam Smith's original analogy between human and physical capital has, not surprisingly, been widely criticised, especially due to the instrumental and reductionist approach that it invokes. Moreover, as intelligent agents, humans, unlike machines, can also exit the firm, withdraw their labour by striking, choose to 'take a sickie' or to expend minimal levels of effort. Some writers take issue with the very concept of human capital, emphasizing that humans consider at least some of the costs of education and training as consumption expenditure, whilst others, such as Thurow (1983), focus upon the uniqueness of man's cognitive capabilities and agency which simply cannot be likened to machines. This approach centres on the concepts of motivation and volition.

favour of government provision of, and investment in, education². Individuals will ‘purchase’ that quantum of education and training that equates marginal benefits with marginal cost. The decision to undertake education and training is therefore essentially an economic one. Accordingly, human capital theory makes a number of predictions about the participation in, and funding of, education and training, in addition to the understanding it provides about returns to the various stakeholders (Becker 1964). It also forecasts that participation declines with age and that those who invested most in schooling will also invest most in training (Carp, Peterson & Roelfs 1974; Blundell, Deardin & Meghir 1996; Groot 1997; OECD 1999). Some writers conceive of this as a form of complementarity between the three components of human capital; that is ability, education and training, and experience (see, for instance, Long et. al. 2000; Acemoglu & Pischke 1999; and Bishop 1996).

²The causal relationship that human capital theorists depict between education and earnings has also proved contentious, with Vaizey, for example, positing that other extraneous factors may better explain the observed relationship. Vaizey (1962) cites factors such as parental income, access to opportunities, motivation and the like as possible causal factors. Similarly, Maglen (1990) reasons that the mere existence of a positive relationship between education and training and earnings does not, of itself, constitute causation. Accordingly, a number of competing theoretical positions are discernable in the literature, notwithstanding Quiggin’s (1999) contention that some of these theoretical positions are driven by those economists who are ideologically infatuated by the efficacy of the market. These propositions question the precise nature of the relationship between education and training and increased earnings. The most popular of these alternative theoretical propositions is the ‘screening hypothesis’, or ‘credentialism’. This approach views the nexus between education and earnings as a very straightforward one in that it sees education as having no intrinsic value other than as providing a signal to employers about the attributes of their potential employees. The strongest prediction of the screening model is that the earnings differential associated with higher levels of education should decrease over time as employers acquire direct knowledge about their worker’s ability, and are therefore less reliant on education levels attained as a signifier of skills and ability. However, this prediction is poorly supported with Psacharopolous’ international surveys undertaken for the Organisation for Economic Development indicating that the earnings differential generally rises with the number of years of experience.

Whilst the economic approach assumes homogeneous preferences on the part of individuals, by way of contrast, the main emphasis in the psychology literature falls on the differences between individuals. For instance, social cognition models are frequently applied to the context of decision-making about participation in education and training. These models were pioneered by Ajzen & Fishbein (1980), Ajzen & Madden (1986) and Ajzen (1988; 1991). In essence, they identify three key variables in forming intentions to act: Attitudes, subjective social norms and perceived behavioural controls. Groteleuschen and Caulley (1977), Yang, Blunt and Butler (1994), Ray (1981), Triandis (1979), Bagozzi and Warshaw (1990) and Pryor (1990) highlight the importance of attitudes in this context. In this sense, attitude simply represents the individual's global positive or negative evaluations about performing a particular behaviour (Pryor 1990). Individual beliefs link a given behaviour to a certain outcome, or to some other attribute, such as the cost incurred in performing the behaviour.

Social cognition models also stress the importance of perceptions in the form of subjective social norm and subjective personal norm as an adjunct to the formation of attitudes³. Pryor (1990, p.148) defines subjective social norm as the individual's perception of social pressure to perform, or to not perform, a given behaviour. Put simply, empirical work drawing on these models gives form to the general idea that it is not only actual policies, practices and the like that influence

³ Employing a different approach, but nevertheless emphasising the impact of perception, are studies of motivation and expectancies such as the work by Tharenou (see, for example, Tharenou 1997 & 2001), and literature that falls broadly within the human resource management genre .

workers decisions, but also some subjective calculation of these factors that may or may not accord with the 'facts'.

