Factors Related to Choosing between the Internet and a Financial Planner

Dissertation

Presented in Partial Fulfillment of the Requirements for the Degree Doctor of Philosophy in the Graduate School of The Ohio State University

By

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2012

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Abstract

In this dissertation, I aim to clarify the factors affecting a consumers’ choice between the Internet and a financial planner for making saving and investment decisions, based on household production theory. Moreover, I explore the likelihood of an individual being an Internet user (vs. a non-user), a financial planner user (vs. a non-user), a mixed user (vs. a non-user), an Internet user (vs. a mixed user) or a financial planner user (vs. a mixed user). First, using the data from the combined set of 2001, 2004, and 2007 Survey of Consumer Finances (SCF), I investigated the proportion of U.S. households using the Internet, a financial planner, both, or neither. I found that Internet usage for making saving and investment decisions grew from 12% in 2001 to 20% in 2007. In contrast, financial planner usage statistics for the same purpose slightly decreased during the same period, from 18% to 15%. More interestingly, the proportion of mixed users, who use the Internet in addition to a financial planner, increased from 4% to 7%. Extending these results to multivariate analyses, I tested whether or not time constraints, monetary constraints, and human resource constraints affect a consumer’s choice between using the Internet and a financial planner. I found that monetary constraints and human resource constraints affected consumer decisions in choosing between the Internet and a financial planner,
which supports household production theory. Unlike my hypothesis, however, time constraints (e.g., working hours per week, presence of a young child under the age of 5) did not bear any significant relationship in making a choice between the Internet and a financial planner. Moreover, the effects of time constraints were not found to be significant on the likelihood of being an Internet user, a financial planner user, and a mixed user. Overall, these results suggest that younger consumers with a Bachelor’s degree and less financial assets are more likely to use the Internet, instead of a financial planner or in addition to the financial planner.
Vita

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## TABLES OF CONTENTS

Abstract ................................................................................................................................. ii
Vita .......................................................................................................................................... iv
List of Tables ........................................................................................................................ x
List of Figures ........................................................................................................................ xi

Chapters:

INTRODUCTIONS ......................................................................................................................... 1
1.1 Backgrounds ....................................................................................................................... 1
1.2 Objectives and significance of the study ........................................................................... 4

LITERATURE REVIEW ............................................................................................................... 8
2.1 The Internet ........................................................................................................................ 9
  2.1.1 Roles of the Internet ..................................................................................................... 10
  2.1.2 Expected costs and benefits of using the Internet ...................................................... 12
    2.1.2.1 Expected costs of using the Internet ................................................................. 12
    2.1.2.2 Expected benefits of using the Internet ............................................................ 15
2.2 A financial planner .......................................................................................................... 19
  2.2.1 Roles of a financial planner ........................................................................................ 22
  2.2.2 Expected costs and benefits of using a financial planner .......................................... 23
    2.2.2.1 Expected costs of using a financial planner ..................................................... 23
    2.2.2.2 Expected benefits of using a financial planner ................................................. 24
4.2.1 Dependent variables .......................................................... 66
4.2.2 Independent variables .......................................................... 67
4.2.3 Control variables .................................................................. 75
4.3 The multinomial logit model ...................................................... 78

RESULTS .................................................................................. 84
5.1 Characteristics of sample households ......................................... 87
5.2 Rates of Internet only, financial planner only, mixed use, non-use by characteristics of households ......................................................... 88
5.3 Multinomial logit results ............................................................. 93
  5.3.1 Internet use vs. Financial planner use (Model A) .................. 96
  5.3.2 Internet use vs. non-use (Model B) ...................................... 99
  5.3.3 Financial planner use vs. non-use (Model C) ....................... 102
  5.3.4 Mixed use vs. non-use (Model D) ....................................... 104
  5.3.5 Internet use vs. mixed use (Model E) ................................. 106
  5.3.6 Financial planner use vs. mixed use (Model F) .................... 108

DISCUSSIONS AND IMPLICATIONS .............................................. 110
6.1 Discussions .............................................................................. 110
  6.1.1 Effects of time constraints .................................................. 110
  6.1.2 Effects of monetary constraints ......................................... 111
  6.1.3 Effects of human resource constraints ............................. 112
  6.1.4 Effects of financial complexity ......................................... 114
6.1.5 Effects of demographic variables..................................................115
6.2 Implications......................................................................................117
  6.2.1 Implications for Internet users .....................................................117
  6.2.2 Implications for financial planner users.......................................118
  6.2.3 Implications for mixed users..........................................................119
  6.2.4 Implications for non-users ..............................................................120
6.3 Summary..........................................................................................123
6.4 Limitations and recommendations for future research .......................125

REFERENCES ....................................................................................127
APPENDIX A: SAS codes for multinomial logit analyses .........................145
LIST OF TABLES

Table 2.1 Studies on the benefits of using financial advice on the Internet ..........18
Table 2.2 Contents of financial planning process framework .............................21
Table 2.3 Studies on the benefits of using financial planners ............................27
Table 2.4 Studies on the use of multiple sources including the Internet ...............33
Table 2.5 Studies on the use of a financial planner ........................................39
Table 2.6 Theoretical frameworks used in empirical studies .............................45
Table 3.1 A summary table of hypotheses .......................................................61
Table 4.1 A summary table of dependent and independent variables ....................74
Table 4.2 A summary table of control variables .............................................77
Table 4.3 Information sources used in grouping ............................................80
Table 4.4 Meanings of dependent variables .................................................83
Table 5.1 Internet use and financial planner use during 2001-2007 .....................86
Table 5.2 Rates of Internet only, financial planner only, mixed use, and non-use by characteristics of households .................................................................91
Table 5.3 Multinomial logit results .................................................................94
Table 5.4 Hypothesized effects and empirical results for IT users & FP users ......98
Table 5.5 Hypothesized effects and empirical results for IT users & non-users ....101
Table 5.6 Hypothesized effects and empirical results for FP users & non-users .....103
Table 5.7 Hypothesized effects and empirical results for mixed users & non-users 105
Table 5.8 Hypothesized effects and empirical results for IT users & mixed users 107
Table 5.9 Hypothesized effects and empirical results for FP users & mixed users 109
Table 6.1 A summary table of significant factors ...........................................122
LIST OF FIGURES

Figure 4.1 Decision-making tree for a multinomial logit model ............................79

Figure 6.1 Strategic approach: How to promote extensive information search using multiple information sources .................................................................121
CHAPTER 1

INTRODUCTION

1.1 Backgrounds

Over the last decade, we have witnessed a rapid growth of broadband Internet adoption in the United States. The number of home broadband connections was only 4% in August 2000, and then the number surpassed 60% as of October 2009. While the growth rate of home broadband connections slowed somewhat after 2009, the rate reached 69% as of October 2010 (CPS, 2010). Also, mobile broadband access with a smart phone and a laptop computer is rapidly growing. According to the Federal Communications Commission, the number of mobile broadband subscribers in the US was over 50 million at the beginning of 2010, and reached 70 million half a year later (Prieger & Church, 2011). Overall, almost 72 percent of American consumers are using the Internet in their everyday lives (NTIA, 2011).

