

Profiling For Profit

A Report on Target Marketing and Profiling Practices in the Credit Industry

A joint research project by Deakin University and Consumer Action Law Centre

February 2012

Research by: Paul Harrison, Charles Ti Gray, and Consumer Action Law Centre



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Table of Contents

1. SUMMARY	5
2. METHODOLOGY AND OBJECTIVES	13
3. THE EXPLOSION OF CONSUMER DEBT.....	15
4. THE ROLE OF FINANCIAL INSTITUTIONS IN FIRST WORLD DEBT EXPLOSION	19
5. METHODS OF FINANCIAL INSTITUTIONS' PROFILING OF CUSTOMERS: DATA MINING, CRM, AND PROFILING.	25
6. THE "PROFITABILITY" OF CREDIT CARD CUSTOMERS.....	37
7. DISTORTING RATIONAL DECISION-MAKING	41
8. CONCLUSION	45
9. REFERENCES.....	49

1. Summary

1.1 Targeting marketing, segmentation and profiling

The marketing of products and services to consumers who are likely to be interested in the offer, or to be profitable for the business, is not new. However, with the development of more sophisticated information technology, businesses are better able to access consumers' personal information and utilise complex systems to predict an individual's behaviour. In the context of consumer lending, this can be applied to:

- ◆ identify new or current customers who are likely to be profitable;
- ◆ tailor and price products and offers that profitable customers are likely to accept;
- ◆ develop strategies to reduce the likelihood that profitable customers will close their accounts (Coyles and Gokey 2002); and
- ◆ "drive the most appropriate collections strategy" (Experian 2008, 3).

Consumer segmentation involves identifying consumers who are likely to have certain characteristics, which make them more likely to be interested in a particular product. For example, Veda Advantage¹, which provides information services to Australian and New Zealand businesses, offers to help businesses optimise "target marketing" by using a wide range of data sources to identify characteristics including age, income, household composition and length of residency (Veda Advantage 2009a).

¹ Veda Advantage provides a range of services to business including credit reporting services.

Customer “profiling” involves the combination of personal data (for example buying habits) with research that matches particular consumer behaviours and characteristics, for the purpose of matching a product, price or marketing strategy to particular individuals. Characteristics are analysed to determine what characteristics the members of the group have in common. Marketing is then directed to other customers who have those characteristics².

“Customer Relationship Management” (CRM), arguably a more sophisticated manner in which businesses profile their customers, involves a business tracking interactions and behaviour of current and prospective customers, usually using special software.

Business often argues that segmentation, profiling and CRM provide a win-win outcome—where consumers get better customer service and access to the products and services they want, and business can better target their marketing and increase profits. Indeed, these strategies may provide some benefits to consumers—for example by providing information about products that might interest them, or reducing the chance that credit is provided to someone who cannot repay.

In the past, the use of consumer data was predominantly related to serving the interests of both banks and customers, where banks had a vested interest in helping their customers to manage their debt so that they would remain an ongoing customer and would provide continual (if small) fees. However, shifts in recent years towards a focus of segmentation as a marketing exercise, rather than a risk assessment exercise, suggests that providing banks with more information about consumers may not be a satisfactory solution toward assisting consumers to manage individual debt.

² This is illustrated in the article ‘Banks Mine Data and Woo Troubled Borrowers’ printed in the New York Times on 21 October 2008 (Stone, 2008).

There are a range of views about the amount of personal information lenders should be entitled to access, and how they should be permitted to use that information. An example of one extreme position is in the United States, where lenders are permitted to obtain lists of individuals who meet the chosen criteria from a credit reporting agency (which holds personal information obtained from lenders) for direct marketing purposes.³ The US Federal Reserve supports this practice, recommending that “pre-screening”⁴ or profiling of customers is beneficial to both the bank and consumer for debt prevention (Board of Governors of the Federal Reserve System 2008).

Australian consumer credit laws do not allow this use of credit reporting information (and, generally, Australian lenders are not seeking an extension of laws to allow this). However, proposed changes to legislation in Australia will allow lenders to filter direct mail credit offers through credit reporting agencies, so that consumers with specific negative credit information will not receive the marketing offer.

Australian laws acknowledge that it is desirable for lenders to have some information about customers for the purpose of consumer protection, by requiring lenders to consider the customer's needs and objectives⁵ when offering a particular product. Providers of other financial services have similar obligations.

³ Federal Financial Institutions Examination Council, Policy Statement—Pre-screening by financial institutions and the Fair Trading Act 1991.

⁴ In the US *Fair Credit Reporting Act*, 15 U.S.C § 604(c)(2004) "pre-screening" refers to the use of credit reporting and/or other data to make firm credit marketing offers to customers. This term has a different meaning in Australia.

⁵ National Consumer Credit Protection Act 2009 (Cth) s 130.

1.2 Risks to consumers—rising debt and business profits

As demonstrated by this report, the increased use of customer information by businesses has coincided with an explosion in the levels of consumer debt. Over the last twenty years, unsecured credit card debt in Australia has increased dramatically by 12 times to a total of almost \$50 billion. Even more concerning is that over 70 per cent of this, or \$36 billion, is accruing interest.

While the risk of a borrower defaulting, at least in the short to medium term, is a key consideration for lenders, financial counsellors and community lawyers believe that many more consumers who don't actually default are caught in long-term debt, struggle to make payments or are 'trapped' into credit products which are profitable for the lender but inappropriate for the borrower.

This report explains how business is using personal information to identify not only individuals' needs, but also their vulnerabilities. For example, banks and credit providers are able to profile, segment and use CRM technology to better target credit card offers to those who don't pay back their full balance within the interest-free period. Known as 'revolvers', such credit card users are highly profitable compared to 'transactors' or 'convenience users', who generally do not incur interest on purchases. Similarly, particular mortgage borrowers can be encouraged to redraw additional funds, or to otherwise refinance or increase the amount of their mortgage.

The competitive need of corporations to increase their profitability and return to shareholders unsurprisingly drives them to use personal information and new technologies for their ends, rather than to help consumers access the most appropriate products for their needs.

1.3 Relevant Legislation and Recent Reform

Credit Reporting

Credit providers share personal information with credit reporting agencies, which is then provided to other credit providers. The credit reporting provisions of the *Privacy Act 1998* (Cth) limit the types of information which can be shared in this way and the purposes for which the information can be used.

New credit reporting legislation is likely to be enacted soon,⁶ which will increase the type of information that can be shared between lenders and credit reporting agencies, giving lenders access to more information about current loans and some repayment history information in addition to currently available information which includes applications for credit, defaults greater than 60 days, court judgments, and bankruptcy orders.⁷

The current and proposed laws prohibit the use of credit reporting information for direct marketing purposes. However, the new law will allow pre-screening, which enables credit reports to be used to filter direct marketing offers. It is also likely that credit reporting information obtained for credit assessment purposes will contribute to data which credit providers retain on their customers, and would therefore be available for marketing to those customers.

Pre-screening

In Australia, the term "pre-screening" refers to filtering out particular consumers (for example those with defaults) from direct marketing campaigns (either from lists of a lender's own customers or lists obtained elsewhere). (ALRC 2008: 57.76).

⁶ Australian Senate Committee, Exposure Drafts of Australian Privacy Amendment Legislation - Credit Reporting(2011) Parliament of Australia
<http://www.aph.gov.au/Parliamentary_Business/Committees/Senate/Committees?url=fapa_ctte/priv_exp_drafts/index.htm>

⁷ Privacy Act 1988 (Cth) s 18E.

