

# **Investigating the employees' decision to participate in Vocational Education and Training (VET): methodological considerations**

## **Abstract**

Nurturing and enhancing the skills and abilities of the workforce is often critical to a firm's ability to sustain a competitive advantage, and to the ability of the economy as a whole to remain competitive. The need to continually develop the skills of employees has become even more of an imperative in the context of rapid technological change, globalisation of production and changing forms of work organization. Education and training confer significant economic and non-economic advantages for the individual, the firm and society, and whilst these gains are notoriously difficult to measure, they are almost universally acknowledged.

Whilst it is almost undeniable that an increasingly globalised economy requires a more highly skilled and malleable workforce, in the current context of reduced government intervention and increasing competitive pressures on enterprises, the provision and funding of education and training has itself become increasingly problematic. Accordingly, issues surrounding the precise nature of the relationship between the individual, the employer and the government are crucial to the future of VET in Australia.

This paper critically examines both the economic and psychological approaches to the examination of employees' decision to participate in VET, and presents a discussion of the advantages of a cross-disciplinary technique to enhance our understanding in this field. An experimental design process utilising this framework is also reviewed along with an examination of potential future research applications.

## **1. Introduction**

Whilst it is almost undeniable that a globalised economy requires a more highly skilled and malleable workforce, in the current context of reduced government intervention and increasing competitive pressures on enterprises, the provision and funding of education and training has become increasingly problematic. Accordingly, issues surrounding the precise nature of the relationship between the individual, the employer and the government are crucial to the future of VET in Australia. Central to this is an expanded understanding of the individual's decision to participate in VET.

Empirical research into the factors affecting participation in education and training can be categorised into the two broad disciplinary areas of economics and psychology. This paper critically examines both the economic and psychological approaches in the context of the employees' decision to participate in VET, and presents a discussion of the advantages of a cross-disciplinary framework to enhance our understanding in this field. We specifically observe that the psychology literature focuses on 'within person' variation that the economic approach generally fails to accommodate in its *homo economicus* methodology. However, the psychological approach also has significant limitations emanating from the lack of attention to exogenous factors.

This paper draws attention to the merits and demerits of these alternative perspectives and is organised as follows: Section 2 reiterates the basic principles of economic decision making and presents some of the perceived short-comings of this approach. The psychological research is reviewed in section 3 whilst section 4 raises some methodological considerations. The paper ends with some brief concluding remarks in section 5.

## **2 0 Rational maximisation in economics and the role of psychology**

Much of the analysis of the decision to invest in education and training relies upon economic reasoning premised on rational choice. In essence, the neoclassical economic paradigm holds that individuals weigh up the costs and benefits of each possible choice prior to making a decision and then select those options that maximise net benefit. Consumers are said to pursue their own self-interest through stable preferences given the constraints they confront (Kaufman, 1999).

Human Capital Theory, (HCT) (Becker, 1964), embodies these assumptions and makes a series of consistent predictions about the extent of participation and the financing of education and training over the lifetime of a worker. Specifically, HCT proposes that an individual will invest in human capital accumulation if the private benefits outweigh the costs incurred, and that they will invest up to the point where marginal benefits equal marginal costs (Becker, 1964; Long et al. 2000). Becker (1964) distinguishes between general and specific education and training insofar as general training is useful in a number of firms and specific training is useful only in the employing firm. Thus, he reasoned that the individual would pay for general education and training, and the firm for specific.

However, despite the widespread acceptance of HCT, its prediction that individuals will pay for their own general education and training is clearly at odds with the available evidence. There appears to be an under-provision of education and training on one hand (Burke, 2000; Ferrier, 2000; Long et al., 2000), and individuals are

reluctant to finance it on the other hand (Burke, 2000). The neoclassical approach in general, and Becker's (1964) Human Capital analysis in particular, provide a compelling and rigorous exposition of the economics of education and training, although there are nonetheless significant gaps in the understanding of individual decision-making behaviour. This is often complicated by the existence of a number of market imperfections, particularly within the labour and capital markets. Moreover, a close examination of the empirical research into the individual's decision to participate in education and training reveals some incongruity between HCT's predictions and the extant evidence. In recognition of this, Becker himself (1993, p.401) observed that "[a]n important next step in expanding the traditional analysis of individual rational choice is to incorporate into the theory a much richer class of attitudes, preferences and attitudes". Becker's observation is consistent with the significant body of literature that has evolved to be generally critical of the sole reliance upon economic factors to explain human behaviour in general, and decision making in particular (Baxter, 1993; Lea, Tarpy, & Webley, 1987; Rogers, 1988; Wolozin, 2002).

