Towards a study of Ngāi Tahu financial literacy and its effect on financial well-being: A literature review

by

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25 June 2012

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Acknowledgements: We gratefully acknowledge the assistance of Corey Bragg (Kaiārahi Māori, University of Otago School of Business).

INTRODUCTION

In light of the recurrent global financial crises over the past decade, world leaders, regulators, and academics have been pressed to consider not only the adequacy of the financial market system but also the financial literacy and ability of individuals to make financial decisions (Gallery & Gallery, 2010; Williams & Satchell, 2011). Financial literacy is a vital skill in this current world full of complex financial decisions (Australian Securities Investments Commission (ASIC), 2003).

Regulatory and economic reforms have been implemented worldwide in an attempt to alleviate the financial crises. Likewise, researchers have also taken the initiative to re-examine various issues surrounding the economic downturn such as those on corporate governance (Ahrens, Filatotchev, & Thomsen, 2011), economic policies (Hodson & Mabbett, 2009; Midthjell, 2011), capital strategy of the banking sector (Khorana & Perlman, 2010), and even the role of business schools (Starkey & Tempest, 2009).

While these technical topics have received plenty of attention, the financial literacy of the general population has, until recently, been neglected. However, as noted by Preer (2011), awareness regarding the costs of financial illiteracy is on the rise and the notion of financial literacy has quickly gained significance in both "*academic and political circles*" (p. 5). Moreover, individuals are becoming increasingly responsible for their own financial security (in part due to the devolution of information technology to the individual) and are confronted with financial instruments that are more complex than ever.

Despite these recent developments, Lusardi (2008) finds that a great number of people have limited financial literacy and not well-equipped to make sound financial decisions, even in developed countries such as the United States. New Zealand is no exception, even though its rapidly aging population needs to take increasing responsibility for pension funds and retirement savings (S. Taylor & Wagland, 2011).

This situation presents New Zealand with an opportunity to improve the public's level of financial literacy, which one might expect would lead to more informed financial decision-making and improved financial well-being (Commission for Financial Literacy and Retirement Income, 2012). Of special interest here is the financial literacy of our indigenous people, in particular Ngāi Tahu[1]. Since negotiating Te Kēreme o Ngāi Tahu in 1996, Ngāi Tahu has received substantial financial compensation, primarily through the signing of the Heads of Agreement, the Deed of Settlement and subsequently the passage of the *Ngāi Tahu Claim Settlement Act* in 1998 (Carrell, 1999; . Te Rūnanga o Ngāi Tahu, n.d.-b). With approximately 48,000 members and an asset base now in excess of half a billion dollars, the South Island tribe is one of the country's largest and richest *iwi* (Stokes, 2006; Te Rūnanga o Ngāi Tahu, 2011).

It is therefore vital that Ngāi Tahu preserve these resources for the *iwi* and also for future generations, in line with the Ngāi Tahu concept of *Kaitiakitanga* (Ngai Tahu Property, n.d.). To this end, proposed longitudinal research into Ngāi Tahu financial literacy levels, how that knowledge is applied in financial decision-making and the subsequent impacts on financial well-being, would be useful in guiding Te Rūnanga o Ngāi Tahu to design programmes and initiatives to assist Ngāi Tahu to meet its objectives: among others, that Ngāi Tahu *whānui* live long and live well. Financial literacy research of a longitudinal nature and within one particular indigenous group is scarce and should therefore contribute invaluable insights to the financial literacy literature.

In the following section, the increasing importance of, and recent advancements in financial literacy are discussed, with particular reference to New Zealand and Ngāi Tahu. Next, the notion of financial literacy is discussed, followed by an examination of the literature on the antecedents of financial literacy. The efficacy of these factors in driving financial decision making and financial wellbeing is then considered. Finally, an overall discussion and conclusion is presented.

DEVELOPMENTS IN FINANCIAL LITERACY

The instability of the global economy has triggered a vast response from governments around the world. Developed economies such as the United States and

[1] Ngāi Tahu are the *iwi* comprised of Ngāi Tahu *whānui*; that is, the collective of the individuals who descend from the five primary *hapū* of Ngāi Tahu, Ngāti Māmoe and Waitaha, namely Kāti Kurī, Ngāti Irakehu, Kāti Huirapa, Ngāi Tūāhuriri and Ngāi Te Ruahikihiki (Te Rūnanga o Ngāi Tahu, n.d-a).

United Kingdom have introduced many new policies and established taskforces to promote financial literacy amongst their people (Hodson & Mabbett, 2009; Williams & Satchell, 2011). Australia and New Zealand implemented similar reforms, as both governments recognise the importance of a high degree of financial literacy if individuals are to make well-informed financial decisions and be self-sufficient in retirement (Commission for Financial Literacy and Retirement Income, 2012; S. Taylor & Wagland, 2011). The necessity to improve the financial literacy of individuals in these developed economies is not only driven by the need to aid them in managing their personal wealth but also to ease the governments' burden to provide for the welfare of an increasingly aging population (Ntalianis & Wise, 2011).

Overseas developments

In the United States, it is documented that most adults recognise the importance of having a good understanding of basic economics and finance (Lusardi & Mitchell, 2007c). However, surveys such as the 2004 Health and Retirement Study (HRS) and National Council on Economic Education survey in 2005 indicate that such beliefs did not translate into efforts to improve personal financial knowledge (Lusardi & Mitchell, 2005; The National Council on Economic Education, 2005) . For the most part, it is found that US adults have difficulty with fundamental principles of financial literacy, such as the "working of interest rates, the effects of inflation, and the concept of risk diversification" (Lusardi, 2008). In response, the Financial Literacy and Education Commission (FLEC) was established in 2003 and was charged with the formulation of the National Strategy for Financial Literacy to address this issue.

The situation in Australia is comparable to that observed in the United States. The Australian and New Zealand Bank (ANZ) have instigated a series of surveys on adult financial literacy in 2003, 2005 and 2008 which generally concluded that "*most Australians have a reasonable level of financial literacy*" but lack advanced financial competence to take on more complex issues such as those concerning fees, charges and taxes in relation to managed investments and superannuation (Australian and New Zealand Bank, 2003, 2005). Similar to most other developed countries, Australia also faces a burgeoning pool of retirement issues in the face of an aging population. And with the introduction of the compulsory Superannuation

Guarantee Charge (SGC) system, the people of Australia are charged with taking on a greater share of the responsibility to provide for their own retirement needs (S. Taylor & Wagland, 2011). Accordingly, organisations such as the Financial Literacy Foundation and a variety of financial literacy education programmes were put in place to address these concerns (S. Taylor & Wagland, 2011).

Aotearoa New Zealand

Similar issues have arisen in New Zealand. Widdowson and Hailwood (2007), with reference to the 2006 *ANZ-Retirement Commission Financial Knowledge Survey* and a 2007 poll commissioned by the Reserve Bank, state that while New Zealanders generally felt positive in managing their personal financial affairs, there were substantial knowledge gaps regarding key financial concepts such as compound interest, inflation and the relationship between risk and return (Retirement Commission, 2006).

