

# THE NBN — DO AUSTRALIAN BROADBAND HOUSEHOLDS FEEL THE NEED FOR SPEED?

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## Abstract

This paper discusses the views of Australian households with a current broadband connection. It is based on survey data collected during August 2008 from a national sample of households. The paper presents an initial analysis exploring a range of household perceptions and intentions related to adopting a high-speed broadband connection.

A high-speed national broadband network (NBN) has been high on the political agenda since the lead-up to the 2007 Federal election, where both major parties went to the poll promoting their intention to implement an NBN. Neither party was deep on providing details of what their national broadband network would offer, except a high speed broadband connection of some form.

The research outlined here discusses the views of households with an existing broadband connection and explores their intention and desire to move to a high-speed broadband connection. It provides important baseline data to inform public debate on broadband policy and questions if the NBN is being proposed as a supply driven model, without sufficient understanding or consideration of the demand factors amongst Australian households.

## Key words

adoption, broadband, diffusion, communications technology, consumer behaviour, model, UTAUT, MATH, TAM, HAT.

## Introduction

2009 is a watershed year in the history of telecommunications in Australia. After many years of discussion and political posturing by successive governments, the Prime Minister announced in July this year Mike Quigley, an ex-CEO of Alcatel, would lead a state-owned company (NBN Co) established to deliver a national broadband network (NBN) to Australia.

Quigley is charged with delivering on the current Federal Government's commitment to supply 90% of Australian homes, schools and workplaces with 100Mbps broadband connections and the remaining 10% with 12Mbps wireless connections. This has been promised to be delivered within an eight-year timeframe (Conroy, 2009). It took the Federal Government over 18 months to form NBN Co and then appoint Mr Quigley from the time they were elected in November 2007. During these 18 months the proportion of Australian households with broadband grew from ~53% to an estimated 73%<sup>1</sup> (ABS 8153.0, 2009).

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<sup>1</sup> This figure may slightly over-represent the total number of households if there are households with multiple broadband connections (e.g. DSL and mobile wireless). This figure is calculated from ABS 8153.0 data reported by the ISPs on the number of Internet connections; while occupied household numbers are extrapolated from ABS 8146.0 (2009) and assume an annual growth rate of 0.016%. Mobile wireless connection numbers are not broken down into business, government and household categories in ABS 8153.0, and have only been reported from Dec 2008. The growth in mobile wireless connections accounts for almost all the broadband subscriber growth from Dec 2008 to June 2009.

So with more than 70% of Australian households having an existing broadband connection, taxpayers, Mr Quigley and the private investors required to partner with the government owned NBN Co in rolling out the national broadband network should be asking themselves:

Do existing Australian broadband households feel the need for the extra speed the NBN will offer?

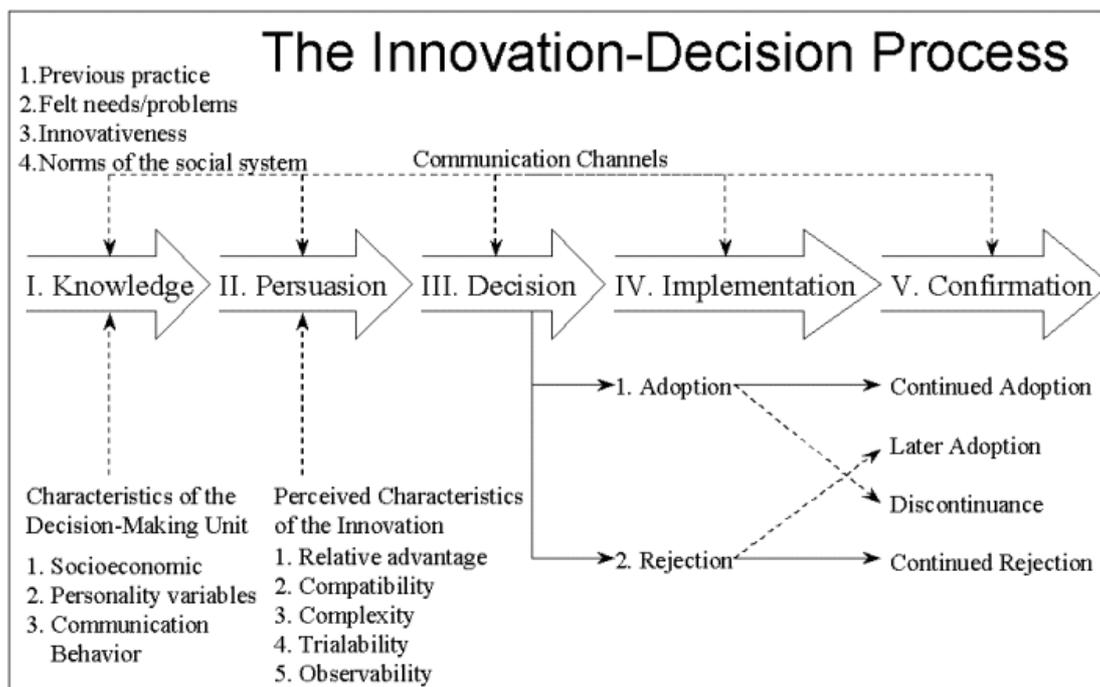
This paper provides an initial insight into the results of research conducted in August 2008 which surveyed a representative sample of Australian households investigating their views on having high-speed broadband in their homes. While data was collected on all household types, only the insights provided by households with a current broadband connection are reported here. Further details on the non-broadband households can be found in Adams (2008) and Adams (2009).