Whilst economic considerations undeniably impact upon the decision to participate in education and training, it appears that other salient factors are also influential. Approaching this question from an economic perspective alone is thus unlikely to result in a comprehensive understanding of the decision making process. Accordingly, neo-classical economics does not appear to explain the extent of investment in education (Burke, 2000) and training, nor does it explain the individual's apparent reluctance to finance their own education and training, despite the significant wage effects with which it is associated (Blundell, et al., 1996; Lilliard

& Tan, 1992). We contend that a presumption of rational behaviour, based exclusively on optimisation and maximisation of utility, may thus grossly underestimate the complexity of the decision-making environment in relation to participation in education and training. More generally,

[r]esting on its utility driven model of economic behaviour, the thrust of orthodox economics... has largely been a denial of the complexity of human and economic behaviour. It confines itself to the effects of, not the direct roots, of economic behaviour (Wolozin, 2002 p. 46).

Much of the empirical economic evidence is 'backward looking' and concentrates on the recipients of education and training (Kilpatrick & Allen, 2001; Lilliard & Tan, 1992; Long et al., 2000), rather than what factors influence the individual's decision. Emphasis has thus focussed upon demographic factors affecting the distribution of education and training (see for instance, Kilpatrick & Allen, 2001), despite Pryor's (1990) contention that an understanding of demographic variables and their contributions to the decision process is of limited use to organisations or policy makers, since these variables are not malleable (Pryor, 1990). Moreover, the examination of the distribution of education and training amongst workers by Long et al. (2000) highlights that 'within person' factors are not accounted for in the economic literature.

Attitude or motivation is referred to frequently as an important attribute of employees- but it is nowhere measured in the literature on the incidence of training. We might expect that, all else equal (and possibly even a few

attributes unequal), employers would prefer to train workers with the ‘right’ attitude rather than those who were uninterested (Long et al. 2000, p.39).

The neoclassical view of motivation is that workers aim to maximise their utility within a budget constraint whilst largely ignoring the factors that may contribute to that utility. However, it is likely that needs influence motivation and vary significantly over a lifetime. This leads to the existence of marked time preferences, contrary to economic wisdom which holds that individuals would simply perform a present value calculation and act accordingly<sup>1</sup>. Understanding the drivers and the within person influences on motivation would enrich our understanding of VET choices.

In this context John Maurice Clark (1967) contended that:

To rely on the mere fact of choice, regardless of the kind of motives behind it, might seem to take economics out of all dependence on psychology, but it does not really do so, save at the cost of becoming utterly meaningless. The economist may attempt to ignore psychology but [it] is a sheer impossibility for him to ignore human nature, for his science is a science of human behaviour. Any conception of human nature that he may adopt involves psychological assumptions, whether these are explicit or not. If the economist borrows his conception of man from the psychologist, his constructive work may have some chance of remaining purely economic in character. But if he does not, he will not thereby avoid psychology. Rather he will force himself to make his own, and it will be badpsychology [sic] (Clark, 1967, p. 96).

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<sup>1</sup> An alternative explanation may be that a net present value calculation is undertaken, but the discount rate is influenced by age. Neo-classical economics nonetheless has difficulty in understanding the process by which discount rates are assigned.