As with other developed countries, New Zealanders are also faced with the challenge to provide for the country's aging population. According to Statistics New Zealand (2009), the population structure will continue to gradually but significantly change, resulting in more older people. Those aged 65+ will almost double to 1 million in the late 2020s compared to 550,000 in 2009, and is expected to overtake the number of children below 14 years of age. Also, one-fifth of New Zealanders will be aged 65+ by 2031, compared with only one-eighth in 2009. However New Zealanders are not preparing well financially for retirement. Widdowson and Hailwood (2007), note that "*less than five percent of total New Zealand household income is derived from sources such as private pension schemes and investments*" (p. 39). Limited provisions for retirement coupled with an aging population profile translate to an increased burden for the government and younger working population to sustain the needs of the retired.

Compounding this problem is New Zealanders' increasingly unsustainable (lack of) saving and spending patterns. The Reserve Bank of New Zealand (2011) figures show that total housing and consumer loan debt has increased around six-fold over the past two decades, and in June 2011 stood at 147% of household disposable income. Additionally, measured household savings have continued to decline instead of increasing to accommodate rising debt levels (Burns & Dwyer, 2007; Widdowson & Hailwood, 2007).

Determined to bring the situation under control, the Retirement Commission (now The Commission for Financial Literacy and Retirement Income) was established in 1993 alongside various strategies and financial educational programmes (S. Taylor & Wagland, 2011).

Ngāi Tahu

Apart from an aging population, there have been other notable shifts on political, economic, and social fronts over recent years. In particular, Māori have begun to be compensated for the loss of their Treaty of Waitangi rights in relation to land, economic and social development.

During the British colonisation, most structural reforms put in place prioritised British interest and disregarded Māori interest. Not only were Māori community resources withdrawn, they also suffered setbacks particularly in education, employment and rights to resource and land (Douglas, 2001). Even after independence, there remained a large and still widening socio-economic gap between Māori and non- Māori (Lunt, Spoonley, & Mataira, 2002). However, Bourassa and Strong (2000) have argued that through the Waitangi Tribunal and subsequent legislation, New Zealand has "moved more vigorously and more comprehensively to address wrongs inflicted on its indigenous population than other former British colonies" (p. 157). One such action was the settlement with Ngāi Tahu.

It is not the intention here to describe the passage of the Ngāi Tahu claim and settlement (Te Kēreme) (Te Rūnanga o Ngāi Tahu, n.d.-b). However one of the components of the Crown's Settlement Offer which is of particular interest here is the 'Economic Redress' which included, among others, $170 million in cash and the option to purchase certain Crown assets, such as the Deferred Selection Process and Right of First Refusal mechanisms (. Te Rūnanga o Ngāi Tahu, n.d.-c). Since 1996, Te Rūnanga o Ngāi Tahu have grown this asset base to show Group financial equity of $591 million in June 2011 and over the fifteen years have allocated over $227 million to *iwi* activities (Te Rūnanga o Ngāi Tahu, 2011).

Māori in general have experienced favourable economic and demographic shifts over recent decades (Coleman, Dixon, & Maré, 2005). Even so, social and economic indicators from the most recent census results (2006) indicate that Māori are at a relative disadvantage to non- Māori, lagging behind in health, education, employment, income and crime. Economically Māori show lower levels of annual income than non- Māori, higher levels of household deficit and lower levels of home ownership (Robson, Cormack, & Cram, 2007). The 2006 and 2009 Retirement Commission Survey reported that 70% of Māori ended their education after secondary school and that a significant proportion of them left without a qualification. The same survey indicated that Māori are more likely to have lower financial knowledge, negative net worth and low income, although this has improved over the years (Retirement Commission, 2006, 2009). They are also less familiar with home loans, investing, and financial planning (Retirement Commission, 2006). Recent developments have seen the release of a strategy to improve financial literacy of Māori over the next eight years (Commission for Financial Literacy and Retirement Income, 2012).

But it appears that Ngāi Tahu fares better on social and economic indicators than Māori in general. Although *iwi*-based statistics are not readily available, a personal communication from A. Scott (Te Rūnanga o Ngāi Tahu, March 2012) highlighted that in 2006 the Māori unemployment rate was approximately twice the rate of non- Māori and that of Ngāi Tahu, and that Māori youth (15-25 years) unemployment was 27.5% whereas Ngāi Tahu’s rate was 14%. Ngāi Tahu also display higher levels of financial knowledge and money management than Māori in general (ANZ Bank, 2010). The 2010 ANZ Ngāi Tahu Financial Knowledge Survey described the financial literacy of Ngāi Tahu as being generally consistent with the national New Zealand results (ANZ Bank, 2010). Additionally, the findings of the survey also showed that Ngāi Tahu were better informed and more aware of their financial situation than before.

As will be discussed in the subsequent sections, culture is not only an important factor that may influence a person’s financial literacy level, but is also instrumental in determining the goals desired by a certain community or individual. Therefore, any research of Ngāi Tahu financial literacy must consider Ngāi Tahu’s culture. Ngāi Tahu, as with other Māori tribes in New Zealand, is a collective entity that has its own history, myths, proverbs, dialect, customs and practices (*tikanga)*, and therefore its own cultural identity (O'Regan, 2001). Factors such as urbanisation, cross cultural marriages, the national education system, legislation such as the Native Land Act 1865, global dispersion and assimilation into the European culture, have challenged the continuation of Ngāi Tahu culture (O'Regan, 2001). However the passage of the Ngāi Tahu claim and settlement (Te Kēreme) has provided the building blocks for economic and cultural revival and security in the future.

Literature suggests that further improvements in the general financial literacy level of Ngāi Tahu may contribute to higher living standards and will help to safeguard the assets of the *iwi* for future generations. It is important to have an adequate level of financial literacy to make the ‘right’ decisions in order to achieve financial well-being (Lusardi, 2008; Ntalianis & Wise, 2011; Widdowson & Hailwood, 2007).

THE MEANING OF FINANCIAL LITERACY

Unfortunately, there is no universally-accepted definition of “financial literacy” in the literature, Worthington (2006) highlighted that the concept of financial literacy or financial capability can range from a very broad definition encompassing a general understanding of economics to narrower definitions, such as an understanding of basic money management which includes budgeting, saving, and investing.

A review of the extant literature reveals that the contemporary notion of financial literacy is often associated with issues that are often thought to be intimidating if not irrelevant to the average consumer; this includes topics on stock markets (Williams & Satchell, 2011), complex financial products (ANZ Bank, 2003; S. Taylor & Wagland, 2011), retirement schemes (Lusardi & Mitchell, 2005), mutual fund industries and regulatory frameworks (Carvajal, 2007), and even the financial crises (Gallery & Gallery, 2010; Gerardi, Goette, & Meier, 2010). On the contrary, financial literacy does not necessarily have to imply ‘advanced’ or ‘professional’ knowledge, nor does it have to deal with skilful stock trading or comprehensive retirement planning. In fact, financial literacy can be seen as a skill that everyone can appreciate and apply in their everyday financial decision-making.