Empirical Evidence

Australian empirical research has been characterised by considerable attention to the demographic factors that predict participation in education and training programs (see, for instance, Kilpatrick & Allen 2001). It has focussed on the preferences revealed through existing market information, rather than drawing upon theoretical models. Within the psychology literature, demographics tend to be considered of only minor importance, without denying the possibility that these factors may interact with other socio-psychological variables. Pryor (1990) and Yang et al. (1994) provide typical examples of this approach. Consistent relationships appear between membership of particular demographic cohorts and participation in education and training. For example, in accordance with human capital theory (Becker 1964), empirical work in psychology has consistently found a negative relationship between willingness to participate in further education and training and age (see, for example, Cookson 1986). It is also generally acknowledged that those workers with the highest levels of education are the most likely to participate in education and training (Blundell et al. 1996; Groot 1997; OECD 1999), in common with those enjoying higher levels of employment position (Yang et al. 1994).

The concept of 'subjective social norm' has been found significant in the individual's decision to participate in education and training in many empirical studies (see, for instance, Groteleuschen & Caulley 1977; Ray 1981; Cookson 1986; Fishbein & Stassen 1990; Maurer & Tarulli 1994; Yang et al. 1994; Becker & Gibson 1998). Related to this concept is the extent of supervisor support, which has consistently been identified as a powerful indicator of participation (Fishbein & Stassen 1990; Maurer & Tarulli 1994). Moreover, behavioural economists, such as Fehr and Gächter (2003, p.518), conclude that social norms govern attitudes, social interaction and conformity amongst peers, relatives and neighbourhoods in decisions pertaining to the development of human capital. These social norms are seen therefore to constitute a category of constraint beyond the legal, informational and budgetary limits considered by economists.

It is thus apparent that there is substantial agreement and areas of overlap between researchers employing distinct disciplinary approaches to the question of worker participation in education and training. We can identify several discernable and congruent themes emerging within these disparate approaches to participation in education and training. First, a rational individual will weigh up the economic costs and benefits of participation; second, their attitudes and perceptions of the views of significant others will be influential in the decision to participate and; third, those who are younger and more educated will exhibit a greater propensity to participate. The technique of choice modelling allows consideration of all these factors in estimating a model of worker choices to Study or Train.

Methodology and Experimental Design

Using the technique of choice modelling⁴, a program of study or training may be conceptualised as a ‘bundle of attributes’ that convey benefits that combine to give utility to the consumer (Stanton, Miller & Layton 2004)⁵. This approach has been productively employed in the context of education and training by Dubas and Strong (1993), Moogan, Barron and Bainbridge (2001), Soutar and Turner (2002), Tarasewich and Nair (2000) and Zufryden (1983), amongst others. Initial steps involve qualitative research to gather data pertaining to the perceived product attributes and their levels. This facilitates the construction of a survey instrument that presents respondents with a hypothetical choice scenario and a number of choice sets. In each choice set, the levels of each attribute are varied to constitute a distinct product. Respondents’ successive choices ultimately statistically reveal the trade-offs made between various attributes. An example of a choice set appears below in Figure 1.

	Cost to you (pa)	Leisure hours lost per week	Career impact
Option A	0	0	Maintain current position
Option B	8000	6	Advance in other industry or sector
Option C	No study		

Figure 1: Would you choose A, B or C?

⁴ For a more comprehensive explanation of this technique and the rationale underpinning it, see O’Keefe, Crase, Dollery and Maybery (2005).

⁵ Kaul and Rao (1995) distinguish between product characteristics and product attributes. Product characteristics are seen to physically define the product and to influence the formation of attributes. Attributes shape consumer perceptions, and are generally fewer in number and more abstract than product characteristics. Consumer decision theory holds that consumers make decisions based upon attributes rather than characteristics.

The research approach employed here follows the iterative process used by Lockwood and Carberry (1998), involving focus sessions, interviews and survey pre-testing. In-depth semi-structured focus interviews of around 30 to 40 minutes' duration were conducted with 16 volunteers at the participants' workplace. Interviews were taped with participants' permission, and the record of interview was later analysed to identify salient attributes and their associated levels. The aim of the initial phase of the empirical research was to delineate the main attributes and specify appropriate levels for inclusion in the choice sets. In addition, data relating to the status quo were gathered to allow the specification of a realistic hypothetical situation. The central challenge in this phase was to determine which attributes to include and thereby vary within the choice sets, and which to omit or hold constant. Core to the successful application of a choice experiment is the description of the particular 'product', making explicit the set of attributes to be considered by respondents. Aligned to this is the establishment and communication of the status quo for each respondent to allow meaningful conclusions to be drawn from each data point.