As the Internet emerged as a new information source, researchers in many disciplines have investigated the effect of the Internet from their various perspectives. The focus of the studies was the effect of the Internet on their industrial structures. For instance, from
the perspective of health care service providers, health information researchers have tried to identify the effect of on-line health information on health professional visits, both for ailment treatments and cancer treatments (Lee, 2008; Nagler et al., 2010; Diaz et al., 2002). From the travel industry perspective, tourism marketing researchers have investigated the effect of the Internet on travel agencies (Bennett & Lai, 2005; Cheyne, Downes & Legg, 2005; Lang, 2000). Education researchers were also interested in possible competitions and collaborations between the Internet and traditional campus-based universities in American higher education (Baer, 1998; Parikh & Sameer, 2002). However, to this date, studies that have identified the impact of the Internet on the financial planning industry are still limited.

In the context of the financial planning industry, few studies have investigated the impact of the Internet on financial planner usage (Nussbaumer et al., 2011; Tseng & Yang, 2011). In their results, the use of the Internet for making saving and investment decisions enhanced the consequent contact with a financial planner. Although individuals have not replaced financial planners with the Internet, the Internet has apparently become a new information source for the general public and is often used to complement financial planner consultations. These results are similar to previous research conducted in the contexts of health information, tourism marketing, and higher education.

However, one important question that needs to be addressed is what kinds of factors affect consumers to choose the Internet over financial planners. As the use of the Internet increases, it will become more important for financial planners to identify clients who use the Internet and to understand how they use it as a source of saving and investment.
information. Also, from the consumer perspective, the Internet has the potential to dramatically change traditional power imbalances between a consumer and a financial planner, as it offers an opportunity for consumers to increase their knowledge, become more informed, and increase their involvement in the saving and investment decision-making process (Rezabakhsh, Bornemann, Hansen, & Schrader, 2006). Hanna and Lindamood (2010) quantified the value of potential benefits of “ideal” financial planning advice on increasing wealth, preventing loss and smoothing consumption by hypothetically comparing naïve alternatives to optimal decisions. If consumers can make optimal decisions using financial information on the Internet, the same amount of benefits that obtained from a financial planner is also available from the Internet.

With regard to the decision of choosing between the Internet and a financial planner, several factors are expected to have an influence. First, monetary constraints will be a crucial factor in choosing information sources, as choosing between the Internet and a financial planner may imply a decision to cut back on some other expenditure or savings goal. Consumers can save the cost of professional financial advice by using the information on the Internet. As saving and investment information become available on the Internet at relatively low prices, consumers might be more reluctant to pay a fee or commission for a financial planner. At the same time, this choice might be affected by what is available and unavailable to a consumer. Second, the availability of human resources and time will be significant factors in choosing information sources, as personal financial planning is more than just searching for financial information. If a consumer works with a financial planner for a comprehensive financial plan, one will go
through several stages including: financial goal setting, investment alternative evaluating, plan implementing, and monitoring. Similarly, a consumer who wants to establish a financial plan independently using on-line financial information needs to invest human resources and time into making such a plan. Third, preferences between the Internet and a financial planner may vary according to the specific requirements of the problem at hand. Thus, too much complexity in the financial structure of a household may be problematic in using the Internet. If the structure of household finances is beyond the understanding of an individual, a consumer may need to contact a financial planner, who has a more specialized knowledge and a better understanding of finance.

This dissertation considered monetary constraints, human resource constraints, time constraints, and the financial complexity of the household, based on household production theory. In the results, statistically significant effects of monetary constraints and human resource constraints were confirmed, while the effects of time constraints were not supported. Based on those findings, this dissertation discussed what sort of people currently use the Internet, a financial planner, both, or neither and who could be additional Internet users, financial planner users, and mixed users.

1.2 Objectives and significance of the study

The first objective of this dissertation is to describe changes in the use of the Internet and a financial planner for saving and investing decisions, across 2001, 2004 and 2007. To reveal the changes in consumers’ preferences, the 2001, 2004, and 2007 Survey
of Consumer Finances datasets were employed. The slow but steady growth of financial planner users has been reported (Joo and Grable, 2001; Elmerick, Montalto, & Fox, 2002; Kim, 2005; Peterson, 2006; Evans, 2009; Hanna, 2011, Finke, Huston, & Winchester, 2011). However, less is known about changes in Internet use for making saving and investment decisions. Thus, this study investigated the changes in Internet use proportions over time, attempting to evaluate the significance of the Internet as a source of financial information relative to a financial planner. Implications for the changes to consumer choices and the financial planning industry are provided.

The second objective is to determine factors that influence consumers to choose the Internet instead of a financial planner. On-line financial information has the potential to substitute for a financial planner’s service, but previous research has not ascertained what specifically makes consumers choose the Internet instead of a financial planner. The result will help us to understand in more detail factors that cause a shift to the Internet from using a financial planner. This dissertation will also analyze the likelihood of an individual being an Internet user (vs. a non-user), a financial planner user (vs. a non-user), a mixed user (vs. a non-user), an Internet user (vs. a mixed user) or a financial planner user (vs. a mixed user). The findings from the first three comparisons will reveal detailed characteristics of each group. We can compare the different impact of factors determining Internet users, financial planner users, and mixed users. The findings from the last two comparisons respectively provide insights into what types of Internet users do not use a financial planner and what types of financial planner users do not use the
Internet. The results may provide useful insights for social marketing programs that are attempting to promote a mixed use of the Internet and financial planners.

This study makes two contributions that are distinct from previous studies. First, it uses household production theory as a theoretical framework. Many studies have explored the use of a financial planner, but only a few were based on an economic framework. Some were based on the cost-benefit framework; however, the role of the cost-benefit framework is not adequately demonstrated. By using household production theory, we could establish hypotheses on the impact of time constraints, monetary constraints, human resource constraints, and financial complexity to choosing between home goods (e.g., the household produced financial plan using the Internet) and market goods (e.g., services from the paid financial planner). The factors related to time constraints and financial complexity were newly included in the model, in addition to the traditional factors that have been considered for studying financial planner use (e.g., the ability to pay, risk tolerance, and other major demographic characteristics). The financial complexity of the household is measured by the number of financial goals, the number of financial accounts, and the number of people in the household.