Drawing directly from the psychological literature, several researchers have sought to understand the individual's participation in education and training (Bagozzi & Warshaw, 1990; Boshier, 1977; Cookson, 1986; Groteleuschen & Caulley, 1977; Maurer & Tarulli, 1994; R Noe, 1986; R Noe & Schmitt, 1986; R Noe & Wilk, 1993; Yang, Blunt, & Butler, 1994). Empirical studies in this genre have identified a number of salient constructs. In particular, variables such as attitudes and social relationships are stressed, in addition to organisational and situational variables. The following section is devoted to a review of pertinent variables emanating from such studies.

### **3.0 Antecedent variables**

The myriad of factors impacting upon an individual's participation in education and training form complex relationships within the decision-making context. For instance, Cookson (1990, p. 138) holds that specific organisational features are critical drivers of the individual's decision to participate, but these characteristics also interact with the employee's perceptions. Notwithstanding the resultant classification difficulties, the following synopsis categorises the salient variables identified within the psychology literature as 'within person', 'demographic and 'organisational' factors.

#### ***3.1 'Within person' factors***

The examination of ‘within person’ factors is central to developing an understanding of the employees’ decision making process in relation to participation in education and training (see, for example, Maurer and Tarulli, 1994; Boshier, 1977; Cookson, 1986; Groteleuschen and Caulley, 1977; Yang, Blunt and Butler, 1994; Triandis, 1977,75,80; Bagozzi and Warshaw, 1990; Noe and Wilk, 1991; Darkenwald, 1985). The psychology literature places significant emphasis on the personal and social factors affecting the willingness to participate in education and training. Moreover, models of decision making suggest that employees’ participation behaviour is determined by external/physical factors, such as access to education and training, and the employees’ social attitudes and objectives, like attitudes to education and training in general, which, in turn, affect the intention to participate.

In addition to attitudes and values, some research stresses the importance of personality as an antecedent variable (Boshier, 1977; Cookson, 1986). However, most psychological research has shown that personality attributes are relatively unchanging. Accordingly, it is preferable in a policy context to focus on research into participation that examines the social attitudes that are responsible for, and *changeable* in regard to participation intent. The emphasis should therefore fall on the relationship between social attributes and intention/behaviour variables since these factors are more malleable. Table 1 highlights the broad range of independent variables investigated in previous empirical studies within the psychology literature.

Table 1. *Previously investigated ‘within person’ factors impacting on the decision to participate in education and training*

Concept	Definition	Empirical studies
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Personality	Consistent psychological patterns within an individual that affect the way they interact with others and the situations they encounter (Robbins, 2001, p 99)	Boshier, 1977; Cookson, 1986
Values	'Motivational dispositions that tend to apply across situations' (Cookson, 1986 p137)	Maurer and Tarulli, 1994; Maurer, Pierce and Shore, 2002
Job involvement	The degree to which a person identifies with their job, actively participates in it and considers their performance important to their self-worth (Robbins, 2001, p. 771)	Maurer and Tarulli, 1994
Attitudes	..motivational dispositions which predispose behavioural response to specific situations. Cookson, 1986, p137	Groteleuschen and Caulley 1977; Yang, Blunt and Butler, 1994; Ray, 1981; Triandis 1977, 1975, 1980 Bagozzi and Warshaw, 1990; Pryor, 1990
Motivation	The process that accounts for an individual's intensity, direction and persistence of effort towards a goal. Robbins, 2001, p.773	Houle,1961; Darkenwald, 1985; Noe and Wilk,1991; Bates,2001
Workplace literacy	'Those skills individuals need to effectively respond to the literacy demands of the workplace' Gowen, 1992	Cookson, 1986; Bates, 2001
Perception of risk of failure/ probability of success	The individual makes an internal assessment of the likelihood of success (Bagozzi and Warshaw, 1990)	Bagozzi and Warshaw, 1990
Subjective norm	Perception of social pressure to perform, or not perform a behaviour (Pryor, 1990)	Fishbein and Ajzen, 1975; Pryor, 1990; Yang et al, 1994; Southern, 1980; Waldron, 1984
Personal norm	What people perceive they should or should not do (Pryor, 1990)	Fishbein and Ajzen, 1975; Pryor, 1990
Cognition	Thought processes	Triandis, 1975;1977;1980
Affect	A feeling towards a particular behaviour.	Triandis, 1975;1977;1980
Beliefs about outcomes.	An individual's assessment of outcomes	Maurer and Tarulli, 1994; Noe and Wilk, 1991; Bates 2001
Ability	An individual's capacity to perform tasks (Robbins, 2001, p.767.	Smith, 1980; Cunningham, 1974
Previous transfer success	How successful has the individual been in applying previous training to the work situation?	Bates, 2001