Through the statistical 'unbundling' of the part-worth utilities assigned to various attributes, choice modelling allows for estimation of trade-offs between attributes. The method also allows the calculation of willingness to pay estimates through which a hypothetical product containing a particular mix of attributes may be assigned a 'price'.

Choice modelling also allows for the inclusion of various social, environmental and psychological variables, including attitudes. In this context, McFadden (1986) identified the potential in utilising latent variables to assist in our understanding of individual choice behaviour⁶. Boxall and Adamowicz (2002, p.241) also stressed the importance of including or specifying heterogeneity which may be socio-demographic or psychographic in nature. Choice models do not, however, explain why individuals make particular choices (Crouch & Louviere 2001). In order to more deeply understand the decision process, the researcher can supplement the choice experiment with additional information about attitudes, motivation and the like. These variables can be introduced into the model through interactions with the alternate specific constant or with the product attributes themselves. This is one way of explicitly accounting for heterogeneity within the sample⁷.

In order to facilitate the effective inclusion of other data through these interactions, factor analysis was initially employed⁸. This analysis combined interrelated items from the survey, reduced the variables to be modelled, and at the same time, minimised the potential for colinearity within the model.

⁶ He proposed the use of attitudinal, socio-economic and perceptual factors in addition to the more traditional economic approach. This acknowledges that the structures underlying the individual's choice behaviour are much more complex than simple economic factors.

⁷ However, care must be taken in interpreting these results since these variables can only be included as a type of 'proxy' for unobserved utility. That is, these types of variable do not provide utility in themselves, but attempt to capture utility that is not encapsulated in the attributes themselves (Hensher et al. 2005, p.480).

⁸ According to Hair et al. (2006, p.104), factor analysis is the generic term for a group of multivariate statistical techniques whose primary purpose is to define the underlying structure in a data matrix. Its aim is therefore to reduce the number of variables into a smaller set of correlated factors. As Hair et al. (2006, p.105) point out, this allows factor analysis to play a unique role in other multivariate techniques such as choice based conjoint.

A Victorian public sector organisation was selected to provide the sample for conducting this choice experiment. The organisation employs approximately 1,700 workers in positions ranging from base level to executive level within scientific, administrative and technical fields. Whilst acknowledging the problems for generalisability to other institutional settings, confining the sample to one organisation affords increased control over many of the variables impacting on the individual's decision. Thus, factors that have been identified as significant in previous research (see, for instance, Bates 2001; Maurer & Tarulli 1994), like organisational policies and procedures, remain less likely to vary across the sample.

Participants delineated between study and training programs, offering a different range of levels for each. Accordingly, the instrument ultimately comprised separate versions for Study and for Training. Definitions of the attributes and their attendant levels appear as coded in the experiment in Table 1.

Table 1: Definitions and coding of variables

Variable/constant	Definition	Coding
PRICE	Cost per annum to the individual (\$)	Study:0, 2500, 5000,8000 Training:0, 1000, 3000, 5000
TIME	Number of leisure hours lost per week	0,6,12,15
ADVANCE	The study or training program leads to career advancement.	Dummy variable with career > 1 taking the value of 1.
C1	Alternate specific constant	Constrained to be equal across V1 and V2
NOW	Employees who were studying or training at the time of survey	Dummy variable, taking the value of 1 for 'yes'
AGE	Respondents age at time of survey	
MANAGE	Workers who were at level four or above in the organisation	Dummy variable with level >3 taking a value of 1.
SCIENCE	Workers who classified themselves as scientists	Dummy variable with type >2 taking a value of 1
ENJOYMENT	Respondents additive score (1-5) on items designed to measure enjoyment of study.	Dummy variable, with scores > 3 taking the value of 1.
OV	Respondents additive score (1-5) on their perception of the degree to which organisational values support participation in study.	Dummy variable, with scores > 3 taking the value of 1.