The New Zealand Retirement Commission and the Australian Securities Investments Commission (ASIC) define financial literacy as:

> *"the ability to make informed judgements and to take effective decisions regarding the use and management of money"* (ASIC, 2003, p. 7; Retirement Commission, 2009, p. 6).

Therefore, a financially literate person must have the competence and knowledge to make "appropriate" decisions especially when dealing with money matters. This prevailing definition was embraced in various Australian and New Zealand research and surveys such as the ANZ-commissioned surveys in Australia and is said to be adopted from the National Foundation for Education Research in the UK (Landvogt, 2006).

In line with the ANZ financial literacy framework, ASIC (2003) further elaborated that the idea of financial literacy is not simply measured by one's ability to generate wealth. Financial literacy requires, *inter alia*, the demonstration of mathematical proficiency, economic and financial understanding (understanding what money is and how it is exchanged) and financial competence (understanding basic financial services, comprehension of financial records and the awareness of the trade-off between risk and return).

In the past decade, there have been numerous surveys conducted to gauge the financial literacy of individuals, including studies spearheaded by Lusardi, the ANZ Bank, ASIC and the New Zealand Retirement Commission. In designing the Health and Retirement Study (HRS) module, Lusardi and Mitchell (2005) singled out three basic yet fundamental concepts characterising financial literacy: the working of interest rates; the effects of inflation; and the concept of risk diversification. The former two, concerning compounding and inflation, test the respondents' "*knowledge of fundamental economic concepts and competence with basic financial numeracy*". Meanwhile, the latter on stock risk evaluates the respondents' "*knowledge of risk diversification*" (p. 4).

Similarly, Mason (2000) summarises the term as "*an individual's ability to obtain, understand and evaluate the relevant information necessary to make decisions with an awareness of the likely consequence"* (p. 31). Most notably, the idea of financial literacy was likened to that of information literacy in the sense that both require information gathering and processing, and an understanding of the potential implications to make well-informed decisions. The distinctive feature of financial literacy (as opposed to information literacy) is, of course, the inclination towards achieving some form of financial gain.

From the discussion above, it is clear that regardless of what definition one adopts, the end goal is identical: to allow individuals to make well-informed financial decisions and enhance financial health. Though "literacy" by definition denotes the possession of knowledge on a particular subject (Soanes, 2002), behavioural research and other academic work (as will be observed in the upcoming sections) broadens the scope of "financial literacy" further by taking an alternative and long term view with regards to consumers' financial well-being instead of focusing on one-off decision making.

In a study on financial literacy in Australian schools, ASIC (2003) highlighted the importance of individual behaviour, in addition to financial knowledge and technical skills in order to promote financial literacy. ASIC emphasised the significance of consumers' attitudes to spending and saving, capability to take on financial responsibility, and exercise of prudence when it comes to personal financial decision-making. Furthermore, a financially literate individual must also be able to take charge of his/her own financial affairs and be confident to request assistance as needed. In a similar vein, Taylor and Wagland (2011) commented that financial literacy is not only concerned with financial knowledge but also attitudes and behaviours, perception, awareness and individual personality.

Comparatively, De Meza, Irlenbusch and Reyniers (2008) in their report to the Financial Services Authority (FSA) of the United Kingdom, highlighted the importance of the financial behaviour and attitudes of individuals in planning and managing their finances. They questioned the effectiveness of existing efforts, claiming that they place too much attention on trying to make consumers better informed instead of imparting positive behavioural changes.

As such, the notion of financial literacy should convey more than just the idea of financial knowledge and skills. As intimated by ASIC (2003) and de Meza, et al. (2008), being financially literate should also mean that one has to have the right attitude and behaviour towards money. This, to a great extent, explains the many attempts made by studies and surveys to measure not only the participants' financial understanding, competence and planning but also their attitude and behaviours, although the latter is much harder to gauge.

The remainder of this paper will be structured around the financial literacy framework presented below, hence subdividing the discussion and bringing to light two fundamental concerns: what are the antecedents of financial literacy and their strength in driving financial literacy levels?; and does improved financial literacy result in better financial decision making and thus higher financial well-being? The discussion of these two themes will as much as possible (in light of the scarcity of academic work) take into account the perspective of Ngāi Tahu, as its financial well-being is one of the primary concerns of this literature review.

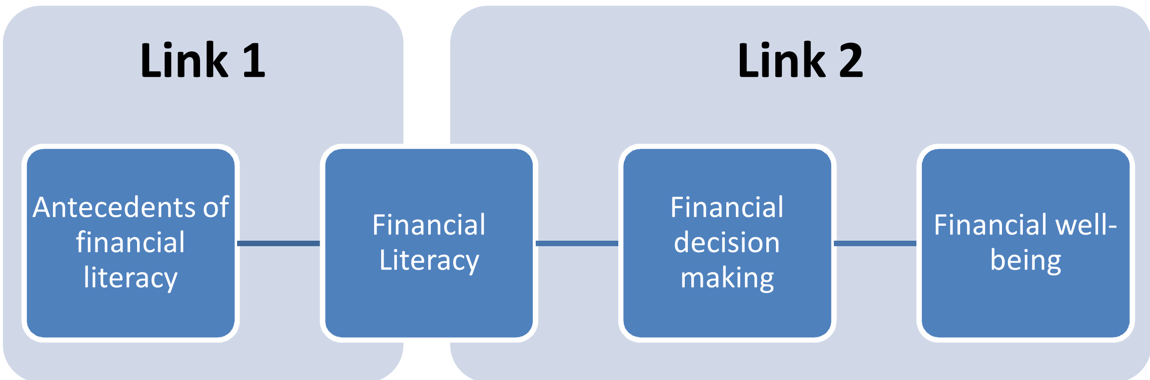

Figure 1: A financial literacy framework associating the antecedents of financial literacy to a person's financial literacy and well-being.

Having considered the meaning of financial literacy, the following section will examine the literature for antecedents that may contribute to the financial literacy of Ngāi Tahu people (link 1).

ANTECEDENTS OF FINANCIAL LITERACY:

What are the factors affecting levels of financial literacy?

Given the increasing importance of financial literacy in the 21st century, it is essential to identify the factors that drive changes in financial literacy levels and establish the strength of their individual effects. Recent surveys provide some preliminary evidence on variables that might explain variations in individuals' ability to make sound financial decisions.

A 2008 survey conducted by the ANZ Bank (2008) in Australia found a strong correlation between financial literacy and socio-economic status, with the lowest levels of financial literacy associated with:

- those having lower education;
- those not working for a range of reasons or in unskilled work;
- those with lower incomes;
- those with lower savings levels;
- single people; and
- people at both extremes of the age profile (18–24 year olds and those aged 70 years and over).