Second, this study employed a multinomial logit model as the multivariate analysis method in order to compare the likelihood of choosing the Internet versus a financial planner. Most research on the use of a financial planner has used a binary logistic regression model by assessing whether households use a financial planner or not. By using the multinomial logit model, the likelihood of being Internet users, financial planner users, mixed users, and non-users could be presented in various ways. This is the
first study to employ the multinomial logit model to analyze the SCF measure of Internet use and financial planner use.

In the next chapter, the literature on the Internet and a financial planner will be reviewed. In chapter 3, household production theory is presented, followed by hypotheses. In chapter 4, the data, sample, empirical model, and the specification of variables are described. In chapter 5, empirical results are presented and discussed. Finally, in chapter 6, conclusions, implications, limitations, and suggestions are laid out.
CHAPTER 2

LITERATURE REVIEW

In the first section of this chapter, we will first review the literature on the Internet as a transaction intermediary and an information intermediary. Then, expected costs and benefits of using the Internet for saving and investment will be discussed. The second section of this chapter also starts by reviewing the literature on a financial planner as a transaction intermediary and an information intermediary followed by discussions on expected costs and benefits of using a financial planner. In the third section, empirical studies on factors related to Internet use and financial planner use will be reviewed. Finally, in the fourth section, frameworks that have been used in the above empirical studies will be reviewed.
2.1 The Internet

One of the valuable aspects of the Internet is the provision of financial information. In particular, on-line discussion board, e-mail, and the World Wide Web have attracted an increasing number of investors in the financial decision-making context. Currently, over 84% of mutual fund investors use the Internet for making saving and investment decisions (ICI, 2011). These statistics show that the Internet plays a vital role in making saving and investment decisions. Without considering the role of the Internet, today’s information searches for financial decision-making would not be fully explained.

Internet financial information sources can be categorized into two types: professional and unprofessional sources. Professional sources seem to be more trusted by consumers as certain experts are involved with professional sources revealing names and licenses (Nussbaumer, Matter, Slembek, & Schwabe, 2011). However, there is a trade-off between cost and quality. Many professional sources charge a subscription fee, while most unprofessional sources provide information for virtually no cost. Professional internet sources for financial planning include the official websites of financial firms, portal sites owned by corporations (e.g. MSN Money, Yahoo Finance, Quickens), stock quotes and stock indices through market watch websites, and monthly/annual subscription sites (e.g., The Motely Fool), stock exchange web sites (e.g., internet trading), finance news (e.g., market watch websites), and e-mail newsletters from private websites of financial planners. Unprofessional internet sources include informal Internet sources such as blogs, online community discussion boards and chat rooms on financial
planning. General internet searches can direct consumers to both professional and unprofessional sources (Loibl & Hira, 2008).

2.1.1 Roles of the Internet

The Internet as a transaction intermediary in saving and investment

As a transaction intermediary, the Internet changes how a consumer uses financial services like banking and insurance. Transaction activities such as checking account balances, transferring funds, paying and receiving bills, trading stocks, and applying for loans have become available through the on-line branches of financial institutions. According to the center for the Digital Future (2011), 47% of Internet users have experiences of using online banking services and 22% of Internet users have experiences of paying bills on-line. ICI (2012) also reported that 82% of household-owned mutual fund accounts were accessed through the Internet, and 57% of household-owned accounts other than mutual fund accounts were accessed through the Internet in the U.S. These statistics show that many consumers now have become familiar with transactions through the on-line channel, and service provision through the Internet has now reached a mature stage in the financial services sector.

The Internet as an information intermediary in saving and investment

An information intermediary is an economic agent that supports the production, exchange, and use of information aiming to enhance the value of information and to decrease the cost of information acquisition (Rose, 1999). As an information intermediary, the Internet distributes financial information and helps consumers with
processing information. By using the Internet as an information intermediary, consumers can save the time and effort required for locating, sorting, and integrating decision-relevant information while reducing costs. This results in an increase in search efficiency. Given that many decision-making environments are now shifted from information-scarce to information-saturated contexts, the role of the Internet as an information intermediary is important today, particularly for preventing stress and tension related to information overload (Lee & Cho, 2005). In addition, the Internet works not only as an information intermediary but also as a self-directed learning medium. As a self-directed learning medium, the Internet provides investment courses including lecture notes, chat rooms, and streaming videos, that are designed to enhance investment knowledge for consumers. Financial knowledge is distributed to consumers with little or no cost, overcoming time and space barriers. For instance, Morningstar, Inc. offers up to 172 on-line courses on investing in stocks, funds, portfolio, and bonds for free, from the beginners’ level to the advanced level. Consumers can start with the basic courses and then move on to the advanced materials. Similar investment classes are provided with a fee in other websites (e.g., www.napfa.org; www.universalclass.com/). On-line universities and on-line courses of campus-based universities (e.g., University of Phoenix; Texas State University-San Marcos) are other examples of self-directed learning media on the Internet. We can expect short and long-term improvements of saving and investment skills for consumers who use the Internet as a self-directed learning media for making saving and investment decisions.
2.1.2 Expected costs and benefits of using the Internet

2.1.2.1 Expected costs of using the Internet

Costs of using the Internet consist of three parts: 1) psychological cost, 2) costs related to Internet access and subscription, and 3) the opportunity cost of time.

Psychological cost

Although an essentially unlimited number of references is available on the Internet, it is not easy to find useful, relevant information on the web whenever it is needed. In such a web-searching context, costs related to psychological burden are likely to be involved with an information search. When the consumer receives too much quasi-relevant information relative to the quantity of information one can process within a specific time period, the problem of information overload is the result (Edmunds & Morris, 2000; Eppler & Mengis, 2004). Symptoms such as psychological anxiety, tension, reduced attention span, difficulties in memorizing and remembering, and poor decision-making are expected consequences of information overload (Waddington, 2003). However, in the practice of economic analysis, psychological burden and information overload are not often considered.

Costs related to Internet access and subscription

Costs related to home Internet access

A pricing structure of home broadband access shows some unique features. First, most of the pricing systems do not limit the amount of data for uploading and
downloading. Since they do not charge additional costs for the extra usage, the price for a broadband subscription is a fixed cost. Second, pricing systems are often discounted and offer the option of bundling the broadband service with other services (e.g., Home phone, cable-television). In contrast, a standalone price is charged for broadband access only. Third, the length of the contract is designated in the pricing system and the rate is different according to the length of the contract.