Some lenders currently use "pre-screening" although there is a question about whether this is permitted under current laws. For example the Australian Law Reform Commission's view is that it is not (ALRC 2008: 57.85). The Government has agreed to allow pre-screening, despite the Australian Law Reform's recommendation against it (Australian Government 2009).

While it is argued by industry that pre-screening enhances "responsible lending" (ARCA 2008) it also makes direct marketing of credit more efficient⁸—and therefore more attractive—for lenders. According to one lender, pre-screening increases approval rates by up to four times (ANZ 2007:15). If lenders can reduce the percentage of those receiving offers whose applications are likely to be rejected (Veda Advantage 2009b), they can afford to be more aggressive in the wording of direct marketing offers. For example, a letter which informs a consumer that he has been "specially chosen" for an offer may harm the lender's image if too many of the recipients were subsequently rejected for credit.

Privacy and Direct Marketing

Personal information which is not regulated by the credit reporting provisions is still subject to the general provisions of the Privacy Act 1988 (Cth), although these provisions provide minimal restrictions on the use of personal information for direct marketing. For example, personal information that is not sensitive can be used for the purpose of direct marketing even where the individual has not consented to this use but where it is impracticable for the organisation to seek consent.⁹ While proposed reforms to the

⁸ See, Call Credit Information Group, *CallScreen* (2012) Call Credit Information Group < <https://www.improvemydata.com/data-sources/CallScreen>> "The main benefits of using CallScreen are substantial savings in the costs of marketing and processing applications for consumers who will not be accepted for credit. Effective credit pre-screening also avoids the adverse PR associated with inviting consumers to apply for credit only to reject them at decision stage."

⁹ *National Privacy Principal* (2001) 2.1(c).

Privacy Act will introduce a specific Privacy Principal in relation to direct marketing, the practical effect is unlikely to significantly change direct marketing practices—particularly marketing to current customers.

Currently all "credit worthiness" information is subject to the stricter credit reporting provisions of the Act, but the proposed credit reporting laws only cover information which is shared with a credit reporting agency. This could potentially make some personal credit information available for direct marketing purposes which has not been available to date.

Responsible Lending

New national consumer credit legislation has introduced, for the first time, responsible lending obligations. These obligations apply to both credit providers (i.e. lenders, such as banks, credit unions and finance companies) and intermediaries (e.g. mortgage and finance brokers). The primary obligation is to conduct an assessment that the credit contract is 'not unsuitable' for the consumer.¹⁰ Credit will be unsuitable where it does not meet the consumer's requirements and objectives, or the consumer will be unable to meet the repayments, or only with substantial hardship. Compliance with the responsible lending obligations requires, amongst other things, that lenders make reasonable inquiries about borrowers' financial situations. These obligations, combined with a requirement that all providers of consumer credit (and intermediaries) be licensed, extend the responsibilities of lenders. However, these provisions focus predominantly on the lending decision rather than the use of marketing strategies.

Credit Card Marketing

Legislation has been recently enacted which prohibits lenders from offering credit card limit increases to customers unless the

¹⁰ National Consumer Credit Protection Act 2010 (Cth) chapter 3.

customer has consented to receiving such offers.¹¹ These provisions are designed to address the significant harm caused by the impact on many consumers who are coerced into increasing their levels of debt (Harrison & Massi 2008). Consumer advocates have identified some concerns about the ability for customers to “opt in” to receive offers, which could be abused by lenders and reduce the benefit of the reforms (Consumer Action 2011).

These reforms also address some particular product design issues by requiring that credit card payments are allocated to the higher interest-bearing balances first. This reduces the consumer detriment arising from the marketing of low interest deals (such as balance transfers) which appear attractive, but “catch” some borrowers who pay high interest on part of the balance while payments are being allocated to the lower interest balance.

1.4 This Report

This report explains that many businesses make significant investments to purchase or develop customer relationship management systems. Given such investments, information about these systems is not widely available, but some publicly available information gives an indication of the extent, and purpose, of their use. Recognising that lenders use customer information, and highly sophisticated systems, to target their marketing strategies, is the first step towards ensuring that these practices are taken into account in the development of consumer policy and law reform.

¹¹ National Consumer Credit Protection Amendment (Home Loans And Credit Cards) Act 2011.

2. Methodology and Objectives

The objectives of this research are to provide a detailed literature review of publicly available research and information and to investigate and analyse the probable methods used by banks and finance companies in segmentation, target marketing, and profiling of current and potential customers.

The research begins with an extensive literature analysis of academic journals, newspapers, trade magazines, and associated media. This literature analysis investigates the nature and characteristics of profiling and targeting strategies being employed by Australian and international bankers, finance companies, and other lenders through an examination of systems journals (which provide the software for the profiling of consumers), marketing journals, newspaper articles, data-mining and research companies, and publicly available information about the practices of financial institutions and banks. This report does not undertake any empirical or primary research.

Laws differ between countries, therefore some international research cannot be directly applied to the Australian context. In particular, laws relating to the use of personal credit data for marketing purposes are currently more restrictive in Australia than in the United States. However, there is little research in this area in Australia and international publications provide a valuable perspective on the sorts of profiling and targeting strategies used which, we believe, are generally applicable to Australia.

The methodology of this report follows an approach similar to that of a legal investigation, by considering circumstantial evidence, establishing intent, and examining effect. Through a review of academic papers related to finance, marketing, and management systems industry, as well as financial and business magazines

and newspapers, this report establishes a “case for consideration”. This is a preliminary review of publicly available literature, and is therefore not definitive in its findings. This preliminary review is intended to inform future research into profiling techniques in the finance sector in Australia and abroad.

The reasons for exploring the impact of these strategies and why consumers, marketers and policy makers might be better informed are manifold: the substantial rise in consumer debt; the impact of the global financial crisis; a slower growth in retail spending (which may lead retailers to explore more ways to encourage consumers to spend); and current Australian law reforms which will increase the amount of personal information available to industry about consumers’ credit histories and new credit laws which impose a “responsible lending” obligation on lenders (Australian Government 2009).

3. The Explosion of Consumer Debt

In 1977 Australians owed approximately 35 per cent of their household disposable income. That figure has risen steadily and by 2010 was over 150 per cent (RBA, Household Finances, 2011).

In Australia, 55 per cent of households have credit card debt (Australian Bureau of Statistics 2009). By September 2011, Australian credit and charge card debt increased to a record \$49.2 billion. At this time, Australians owed \$36.2 billion in interest-bearing credit and charge card debt, but only made \$21.8 billion in repayments (RBA, Credit and Charge Card Statistics, 2011). Since 1990, the debt to assets ratio in Australian households has risen from eight per cent to just below 20 per cent (Figure 1) (RBA, Household Finances, 2011). The impact of the global financial crisis can be seen during the years 2007 to 2009, but the ratio has continued to trend upwards since that time.