The 2010 ANZ Ngāi Tahu Financial Knowledge Survey also finds that a person's financial competency tends to vary with age, education, income, and employment status. On another note, the survey result also indicates that participants of investment funds or saving initiatives such as Whai Rawa[2] are more likely to be associated with higher financial knowledge than those who do not participate. As for Lusardi and Mitchell (2007a), the conventional determinants of financial literacy, and hence financial well-being, include variables such as educational attainment, sex, race/ethnicity, marital status, age, number of children, retirement status, and household income.

It is noted that while these studies have contributed to the financial literacy literature and offered policy-makers direction in their endeavour to improve general financial literacy levels, most findings remain far from being absolute. For example, the ANZ Bank survey (2008) found that 19% of people with household incomes below $25,000 (low income group) had financial literacy scores that placed them in the top 40% of the population although the average financial literacy score for people in that group was lower than that of the total sample.

[2] A savings scheme operated by Te Rūnanga o Ngāi Tahu

The following subsections will discuss in greater detail the main proposed antecedents of financial literacy, which include education level, behavioural and psychological biases, cultural background, race and values, and various others.

Education level

A person's education level is almost always argued to be the principal driver of financial literacy. This subsection will consider not only the impact of financial education, but also those of general education levels and literacy programmes.

In a speech before the Committee on Banking, Housing, and Urban Affairs, Alan Greenspan (2002), Chairman of the US Federal Reserve Board, stated that:

> *Improving basic financial education at the elementary and secondary school level is essential to providing a foundation for financial literacy that can help prevent younger people from making poor financial decisions that can take years to overcome…. [Also,] competency in mathematics--both in numerical manipulation and in understanding its conceptual foundations--enhances a person's ability to handle the more ambiguous and qualitative relationships that dominate our day-to-day financial decision-making…. Focusing on improving fundamental mathematic and problem-solving skills can develop knowledgeable consumers who can take full advantage of the sophisticated financial services offered in an ever-changing marketplace* (para. 12).

Research has shown that the dissemination of information and literacy training, delivered through various financial education programmes can lead to positive outcomes, such as higher savings rate and proper retirement planning (Atkinson, 2008; Bayer, Bernheim, & Scholz, 1996; Lusardi, 2004). By providing the "*knowledge, aptitude and [necessary] skills base*", financial education enables individuals to understand the financial services available to them and manage their finances effectively (Mason & Wilson, 2000, p. 5). These findings reinforce the notion of financial education conceived by the Organisation for Economic Co-operation and Development (OECD), which described financial education as "*the process by which financial consumers/investors improve their understanding of financial products and concepts and, through information, instruction and/or objective advice, develop the* *skills and confidence to become more aware of financial risks and opportunities, to make informed choices, to know where to go for help, and to take other effective actions to improve their financial well-being*" (OECD, 2005, p. 26).

However, the financial literacy literature has yet to produce conclusive evidence as to whether financial education leads to actual improvements in financial literacy, which is comprised of financial knowledge, behaviour and attitudes (Hung, Parker, & Yoong, 2009). Nonetheless, financial literacy is generally discerned as having a strong association with education levels, with policy-makers believing that the "*impact of poor decision making due to lack of financial knowledge can be overcome through mandated financial education*" (Mandell & Klein, 2009, p. 16). Early authors such as Bernheim, Garrett and Maki (1997) found that financial education mandates in high school considerably increased an adult's propensity to save. Similarly, Bayer, Bernheim and Scholz (1996) argued that financial education at the workplace enables employees to better appreciate economic vulnerabilities, and thus explains the increase in participation and contributions to voluntary saving plans.

A more contentious issue is the identification of the specific skills or knowledge that should be emphasised in education programmes aiming to boost financial literacy levels. The literature has also begun to examine the incremental effect of education efforts on one's financial literacy. Most of these studies are driven by scepticism about the validity of claims made by "education advocates" and the lack of empirical evidence (Mandell & Klein, 2009; Willis, 2009).

On identifying what specific "financial knowledge" is required to cope with the financial complexities of the modern world, Lusardi and Mitchell (2005) point to three economic concepts that they claim constitute "basic financial literacy": interest compounding, inflation, and risk diversification (Lusardi & Mitchell, 2005). In demonstrating that proposition, Lusardi and Mitchell (2007b) showed that financial literacy is strongly correlated with exposure to economics in school and company-based financial education programmes. Concurrently, Van Rooij, Lusardi and Alessie (2007) suggested that people who studied economics were much more likely to display higher levels of financial literacy in the future.

Whereas "financial knowledge" is often considered central to financial literacy, Hung, et al. (2009) cautions that it should not be confused with "general knowledge". On the latter, Lusardi and Mitchell (2007a) discovered a steep "*wealth-education gradient*" in their study of Baby Boomers (p. 208). In particular, financial literacy level was found to benefit immensely from an individual's general (rather than financial) education level. Additionally, Australian and New Zealand financial literacy surveys have consistently identified individuals with higher education qualifications amongst those with the highest levels of financial literacy (Australian and New Zealand Bank, 2005, 2010; Retirement Commission, 2009).

Recent research has also revealed that financial education may have a non-linear impact on financial literacy – an indication that other variables may be at play. Based on information acquired from the Health and Retirement Study (HRS), Lusardi (2004) found that families from the lowest income levels and those with low education responded most favourably to retirement seminars. Individuals from the lower quartiles are the ones who need the most help, the author argued, and therefore the positive wealth effect was stronger amongst these subgroups.

However, criticisms of studies claiming to find support for financial literacy education have begun to emerge, especially in the face of methodological setbacks and conflicting academic evidence (Willis, 2008). Despite being heavily backed by policy-makers and literacy advocates, training, seminars, and other programmes aiming to improve financial knowledge are said to impart minimal impact, especially when other factors such as peer effects, social effects and behavioural biases are taken into account (de Meza et al., 2008; Duflo & Saez, 2004). Mandell and Klein (2009), for instance, reported that the financial literacy of those who took personal financial management courses during high school did not significantly surpass those who did not.

Notwithstanding the abundance of academic work suggesting a positive association between education and financial literacy, Taylor and Wagland (2011) warn that the results should not be construed to imply a causal relationship between the two variables. The authors questioned whether education programmes truly brought any changes to individuals' financial competency and behaviour, claiming that there is a mismatch between programmes intending to increase financial literacy and the skills individuals need to manage their everyday finances. They also cited difficulties in measuring their effectiveness and in obtaining reliable evidence to substantiate the said correlation.

Commenting on the body of research observing a positive correlation between financial education (in this case, attending a retirement seminar) and financial literacy and well-being (private wealth or contributions to pension funds), Lusardi (2004) highlighted the same set of problems, stating that "*it is not completely clear what this correlation means*" (p. 8). While participation in retirement seminars could lead to increased wealth levels, the direction of causation could just as well be in the opposite direction (a problem of endogeneity), i.e. wealthy people, given the amount of assets that they possess, may have a greater interest in such seminars and hence, are more likely to attend them. The author speculated that seminar attendances could simply be a "*proxy for individual characteristics and attitudes towards saving*", rather than a measure of the extent of financial education (p. 9).