A few studies have measured the costs of having a home broadband subscription in the U.S. According to the Federal Communication Commission (FCC)’s 2009 survey, households paid $40.68 per month on average for Internet access. Households with standalone contracts paid $46.25 on average whereas households with the option of bundling paid $37.70 on average (Horrigan, 2010). According to Greenstein and McDevitt (2010), the average price for a cable-modem service was $48.86 in 2004. It has increased to an average of $51.35 in 2009. For the Digital Subscriber Line (DSL) service, the average price for standalone contracts was $58.11 in 2004, $60.02 in 2008, and $58.61 in 2009. After reviewing the changes in the price index of broadband subscriptions between 2004 and 2009, researchers concluded that dramatic quality-adjusted price declines were not observed in the broadband services market, different from other electronics markets. Rosston, Savage, and Waldman (2010) measured the willingness to pay for broadband home Internet access by using a random utility model. The data used in the study were collected by conducting repeated discrete-choice experiments in a nationwide survey. In their results, households were willing to pay $59 per month for “Basic” Internet service (with fast speed and less reliable service), $79 per
month for “Reliable” service (with fast speed and very reliable service), $85 for “Premium” service (with fast speed, very reliable service and the ability to designate some downloads as high priority), and $98 for “Premium Plus” service (with fast speed, very reliable service plus all other activities bundled into the service). Comparing the price index with the willingness-to-pay, the willingness to pay for basic, reliable, premium, and premium plus services in Rosston, Savage, and Waldman (2010) are all relatively higher than the average market price of a broadband subscription reported in Greenstein and McDevitt (2010). This is consistent with the statistic that about 65% of individuals, who are age 16 and more, had broadband access to the Internet at home in 2010 (CPS, 2010).

Costs related to subscription

On-line information sources such as the Wall Street Journal (www.wsj.com), Consumer Reports (www.consumerreports.org) are examples of successful subscription websites with paid subscribers. Lopes and Galletta (2006) suggested that the key factor that makes those websites successful is that they have a well-defined purpose for attracting subscribers. Unlike these websites, most financial websites of investment companies still provide information for free. The production costs of on-line financial information consist of the sum of investigation, printing, and diffusion, although the costs of printing and diffusion are almost ignored in on-line financial information. Also, profits come from selling financial products rather than providing information for investment companies.
Cost related to the opportunity cost of time

The opportunity cost of time is based on time allocation theory by Becker (1965). After analyzing a detailed survey of technology choices conducted by Forrester Research, Goldfarb and Prince (2008) found that those with higher incomes and higher education levels spent less time on the Internet compared to their relatively lower-income, and less educated counterparts. In their results, income and education had positive effects on the adoption of the Internet, although after adoption, those factors showed negative effects on the length of Internet use. Researchers suggested that low income, less educated individuals spent more time on the Internet due to their lower opportunity costs of leisure time. Based on the same idea, Lin and Lee (2004) also suggested that consumers’ financial information search online requires significant economic sacrifice, particularly for those who are employed with high salaries.

2.1.2.2 Expected benefits of using the Internet

Stock buying recommendations on the Internet is a type of on-line financial information that can be used for financial planning. Although there are few studies analyzing general financial benefits of on-line information related to financial planning, a few empirical studies have examined the effects of stock buying recommendations in e-mail newsletters and on-line discussion boards (Dewally, 2000; Tumarkin & Whitelaw, 2001; Antweiler & Frank, 2004; Hanke & Hauser, 2008). The majority of studies have focused on outcomes in the short run (e.g., five days following the message posting day). The results of those empirical studies have shown that those buying recommendations are
likely to influence the trading volume and volatility, but they are unlikely to predict the level of positive returns. Studies on the tangible benefits of using the Internet are organized in table 2.1.

Dewally (2000) investigated the effects of stock buying recommendations in Yahoo! Finance (http://finance.yahoo.com/) on abnormal returns (ARs) in stock market prices. The 798 buying recommendations posted on two different Internet newsgroups were used in this study. In order to measure the pure effects of the one-time buying recommendation, Dewally excluded any stock discussed in the seven day period prior to the posting date, discarding any stock that was repeatedly recommended, and excluding any stock that had been recommended for the past three days. In the results, it was revealed that those buying recommendations non-significantly increased investment returns, but only by 1.13 % over the 20 days after being posted. Dewally concluded that the two news groups failed to offer valuable advice to their readers.

Tumarkin and Whitelaw (2001) examined the effect of stock messaging boards on the abnormal return of 73 Internet service companies, between 1999 and 2000. Messages posted on the RagingBull.com (http://ragingbull.com/) were collected and analyzed. In 2000, the number of average daily message postings was 7.6 messages, with a maximum number of 104 messages in a day. In their results, stocks that possessed strong positive opinions exhibited significant increases in trading volume. However, the industry-adjusted returns were not influenced by strong-positive, weak-positive, or negative opinions on the RagingBull.com website, for the five days preceding and five days following the posting day.
Antweiler and Frank (2004) studied the relationship between postings on the Internet stock message boards in Yahoo! Finance (http://finance.yahoo.com/), RagingBull.com (http://ragingbull.com/), the Wall Street Journal (http://online.wsj.com/home-page#) and the Dow Jones Indices. In their results, postings on the Internet stock message board had statistically significant but economically small positive effects on stock returns. The return was not even greater than the expected transaction cost. Although postings on the message boards failed to predict consequent stock returns in a successful manner, message postings were helpful in predicting volatility in the short run, thus researchers concluded that those postings were more than just noise.

In Hanke and Hauser (2008), researchers examined the effects of stock buying recommendations in spam e-mails and found significant effects on returns, turnover, and intra-day price ranges. In terms of returns, statistically significant negative effects were found five days after the spam day. A clustering of spam events was observed in the data and it was suggested that spammers might target a certain stock in advance of its scheduled liquidation and send stock buying recommendations in order to create excessive levels of demand in the market.
<table>
<thead>
<tr>
<th>Author (year)</th>
<th>Title</th>
<th>Independent var.</th>
<th>Dependent var.</th>
<th>Findings in Returns</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dewally (2000)</td>
<td>Internet investment advice: Investing with a rock of salt</td>
<td>Stock buying recommendation in on-line news groups</td>
<td>Abnormal Returns</td>
<td>N.S.</td>
</tr>
<tr>
<td>Tumarkin and Whitelaw (2001)</td>
<td>News or Noise? Internet postings and stock prices</td>
<td>Strong positive, weak positive, &amp; negative opinions (Raging Bull)</td>
<td>Abnormal Returns Trading volume</td>
<td>N.S.</td>
</tr>
<tr>
<td>Antweiler and Frank (2004)</td>
<td>Is all that talk just noise? The Information Content of Internet stock message boards</td>
<td>Internet stock message board (Yahoo! Finance; Raging Bull; WSJ)</td>
<td>Dow Jones Industrial Average; Dow Jones Internet index</td>
<td>Very small but significant positive effects</td>
</tr>
<tr>
<td>Hanke and Hauser (2008)</td>
<td>On the effects of stock spam e-mails</td>
<td>Stock buying recommendations in spam e-mails</td>
<td>RET (return); TO(turnover); IR (volatility)</td>
<td>Negative effects</td>
</tr>
</tbody>
</table>