### Literature review

Technology adoption studies have historically focused on organisational adoption, with the Technology Acceptance Model (TAM) (Davis, 1989; Davis, Bagozzi & Warshaw, 1989) gaining widespread acceptance in the information systems research community. TAM was based on the Theory of Reasoned Action (TRA) (Fishbein & Ajzen, 1975) and has been widely referenced and used as the basis of many subsequent adoption studies. Various adoption research models have built using TAM as a base; including Brown and Venkatesh’s (2005) Model of Adoption of Technology in Households (MATH).

Around 1998 articles started to appear investigating household technology adoption. Dwivedi, Williams & Venkatesh (2008) found one article was published in 1998 and peaked at 21 articles in 2006, with a total of 80 articles published overall in the 10 years they surveyed up until 2008. Of these articles 32.5% were based on TAM (1989), while the next largest category of 11.3% of articles used Rogers’ (2003) Innovation Diffusion Theory (IDT) as their theoretical base. IDT has been used in a broad cross-section of innovation adoption and diffusion studies, and states adopters move through a five stage process when considering adopting an innovation. Rogers (2003) calls this the Innovation-Decision Process (see Figure 1).

**Figure 1. The Innovation-Decision Process**



Source: Rogers, 2003, p. 170

The focus for this research is to investigate the key influences as household consumers move from the *persuasion* stage to the *decision* stage of the Innovation-Decision Process. The theoretical basis for this research is built on IDT and the Model of Adoption of Technology in Households (MATH).

While the unit of study here is the individual household; this research recognises the data was collected during a time (August 2008) when the broader political environment within Australia was still developing in relation to a national broadband policy. At the macro level there is a body of research investigating the drivers of broadband demand in a range of countries. For example Barr (2006) in his study of the broadband ‘experiment’ in Kenniswijk, in The Netherlands, found governments can stimulate demand for broadband by engaging communities through encouraging the development of innovative applications. The findings of this current research should consider the household views in Australia by reflecting on the lessons learned in other countries.

## Methodology

Household technology adoption is still an emerging area and researchers often use organisational models like the Technology Acceptance Model (TAM) as their theoretical basis. Recognising the limitations of building household adoption models from theories originally developed for organisations, this research took a mixed methods approach, first running a qualitative phase involving focus groups to explore in more depth the issues relevant to household technology adoption (Adams, 2006).

From there a model of household technology adoption was conceptualised and then operationalised by developing a questionnaire built around the relevant theoretical constructs (Adams, 2007). A random sample of five thousand Australian households was sent the questionnaire by mail seeking feedback on broadband in their household. The mail out contained two similarly structured surveys: *Survey A* for households who did not have the Internet connected or were dial-up users; and *Survey B* for current broadband users. A total of 624 useable responses were received, with 459 of those from current broadband households. Only the responses from current broadband households are reported here<sup>2</sup>.

The questionnaire consisted of 56 statements relating to the households views on broadband, asking for a response on a seven point Likert scale from Very Strongly Disagree through to Very Strongly Agree. The questionnaire included 16 demographic questions about the household and finished with two open-ended questions to capture any additional thoughts the household had in relation to broadband. Some of the initial findings for current broadband households are discussed below.