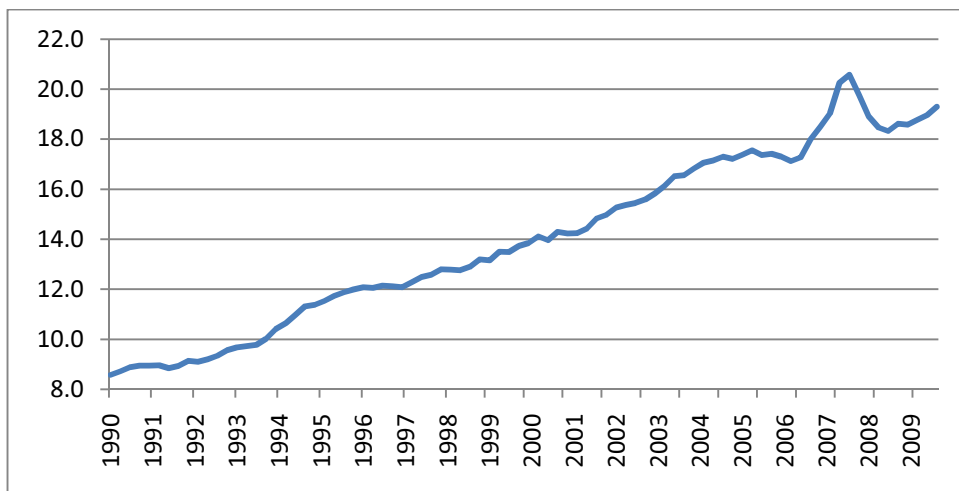


Figure 1: Australian Household Debt To Household Assets Ratio (1990—2010)

Source: RBA, Household Finances, 2011.

The rise of consumer debt and the escalation of consumer credit are not unique to Australia. The London School of Economics is calling these trends “The First World Debt Crisis of 2007-2010”, noting that the United States’ sub-prime crisis is symptomatic of a global financial crisis (Wade, 2008). Sanchez (2009, 1) describes the rise of consumer debt and bankruptcy as “explosive” over the last 20 years of the American economy.

The number of annual bankruptcy filings in the US increased by more than 1.3 million, from 286,444 to 1,563,145, between 1983 and 2004. Between 1980 and 2004 credit card debt rose from 3.2 per cent to 12 per cent of U.S. median family income (White 2007). Both White and Sanchez (2009) attribute the rise of bankruptcy filings in the U.S. to “revolving debt”—mainly credit card debt. Revolving debt consists of unsecured credit that is not paid off in full, but in partial payments, and continues to accrue interest (Livshits, MacGee, and Tertilt 2007).

Although White (2007, 178) acknowledges that adverse factors (for example job loss, gambling addiction, medical costs) sometimes contribute to bankruptcy, he also argues that these “events do not provide a good explanation for the dramatic increase in bankruptcy filings, because such events have not become much more frequent over time”. Indeed, Sanchez (2009) tracks a distinct correlation between the tailoring of credit to consumers using increasingly advanced information technology and the rise of bankruptcy.

Debt levels from the United Kingdom mirror the trends in the U.S. and Australia. In 2009, personal debt increased by £1 million every 50 minutes, although this is a decrease from £1 million every 5.3 minutes in January 2008. Interest paid in the UK has reached a daily figure of £189 million and one person is declared bankrupt every 4.5 minutes (Talbot 2009).

As noted above, the impact of the global financial crisis has also caused Australian consumers to reduce their debt since 2008 (Australian Bureau of Statistics 2009). This downturn, however, follows decades of escalation in lending and has only reduced the overall problem of consumer debt marginally. Debt levels have begun increasing again since the middle of 2010.

4. The Role of Financial Institutions in First World Debt Explosion

The steady rise in consumer debt has occurred at the same time that the banking sector has increasingly taken to using sophisticated modelling to target customers more efficiently and effectively (Christiansen 2008; Danna and Gandy 2002). Scoring models are being employed to target customers for credit products based on parameters such as age, income and marital status, and behavioural models analyse the purchasing behaviour of existing customers (Hsieh 2004).

New technological advances in software are enabling financial institutions to “mine” the data of consumers at an unprecedented level. Transaction and credit card account details are drawn upon to create sophisticated predictive models that can “profile” customers’ behaviour (Donato et al 1999; Hsieh 2004).

Sanchez (2009) has found that there is a positive correlation between the rise of consumer debt and financial institutions’ access to information. Sanchez examined two questions. First, did the rise in debt-to-income and bankruptcy asymmetrically mirror the fall in information costs for banks from 1983 to 2004? Second, what percentage of the rise in bankruptcy rate is directly related to the fall in the cost of information for the financial sector?

The conclusion of the study is that “the drop in information costs alone explains 37 per cent of the rise in the bankruptcy rate between the years 1983 and 2004” (Sanchez 2009: 4). Sanchez divided financial institutions into two groups: “informed lenders” that use screening technology; “uninformed lenders”, who design debt contracts with the purpose of inducing borrowers to reveal details about their behaviour. This study examined the effects of screening processes (i.e., the rise in debt-to-income and

bankruptcy), rather than the practice of screening. Sanchez did identify, however, that these screening processes and the “cost of information” are linked to the development of new technologies.

LoFrumento (2003: 3) outlines the “basic ingredients” of a “customer-profitability calculation engine” (Figure 2):

- ◆ Put all the accounts and associated data in one place—for example, a data mart or data warehouse.
- ◆ Identify all associated revenue at the individual-account level.
- ◆ Tie all transactions to individual accounts.
- ◆ Apply unit costs and account-maintenance costs for each transaction to gain the total cost of maintaining the account.
- ◆ Calculate account-level profitability.
- ◆ Household the accounts via a householding algorithm to the customer level.
- ◆ Calculate the profitability at the customer level.
- ◆ Reconcile the customer-profitability results with the financial-management reporting systems.”

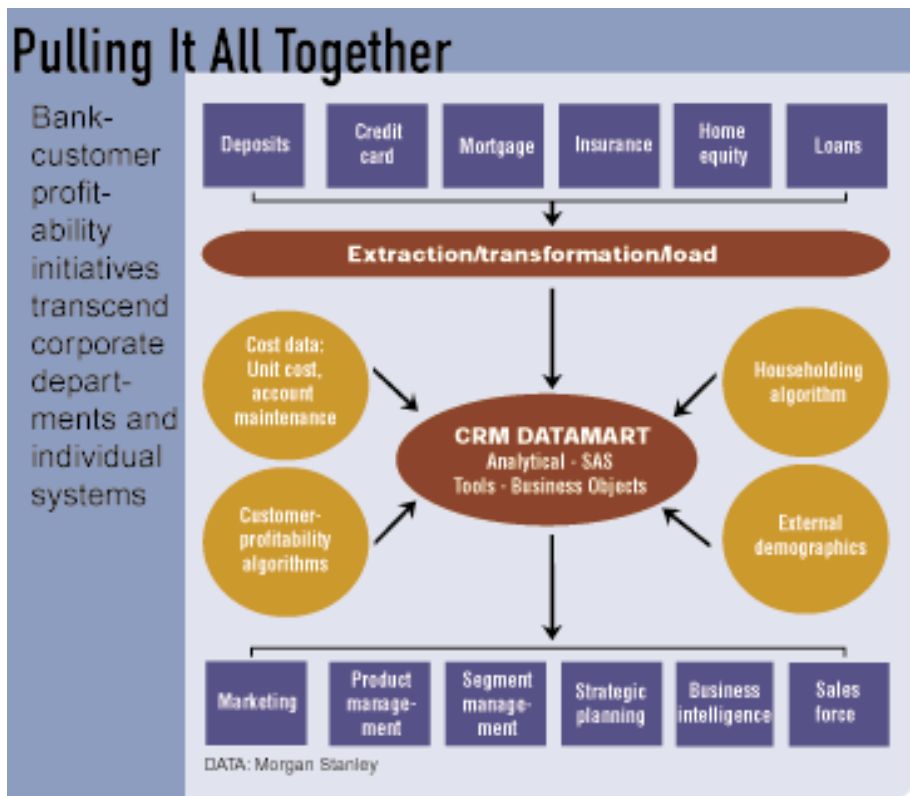


Figure 2: Silos to Households (LoFrumento 2003: 3).