**Table 2.1** Studies on the benefits of using financial advice on the Internet
2.2 A financial planner

As advice provided by a financial planner is based on many fields of study including finance, economics, psychology, and consumer sciences, various occupations and licenses are associated with financial planners (Schuchardt et al., 2007). In terms of occupations, bankers, licensed attorneys, insurance agents, realtors, and securities brokers all call themselves financial planners. These financial planners provide advice on topics such as emergency fund management, debt management, insurable risk reduction, investment risk control, estate planning, and tax planning depending upon their specialization. In terms of licenses, Certified Financial Planners (CFPs), Chartered Financial Consultants (ChFCs), Chartered Life Underwriters (CLUs), and Chartered Financial Analysts (CFAs) are examples of financial planners (Ligon, 2003). Although various licenses co-exist, the Certified Financial Planner (CFP®) designation is nationally advertised and widely used in the U.S. The Certified Financial Planner Board of Standards Inc. (CFP Board) has established standards for CFPs and requires education, examination, experience and ethical codes (CFP Board, 2012). Procedures for working with a financial planner are outlined in Gao, Wang, Xu, and Wang (2007) and the CFP Board (2012). Both frameworks have six steps and provide detailed explanations on each step that a consumer will go through when working with a financial planner. In both frameworks, the task of setting financial goals is given in the first to second steps, analyzing and evaluating investment alternatives is given in the third to fourth steps, implementing a plan and monitoring it is given in the fifth to sixth steps. The core
contents of each stage suggested by Gao et al. (2007) and the CFP Board (2012) are presented in table 2.2.
### Table 2.2 Contents of financial planning process frameworks

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Stage 1</td>
<td>Determine family’s current financial situation</td>
<td>Establish the client-planner relationship</td>
</tr>
<tr>
<td>Stage 2</td>
<td>Establish financial goals</td>
<td>Gather client data, including financial goals</td>
</tr>
<tr>
<td>Stage 3</td>
<td>Review the alternative courses of actions</td>
<td>Analyze and evaluate the clients’ financial status</td>
</tr>
<tr>
<td>Stage 4</td>
<td>Evaluate the alternatives</td>
<td>Develop the financial planning recommendations</td>
</tr>
<tr>
<td>Stage 5</td>
<td>Choose an action</td>
<td>Implement the financial planning recommendations</td>
</tr>
<tr>
<td>Stage 6</td>
<td>Reevaluate and revise the chosen financial plan</td>
<td>Monitor the financial planning recommendations</td>
</tr>
</tbody>
</table>
2.2.1 Roles of a financial planner

_A financial planner as a transaction intermediary in saving and investment_

A financial planner is placed between specialist advisors and the consumer as a transaction intermediary and works as a delivery channel of specialist advisors (e.g., Certified Public Accountants (CPAs), attorneys, Stock brokers, etc). Black, Ciccotello, and Skipper (2002) suggested that consumers can save transaction costs by consolidating accounting, billing, correspondence, and other activities with a financial planner. Similarly, a financial planner works as a surrogate and takes full control in managing clients’ portfolios (Mazzoli & Nicolini, 2010).

_A financial planner as an information intermediary in saving and investment_

As various types of financial products co-exist in the financial market, the information search for saving and investment is often confusing. Under these circumstances, a financial planner delivers advice in order to support consumers’ decision-making. By using a financial planner as an information intermediary, the burden of searching for information is reduced for consumers. Black et al. (2002) suggested that consumers can save search and monitoring costs by working with a financial planner. In addition, consumers use a financial planner as an advisor when they don’t have enough knowledge or time to manage their savings and investments (Bae & Sandager, 1997). When an individual trusts his/her financial planner as an advisor, the individual is more confident in making final decisions and implementing plans (Sniezek & Swol, 2001).
2.2.2 Expected costs and benefits of using a financial planner

2.2.2.1 Expected costs of using a financial planner

The use of a financial planner involves substantial costs. Consumers compensate financial planners’ service by paying fees, commissions, or some combination of these (Finke, 2011). There is no uniform payment method in the financial planning industry. However, pricing policies are mostly dependent upon the affiliation format of financial planners. Those financial planners who are not affiliated with financial firms are called Independent Financial Advisors (IFAs). IFAs do not need to sell specific financial products associated with a firm. Instead, IFAs charge on the basis of service, through the format of an hourly or flat rate. It is difficult to estimate the total amount of fees paid to IFAs. However, we can make a rough estimate based on the market price. In 2010, the hourly rate of IFAs ranged from $100 to $400, with an average of $175 per hour (Costhelper, 2010). Based on this fee-charging system, the total cost charged at the end of the whole session would be over $1,000. Otherwise, the flat fee starts from $400 to $500 and increases as more services are provided.

As consumers often hesitate to pay an explicit fee to financial planners, financial firms developed a new fee charging system called “wrap fees,” which are annual fees proportional to the size of the account (Barber & Odean, 2001). Similarly, financial planners who are affiliated with specific financial firms mostly charge commission. The commission is the sum of advisory costs and delivery costs. Mazzoli and Nicolini (2010) criticized charging commissions for being “opaque” and leaving uncertainties. However,
it is reported that consumers prefer paying commission rather than paying flat fees, since the commission seems to be less expensive from the consumers’ perspective (Bluethgen, 2008; Inderst & Ottaviani, 2009). Commissions start at 1% or less on money market accounts (MMA) and treasury bills, and then increases up to 5.5% on mutual funds. For instance, if a consumer invests $50,000, the actual amount of fees are between $500 and $2,375 (Costhelper, 2010).

2.2.2.2 Expected benefits of using a financial planner

Tangible benefits

A stream of empirical studies have examined the benefits of using financial planners (Bergstresser, Chalmers & Tufano, 2007; Bluethgen, Gintschel, Hackethal, & Mueller, 2008; Hackethal, Haliassos, & Jappelli, 2012). In their results, accounts advised by financial planners were well-diversified in general. However, those accounts often yielded lower returns due to the poor stock-picking abilities and transaction costs. Studies on the tangible benefits of using financial planners are organized in table 2.3.