Results

An iterative process was employed to estimate models of best fit for both Study and Training. Attribute interaction models were also generated in an attempt to glean further information about the behaviour of various demographic cohorts in relation to the various product attributes. For instance, the TIME attribute interactions furnish additional information about which groups of respondents tend to be more time sensitive. Table 2 shows the Study models formed from attribute interactions and also the preferred specification embodied in Study Model 4.

Table 2: Study models

	Model 1 Price attribute interactions	Model 2 Time attribute interactions	Model 3 Career attribute interactions	Model 4 ASC interactions
C1	1.06011*** (6.895)	0.5960*** (5.150)	0.65032*** (5.551)	0.10332 (.310)
PRICE	-0.00035*** (-4.856)	-0.00028*** (-15.688)	-0.00051*** (-15.921)	-0.0002923*** (-15.681)
TIME	-0.13886*** (-8.580) 9	-0.02626 (-0.957)	-0.07663*** (-8.822)	-0.07509*** (-8.708)
ADVANCE	1.2176*** (10.370)	1.1002*** (9.906)	2.2364*** (6.632)	1.1215*** (9.969)
PRICE*MANAGE	0.000116** (3.142)			
PRICE*SCIENCE	-0.00017*** (-5.580)			
PRICE*TIME	0.00002*** (4.754)			
TIME*AGE		-0.00171** (-2.171)		
TIME*MANAGE		0.03957** (2.428)		
ADVANCE*MANAGE			1.1593*** (6.428)	
ADVANCE*SCIENCE			-0.37967** (-2.633)	
ADVANCE*AGE			-0.04178*** (-4.802)	
ADVANCE*NOW			0.87860*** (4.690)	
AGE*ASC				-0.01882** (-2.374)
MANAGE*ASC				0.35625** (2.154)
ENJ*ASC				1.24994*** (7.458)
OV*ASC				0.45039** (1.972)
Rho 2 (ρ^2)	0.22253	0.20106	0.22720	0.22779
Adjusted Rho 2 (ρ^2_{adj})	0.21982	0.19897	0.22451	0.22510
Observations	1152	1152	1152	1152
Chi-Square	2247.5681	2222.1242	2241.6534	2254.2514

t-ratios in parentheses

***Significant at the 1% level

**Significant at the 5% level

*Significant at the 10% level

In sum, the preferred Study Model 4 supports the view that the individual worker's decision to participate in Study is a function of the cost to the individual,

the amount of leisure time forgone, the impact on career, the individual's age, the organisational level of the employee, his/her intrinsic enjoyment of study and his/her perception of organisational values. To reiterate, along with the product attributes that explained most of the variance in the participation decision, those who were younger, at higher levels within the organisation, who perceived organisational values as supportive of participation and who reported intrinsic enjoyment of study were most likely to choose a Study option. Nevertheless, 'economic' attributes of time and money were crucial determinants of the employees' decisions to participate.

It is interesting to note that, in contrast to other research findings about participation in education and study programs (see, for example, Blundell et al. 1996; Groot 1997; OECD 1999), the previous level of educational attainment was not significant in the Study Models. Some sampling bias in this respect was not unexpected, since according to recent estimates by the Department of Employment, Science and Training (2006), the proportion of the general population holding undergraduate degrees is only about 20%. However, in the case of this study, about 85% of respondents had achieved this level of educational qualifications. A plausible explanation resides in the existence of a sample bias, since those familiar with education systems may have exhibited a greater propensity to participate.

Of the 'within person' factors added to the Study Model, only ENJOYMENT and ORGANISATIONAL VALUES were significant and added to the statistical performance of the model. The salience of the ENJOYMENT attitude variable

accords with earlier research (see, for example, Blunt & Yang 2002). Similarly, ORGANISATIONAL VALUES has featured in previous empirical work, although social cognition models refer to it as subjective social norm (Fishbein & Stassen 1990; Maurer & Tarulli 1994).