Also on the efficacy of financial capability initiatives and education, Atkinson (2008) downplayed the importance of financial knowledge, arguing that there is little value in keeping abreast of the latest developments in the financial landscape. Apart from the lack of empirical evidence, the author also claimed that "*we know virtually nothing about the impact of initiatives on particular aspects of financial capability, or the most appropriate delivery mechanisms for use with particular groups*" (p.10). A commonly cited reason for this stems from the design of financial education programmes, which tend to be somewhat superficial and not tailored to address specific knowledge gaps, which makes subsequent evaluation difficult (Atkinson, 2008; Fox, Bartholomae, & Lee, 2005; Willis, 2008). Lusardi and Mitchell (2007b) also note that there is a paucity of data on what economic and financial knowledge is most relevant in enhancing one's ability to make prudent financial decisions.

Exacerbating things further are methodological issues that are yet to be solved; the primary one being the absence of any straightforward way to evaluate the success of educational programmes. On this matter, Bernheim, et al. (1997) put forward several reasons: first, such courses are not homogenous and cannot be benchmarked or compared to another; second, self-reported measures, though easier to gather, are subject to biases that may tilt the results toward finding that education is effective; third, financial education strategies do not bring about an immediate change and can take several years to produce a noticeable effect. With regards to outcome measures, a majority of research work have opted for savings and retirement related measures although it remains unclear whether they are representative of an individual's financial literacy and well-being (Lyons, Palmer, & Scherpf, 2006).

In addition to the above, Willis (2008) highlighted two sampling biases that could affect the study results: non-random, non-response bias (those who think they have changed their behaviour are likely to be the most eager to report it than those who do not); and self-selection bias (individuals who choose to attend personal finance classes may be better informed or more motivated, may have more free time for researching and making financial decisions, may possess personalities more conducive to welfare enhancing financial behaviour).

Concurrently, there is also a lack of "systematic testing" of the methods used to deliver financial knowledge and skills (Atkinson, 2008, p. 73). Willis (2008), in a review of the literature suggests that "*long-term, individually-tailored and responsive programs delivered in small classrooms and one-on-one settings*" (p. 48), such as direct counselling are much more effective compared to self-study and other one-off courses. This, it was argued, undermines the advocacy for more financial literacy education programmes as the former relies on active intervention from a third party rather than increases in financial knowledge.

In New Zealand, the Commission for Financial Literacy and Retirement Income has been working closely with schools and tertiary institutions in efforts to educate New Zealanders about managing their personal finances (The Commission for Financial Literacy and Retirement Income, n.d.). However, similar to the findings of overseas research, there is still a lack of academic support to back the inclusion of financial teachings in New Zealand educational institutions.

In a similar vein, ASIC (2003) observes that schools in Australia are already teaching aspects of financial literacy as part of their teaching syllabus. Given the infancy of these efforts however, ASIC admitted the absence of a systematic approach to the teaching of financial knowledge and "*coordination across curricula to reinforce and ensure systematic learning*" (p. 23). Nevertheless, the Australian regulator remained confident that many more opportunities exist in the curriculum, albeit being currently under-utilised.

In the case of “MoneyMinded” – an ANZ funded adult financial literacy programme designed to help people build their financial skills, knowledge and confidence through workshops delivered by financial counsellors and online materials, the absence of a “*large-scale, quantitative evaluation*” is a major drawback considering the large numbers of participants it managed to attract. (Atkinson, 2008, p. 60; MoneyMinded, n.d.)

In summary, individuals who are more highly educated tend to exhibit a higher degree of financial literacy and well-being, consistent with the belief that financial literacy education empowers consumers and equips them with the knowledge necessary to make informed decisions with regards to budgeting, saving and investment, which in turn should lead to an increase in their financial well-being (Atkinson, 2008). More notably, this was claimed to be especially so for vulnerable population subgroups that have traditionally been underserved by the financial system (Greenspan, 2002).

However, the causal relationship between education and financial literacy remains debated in the literature. Therefore, it is possible that the undirected provision of information may be wasteful and even counterproductive (Willis, 2009). If Te Rūnanga o Ngāi Tahu is to provide financial literacy education to Ngāi Tahu, then it appears that it should work in conjunction with educators and researchers to critically analyse the correlations identified in the literature (Fox et al., 2005). It could then tailor its programs to meet the specific needs of Ngāi Tahu, so that it devises programs that are effective in realising lasting benefits.

Behavioural and psychological biases

According to de Meza (2008), making people better informed is of minimal value if it has no effect on behaviour. These authors suggested that financial capability is likely to be more concerned with psychological factors such as self-control, procrastination and immediate gratification rather than a lack of financial knowledge, *per se*. Thus, it could be more effective to address these behavioural inclinations/biases directly rather than trying to “*educate people out of error*” (p. 8).

This belief is similarly held by Gallery and Gallery (2010) in their criticism on the failure of regulatory responses and educational efforts to account for these biases.

While the existing literature is strongly supportive of the acquisition of sophisticated financial knowledge through education, such pursuits do not necessarily guarantee better financial outcomes (Hilgert, Hogarth, & Beverly, 2003; Mandell & Klein, 2009). Financial plans are not necessarily followed by action (Choi, Laibson, Madrian, & Metrick, 2002) and irresponsible parties are still said to be able to exploit the "*heuristics, biases, and emotional coping mechanisms*" that individuals rely on and interfere with welfare-enhancing behaviours (Willis, 2008, p. 3).

Choi, Laibson and Madrian (2006) found that despite coming from excellent educational backgrounds, their test subjects which included MBA students and college graduates (with an average combined SAT score placing them at least on the 98th percentile in the US) still struggled with S&P 500 index fund investments. Even when "*transparent and salient*" information was disclosed, investors still "*overwhelmingly*" failed to minimise index fund fees (p.25). On top of that, the subjects appeared to have been influenced by irrelevant facts which were part of the materials presented to them.

The behavioural economics literature has shown that humans are "*systematically prone to various kinds of cognitive biases*" which can lead to suboptimal decisions (de Meza et al., 2008, p. 52). Most of these originate from our limited cognitive ability and reliance on rules of thumb or heuristics in decision-making processes. These biases include procrastination, regret aversion, risk aversion, compulsiveness, altruism, peer pressure, mental accounting and status quo bias (de Meza et al., 2008; Hilgert et al., 2003; Ntalianis & Wise, 2011).

Procrastination and instant gratification, for example, explain why individuals' actions or forbearance thereof are sometimes incompatible with the standard economic principles of rationality and welfare maximisation. In a study on retirement planning, O'Donoghue and Rabin (1998) pointed out that people perform poorly in retirement planning because they delay actions despite being aware that prompt action would be better. The underlying cause for this is said to be individuals' time-inconsistent "*taste for immediate gratification*" (p. 1). The literature describes it as hyperbolic discounting - the tendency of individuals to have high short-term discount rates but low long-term discount rates (O'Donoghue & Rabin, 1998; Phelps & Pollak, 1968). For this reason, incidents of high interest credit card borrowing, unwillingness to engage in financial planning, and low participation in voluntary courses are not unusual regardless of one's financial knowledge.