This extensive list of variables can, however, be truncated by examining the precise findings in relation to the relative importance of each variable reported in the empirical studies. A careful review of the empirical studies utilising social cognition models indicates that attitudes play a consistent predictor role (see for instance, Becker & Gibson, 1998; Pryor, 1990; Ray, 1981; Yang et al., 1994) and that the impact of subjective social norm and subjective personal norm varies (Becker & Gibson, 1998). Subjective social norm is defined by Pryor (1990) as a perception of social pressure to perform, or not perform a behaviour. In terms of the individual's decision to participate in VET, subjective social norm is likely to be influenced by the employee's perceptions of the wishes of their supervisor, manager and peers. In turn, these impressions will be informed by the organisation's culture, policies towards VET, and the practices that flow from them. Subjective personal norm is what people believe they should or should not do, and is informed by their attitudes and beliefs. Once again, the organisation's culture, policies and practices have proven to be relevant influences on subjective personal norm.

In terms of operationalising a decision model, each of these variables is subject to change through organisational or governmental interventions. For example, a supervisor's actions may alter an individual employee's subjective social norm, or changed workplace policies regarding attendance at training sessions may improve an employee's attitude to education and training in general.

### *3.2 Demographic factors*

Pryor (1990) and Yang et al. (1994) downplay the influence of demographic factors but do not discount the possibility that demographic variables may interact with other socio-psychological variables. Research focusing on demographic factors in their own right has revealed a negative relationship between age and participation (Cookson, 1986; Blundell, 1996; Groot, 1997; OECD, 1999a). On the other hand, positive relationship is consistently reported between previous educational attainment and participation (Anderson and Darkenwald, 1979; Carp et al, 1974; Johnstone and Rivera, 1965; Waniewicz, 1976; Bagozzi and Warshaw, 1990; Blundell et al., 1996; Groot, 1997; OECD, 1999a). In a practical sense, it is possible that demographics are of less interest to researchers, since demographic factors cannot be manipulated to maximise uptake of education and training programs.

### ***3.3 Organisational factors***

Notwithstanding the attention given to ‘within person’ and demographic variables, the organisational context confronted by employees has also been viewed as critical. Cookson (1990) specifically includes the individual’s perception of organisational factors, such as the company’s general attitude to employee development, as significant situational variables. Cookson (1990, p.138) maintains that pertinent features of sponsoring organisations are crucial to the learner’s decision to participate. Maurer and Tarulli (1994) also emphasise the perceptions of the work environment, which they see as comprising perceptions about policies, rules, guidelines, and regulations, as key determinants of an employee’s decision to participate in education and training. The social context within the organisation is also considered important. Maurer and Tarulli (1994) and Tharenou (2000) examine the perceived degree of social support from supervisors and peers in their models of participation. This factor

is also implied in the literature that draws on Fishbein and Azjen's (1975) seminal theory of reasoned action. It includes, as an antecedent variable, subjective social norm.

The inclusion of organisational factors in any analysis of employees' participation in education and training programs appears vital in developing an understanding of the salient variables in the individual's decision making process. In addition, these factors are perhaps the most easily manipulated to achieve an improved training participation outcome. That is, compared to the more distal variables outlined above, such as personality and demographics, it is relatively easy to change an organisation's policies, rules and possibly even its learning culture. The significance of this is underpinned by Woodall and Winstanley (1998) contention that '...much care is needed to ensure that the organisation's capacity to support learning is adequate' (1998, p.157).