Like other businesses, the banking sector utilises sophisticated research methods to segment and target consumers, however, in this sector these research technologies are also targeting consumers whom they refer to as “profitable” that others might consider financially vulnerable (Stone 2008). These strategies involve targeting those considered to be in financial ‘need’ (e.g., at the upper end of their credit limit), therefore more susceptible to accepting a loan or credit card to alleviate their immediate problems. In the US lenders can purchase and use personal credit information supplied by specialist companies for this purpose.

Accessing this kind of information allows lenders to target groups of potential customers and tailor marketing strategies to them (Dibb, Stern, and Wensley 2002). For vulnerable consumers,

these offers can appear to serendipitously come at just the right time. What may not be apparent to these consumers is that they have been deliberately targeted using extensive and sophisticated marketing strategies by lenders.

Drawing together data enables banks to target specific consumers and consumer groups. Large segments can be further sub-segmented, by “defining a useful sub-segment [which] generally involves doing a deep dive into the most profitable end of the segment to tease out distinct behaviour patterns” (Dragoon 2006, 2). RBC Royal Bank, for example, has segmented customers based on 5 “strategic life-stage segments”: “Youth”, under 18s; “Getting Started”, aged between 18 and 35; “Builders”, aged between 35 and 50; “Accumulators”, aged between 50 and 60; and “Preservers”, over 60 (Dragoon 2006, 2). Similarly, in the Australian context Veda Advantage identifies 45 customer segments including "suburban battlers", "working students" and "affluent young families" (Veda Advantage Solutions Group 2009). However this demographic segmentation only skims the surface of segmentation.

Martin Lippert, vice chairman and CIO of RBC Financial Group, noticed that there was a sub-segment of RBC customers who spent a lot of time out of the country in particular months. Many of these were “snowbirds” that were escaping to Florida to avoid the Canadian winter. In order to capitalise on this “sweet spot of untapped potential for the bank”, RBC established a “snowbird package” including tailored elements, such as travel health insurance, and easy access to Canadian funds (Dragoon 2006, 3).

In Australia, Westpac’s Program Reach enables similar segmentation. This program provides customer centre representatives with the ability to focus a specific campaign on a specific customer. Outbound callers are sent a “Westpac Lead” which matches the customer with other suitable offers. For example, an outbound caller who is targeting consumers via

Westpac's "Relationship Builder" is sent a "Lead" regarding a campaign that Program Reach predicts the customer may be interested in (using data analysed by Teradata) (Power 2005, 1).

Danna and Gandy (2002, 379) examine the ethical implications of data mining and customer relationship marketing. On the surface, "the principles of customer relationship management and the software tools that allow it to be implemented in an e-business setting appear to be a rational means to a profitable end". However, this rationale does not adequately account for the social costs of these practices.

Although segmentation in marketing is not new, it is somewhat partitioned by businesses and in policy from the wider social, economic, and political implications. To some degree, policy is struggling to maintain pace with the advancement of information technology and its ability to segment and target consumers at a very specific level. Policy frameworks in relation to credit marketing need to be reconsidered in light of the sophisticated modelling now available to banks and finance companies.

5. Methods of Financial Institutions' Profiling of Customers: Data Mining, CRM, and Profiling

5.1 New Technologies and the Finance Industry

The large quantity of research into data mining in the finance industry in the last decade reflects a shift in banks' focus from using data to purely assess risk, to utilising technologies to better target customers (Bailer 2007). Banks are increasingly turning to customer analytics software and customer relationship management (CRM) systems to "help better understand customers" (Tillett 2000: 45). Data mining has drawn serious attention from both researchers and practitioners due to its "wide applications in crucial business decisions" (Lee et al. 2006: 1114). Data mining is employed as a means to gather consumer information and analyse it using a range of statistical methods, neural networks, decision trees, genetic algorithms, and non-parametric methods. Understanding consumer behaviours through data mining is often referred to as 'customer analytics' and data mining is now perceived as an essential business process.

Information technology magazines advise the finance industry that "... one of the more powerful techniques for discovering ways to increase sales and revenue is to use data mining and analysis tools to perform customer-segmentation studies. Such studies can be an effective way to learn about emerging sales-channel problems to find unmet market needs that instantly translate into new sales opportunities" (Pallatto 2000: 12). Although this may read simply as marketing "spin", this article then goes on to outline how businesses are able to utilise data mining and other systems technology to achieve higher sales and revenue.

Two areas emerge in this research of particular interest in the finance sector, namely, credit scoring and behavioural modelling (e.g., choice-modelling profiles built through mining transaction records, sometimes referred to as “customer analytics” [Cohen 2004]). The combination of these two analytical tools has enabled lenders to build modelling programs that analyse the financial habits and anticipate consumption choices that consumers are likely to make.

Tillet (2000, 45) argues, “... as large banks grow larger and pure internet banks grab customers that don’t want full-service banking, the thousands of others in the middle are feeling the squeeze to offer higher levels of service. As a result many are turning to web-based data mining and customer relationship management applications to help better understand their customers”. Similarly, Dragoon (2006, 1) outlines how customer segmentation “done right” can help, “understand customers’ needs to boost profit”, “segment customers according to their necessities at each life stage”; and understand “why segmenting by age or revenue alone is ineffective”.

Bailor (2007) reported that financial services were widely investing in CRM. Palande (2004) identified a global trend of financial institutions investing in “customer analytics” software for cross-selling credit cards, personal loans, or housing loans.

McIntyre (1999) predicted that Australian banks would begin to follow the lead of US financial institutions in relation to the use of data and analytics. ZDNet reported that Australian banks were failing to capitalise on CRM in 2003 (Kidman 2003). During the 2000s, Australian banks began to explore CRM, until it became common practice (Douglas 2005; Power 2005; Lekakis 2007; Ross 2008; Deare 2005). NAB recruited Gerd Shenkel to act as General Manager of Customer Strategy and Cross Marketing, who reported that the bank’s eight-year-old Teradata CRM package

was now strategically linked with the bank's three-year turnaround plan (Douglas 2005).

The ANZ (2000) stated that it possessed the technology to create individual user profiles by combining EFTPOS and credit card transaction data with other information collected by the bank. However, it claimed that it did not create individual profiles but that the profiles developed from the data were used to design new card products.

The data, which included the merchant's line of business but not the product or service purchased, was aggregated and used within the bank for a variety of purposes. For example, ANZ said "the aggregated data can be analysed to develop a profile of overall customer purchasing patterns, to show spending habits of age, income and geographic cohorts" (p12).