Loss aversion –the tendency of individuals to weigh losses more than gains– is also known to influence one's decision making (de Meza et al., 2008; Kahneman & Tversky, 1979). Genesove and Mayer (2001) provide direct evidence of this suboptimal behaviour based on housing market data from downtown Boston in the 1990s. According to their study, sellers subject to nominal losses tended to hold on to assets longer and set higher asking prices than what the market would pay to 'recoup' some of the cost. This would not be the case under standard economics, however, as properties should be sold for what the market will bear and not influenced by prices at the time it was purchased (de Meza et al., 2008).

There is an extensive literature on other psychological biases that are likely to influence financial decision making such as default (tendency to stay with the default), regret aversion (tendency to avoid taking an action fearing that in hindsight it turns out to be suboptimal), confirmation or myside (tendency to be biased in evaluating evidence by one's own previously held opinions), and the 'curse of knowledge' (people being overwhelmed with information leading to loss of focus, over-deliberation and misuse of information) (de Meza et al., 2008). Although a thorough discussion of each of these is beyond the scope of this paper, it highlights the significance of behavioural and psychological impacts in one's ability to attain financial well-being.

Thus far, the advancement of behavioural economics has been towards explaining choices rather than trying to change them (de Meza et al., 2008). Nonetheless, the literature does present a number of studies suggesting remedies to overcome cognitive biases that inhibit prudent decision-making in relation to personal finance. One such example is provided below.

The problem of procrastination, as explained by O'Donoghue and Rabin (2001), is induced when people are encumbered with too many choices. Thus, the first step to overcoming this can simply be to reduce the complexity of the decision that they have to make. Madrian and Shea (2001), in particular, found that the participation rate in 401(k) –a retirement savings plan in the United States–increased dramatically when enrolment became automatic and that the majority of the participants retained both the contribution rate and fund allocation at the enrolment default. Apart from making participation simple, the authors suggested that the change to automatic enrolment and default contribution rate was perceived by the participants as ‘investment advice’. The usage of a bias (tendency to stick with the default) to correct a bias (procrastination), or what Willis (2008) refer to as ‘welfare-enhancing defaults’ proves to be an avenue for further research and could be valuable for future policy designs.

The pension and savings industry in New Zealand appears to have utilised these findings from the US behavioural finance and financial literacy literature. An example is the KiwiSaver saving scheme, a government initiative intended to help New Zealanders save for retirement (Littlewood, 2010). Although the “direct applicability” to New Zealand is said to be somewhat unclear, the adoption of automatic enrolment in the KiwiSaver scheme appears to have been effective in increasing participation (Toder & Khitatrakun, 2006). More specifically, March 2010 statistics provided by the Inland Revenue Department (2010) shows that 512,000 (37.4%) KiwiSaver members did not actively sign up for the scheme. However, the fact that nearly one third of those who were automatically enrolled, subsequently opted-out, draws attention to the lack of generalisability of human behaviour and the possible presence of localised issues unique to New Zealand.

Although the research work presented here does not encompass every topic in the behavioural economics literature, it provides indirect evidence that financial education is unlikely to produce lasting effects on financial literacy and decision-making behaviour if psychological and cognitive attributes of the Ngāi Tahu participants are not taken into account. According to Willis (2008, 2009) and de Meza, et al. (2008), the way forward for policy makers and educators is to recognise the existence of behavioural and psychological biases; and establish strategies that promote welfare-promoting behaviour such as higher saving and proper budgeting. They also propose the use of active intervention by counsellors rather than passive communication of information as the latter proved to be somewhat ineffective.

Cultural background, race and values

Cultural factors can also affect one’s financial capability. The precise definition of culture remains debatable, but it may be understood in our case as a complex entity of knowledge, values and other factors shared by the members of a social group, which steer individual behaviour and are transmitted from one generation to the next, via teaching and imitation (Breuer & Quinten, 2009; Stulz & Williamson, 2003).

Reuter (2011) has observed a rise in ‘cultural approaches’ to finance research and that ‘cultural biases’ are increasingly being accepted as a basis of argument within the behavioural finance literature. However, while cultural concepts have successfully secured a firm footing in the human psychology literature, the amount of research specifically directed towards investigating the link between cultural influences and one’s financial literacy, behaviour and material well-being have been scarce.

However, Grinblatt and Keloharju (2001) provide some empirical evidence on how familiarity with language and culture might influence one’s investment preferences. Supporting their case, Finnish stock market data showed that investors tend to hold and trade stocks of firms that communicate in the investor's native tongue and have chief executives with similar cultural background. However, the authors stopped short of explaining the roles that language and culture might play in one’s cognitive processes when dealing with investment decisions.

Extending the literature on the impact of culture on financial behaviour, Matters (2008) offers a unique analysis of the different characteristics exhibited by a diverse range of cultures in a worldwide survey comprising 22 countries. Interestingly, the study shows that people from countries that rank higher on the individualism scale[3] tend to have a lower propensity for risk. This, the author explains, is due to the tendency of people from individualistic societies to place more interest in themselves and their immediate families compared to the larger community. In collectivistic societies such as China, however, trust and social networking between family members, friends and associates are of utmost

[3] A measure of the degree of individualism or collectivism of the people from various countries; 0 being low individualism/ high collectivism and 100 being high individualism/ low collectivism (Hofstede, 1984).

importance. Individuals are integrated into "*strong cohesive in-groups, generally extended families who protect one another in exchange for unquestioning loyalty*" (p. 42). Individuals from collectivistic groups (such as Ngāi Tahu (Tassell, 2004)) are therefore less risk averse as the group members provide a safety net that is absent in individualistic cultural societies such as the United States.

Other research in this area shows that one's cultural and racial background can influence saving behaviour (Fisher, 2010), an analysts' ability to make accurate forecasts (Clement, Rees, & Swanson, 2003), and also decision making under conditions of complexity, uncertainty, and ambiguity (Gaenslen, 1986).

Ngāi Tahu has specific cultural values (e.g. spiritual tie with its land and water, *whakapapa*, *whakawhanaungatanga)* (Harmsworth, 1997; Ngāi Tahu Property, 1996) which may influence the acquisition of, and attitudes towards financial literacy and the financial decision making processes. It is noted however, that the distinction between ethnic or cultural or religious attribute (i.e. values and beliefs) and mere affiliation are not always clear-cut. For instance, Hilary and Hui (2009) found that an individual's risk aversion correlates positively with both individual religiosity (how religious a person is) and religious affiliation but how each of these affect one's risk appetite remains unclear. Hana O'Regan (2001) describes that an individual's strength of identification with Ngāi Tahu depends on factors such as one's native tongue and one's involvement in Ngāi Tahu activities (especially at the *marae* and *rūnanga* levels). This variation in cultural identification may have some effect on Ngāi Tahu individuals' financial literacy. Nevertheless, in general, culture is persistent and people will bring their cultural norms, values and beliefs into new environments (Matters, 2008).