In sum, a number of independent variables have been identified in previous research into the individual's participation in education and training. However, from an organisational or policy maker's perspective the factors of most interest are simply those over which some control may be exercised. Social cognition models in the psychology literature enumerate the key variables as attitudes, subjective social norms and intentions, all of which are subject to change through appropriate interventions.

This investigation reveals that apart from the economic considerations in the decision making process, there are important 'within person' and organisational factors that impinge on individual choice. In addition, there are particular

demographic factors that are associated with different participation rates. Accordingly, the challenge in researching the question of the individual's choice to participate is to develop a methodology that is capable of incorporating a suite of independent variables. One technique that appears particularly promising in this regard is choice modelling which is introduced in the following section.

#### **4.0 Methodological implications**

Given the level of complexity inherent in both the 'product' that is VET and in the individual's decision-making process, it seems that some form of multi-variate analysis (MVA) will be a useful vehicle for shedding empirical light on the issue of participation in and payment for VET. MVA is defined as '[a]ny simultaneous analysis of more than two variables....' (Hair et al. 1998).

Conjoint analysis is one multivariate technique that explores the mechanisms by which respondents develop preferences for products, services or ideas with multiple attributes. Applications of conjoint methodology have become commonplace so that '...conjoint analysis has emerged as the most widely applied marketing research tool for modelling consumer preferences among multi-attribute alternatives'(Akaah, 1991). More specifically, it has been applied to consumer goods (Louviere & Woodworth, 1983), environmental valuation (Morrison et al. 1996; Lockwood and Carberry 1998), tourism and hospitality (Crouch & Louviere, 2001), property rights (Cruse et al., 2003) and education (Dubas & Strong, 1993; Moogan, Baron, & Bainbridge, 2001; Soutar & Turner, 2002; Tarasewich & Nair, 2000; Zufryden, 1983). Moreover, it has served as a useful tool for implementing market segmentation

strategies, predicting choice behaviour (Elrod, Louviere, & Davey, 1992), and analysing buyer behaviour (Moogan et al., 2001).

Conjoint analysis assumes that consumers evaluate sets of objects or concepts as bundles of attributes. In particular, the technique seeks to ascribe utility to the various attributes, under the assumption that consumers are able to allocate utility to the various levels of an attribute and then formulate a total utility for the particular product/service/idea which can be real or hypothetical. Accordingly, this technique draws on the rigorous *homo economicus* assumptions. The aim of the conjoint research is to statistically unbundle the part-worth utilities assigned to various attributes. 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 (Kaul & Rao, 1995). Thus, if we regard education and training as a product, then we should be able to enumerate its attributes and determine their relative importance for consumers.

Choice-based conjoint, or choice modelling, presents a number of discrete choice sets to the respondent, without directly asking the participant to rank or rate each attribute. Usually, the respondent is presented with a reduced choice set, reflecting a fractional factorial design. It thus more closely resembles a realistic choice scenario than does traditional conjoint analysis which is predicated upon an information-intensive search process applied to the decision context. However, the presentation of discrete choice

sets in a choice experiment employs a realistic format where decision makers are typically considering a much reduced set of alternatives, are subject to bounded rationality, and driven by the tendency to satisfice. In this sense, a well-designed choice model is aligned with Simon's (1959) notion of bounded rationality:

The classical theory is a theory of a man choosing among fixed and known alternatives, to each of which is attached known consequences. But when perception and cognition intervene between the decision maker and his objective environment, this model no longer proves adequate. We need a description of the choice process that recognises that alternatives are not given, but must be sought; and a description that takes into account the arduous task of determining what consequences will follow on each alternative. The decision makers model of the world encompasses only a minute fraction of all the relevant characteristics of the real environment, and his inferences extract only a minute fraction of all the information that is present even in his model (Simon, 1959).