Bergstresser, Chalmers and Tufano (2007) compared the broker channel with the direct channel and found that the broker channel sells inferior funds. Researchers compared five aspects of potential benefits including reduced search and analysis cost, reduced non-distribution costs, risk-adjusted returns, asset allocation, and investor biases. Among these five potential benefits, only a reduction in search cost and analysis costs was supported. To be specific, bond and equity funds sold by the broker channel showed lower returns than direct-sold funds. Also, brokers did not exhibit superior asset
allocation and timing abilities in terms of Mean Excess Return per month, standard deviation of Monthly Excess Returns, or the Sharpe ratio.

Based on German data, Bluethgen et al. (2008) reported that the advised clients allocated more equity to mutual funds compared to self-directed individuals. Those portfolios of advised individuals were more diversified, resembling the optimal portfolios prescribed in financial theory. Although advised portfolios involved higher fee expenses followed by high turnover rates, a growth in net benefits was estimated in advised portfolios.

More recently, Hackethal, Haliassos, and Jappelli (2012) compared the performance of advised accounts with self-managed accounts and reported that advised accounts exhibited lower abnormal returns, higher turnover rates, higher mutual fund investments and greater diversification. Two types of financial planners were considered in this study for advised accounts: Independent Financial Advisors (IFAs) and Bank Financial Advisors (BFAs). In the results, both IFAs and BFAs had negative effects on returns and Sharpe ratios. While the use of IFAs reduced total portfolio risk and Sharpe ratios, the use of BFAs increased portfolio variance and reduced the Sharpe ratio to a larger extent.

Chalmers and Reuter (2012) compared the actual portfolios of broker-advised funds, target-date funds, and self-directed funds, using a dataset provided by the defined contribution plan of the Oregon University System from 1999 through 2009. After comparing annual after-fee returns, portfolio risk, asset allocation, and fund selection decisions from three different types of portfolios, Chalmers and Reuter reported that portfolios based on the default option (target-date funds) and self-directed funds
performed better than broker-advised funds in terms of annual after-fee returns. After paying broker fees, portfolios based on broker-advised funds exhibited lower returns, although they were well-diversified in terms of asset allocation and fund selection.
<table>
<thead>
<tr>
<th>Author (year)</th>
<th>Title</th>
<th>Independent var.</th>
<th>Dependent var.</th>
<th>Findings in Returns</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bluethgen et al. (2008)</td>
<td>Financial advice and individual investor’s portfolio</td>
<td>Use of financial advice</td>
<td>Diversification; Turnover rate; Sharpe ratio</td>
<td>Higher returns for the advised account</td>
</tr>
<tr>
<td>Chalmers and Reuter (2012)</td>
<td>What is the impact of financial advisors on retirement portfolio choices and outcomes?</td>
<td>Broker account; Self-directed account; target date fund</td>
<td>Returns; Risk; Asset allocation; Fund selection</td>
<td>Lower returns for the broker advised account</td>
</tr>
</tbody>
</table>

Table 2.3 Studies on the benefits of using financial planners
Intangible benefits

According to the CFP board (2012), individual investors with financial planners adapt life changes well into their financial plans and are on track for their financial as well as other goals. Thus, financial planner users feel more organized, as they are aware of their current financial situations and have a long-term plan as well as a short term plan. Although empirical studies have not found strong evidence of tangible benefits of using a financial planner, a substantial intangible benefit was found in Marsden, Zick, and Mayer (2011), in terms of goal setting, calculating retirement needs, diversifying retirement accounts, using supplemental retirement accounts, accumulating emergency funds, positive responses to the economic crisis, and retirement confidence. In Mayer, Zick and Marsden (2011), having a retirement saving goal resulted in increases of self-reported savings for retirement among both younger and older respondents. In addition, findings about the cognitive abilities of financial planners suggest that having advice might be a better choice if an investor has insufficient financial knowledge for decision-making. Superior financial abilities of financial planners were found in Shiapira and Venezia (2001) and Jones, Lesseig, and Smythe (2005). Shapira and Venezia (2001) tested the cognitive abilities of financial planners and reported that financial planners were less likely to commit cognitive errors (e.g., selling poorly performing stock earlier) than individuals. Jones et al. (2005) suggested that financial planners considered various fund characteristics and reports when choosing mutual funds for investment.

Up until now, we have discussed both tangible and intangible benefits of using financial planners. Although the presence of some tangible and intangible benefits are
substantial, those benefits can be reduced when the interest of a consumer and a financial planner are not aligned (Finke, 2012). The presence of a potential conflict of interest was found in Mullainathan, Noeth, and Schoar (2012). Through an audit study, researchers reported that the majority (50%) of financial planners encouraged investing in actively managed funds with higher fees; while only 8% recommended the index fund with lower fees. When the auditor was a female, financial planners were 40% more likely to say that their clients first must transfer the balance to them. For the findings, Mullainathan, Noeth, and Schoar proposed that financial planners might not have the ability to remove biases in portfolios or intentionally exacerbate existing biases in the portfolios.

2.3 Studies on Internet use and financial planner use

2.3.1 Studies on Internet use

Factors associated with Internet use for making saving and investment decisions

According to the U.S. Federal Communications Commission (FCC) 2009 survey, Internet use is now spread among the general public: 30% of respondents used the Internet with a hand-held tool; 65% had home broadband access; 78% used the Internet (Horrigan, 2010). Given that 78% had Internet access in 2009, the size of the population using the Internet for making saving and investment decisions is still relatively small. In fact, Internet access is a multi-faceted concept with four kinds of barriers including 1) lack of elementary digital experience; 2) No access to the PC and network; 3) Lack of digital skills; and 4) Lack of usage opportunities (Van Dijk & Hacker, 2003). Thus,
Internet use for making saving and investment decisions refers to the third of four successive kinds of access problems depending on one’s ability to use the Internet effectively. In 2011, 84% of mutual fund investors used the Internet for financial purposes including searching for financial information, trading stocks, and accessing financial accounts (ICI, 2012). Previous studies have shown that certain socio-demographic characteristics are associated with the relative ease of Internet use for saving and investment (Lin & Lee, 2004; Chang, 2005; Rock, 2010). In Lin and Lee (2004), the probability of using the Internet when making investment decisions was associated with subjective knowledge, risk tolerance, age, education, and income. Specifically, individuals with higher levels of subjective knowledge, higher levels of risk tolerance, educational attainments higher than college education, and an annual income above $60,000 were more likely to use the Internet for making investment decisions. In Chang (2005), factors associated with Internet use for saving and investment were levels of education, liquid assets, risk tolerance, and a single male household. The 1998 Survey of Consumer Finances was used and analyzed in this study with the logistic regression model. In Rock (2010), male, older age, and Asian were positively associated with Internet use for saving and investment. The data used in this study was collected through a telephone survey of individuals who earn more than $75,000 a year. Thus, there is a limitation in generalizing this result. The findings from above empirical studies suggest that factors associated with the first level access problem are still significant in dealing with a lack of digital skills, which is the third level access problem (Martin & Robinson, 2007).
Patterns of Internet use for making saving and investment decisions