At Westpac, Fernando Ricardo was brought in to handle Program Reach, the principal driver of which was to "provide Westpac's staff with better information about customers," and, as Ricardo observes, "to provide the right tools for our staff to better service customers and have relevant conversations with them" (Power 2005, 1). Westpac launched Program Reach to provide staff with "better information about customers" (Power 2005). In 2008, Westpac restructured and created a specific technology division focused on gathering consumer data and better targeting consumers (Ross 2008). Former chief executive of Commonwealth Bank of Australia, Ralph Norris, created CommSee with the assistance of software provider Oracle, to "provide bank tellers with a complete profile of a customer's product relationships with the bank" in order to improve "customer satisfaction ratings and cross-sell rates" (Lekakis 2007). The National Australia Bank invested in an eight-year Teradata CRM package, ANZ followed suit with the iKnow CRM teller tool, and the St George Bank similarly implemented Peoplesoft CRM.

The money invested by these financial institutions has been considerable: CBA's program reportedly cost \$100 million, while Westpac has spent \$200 million (Douglas 2005).

5.2 Research: Data Mining, Neural Networks, and Customer Profiling

Banks and other financial institutions are increasingly associated with software companies specialising in customer analytics (Palande 2004). International Quality and Productivity Centre (IQPC) lists ANZ, CBA, Barclays Bank, Teachers Credit Union, and Bendigo and Adelaide Bank amongst their customers (IQPC 2009). KXEN, "the data mining automation company", lists Barclays Bank, Bank Austria, Finansbank and the Bank of Montreal as former and current customers (KXEN 2009). SAS software has numerous banks and other financial institutions listed as clients, including CBA, ING, Citibank, Credit Union Australia and Westpac (SAS 2009).

SAP and Siegel are two of the most established business software companies that cater to the finance industry (Deare 2005). SAP's software promises to "help you better understand your customer and product markets". Specifically, the software enables banks to "extract customer information from your legacy or third-party systems and use this information to improve the accuracy and relevance of your offers" in order to "create the optimal offer" (SAP 2009). Siegel's company website, Prediction Impact, observes, "Data is your most valuable asset. It represents the entire history of your organisation and its interactions with customers. Predictive analytics taps this rich vein of experience, mining it to offer something completely different from standard business reporting and sales forecasting: actionable predictions for each customer" (Prediction Impact 2009).

Half of Fortune's top 1000 companies planned on using data mining technology in 2001, doubling the figure from 1999 when a quarter of firms were employing the practice (Danna and Gandy 2002). By 2009, the ties that major international and Australian banks have with customer analytics software companies suggest that the practice is now uniform across the finance industry (IQPC 2009; KXEN 2009; SAS 2009). As noted by Hadden et al. (2006: 104), marketing approaches have evolved from being product-centric to customer-centric “supported by modern database technologies, which enable companies to obtain the knowledge of who the customers are, what they have purchased, when they purchased it, and predictions on behaviour”.

Sophisticated analytics software enables financial institutions to comb through, or 'mine', vast quantities of data. This data can be drawn from call centres, product registration and point-of-sale transactions. The internet is now providing an unprecedented wealth of data in transaction records, forms, as well as 'clickstream' records (what a user clicks on when browsing an internet site). This data is then analysed using data mining algorithms to “discover hidden patterns and trends that are used to create consumer profiles” (Danna and Gandy 2002: 374).

Advanced computational systems for data mining, or customer analytics, such as neural networks and adaptive systems are increasingly being employed (Malhotra and Malhotra 2003). Neural networks are computer systems whose architecture is inspired by the functioning of the human brain. These systems are flexible, non-linear modelling tools comprised of several “layers” which segment and subsegment information into “nodes” (Zhang et al. 1999: 17). Neural network systems are increasingly being employed to process the large quantities of data in the finance industry (Agrawal, Imielinski, and Swami 1993; Hadden 2006).

Neural networks “model human brain functioning through the use of mathematics (Danna and Gandy 2002: 374)”. These programs

are designed to “learn” about behaviour—to some degree taking on a form of artificial intelligence—so that analysis does not require as much intensive programming. For the finance sector, there is an increasing amount of academic research in technology that targets banking and data mining. Neural networks feature in many of the analytical models for financial data mining (Lee et al. 2006).

Some of this research focuses specifically on risk analysis. By the late 1990s, data mining was a popular solution to evaluating the risk of credit card users’ propensity to fall into bankruptcy (Donato et al. 1999). The popularity of neural network software in predicting risk for financial institutions, and evaluating credit ratings, is reflected in the academic research focused on information technology for the finance sector (Danna and Gandy 2002; Donato et al. 1999; Hadden 2006; Hsieh 2004; Lacher 1995; Lee et al. 2002; Lee et al. 2006; Malhotra and Malhotra 2003; Mavri et al. 2008; Rygielski 2002; Thomas 2000).

Using neural networks, and similar new technologies, for credit scoring is prevalent in research (Lee et al. 2002; Mavri et al. 2008; Thomas 2000). Credit scoring models “help to decide whether to grant credit to new applicants by customer’s characteristics such as age, income, and marital status” (Hsieh 2004, 623).

Some research focuses on models for the credit scoring of bank loans (Kim and Sohn 2004; Malhotra and Malhotra 2003). Lee et al. (2002) propose a credit scoring model using hybrid neural networks, while others focus on risk assessment for credit card approvals (Livshits, MacGee, and Tertilt 2008).

As well as being used to assess risk, some models of credit scoring examine repayment ability of the customer, outstanding debt (which is weighted as a positive criteria in some models), or the frequency of the repayments from the customer (Hsieh 2004).

Hsieh’s model (summarised in Figure 3) examined credit card transactions and account data with the purpose of discovering “interesting patterns in the data that could provide clues about what incentives a company could offer as better marketing strategies to its customers” (2004: 623).

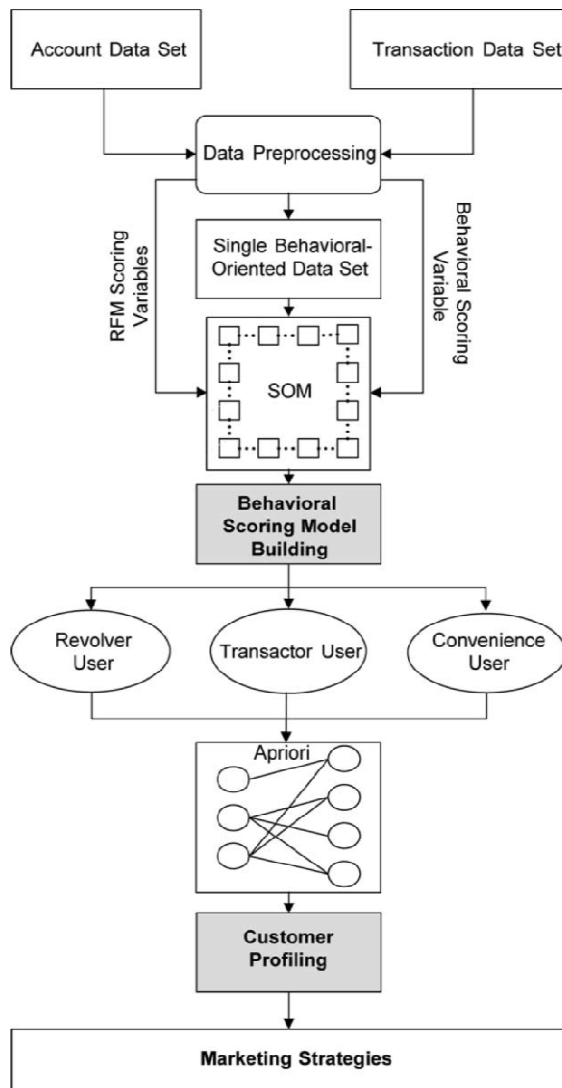


Figure 3: Two-Stage Behavioural Scoring Modeling (Hsieh 2004: 624).