The attribute interactions introduced in Study Models 1, 2 and 3 shed light on the respondents' behaviour in relation to each attribute, expanding our understanding of the importance of PRICE, TIME and ADVANCE in the decision context. Several striking findings appear to warrant further scrutiny: (a) Older workers were more time sensitive and more easily deterred by an increasing price. In addition, for these workers even the positive effect of promised career advancement was less likely to encourage participation; (b) workers at higher levels in the organisation were less deterred by increasing price and time commitment, and were more likely to react positively to the promise of career advancement; and (c) in comparison to other occupational groups, scientists were more price sensitive and less inclined to choose a Study option offering advancement, perhaps reflecting their already very high level of educational qualifications.

In essence, individuals were (on average) prepared to pay for a Study program, but this preparedness was ameliorated by the time commitment required, and encouraged by those options that carried an enhanced effect on career advancement. Accordingly, these findings provide broad support for previous research of both the economics and psychology genres, and in this particular context, suggest some policy and procedural avenues for organisations that wish

to alter rates of participation in education and training for their workers. Training models are presented in Table 3 below. Table3: Training models

	Training Model 1: PRICE INTERACTIONS	Training Model 2: TIME INTERACTIONS	Training Model 3: ADVANCE INTERACTIONS	Training Model 4: ASC INTERACTIONS PROBIT MODEL
ASC C1	0.68291*** (5.917)	0.72442*** (6.200)	0.7195*** (6.188)	-2.2441*** (-7.843)
PRICE	-0.000134 (-1.373)	-0.0004476*** (-15.326)	-0.00043*** (-15.143)	-0.000302*** (-11.543)
TIME	-0.0875*** (-10.089)	0.64559** (2.226)	-0.08910*** (-10.106)	-0.06161*** (-8.134)
ADVANCE	1.0782*** (9.793)	1.1442*** (10.122)	3.1804*** (9.060)	0.79446*** (7.801)
PRICE*SCIENCE	-0.000125** (-2.343)			
PRICE*AGE	-0.5717** (-1.974)			
TIME*SCIENCE		-0.08460*** (-5.449)		
TIME*AGE		-0.00198*** (-2.608)		
TIME*MANAGE		-0.0519*** (-2.907)		
ADVANCE*MANAGE			-0.3548* (-1.904)	
ADVANCE*SCIENCE			-0.6356*** (-3.594)	
ADVANCE*AGE			-0.3745*** (-4.448)	
AGE*ASC				-0.2798*** (-4.470)
SCIENCE*ASC				0.6832*** (4.629)
Rho 2 (ρ^2)	0.20201	0.23703	0.23385	0.22590
Adjusted Rho 2 (ρ^2_{adj})	0.20466	0.23463	0.23145	0.22312
Observations	1118	1118	1118	1118
Chi-Square	2164.0605	2163.3686	2167.2155	2254.2514

t-ratios in parentheses
 ***Significant at the 1% level
 **Significant at the 5% level
 *Significant at the 10% level

The Training Model exhibited a number of departures from the previous Study Model, not the least of which is the existence of an alternative model form. The choice to train was influenced by the product attributes of TIME, PRICE and ADVANCE along with the respondent's age. In contrast, the choice not to train was a function of a constant which captured unobserved utility emanating from not entering the market for training, alongside the nature of the participant's position. Scientists were significantly more likely to choose a 'no training' option.

Attribute interactions for the Training Model shed further light on the behaviour of various sub-groups in relation to the attributes. More specifically, those who were older were more sensitive to increases in the time commitment required, as were those classified as scientists, and managers. These groups were also less likely to choose an option that had a positive impact on their career. Price sensitivity was associated with advancing age and a job classification as scientist. In short, attribute interactions in the Training models reaffirm the negative influence of AGE, SCIENCE and MANAGE on the selection of any Training option at all. Having briefly considered some of the major findings, attention now turns to a discussion of their implications for organisational policy makers.

The choice modelling process allows for the calculation of the specific trade-offs between product attributes made by individuals⁹. Put differently, the models allow the calculation of the relative importance of attributes in the choice to participate in a Study program. Implicit prices embody these trade-offs. They are derived by

⁹ Some care should be taken in interpreting these figures. For example, Hensher *et al.* (2005) argue that multi-nomial logit models commonly tend to over-estimate willingness to pay.

examining the marginal rate of substitution between the cost to the individual (PRICE) attribute, and the other attribute under consideration. This involves calculating the implicit price of leisure time forgone (TIME). In the case of the linear function the implicit price of leisure time simply reduces to:

$$\text{Implicit Price}_{(\text{LINEAR})} = \beta_{\text{TIME}} / \beta_{\text{PRICE}} \quad [1]$$

Here, β is the coefficient attached to the product attribute. Confidence intervals for implicit price estimates can be calculated using a technique attributed to Krinsky and Robb (1986). Results for the implicit price of a one hour per week increment in the TIME attribute and related confidence intervals are reported in Table 4.