Another difficulty is that the literature tends to conceptualise culture according to nationality, rather than ethnicity, which is more relevant to a Ngāi Tahu study. Furthermore, most research uses self-reported measures of culture – a construct that is in itself complicated and mostly approximated by proxies (Clement et al., 2003). All of which, perhaps, is due to the apparent absence of any consistent cultural framework within the finance literature (Reuter, 2011).

Other antecedents

Other factors which may impact on the acquisition of financial literacy are interactive learning tools and practical experience, age and life experience, gender and marital status. These are briefly discussed below.

Initiatives such as Sorted, KiwiSaver, and Whai Rawa provide New Zealanders with a number of opportunities to actively engage in practical and active learning rather than passive assimilation of knowledge, as discussed in the preceding section on financial education. In an early effort to increase financial literacy levels, the Retirement Commission began to provide financial education and other resources through the Sorted website (www.sorted.org.nz). Crossan (2010), the current New Zealand Retirement and Financial Literacy Commissioner, commented that Sorted has grown to include more than 40 interactive tools, an insurance calculator and a 'money tracker' tool to help individuals deal with personal financial affairs.

Such a learning environment could prove to be advantageous provided the learning tools are "*well designed, interactive and incentivised*" (de Meza et al., 2008, p. 54). This suggests that one could attain better proficiency in financial matters with more hands-on experience dealing with various issues relating to financial products rather than learning the theories underlying them (Lusardi, 2008). In comparison to formal education such as seminars, this learning-by-doing approach can also help to correct confidence issues and psychological biases (loss aversion, for instance) which may inhibit optimal financial decision making.

As the literature suggests that financial literacy develops with exposure to saving and investing know-how, one could expect general financial literacy to increase with age and life experience (Lusardi, 2008; Madrian & Shea, 2001). This suggests that a longitudinal study on Ngāi Tahu's financial literacy would be useful to evaluate how experience affects literacy and financial behaviour over time.

Numerous studies show statistical associations between financial literacy and various other demographic and socioeconomic factors such as gender and marital status (Australian and New Zealand Bank, 2005; Lusardi & Mitchell, 2005;

Retirement Commission, 2009). Theorising the links is not well developed but some discussion is contained below.

Women are less likely to be financially literate (Lusardi, 2008). This may have originally been due to lower levels of general education and qualification amongst women, and gender biases concerning women's place in society. With increasing levels of participation and performance of women in education and the paid workforce (Ministry of Women's Affairs, 2010), it is likely that this difference is diminishing. In fact the New Zealand Retirement Commission (Retirement Commission, 2009) presented evidence showing a decreasing financial knowledge gap between genders since its earlier survey in 2006 e.g. the proportion of females in the high knowledge group increased from 12% to 40%.

Theorising about the effect of marital status might include the issue of goal replacement i.e. married couples may be more interested in home ownership than single persons and therefore more become more financially literate as they learn about saving, budgeting and mortgages.

CAN IMPROVEMENTS IN FINANCIAL LITERACY LEAD TO BETTER FINANCIAL DECISION MAKING AND FINANCIAL WELL-BEING?

Unfortunately, the literature does not give a clear indication as to whether financial literacy improvements promote better financial decision-making and greater financial well-being, due to the use of inconsistent definitions and measures, and the lack of academic work demonstrating such an effect (Atkinson, 2008). This is discussed below.

Firstly, it is important to note that a precise definition of 'financial well-being' does not exist. As per the literature, this may include considerations of a person's performance in credit, liquidity, savings, asset allocation, inflation protection, tax burden and housing expenses (Greninger, Hampton, Kitt, & Achacoso, 1996). Similarly, the InCharge Financial Distress/Financial Well-Being Scale (IFDFW) infers 'financial well-being' from a person's level of financial stress, personal financial situation and self-sufficiency, all of which are assessed through a self-reported, 8-

question instrument (Olson, 2007). A more common approach in the literature, however, is to equate ‘financial well-being’ to simpler proxies such as savings rate (e.g.: Bayer et al., 1996; Lusardi, 2004), wealth accumulation (e.g.: Bernheim et al., 1997) and retirement preparedness (e.g.: Crossan, Feslier, & Hurnard, 2011; Lusardi & Mitchell, 2005), which are easier to measure. Some researchers have also attempted to measure financial well-being in terms of one’s psychological health (e.g.: M. P. Taylor, 2011).

Burns and Dwyer (2007) note that concepts such as “investment” have cultural specificity. Therefore in the case of Ngāi Tahu, these afore-mentioned conventional conceptualisations of ‘financial well-being’ may even need further refining as a greater emphasis is placed on enriching Ngāi Tahu culture and prosperity for current and future generations (. Te Rūnanga o Ngāi Tahu, n.d.-a). According to Professor Charles Royal (2011), when it comes to Māori economic development, more important than personal income are objectives such as the renewal of *mana*, the creation of sustainable value generating enterprises in *iwi, hapū, whānau* and general Māori communities, and the uplifting of Māori participation in New Zealand’s economy. Similarly, Te Rūnanga o Ngāi Tahu emphasises values such as tenacity (*toitu te rangatiratanga*), sustainability (*toitu te ao turoa*), culture (*toitu te iwi*), and innovation (*toitu te pae tawhiti*) (. Te Rūnanga o Ngāi Tahu, n.d.-d).

Key authors such as Lusardi and Mitchell have been persistent in proclaiming the importance of financial literacy and its implications in personal finance decisions. In their 2007 paper, the authors discuss the evidence obtained from the 2004 HRS which shows that financial knowledge –and thus financial literacy– significantly explains one’s savings behaviour and retirement planning, which can be taken as indicators of financial wellbeing. Most notably, the explanatory power of ‘financial literacy’ was found to be greater than that of other predictors such as education, marital status, family size, race and gender (2007c).

In addition, the literature consistently suggests that financial literacy –the ability to make informed judgements and decisions regarding the use and management of money– is essential when dealing with issues involving budgets spending and saving decisions management of financial risks and debt levels and other financial affairs which may significantly affect the decision-maker's wealth and financial security (Lusardi, 2008). This is especially the case in the face of increasing financial complexity where a small misstep, due to "*a lack of understanding of financial matters, can result in … negative outcomes, including a lower level of financial wealth and imprudent debt levels*" (Widdowson & Hailwood, 2007, p. 38).