The key feature of this model is a “cascade” involving a self-organising map (SOM) and an *a priori* association rule inducer. A SOM is “an unsupervised learning algorithm that relates multi-dimensional data as similar input vectors to the same region of a neuron map” (Hsieh 2004: 624). Neural networks function by “learning” to recognize data and classify it into different categories. The SOM was developed by Kohonen (1995) as an improvement on “supervised” neural networks (computer systems that required an administrator to aid the network in learning what the right pattern recognitions were).

SOMs can learn independently, or “unsupervised”, what patterns to recognize and how to classify information. In this model, the information is bank account data and transaction records, vast quantities of information in which humans would struggle to recognize patterns (Hsieh 2004). The “unsupervised” SOM then allows the computer system to learn how to recognize “revolving” users of credit, as opposed to “transactor” users and “convenience” users. A “transactor” or “convenience user” repays transactions within the interest-free period, whereas a “revolving” user retains an ongoing balance, thereby paying more interest on purchases. This is the first component of Hsieh’s model, the “behavioural scoring model building” step.

The second step incorporates an *a priori* association rule inducer to refine the behavioural scoring model into an applicable customer profiling system. *A priori* refers to the rule that is used to “find out the potential relationships between items or features that occur synchronously in the database” (Hsieh 2004, 624). This feature further refines the classification systems and recognizes the overlapping users, e.g., transactor users who occasionally lapse into revolving users. The ultimate goal, as illustrated in Figure 3, is a highly detailed customer profiling system.

Another credit scoring system focuses on predicting personal bankruptcy using credit card account data. This model is also a two-stage approach, combining a decision tree and artificial neural network technologies. The data for this model was also drawn from credit card account data (Donato et al. 1999). Taking information from 12,942 accounts for analysis, the model categorized consumers into: “bankrupt”, approximately 4000 records; “charged off” (accounts closed that were not classed as bankrupt), approximately 2000; “delinquent n Months” (neither bankrupt nor charged-off but delinquent by n months of payments), approximately 500; “OK” accounts (in good standing), approximately 2000; and “random” (a completely random selection), approximately 2000 (Donato et al. 1999, 435). The data was fed into a probability “decision tree” that classifies data into “good” and “bad” (Figure 4).

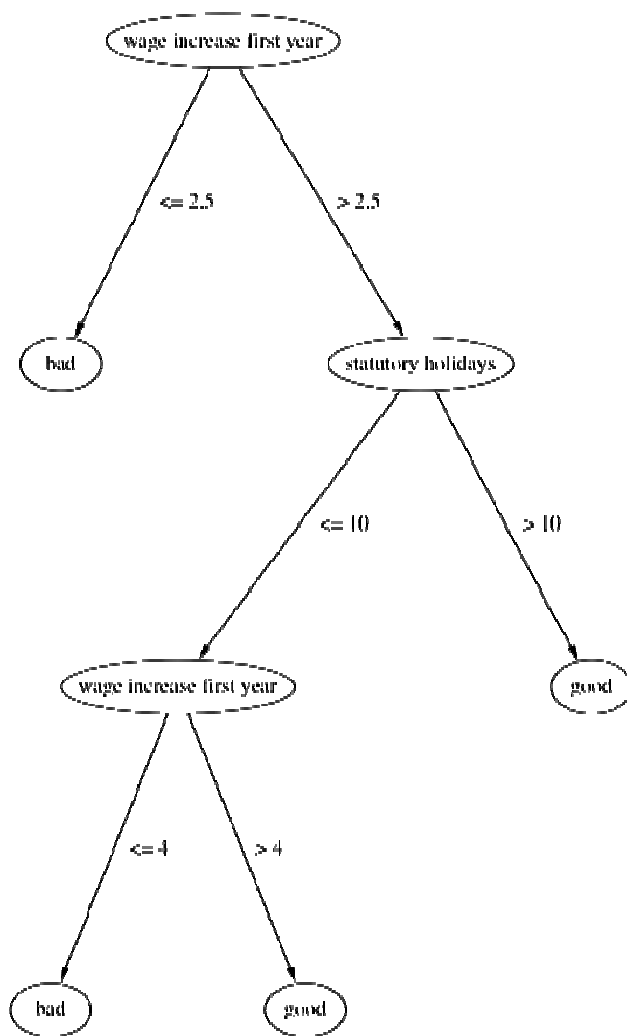


Figure 4: Example of a Decision Tree

The input in the model's tree consisted of values most correlated to bankruptcy behaviour providing "preliminary clustering of the accounts into distinct behavioural patterns" (Donato et al. 437).

Lenders argue that these behavioural models are being used to predict consumer's probability of default or bankruptcy (Zhang et al. 1999). This may well be in the best interests of both the bank and the customer. If the bank can determine that a customer is likely to default given a higher loan and/or credit, then the bank might well prevent that person from making a financial decision that will affect them adversely. In this sense, the profiling and data mining performed by the finance industry can be viewed as benign and benefiting both parties.

Some research focuses on models for the credit scoring of bank loans (Kim and Sohn 2004; Malhotra and Malhotra 2003). Lee et al. (2002) propose a credit-scoring model using hybrid neural networks, while others focus on risk assessment for credit card approvals (Livshits, MacGee, and Tertilt 2008).

Other research focuses on "churn" of customers, the cost of recruiting new customers versus that of retaining ongoing customers (Hadden et al. 2006; Hadden et al. 2007). "Churn" is essentially customer turn-over: how often new customers are being received by the company; how often customers are leaving (Hadden et al. 2006). The use of computer technology for the analysis of complex data enables financial institutions to construct behavioural models that can predict consumer choices based on multivariate demographic factors (Hsieh 2004).

As with lenders' arguments about behavioural models, the authors of the above research argue that credit scoring and the "mining" of transaction records is for the benefit of the customer. The purpose of credit scoring models, they suggest, is to assign credit applicants to either a "good credit" group that is likely to repay financial obligation or a "bad credit" group who has a high

possibility of defaulting on the financial obligation (Lee et al. 2006). This appears to be of benefit to the consumer, where it can protect consumers from making poor choices and thus stem the rising problem of consumer bankruptcy (Malhotra and Malhotra 2003).

However, an analysis of commissioned research, academic papers, finance and marketing magazines and newspapers suggests that banks are concerned with the needs of consumers insofar as it contributes to organisational performance, and ultimately financial viability and return to shareholders (Berger 2002; Pallatto 2003; Tillett 2000; Dragoon 2006; Bailor 2007; Hallowell; Cohen 2004; Curko, Bach, and Radonic 2007). Whilst profit generation and (a broad definition of) consumer needs may not be mutually exclusive, they shouldn't necessarily be assumed to be reliant upon one another. This is discussed in the following section. Whilst the risk for the customer and the bank is worthy of assessment, it can also be argued that lenders are using this information to assess the "profitability" of the client (Hsieh 2004).