Empirical studies have investigated the use patterns of information sources focused on the Internet. Studies of patterns of Internet use for financial decision-making are organized in table 2.2. Kwon (2004) and Loibl and Hira (2009) used cluster analysis to analyze the pattern of information use for financial decision-making. Kwon (2004) demonstrated that there are four patterns: ‘mass media oriented light users,’ ‘comprehensive expert users,’ ‘assertive users,’ and ‘technical/investment oriented expert users.’ In Kwon’s study using the 1998 SCF, Internet users were not clustered into a separate group. Instead, Kwon reported that 49% of respondents in the ‘assertive users’ group used the Internet along with other information sources (e.g., magazine/newspapers, friend/relative, TV/radio). Later in Loibl and Hira (2009), Internet users were identified into one group as a result of the cluster analysis. The names of five groups identified in Loibl and Hira were ‘balanced investors,’ ‘online investors,’ ‘moderate investors,’ ‘workplace investors,’ and ‘reluctant investors.’ Among these five groups, the Internet was predominantly used by ‘online investors’ and ‘moderate investors.’ These two groups were placed in second and third place respectively among a total of five groups, in terms of the frequency of information use. While the ‘online investor’ group used the Internet exclusively, the ‘moderate investor’ group used the Internet with other information sources (e.g., press, financial planners).

Empirical studies also have investigated the effect of using a financial planner on the Internet, as well as the effect of the Internet on financial planner use. These studies are also organized in table 2.2. Lee and Cho (2005) investigated the effect of using a
financial planner on the Internet, after analyzing 2000/2001 MacroMonitor data set. In Lee and Cho, those who used a financial planner were less likely to use the Internet, as they preferred more credible information. On the other hand, in Nussbaumer et al. (2011) and Tseng and Yang (2011), the use of the Internet positively influenced the consequent use of a financial planner. Tseng and Yang (2011) conducted a path analysis using data from Taiwanese investors and found that the information search using the Internet increased information search through financial planners. Nussbaumer et al. (2011) also reported that wealthy investors search to a great extent, but those investors tend to use a financial planner after using the Internet. In addition to a financial planner, other paid information sources (e.g., professional advisors) were used only after the unpaid information sources had been used (e.g., the Internet). This research is from a Swiss-based study using respondents with more than 500,000 Swiss francs (approximately $522,300 USD).
<table>
<thead>
<tr>
<th>Author (Year)</th>
<th>Data Set</th>
<th>Title</th>
<th>Analysis Method</th>
<th>Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kwon (2004)</td>
<td>1998 SCF</td>
<td>Clustering users of multiple sources of information for saving and investment</td>
<td>Cluster analysis</td>
<td>The Internet was used with other sources</td>
</tr>
<tr>
<td>Lin &amp; Lee (2004)</td>
<td>2000/2001 Macro Monitor dataset</td>
<td>Consumer information search when making investment decisions</td>
<td>Probit regression analysis</td>
<td>Subjective knowledge (+), risk tolerance (+), Age (-), Education (+), Income (+)</td>
</tr>
<tr>
<td>Chang (2005)</td>
<td>1998 SCF</td>
<td>What a little help from my friends (and my financial planner)</td>
<td>logistic regression analysis</td>
<td>Education (+), liquid assets(+), risk tolerance(+), single male (+)</td>
</tr>
<tr>
<td>Loibl and Hira (2009)</td>
<td>The proprietary data</td>
<td>Investor information search</td>
<td>Cluster analysis</td>
<td>‘Online investor group’ was identified</td>
</tr>
<tr>
<td>Rock (2010)</td>
<td>U.S. household with incomes of $75,000&lt;</td>
<td>The use of the Internet as a source of financial information by households in the United States</td>
<td>OLS regression</td>
<td>Male(+), older age(+), Asian(+)</td>
</tr>
<tr>
<td>Tseng and Yang (2011)</td>
<td>378 Taiwanese investors</td>
<td>The role of information searches in investment choice variation: Digital information, advice seeking and heuristics</td>
<td>Path analysis</td>
<td>IT-&gt; FP (+)</td>
</tr>
<tr>
<td>Nussbaummer et al. (2011)</td>
<td>17 university educated subjects</td>
<td>Understanding information seeking behaviour in financial advisory</td>
<td>Focus Group Interview</td>
<td>A financial planner was used after the Internet</td>
</tr>
</tbody>
</table>

Table 2.4 Studies on the use of multiple sources including the Internet
2.3.2 Studies on financial planner use

During the past two decades, researchers in the field of consumer science have produced many articles, theses, and dissertations on consumers’ financial informational search behaviors. Some of them were interested in the amount of searching, but most of them investigated which information sources were most frequently used for financial planning and which factors influenced choosing that specific information source. Public datasets used in these studies were 1) the Survey of Consumer Finances; 2) the Health and Retirement Survey; 3) the Retirement Confidence Survey; and 4) the Macro Monitor dataset. Also, a few researchers conducted their own surveys and generated proprietary datasets.

*Empirical studies using the Survey of Consumer Finances (SCF)*

In the literature reviewed, the most frequently-used dataset is the Survey of Consumer Finances (SCF). The SCF measured consumers’ financial planner usage for saving & investment decision-making and credit & borrowing decision-making. Elmerick, Montalto and Fox (2002) and Hanna (2011) examined financial planner usage for making saving and investment and/or credit and borrowing decisions, while Chang (2005), Peterson (2006), and Evans (2009) examined financial planner usage only for making saving and investment decisions. Empirical studies using the Survey of Consumer Finances are limited particularly with regard to measuring the extent of financial planner usage, since financial information sources are measured by a series of binary questions. Consequently, most studies using the SCF conducted a logistic
regression analysis, which is appropriate for analyzing a limited dependent variable. Also, the specific types of financial planners and the extent of usage could not be revealed in these studies due to the dependent variable. Although the SCF does not have data about the frequency of financial planner usage, the type of financial planners, and the amount of money paid for financial planners, studies using the SCF provide a picture of growth in financial planner use.