## Findings and discussion

Using a Juster scale, the questionnaire asked current broadband households about their intention to upgrade to higher speed broadband within the next 12 months on a scale of 0 (no chance) to 10 (certain). Forty-four per cent (44%) stated there was no chance (0), to only a slight possibility (2) they would upgrade their broadband connection within 12 months; while 19% rated themselves as very probable (8) to certain (10) they would connect. While on the surface 19% may seem like a small number of households planning to move to higher speed broadband, there aren’t many companies who would not be excited about the idea of being able to sell a higher level of product or service to one-fifth of their customers within the next twelve months.

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<sup>2</sup> For the reader interested in comparing current broadband and non-broadband households, the Findings and Discussion section in this paper follows a similar format to Adams (2008) which outlined the initial findings for non-broadband households. Readers should check with the author before citing direct comparisons, as the 2008 data was drawn from an early sample of responses. Some broader comparisons of non-broadband and current broadband households can be found in Adams (2009).

When this survey was run in August 2008, there was very little detail on what the Federal Government planned to do to implement a national broadband network (NBN). Given this context, households were asked to indicate their household's view on the statement: *The Federal Government's broadband initiatives will help our household.*

**Table 1. Distribution of responses to survey question NS2**

Very Strongly Disagree	Strongly Disagree	Disagree	Neither Agree or Disagree	Agree	Strongly Agree	Very Strongly Agree
3.1%	3.5%	14.1%	60.8%	14.8%	2.9%	0.9%
NS2 — The Federal Government's broadband initiatives will help our household						

Clearly the Federal Government has not succeeded in convincing current broadband households they will be better off with the NBN, with 60.8% neither agreeing nor disagreeing with the statement. Just under one-fifth (18.6%) of households had some level of agreement the Federal Government's broadband initiatives would help, while slightly more (20.7%) felt they would not be helped. It is interesting to note this 20.7% figure is similar to the 19% of households who said they planned to upgrade to higher speed broadband in the next 12 months, which is before the NBN will be implemented. Clearly one-fifth of households aren't relying on the Federal Government to offer them a solution to faster broadband access in the short term. A chi-squared analysis found evidence of a relationship between upgrade intention and household's attitude towards the Federal Government's broadband initiatives would help them,  $\chi^2 = 38.425$ ,  $df = 6$ ,  $p = .000$

Many households would start with their current provider when looking for a higher speed broadband connection; in Australia, Telstra has 48% of the overall broadband market (SMH, 2008). Given their dominant market position, households were asked if they felt Telstra's dominance was a barrier to competition.

**Table 2. Distribution of responses to survey question NS3**

Very Strongly Disagree	Strongly Disagree	Disagree	Neither Agree or Disagree	Agree	Strongly Agree	Very Strongly Agree
2.9%	3.1%	14.5%	26.7%	25.3%	10.1%	17.4%
NS3 — Telstra's dominance of the broadband market is a barrier to competition						

While they might have almost half the overall broadband market in Australia, more than half the current broadband households (52.8%) agreed Telstra's dominance is a barrier to competition. As an interesting aside, it must be pure statistical coincidence that Telstra has 48% of the overall broadband market and 52.8% of current broadband households think their dominance is a barrier to competition. Unfortunately data was not collected on who the household's current broadband provider was, so no comment on any correlation of these figures can be offered.

The first question households were asked, was did they think having broadband would be useful for their family.

**Table 3. Distribution of responses to survey question A1**

Very Strongly Disagree	Strongly Disagree	Disagree	Neither Agree or Disagree	Agree	Strongly Agree	Very Strongly Agree
0.4%	1.1%	3.7%	12.0%	33.7%	22.5%	26.5%
A1 — Having faster broadband would be useful for our family						

While only 19% of households rate themselves a good chance of installing broadband in the next 12 months; 82.7% of households felt faster broadband would be useful for their family. There is clearly a large gap between these two figures. A chi-squared analysis found evidence of a relationship between upgrade intention and the degree to which households felt broadband would be useful for their family,  $\chi^2 = 53.714$ ,  $df = 6$ ,  $p = .000$ .

While the vast majority of current broadband households think faster broadband would be useful, only one-fifth of them plan to upgrade in the coming twelve months. Some possible reasons for the discrepancy in these figures are discussed below. Despite already having a broadband connection in the household, more than half (51.3%) of the current broadband households find it frustrating trying to find accurate and relevant information on broadband.