Choice modelling generally employs an experimental design process to first establish the choice sets to be presented to respondents. The purpose of this process is to reduce the choice task to those options likely to be considered by Simon's (1959) 'boundedly rational man'. Thus, whilst the technique offers considerable scope in the context of this research, "...potential advantages must be weighed up against the greater complexity of undertaking choice modelling studies, in terms of experimental design, questionnaire design and focus groupings, and model estimation" (Blamey et al. 1999, p. 355). The experimental design process is also used to reveal potential

cross effects where the attributes of one alternative impinge upon the utility of another. Careful survey design which includes an iterative process can minimise the influence of cross effects and enhance the precision with which parameters are estimated (Morrison et al.1996, p. 10).

Experimental design has two main functions. Firstly, it aims to identify those variables or attributes that are likely to affect consumer preferences and ascribe appropriate levels for the conduct of the research. Secondly, the experimental design process should establish an appropriate model for consumer preferences. Moreover, since little can be salvaged from data gathered from a flawed conjoint experiment “... designing the project is a critical step to success” (Hair et al. 1998, p. 399).

Choice modelling offers respondents a range of choice sets where attributes of the good or service are varied. Each set of attributes may be labeled or generic with data ultimately providing an estimate of the value of changes to individual attributes. Moreover, a ‘choose neither’ option amongst the choice model allows estimation of the absolute value of alternatives.

Choice modelling may be undertaken in a context of revealed or stated preferences. Revealed preference models rely upon the actual behaviour; that is, they result from data collected in a real market. Stated preference methods, on the other hand, collect data in a hypothetical market. Whilst revealed preference methods offer certainty in actual choice behaviour, this data is not always available. Moreover, revealed preference methods give no information about the choice options considered but not chosen. Crouch & Louviere, (2001) contend that only very rarely are revealed

preference data of much use for modelling purposes. Notwithstanding this, several areas of concern exist in the application of any stated preference technique. Firstly, all stated preference techniques can be criticized due to the poor correlation between intent and behaviour. For instance, Ajzen and Peterson (1988, p. 58) observe that ‘...social psychological research has revealed poor relations between attitudes and overt action’. Similarly, Diamond and Hausman (1994) found that there were large and significant differences between willingness to pay in stated preference experiments on one hand and actual payment on the other.

Whilst choice modelling is a sophisticated extension of the neoclassical approach, on its own it would still exclude important ‘within person’, demographic and organisational factors. To answer this requires a technique that is capable of capturing both economic and psychological variables. Choice modelling can be amended to allow for the consideration of non-economic variables in a predominantly economic framework and presents this opportunity in a relatively realistic experimental procedure. Thus, a choice experiment that gathers data relating to ‘within person’ factors, organisational factors and demographic factors, in addition to the choice task itself may prove particularly useful in developing empirical data that explains choices in education and training.

## **5.0 Concluding Remarks**

This paper has reviewed empirical research into participation in education and training within both the economic and psychology paradigms. Perhaps not surprisingly, the approach of these two disciplines differs greatly. In sum, the

psychology literature examined in this paper focuses on the 'within person' factors impacting upon the choice to participate. Economic research, on the other hand, having made a number of critical assumptions in relation to the decision process, largely concentrates on the distribution of education and training, employing an ex poste approach. Whilst each strand of research provides useful insight into the determinants of the choice to participate in education and training, it has been argued that an approach that takes cognisance of both economic and psychological factors will yield superior results, particularly from a policy maker's perspective.

The choice modelling approach suggested in this paper ostensibly utilises an economic approach in that it is based on random utility theory. However, it also recognises the restricted nature of the individual's decision process and, despite its experimental nature, more closely approximates a 'real life' choice situation than traditional or adaptive conjoint techniques. Moreover, the choice instrument itself allows for the inclusion of both demographic and psychographic data, enabling the addition of factors such as attitudes, subjective social norms, previous participation: all of which have proved significant in previous research. Furthermore, the iterative experimental design process can accommodate the gathering of information specific to the organisational context which is also likely to play a significant role in determining whether individuals participate in education and training. In sum, the approach suggested in this paper proffers an expanded notion of human agency that largely preserves the rational choice paradigm, but seeks to add psychological and social considerations, like social norms. Thus, it expands the backdrop against which individual cost and benefit calculations are conducted.

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