6. The “Profitability” of Credit Card Customers

“Subsegmenting is where the gold is”

*Larry Seldon, Professor Emeritus of finance and economics at
Columbia Business School (Dragoon 2006, 2)*

On the surface, the focus on CRM, tailoring products to specific customers’ needs, is in consumers’ interests. Arguably, too, consumers can be better protected from making poor financial decisions that may lead to unmanageable debt or bankruptcy (Malhotra and Malhotra 2003). However, the language employed not only by industry but academic research, suggests a different focus. In promotional literature, customer analytics and CRM software providers emphasise the need for “business-to-consumer enterprises ...to build better and more profitable relationships with their customers in a customer-centric economy” (Danna and Gandy 2002, 374).

The first key question posed on IBM’s customer analytics software site, Cognos, is “Who are my top-10 revenue-generating customers? My most profitable customers?” (IBM 2009). KXEN’s customer analytics and segmentation software gives businesses “vital information” to “customise marketing campaigns, to optimize targeting, to increase returns, and to drive up profitability” (KXEN 2009). SAP’s analytics technology boasts of providing resources to focus sales “on the most profitable customer opportunities” (SAP 2009). SAS’s software features data “drilling” for “profitability management” (SAS 2009). Risk is mentioned on these sites as well, and Teradata describes it as a “critical” factor for financial services (Teradata 2009). However, the prominence of the profitability of customers suggests that risk assessment is only

one of the objectives of data mining, customer segmentation, and customer analytics software.

Tony LoFrumento, executive director of customer relationship management at Morgan Stanley, a New York based global financial services provider writes, “To be a truly customer-centric business, it’s vital that you understand the profitability of every customer” (LoFrumento 2003). Similarly, Gaetane Levebvre, Vice-President of “Client Knowledge and Insights” at RBC Financial Group, observes that for CRM, “Profitability is extraordinarily important and it’s where you want to start” (Dragoon 2006, 2). The emphasis here by Levebvre and LoFrumento on the “profitability” of customers is a recurring theme in operations and marketing industry media.

In the academic literature supporting this kind of software (neural networks research, etc.) this objective is mirrored. Hsieh’s (2004, 623) research in data mining notes, “it is essential to enterprises to successfully acquire new customers and retain high value customers...instead of targeting all customers equally or providing the same incentive offers to all customers, enterprises can select only those customers who meet certain profitability criteria based on their individual needs or purchasing behaviours”.

Customer analytics data is used for what is, at times, referred to as a “Profitability Segmentation Model” (Giltner and Ciolli 2000). Using this model, the purpose of CRM is to “rate customers by their attractiveness” and to “build fences around the profitable clients” and to attract “look-alike” clients. Consumers who are “less attractive” (i.e., less profitable) should be cross-sold profitable products or “corralled into less expensive service channels (Giltner and Ciolli 2000, 1)”. In this model, the word “profitability” is factored into the formal title for a CRM model, highlighting the focus of data-mining, customer analytics, and CRM.

It can be said that this data is used for market segmentation so consumers get exactly what they want. However, market segmentation's primary purpose is not improved customer relations, but is "grounded in economic pricing theory, which suggests that profits can be maximised when pricing levels discriminate between segments" (Dibb, Stern, and Wensley 2002).

Academic journals provide a window into the purpose of the software. Market segmentation based on factors such as geographic, demographic, psychographic, behaviouristic data, values and image, is not new (Beane and Ennis 1987). However, technological advances are enabling customer analytics to be conducted at a depth, and at reduced costs, that have been previously unimaginable.

A review of information technology or computer systems research reveals a focus on the identification of "profitable" customers (Hadden et al. 2007; Hsieh 2004; Lee et al. 2006; Rygielski, Wang, and Yen 2002). Simply retaining loyal customers, traditionally viewed as desirable in the finance sector, can be as costly for the bank as managing "churn" of new customers (Hadden et al. 2007). Transaction data is used for behavioural scoring models to "predict profitable groups of customers based on previous repayment behaviour" (Hsieh 2004). Data mining can be used for "customer profit analysis", where, again, the word "profit" figures in the title highlighting the focus of the model (Lee et al. 2006). Others identify that customer relationship models can "improve profitability with more effective acquisition and retention programs, targeted product development, and customised pricing" (Rygielski, Wang, and Yen 2002, 489).

Martin Lippert, vice chairman and CIO at RBC Financial Group, for example, says, "our opportunity lies in finding what the needs of the customer might be so we can offer them additional products and get them to a point where we're making some return" (Dragoon 2006, 1). Similarly, LoFrumento emphasises the need

for a focus on “profitability” (2003). Consumers are explicitly referred to as “profitable” when the bank stands to make higher short-term gains from them (Tillett 2000). Indeed, banks are so focused on their interest yielding customers they effectively punish those who are in greater control of their finances.

Rob DeSisto, an analyst for the Gartner Group (who “drive future growth by monetizing business intelligence and customer data” [Gartner 2009]), says, “If a customer is not a profitable one you would want to charge them higher fees than those customers that are profitable” (Tillett 2000, 45). This underscores the shift by finance businesses from seeing the profitability of those customers who are managing their debt effectively coming from ongoing account fees, to a customer who struggles to maintain their debt but yields short-term gains in high interest.

7. Distorting rational decision-making

In the context of credit marketing and profiling, there are several reasons for consumers' inability to defend themselves against the marketing practices of the lending institutions. Research suggests that customers tend to take a limited interest in financial services and consider them as a necessity (Aldlanigan and Buttle 2001; Beckett et al. 2000), and are likely to respond positively to suggested products when offered to them.

Recent research from the British Office of Fair Trading (2008), for example, found that 70 per cent of consumers did not shop around for the best credit card deal for themselves, and that 30 per cent of consumers simply took the deal that was suggested by their financial institution, trusting that their lender would look after their interests. Similarly, research into credit card marketing found that consumers were more likely to respond to visual cues such as layout of offers, or even images of purchasable products as a means to assess the merit of an offer, rather than interest rates, or outstanding debts (Bertrand et al. 2005).

Similarly, other research has found that willingness-to-pay (i.e. to spend) is increased when customers use a credit card rather than cash, despite the premium and ubiquity of credit card use. In other words, consumers are willing to spend larger sums of money when they use their credit card, than when they are required to pay with cash (Prelec and Simester 2001).

It is arguable, then, that a rational and methodical search for information does not shape and direct rational choice in the financial context, but other exogenous factors influence the consumer's disposition to purchase financial products (Beckett et al. 2000).

Much policy on consumer credit, however, rarely takes into account this knowledge, assuming that consumers are entirely rational and will make the best decision for themselves after investigating the seemingly abundant information available. In Australia, for example, disclosure has tended to be the most common consumer protection tool, although policy makers asserted that “much policy is already based on, or implicitly accounts for, behavioural economic tenets” (Australian Government 2007, 309).

The primary recognition of the need for consumer protection is the requirement of institutions to disclose information about financial products, which is at the core of consumer regulation. This disclosure is based on the belief that it “enhances consumers’ ability to assess financial products and make informed decisions” (Australian Treasury 1999, 23). The key consumer protection provisions that relate to advertising and marketing are prohibitions on “conduct that is misleading or deceptive, or is likely to mislead or deceive” (Trade Practices Act 1974).

In the UK there is some regulation of information that must be conveyed by lenders (such as account fees and interest charged). However, much of it is based on a rational interpretation of decision-making, and is compromised due to the “noise” created by an overabundance of unnecessary or confusing information (Better Regulation Executive and National Consumer Council 2007).