**Table 4. Distribution of responses to survey question A47**

Very Strongly Disagree	Strongly Disagree	Disagree	Neither Agree or Disagree	Agree	Strongly Agree	Very Strongly Agree
2.4%	2%	19.6%	24.7%	37.7%	9%	4.6%
A47 – Searching for accurate and relevant information about broadband is a frustrating process						

Part of this frustration seems to come from almost half (48.3%) the current broadband households not being able to adequately compare the plans on offer.

**Table 5. Distribution of responses to survey question A21**

Very Strongly Disagree	Strongly Disagree	Disagree	Neither Agree or Disagree	Agree	Strongly Agree	Very Strongly Agree
2%	3.7%	19.1%	26.8%	31.4%	10.1%	6.8%
A21 — Information is not available to compare the different broadband plans and be able to tell exactly what the differences are.						

It is interesting that all of the households being discussed here currently have a broadband connection and have gone through the process (persuasion to decision from Figure 1) of subscribing to broadband previously; yet almost half of the existing broadband households agreed to some level that information was not available to compare broadband plans easily. While broadband is in more than 70% of Australian households overall, it seems the telecommunications carriers can take no credit for making the process easier for the average household. Yet, despite the high proportion of households expressing frustration in trying to find accurate and relevant information on broadband (Table 4) and not being able to adequately compare the plans on offer (Table 5), no significant association was found with upgrade intention when a chi-squared analysis was performed.

Another area likely to have a negative affect on upgrade intention is the pace of technological change. For over one-third of households (38.6%) the issue is when to commit to the technology given there might be a better option available soon.

**Table 6. Distribution of responses to survey question A26**

Very Strongly Disagree	Strongly Disagree	Disagree	Neither Agree or Disagree	Agree	Strongly Agree	Very Strongly Agree
4.2%	3.3%	22.9%	31.1%	24.7%	9.3%	4.6%
A26 — We cannot decide when to upgrade our broadband speed because it seems as if there is always a better technology just around the corner.						

Evidence of a relationship between upgrade intention and the pace of technological change (Table 6) was found through a chi-squared analysis,  $\chi^2 = 29.999$ ,  $df = 6$ ,  $p = .000$ . As the national broadband network (NBN) starts rolling out, it will be interesting to see what affect this has on household sentiment about what technology 'is just around the corner' and whether this will have a negative effect of the sale of existing broadband offerings.

But like many household consumer issues, financial reasons play a key role in the decision making process. Two-thirds of households (66.8%) of households stated higher speed broadband is not a priority in their household budget. A chi-squared analysis found evidence of a relationship between upgrade intention and the relative priority of broadband in the household budget,  $\chi^2 = 71.912$ ,  $df = 6$ ,  $p = .000$ .

**Table 7. Distribution of responses to survey question A32**

Very Strongly Disagree	Strongly Disagree	Disagree	Neither Agree or Disagree	Agree	Strongly Agree	Very Strongly Agree
1.8%	4.0%	9.9%	17.6%	45.2%	11.9%	9.7%
A32 — Higher speed broadband is not a priority is our household budget						

Another way of looking at this issue is that the broadband speed they currently have represents the best balance between the cost and perceived benefits for these 66.8% of households.

## Conclusion

We started by asking:

Do existing Australian broadband households feel the need for the extra speed the NBN will offer?

And the answer is yes ... sort of ...

Mr Quigley (NBN Co) can take a lot of comfort in the fact that 82.7% of existing households with broadband stated that faster broadband would be useful for their family; but the challenge is how does he convince the two-thirds (66.8%) of these same households to pay more for that faster connection? Another way of looking at this issue is to ask: *What services will convince households to make higher speed broadband a priority in their household budgets?*

While the logistics and challenges of rolling out the NBN in the promised eight-year time frame are enormous, maybe it is time we shift the focus of the national debate on broadband away from arguing over the alternative supply side models, to focussing on how we can drive demand. There is an overwhelming majority of existing broadband households (82.7%) who already think faster broadband is a good idea, now they just need to have a compelling reason to make room in their household budget to upgrade. The logical way to do this is to start funding a broad cross section of projects which will ultimately drive demand. The evidence this model works has been demonstrated by innovative projects like the Kenniswijk experiment (Barr, 2006).

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