**Table 4: Estimated Marginal Rates of Substitution for TIME Attribute
(Based on Study Model 4 and Training Model 4)**

	Mean	95% Confidence Interval	
		Lower Bound	Upper Bound
TIME (Study Model 8)	-\$255.55	-\$323.17	-\$193.12
TIME (Training Model 8)	-\$202.45	-\$270.10	-\$149.67

In the case of a Study program, the negative sign of the implicit price of leisure time implies that in order to give up one additional hour of leisure, employees would need to be offered, on average, \$255.55 in compensation *ceteris paribus*. The corresponding estimate for a Training program is \$202.45 *ceteris paribus*.

It is also possible to calculate the mean willingness to pay for a number of specific scenarios in this manner. Welfare change in the form of compensating surplus can

be estimated directly from the choice modelling data. Hanemann (1984) offers the following technique:

$$W = [\ln \sum_{j \in C_i} e^{v_{ij0}} - \ln \sum_{j \in C_i} e^{v_{ij1}}] / \mu^1 \quad [2]$$

where μ^1 is the marginal utility of income and v_{ij0} and v_{ij1} describe utility before and after the change. C_i is the policy relevant choice set for respondent I .

Blamey et al. (1999, p.342) observe that if the choice set contains a single before and after option the estimate of welfare change reduces to:

$$W = [v_{i0} - v_{i1}] / \mu^1 \quad [3]$$

These results are summarised in Table 5 below. Willingness to pay estimates include mean values and confidence intervals at the 5% and 95% levels estimated using a similar technique to that applied to the earlier implicit price estimation.

Table 5: Willingness to pay for Study compared to willingness to pay for Training (Based on Study Model 4 and Training Model 4).

	0 hours of leisure	5 hours of leisure	10 hours of leisure	15 hours of leisure
Career advancement TRAINING	\$2624.27 (\$1883.51 to \$3504.82)	\$1603.59 (\$879.07 to \$2423.99)	\$586.49 (-\$218.40 to \$1442.32)	-\$429.61 (-\$1436.14 to \$588.48)
Career advancement STUDY	\$3810.61 (\$2948.97 to \$4746.35)	\$2557.68 (\$1716.98 to \$3481.10)	\$1282.90 (306.93 to \$2251.76)	-\$14.22 (-\$1186.91 to 1155.07)
No career advancement TRAINING	-\$1015.40 (-\$1350.86 to - \$735.45)	-\$2029.26 (-\$2687.96 to - \$1475.09)	-\$3049.51 -4072.05 to -2249.03	(-\$4072.05 to - \$2249.03)
No career advancement STUDY		-\$ 1280.57 (-\$1620.59 to - \$964.75)	-\$2556.71 (-\$3263.25 to - \$1933.89)	-\$3830.71 (-\$4902.64 to - \$2899.90)

These calculations show in all scenarios that the willingness to pay for a Study product markedly exceeds that for a Training product, even given the leisure time commitment required and the impact on career. It is important to note that the estimates also reveal the significant impact of the opportunity cost of leisure in the context of both products. In the case of the Training Model, workers would give up ten hours of leisure time, but only if it led to career advancement. This provides support for the notion, expressed in the interview phase of this research, that participants were quite comfortable with the concept of paying for their own education, reflecting a realisation of the ‘necessity’ of private contributions to higher education that have been progressively enshrined in government policy over the past 25 years. However, the concept of user-pays became more problematic when TIME is added to the decision set and when the program is perceived as Training rather than Study *per se*.