In the US, regulations are comparatively more relaxed, whereby US credit reporting information is used as a source of information for marketing purposes, allowing lenders to contact consumers, unprompted, with offers and information (Board of Governors of the Federal Reserve System 2004). Whilst the Federal Reserve report acknowledges that there are undoubtedly situations when these offers result in debt, it argues that these are anomalies; consumers, for the most part, make educated, rational decisions.

The Office of Fair Trading in the UK, however, found that 68 per cent of customers did not compare their current credit card with any others. Their research found that it cannot be assumed that consumers will choose the correct product for their needs based on careful research (2008).

In the past, the interests of banks and consumers were not incompatible, and the arguments presented in the Federal Reserve's report to Congress would have made a certain amount of sense. Lenders have been traditionally interested in clients who remain in control of their debt (Story 2008; Craig 2009; Morgenson 2008). These clients represented long-term investments, and earnings could be made in the form of account fees. Lenders, therefore, had a vested interest in helping these consumers manage their debt so that they would remain an ongoing customer and would provide continual (if small) fees.

However, in recent years there has been a shift in focus for lenders. Although it is difficult to locate official sources citing directly this shift in focus (on the part of lending institutions), recurrent anecdotal evidence continues to surface. Newspaper articles note that for the baby boomers, lenders were highly concerned with the customer's ability to comfortably manage debt. Many articles highlight a shift for the current generation toward offering far higher loans and credit in relation to income (Story 2008; Craig 2009; Morgenson 2008; Davis 2008). Those consumers, Generation Y's parents, who were once the staples of financial institutions have become marginalised as lenders focus on those who provide short-term high yields from debt-generated interest (Morgenson, 2008).

Arguably, the changes in informational technologies have underpinned this shift in priorities for lenders (Berger 2003). Lenders are able to mine vast volumes of information, such as transaction records, shopping behaviours, and demographic shifts (Agrawal, Imielinski, and Swami 1993). Access to this information

has revealed that profitability is not necessarily linked to customers who manage debt comfortably but can be greater where outstanding debt yields interest payments. This shift in priority from long-term consumer, to short-term high-interest bearing customer, has resulted in a rise in consumer debt, which coincides with the lowered cost of information access and mining (Sanchez 2009).

8. Conclusion

8.1 Findings and limitations

Rather than providing expedient solutions, implications or recommendations, this paper offers a preliminary attempt to “catch” the shape of an overlooked research and public policy issue.

For greater clarity and understanding of the segmentation practices of lenders, and the impact on consumers, a far more detailed investigation and review is required. However, such an investigation would be limited due to the commercial sensitivity of any detailed information about customer profiling systems.

Of course, borrowers need to take some responsibility for their actions. Put simply, though, it is not a level playing field. Banks and financial institutions are massively well-resourced organisations that use complex segmentation and marketing strategies to target these profitable customers with deals apparently tailored to their needs. As well as marketing strategies, product design is also often designed to drive some consumers to take on more credit than they otherwise would (Harrison & Massi, 2008). As a result, consumers can be encouraged to accept inappropriate credit products without being aware of the techniques being employed to target their vulnerabilities.

The rise in debt and bankruptcy in the last 20 years, and the larger context of the global financial crisis, suggests greater clarity is required about the causes of consumer debt. Sanchez (2009: 2) classifies financial institutions that have access to profiling or screening information as “informed lenders” and those who do not as “uninformed lenders”. Access to more detailed personal information can give lenders more accurate risk assessment tools.

The question is whether lenders use the personal information they have available to support responsible lending or to enhance profitability by marketing and lending practices which may not be in the best interests of borrowers.

There is a circumstantial link between the increase in informed lenders and the level of consumer debt (Sanchez 2009; Barron & Staten 2000, Davis 2008; Office of Fair Trading 2008), and this is supported by organisational intent.

The very information that assesses risk for the finance sector potentially also yields information about the consumers who are likely to yield high interest from debt (Davis 2008; Tillett 2000; Derringer 2006; Craig 2009; Morgenson 2008; Stone 2008). If banks have shifted away from viewing long term customers as highly profitable, and are seeking those who will yield high-interest in the short term, the intent determines how the information will be used. This combined with the significant reduction in the cost of accessing and analysing data should be cause for concern for policy makers.

Recent developments in credit laws have, for the first time, imposed a responsible lending obligation on lenders—albeit that the obligation is limited to providing a loan which is "not unsuitable", and focuses on credit assessment rather than marketing techniques. Proposed credit card legislation will address some of the problems arising from marketing practices and product design. However, while these reforms are very positive for consumers, they only go a small part of the way to address the harm which can arise from the exploitation of consumer vulnerabilities by the combination of customer profiling, marketing techniques and product design.

A continued prohibition on the use of credit reporting information for direct marketing may appear to suggest that the proposed reforms may not have an impact on the extent of customer

profiling. However, this is far from clear, due to the ability to use this information to filter out individuals from direct marketing (pre-screening) and the likelihood that certain information produced from credit reporting information may be included in internal customer relationship management systems. The proposed credit reporting reforms are likely to have a significant impact on the consumer credit market as a whole, including an overall increase in consumer lending. While the availability of more credit reporting information is likely to lead to a reduction in the *proportion* of debt defaults, an increase in overall debt levels is expected, which may result in an increase in the actual *number* of borrowers experiencing default. While default numbers are one indicator of consumer detriment, other consumer harms such as long-term indebtedness or the use of inappropriate products are more difficult to measure. Ongoing research will be needed to monitor and evaluate the impact of credit reporting reforms on consumer debt and defaults, but also to focus on any developments in product design and pricing, as well as targeting and direct marketing techniques.

While access to information about particular business information systems is unlikely to be available, it is crucial that policy makers and regulators are aware of the widespread use and application of such systems. The ability to profile customers, and target particular messages and products to them, supports the call for increased regulatory focus on credit product design and marketing techniques.

8.2 The public policy challenge

The techniques exposed by this report are not widely known or understood by policy makers or the public. According to Roger Clarke (1994), many of the techniques used by business are "undertaken largely under cover".

During the recent wide-ranging inquiry into Australia's privacy laws, which considered credit reporting regulation, little consideration was given to the way in which banks and finance companies use personal information they hold to profile, segment and target market consumers. This inquiry actually recommended increasing the amount of personal information that may be disclosed to credit reporting agencies, on the basis that it would assist credit providers make better lending decisions, and Government has generally accepted this recommendation.

Responsible lending and restrictions on credit limit increase offers, are significant consumer protection reforms. However legislation, understandably, tends to focus on each individual interaction between borrower and lender. Legislative responses thus far are generally inadequate to respond to the combination of customer profiling, marketing techniques and product design which can exploit consumer vulnerabilities but may not necessarily lead to a loan which would be considered "unsuitable" under the law. Furthermore, responsible lending laws do not cover the types of marketing messages used by lenders, or take into account the types of consumers who might be specifically targeted to receive a particular advertisement or offer.

This report shows that financial service providers outlay significant sums for systems which enable them to use customer information to enhance their profitability. It is therefore not surprising that detailed information about these systems is not publicly available. So, while there is still little "hard evidence" about personal information being actively exploited by businesses in their marketing practices, this report is a first step in seeking information that is publicly available about the use of segmentation, target marketing and profiling of current and potential customers in the marketing of credit to consumers.

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