Regardless, the lack of empirical evidence demonstrating the direct consequence of financial literary levels on one's financial wellbeing must be acknowledged. Most notably, the matter of contention has always been on the impact of financial literacy antecedents (e.g. education) on a corresponding measure of 'financial well-being' (e.g. savings). 'Financial literacy' is often an implied intermediary link or left completely out of the equation, resulting in a general lack of empirical work examining the link between 'financial literacy' and 'financial well-being'. In some instances, the notion of 'financial literacy' becomes so intertwined with other related concepts (such as its antecedents) they are taken to imply one another (Hung et al., 2009). Bayer et al. (1996), for example, found a significant relationship between retirement seminar attendance and the attendee's savings rate. While they did find a significant relationship between the two, the blurring of the line between 'financial literacy' and its antecedent (in this case, financial education) makes it difficult to discern whether the change in savings behaviour is due to increased financial knowledge or correction of a cognitive bias or the existence of peer pressure or other means not related to one's financial literacy level.

Although there have also been an increasing number of financial research studies undertaken in the Australasia region, a significant proportion of them, such as the ANZ adult literacy survey in Australia (Australian and New Zealand Bank, 2003, 2005), the Retirement Commission survey in New Zealand (Retirement Commission, 2009), and the Ngāi Tahu survey (Australian and New Zealand Bank, 2010) are primarily descriptive in nature and do not theoretically explain the link between financial literacy and financial well-being (Willis, 2009, p. 1).

Much of this debate may be due to the variations in the definition and measurement of 'financial literacy' and 'financial wellbeing' (Greninger et al., 1996; Hung et al., 2009). For example, one might concede increases in retirement savings as proof of effective financial education, whereas another, who might define financial wellbeing in terms of financial stress, may conclude differently if the increased saving compromises the allocation for essential housing expenses.

In a related matter, Duflo and Saez (2004) suggested that an individual's financial well-being can be driven by various factors apart from financial knowledge, namely social norms and peer effects. Backing their argument, the authors reported instances where participation in 401(k) savings was not purely the outcome of new information about the costs and benefits of the plan, nor was it the result of careful analysis of the available alternatives. Instead, individuals' decision to participate in the plan appeared to be influenced more heavily by their peers in line with the social effects hypothesis.

Others have questioned the emphasis placed on financial knowledge and optimal saving and investing practices. Porter and Thorne's (2006) study on bankruptcy recovery suggests that the key barriers to long term financial well-being are the failure to find sufficient income and employment, rather than the explicit inability to manage personal financial matters. Lending support to such a view, the Retirement Commission (2009) survey result showed that those at a greater risk of needing to borrow to cope in the short term are more likely to come from the lowest income groups. However, while income and employment can be seen as possible factors, there is "no empirical consensus about whether income itself enhances well-being" (M. P. Taylor, 2011) .

In summary, the literature tends to suggest a link between financial literacy, financial decision-making and financial well-being. While the overall evidence on the efficacy of financial literacy improvements remains promising, ill-defined terms, difficulty in constructing measurable approximations of financial literacy, difficulties with construct definition, lack of appropriate data and clarity in links hampers the ability to draw clear supportive conclusions (Hung et al, 2009). In addition, access to the design and research methodologies used in studies are sometimes difficult to obtain, thus impeding attempts to validate the conclusions being presented (S. Taylor & Wagland, 2011).The inconsistencies and lack of generalisable evidence suggest some uncertainty as to whether the benefits of financial literacy initiatives outweigh its costs (Braunstein & Welch, 2002). However, as well as being a limiting factor, this situation provides a clear opportunity for further research.

DISCUSSION AND CONCLUSION

The explosive growth of information technology in the recent decade has introduced a wider array of financial products that are more intricate than ever before (Mason & Wilson, 2000). In New Zealand this has been accompanied by substantial financial deregulation which facilitated a rise in competition and innovation, ease of access to credit sources, greater consumer participation in investment markets and the proliferation of financial products in the average household (Australian Securities Investments Commission, 2003; Widdowson & Hailwood, 2007; Worthington, 2006).

In the wake of recurring financial crises and rising levels of household debt, however, it is increasingly recognised that improvements in financial literacy levels have not been commensurate with the progress made in the financial marketplace. While the economic downturn was accompanied by various regulatory interventions and financial literacy initiatives, most of the reforms introduced have been largely based on the belief that improved financial literacy (through financial education and other means) underpins optimal financial behaviour and financial wellbeing – a presumption that remains far from certain despite the newfound and expanding interest in financial literacy research. The situation is further aggravated by the fact that these initiatives often take place without an incorporation of strategies for subsequent evaluation, thus hampering further investigations into their effectiveness *ex-post* (Fox et al., 2005).

There has been an encouraging amount of research on various antecedents of financial literacy. This includes comprehensive investigations into the efficacy of financial education, general education and training; the consideration of cognitive biases and cultural influences, and the discovery of other factors that may influence financial literacy levels. Although the role of education, cognitive biases and culture as principal drivers of financial literacy have been largely substantiated by the literature, the exact impact of age, gender, and marital status remains unknown and under-theorised.

It is also clear that improvements can be made to the research methods deployed in financial literacy research. Willis (2009), amongst others, cite deficiencies in the research such as a lack of reliable evidence, issues with research design, measurement and interpretation of results, absence of replication of research findings and minimal peer-review of papers. Atkinson (2008), in a review of the literature, has offered several suggestions to address these methodological problems. Besides a greater emphasis on financial behaviour, the author proposed the following practices that could be incorporated in the design of future evaluations of financial capability initiatives:

- Clear objectives of the project and the evaluation
- Good quality data, including administrative records
- A sample that is broadly representative of the target population
- Careful consideration of the sample size, taking into account the analysis that will be needed to understand the outcomes
- Well-designed data collection instruments that are appropriate to the target group and to the initiative under evaluation
- A benchmark measure of knowledge, attitude and behaviour (before the initiative) and a follow up measure to identify change (after the initiative)
- A 'control' group to show the normal changes that take place in the absence of such an initiative
- Consideration of the time period necessary to identify change, balanced with consideration of the likelihood of collecting reliable data over extended periods of time.

Being one of the earliest countries to implement financial literacy initiatives through a dedicated government agency (the Commission for Financial Literacy and Retirement Income), Aotearoa New Zealand is at the forefront in the movement to promote greater financial literacy levels. In addition, Ngāi Tahu is also thought to be the first indigenous community in the world to undertake descriptive financial literacy research (Crossan, 2010). However, there is still considerable scope for research by Ngāi Tahu, especially in light of the concerns with the current literature exploring the financial literacy, financial decision making and financial well-being links, and in consideration of its substantial asset base and future aspirations, goals and program initiatives for the *iwi*.

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Appendix 1 Glossary of Māori (Kāi Tahu dialect) terms

Hapū	Sub-tribe, extended whanau
Iwi	Tribe
Kaitiakitanga (Kaitiakitaka)	For us and our children after us
Mana	Prestige, authority, status, spiritual power
Marae	Sacred communal meeting place
Rūnanga (Rūnaka)	Governing council of hapū or iwi
Tikanga (Tikaka)	Lore, customary values and practices
Whakapapa	Geneology
Whakawhanaungatanga (Whakawhanaukataka)	Relationship building
Whānau	Family
Whānui	Collective of tribal members