Implications for Organisations

Several implications for organisational management can be drawn from close scrutiny of these models. More specifically, these models offer an empirical estimate of the relative importance of a range of variables and provide potentially valuable insights into possible combinations of attributes and other factors that may be manipulated in order to alter participation rates in Study or Training programs. Moreover, they suggest which sub-groups of employees are least predisposed to participation, making the targeting of particular policies to encourage uptake of study or training opportunities potentially more effective. Put differently, improvement in participation at the margin may be more efficiently secured through encouragement of particular groups rather than pursuing other broad-based strategies where the improvement in participation at the margin may be less.

The Training Model, in addition to taking an alternative functional form, shows the reduced influence of attitudinal factors and perceptions of organisational values in the employees' decisions to train. These results suggest not only that study and training invoke distinct decision-making processes and considerations, but also have implications for the ability of the organisation to alter decision parameters. Unlike in the case of Study which appears amenable to changed policies that impact upon organisational values for example, the scope to alter Training uptake appears to reside primarily in varying the levels of the attributes of a training program. This entails adjusting the cost to the individual, the amount of leisure time required for completion and making explicit the positive effects

that the training may have on the employees' careers. Some advantage may also be gained by reducing resistance of some managers and scientists.

The divergence between the propensity of scientists to choose Study on one hand, or Training on the other warrants closer scrutiny. It is possible that this organisation is much more attuned to the benefits of study due to the scientific nature of its core business which may result in training being seen as the 'poor cousin', and primarily tied to the organisation rather than to the employees' profession. Professionals are distinguished by their intensely felt affiliation with their profession as opposed to their more tenuous allegiance to their employer (Pryor 1990). In other words, it is possible that scientists, in particular, saw participation in training as a matter of organisational rather than professional concern. For instance, one respondent observed that 'senior scientists self-educate as a matter of course (or should!), it just isn't usually formalised'. This commitment does not appear to translate to the case of workplace training. The reduced importance of organisational values and attitudes evident in the Training Model may reflect a pervading perception within the organisation that, unlike further study, much voluntary training may be simply a 'waste of time'. As one respondent put it:

It [training] comes across as 'doing training for training's sake' rather than to improve skills or performance and seems to be more about satisfying the hierarchy's need to be able to say (in their own performance plans, presumably) that they have X numbers of staff undertake X training course.

Conclusion

This paper has attempted to compare and contrast the decision processes of public sector employees for participation in study programs vis-à-vis training programs. Empirical estimates reveal substantial divergence between the decision drivers for these two distinct genres of programs, and scrutiny of the models reveals several respects in which the findings diverge from theoretical and empirical evidence.

Whilst the two distinct categories of ‘product’ elicited different models of consumer choice, they have in common the over-riding influence of economic factors. In the case of Study and Training, product attributes of PRICE, TIME and ADVANCE were the main drivers of the decision to participate. As expected, PRICE and TIME constituted a substantial barrier to participation, but these obstacles could be ameliorated by a more positive ADVANCE attribute.

Training and Study models both reinforced the importance of these economic factors in the decision making process of individuals and supported the negative relationship between age and the propensity to train or study in accordance with standard Human Capital theory predictions. However, this paper raises some questions about the applicability of its predictions in relation to the complementary nature of study and training. In essence, in contrast to the literature, the Training model showed that SCIENTISTS, who were the most highly educated employee cohort, were particularly predisposed to choose a ‘no training’ option. Moreover, economic considerations appeared to predominate the decision to train, unameliorated by attitudinal variables such as the workers’

enjoyment of training or, more tellingly, their perceptions of the value accorded training by the employing organisation. This provides a stark contrast with the Study model in which these 'within person' factors were significant.

The Study model encapsulated both the intrinsic enjoyment of study and the worker's perception of organisational values in relation to study. The latter factor was seen as resembling the subjective social norm commonly referred to in the psychology literature. Both these variables were positively associated with a decision to participate, as was the attribute of ADVANCE. A countervailing influence was exerted from PRICE, TIME and age of the worker. These findings accord closely with the predictions of human capital theory, and with previous empirical work of both the economic and psychology genres. However, the training model included no such attitudinal factors, reflecting the over-riding influence of the economic considerations embedded in the product attributes.

Accordingly, it appears that the decision to undertake further training is regarded in a much more instrumental fashion than is the decision to participate in study within this organisation. This infers that managers need to tie the outcomes of the training to some more tangible outcome in the eyes of the worker. Further research might gainfully investigate the types of policy interventions that have been employed to achieve this end.

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