Elmerick, Montalto, and Fox (2002) used the 1998 SCF and found that education, age, race, employment status, income, net worth and financial assets were positively associated with financial planner usage. Chang (2005) also analyzed the SCF 1998 and showed that use of a financial planner was positively associated with education, financial assets, single female, Black and risk tolerance. Peterson (2006) discussed financial planner usage with the 2004 SCF, focusing on the effect of financial complexity of the household. Financial complexity was measured with three variables: the number of financial goals, the number of financial accounts, and the number of dependents. The number of financial goals and accounts had statistically significant positive effects on financial planner usage. However, the number of dependents did not predict financial planner usage. Evans (2009) discussed the gendered difference of financial planner usage centered on married households in the 2004 SCF. From their assessment of the literature, Evans noted that women are more likely than men to seek assistance from others. In his results, households where the husband is the financially most-knowledgeable were more likely to use a financial planner than households where the wife is the financially most-knowledgeable. However, the differences were not confirmed in the following
decomposition analysis. Hanna (2011) analyzed the four consecutive releases of the SCF from 1998 to 2007 in order to estimate the demand for financial planning services. According to Hanna, the slow growth of financial planner usage has been reported between 1998 and 2004. However, financial planner usage suddenly jumped in 2007. The percentage of households using a financial planner was 21 to 22% during 1998 to 2004, and 25% in 2007. The estimated number of households using financial planners was 21,670,000 in 1998, but by 2007 that number had increased to 29,300,000. This means that one out of four American households is now assisted by a financial planner. In terms of household characteristics, education, age, single female, Black, positive and negative net worth, and risk tolerance exhibited positive effects on financial planner usage, whereas presence of a child under age 19 and Others/Asian were negatively associated with financial planner usage.

Empirical studies using the Health and Retirement Survey (HRS)

Another national survey with data on consumers’ financial planner use is the Health and Retirement Survey (HRS). The HRS is a nationally representative longitudinal survey of adults 50 years and older focusing on health and retirement decisions. The HRS is conducted biannually by the Institute for Social Research at the University of Michigan. The 2000 HRS provides information about financial planner use of the elderly who is 65 years or older. Using the 2000 HRS, Kim (2005) used variables measuring health status, cognitive ability, and social interaction in order to construct a proxy for elderly vulnerability. Her results revealed that elderly populations aware of their decreasing cognitive abilities (e.g., older ages, IADL problems, and computational
inabilities) are more likely to use a financial planner. However, depression symptoms have a negative impact on financial planner usage.

*Empirical studies using other datasets*

In addition to the SCF and the HRS, Joo and Grable (2001) used the Retirement Confidence Survey (RCS), Kim and Kim (2010) used the MacroMonitor Survey, and Finke, Huston, and Winchester (2011) used a proprietary dataset. Studies using other datasets have reported higher rates of financial planner usage than studies using the SCF.

Joo and Grable (2001) discussed the effects of demographic, financial, and attitudinal variables on the use of financial planning services. Based on a conceptual framework of personal finance help-seeking behaviors developed in Joo and Grable (1999), Joo and Grable (2001) analyzed the 1998 RCS and found that female, income, positive financial behavior, proactive retirement attitude and a higher risk tolerance were positively associated with financial planner usage, while the effects of age, marital status, the number of dependents, and racial/ethnic characteristics were not significant.

Using the 2002-2003 the Mature Market Survey (MMS), Kim and Kim (2010) reported that financially distressed consumers, who were overly indebted and were in professional debt consolidation programs, were more likely to consult with professionals when making a retirement plan. In Kim and Kim, of 353 individuals who had reported an annual income of under $50,000 and who had contacted an institution for credit counseling between July 1, 2002 and June 30, 2002, about 52% used professional services, including financial planners, lawyers, lecturers, accountants, and counselors, for
making a retirement plan. Based on this finding, Kim and Kim suggested that pension plans targeting younger financially distressed consumers have potential in the private pension market.

Finke, Huston, and Winchester (2011) discussed the effects of socio-demographic characteristics on three types of choices to purchase: self-directed financial planning, advice-supported financial planning, and financial planning with a written, comprehensive plan. Among 3,022 survey respondents with $50,000 or more of annual income or investable assets, 50% chose self-directed financial planning, 25% chose the advice-supported financial planning, and 25% chose comprehensive planning. Finke, Huston, and Winchester found that those with the highest level of assets and college education were more likely to purchase comprehensive planning services with a written plan. However, the effect of income was not as significant as asset value. In terms of age, younger aged individuals were more likely to use the self-directed planning, middle-aged individuals were more likely to use the comprehensive planning, and older aged individuals were more likely to use the advice-supported planning.
<table>
<thead>
<tr>
<th>Author (Year)</th>
<th>Data Set</th>
<th>Title</th>
<th>Analysis Method</th>
<th>Main Focus</th>
</tr>
</thead>
<tbody>
<tr>
<td>Joo and Grable (2001)</td>
<td>1998 RCS</td>
<td>Factors associated with seeking and using professional retirement planning help</td>
<td>Logistic regression analysis</td>
<td>Use of a financial planner for retirement planning</td>
</tr>
<tr>
<td>Chang (2005)</td>
<td>1998 SCF</td>
<td>What a little help from my friends (and my financial planner)</td>
<td>Bivariate probit analysis, multinomial logistic regression analysis</td>
<td>Use of social networks (friends and family)</td>
</tr>
<tr>
<td>Kim (2005)</td>
<td>2000 HRS</td>
<td>Financial management assistance use by the vulnerable elderly</td>
<td>Logistic regression analysis</td>
<td>Vulnerable elderly age over 70</td>
</tr>
<tr>
<td>Peterson (2006)</td>
<td>2004 SCF</td>
<td>Are households with complex financial management issues more likely to use a financial planner?</td>
<td>Multinomial logistic regression analysis</td>
<td>Financial complexity</td>
</tr>
<tr>
<td>Evans (2009)</td>
<td>2004 SCF</td>
<td>The predisposition of women to use the services of a financial planner for saving and investing</td>
<td>Logistic regression analysis, Decomposition method</td>
<td>Married household</td>
</tr>
</tbody>
</table>

Table 2.5 Studies on consumers’ use of a financial planner
2.4 Theoretical frameworks on information source selection

As theoretical frameworks for the studies on choosing information sources, two different approaches could be used. One is the cost-benefit framework and the other is the least-effort framework (Hardy, 1982). The cost-benefit framework suggests that consumers consider costs and benefits when choosing information sources for searching. Applications of the cost-benefit framework are varied. The model of external information search (Schmidt & Spreng, 1996), the value-intention framework (Dodds, Monroe, & Grewal, 1991; Zeithaml, 1988), the economics of information theory (Stigler, 1961), and household production theory (Becker, 1965) are based on the cost-benefit framework. The least-effort framework, on the other hand, suggests that consumers prefer the option of saving irrespective of benefit. However, an option involving the least cost can be the one with the maximum benefit too, if the perceived benefits are not noticeably varied while the suggested costs are varied.

2.4.1 The cost-benefit framework

The basic assumption is that consumers with more information can make a better decision. However, there are rational restrictions on information acquisition: cost. As there is a trade-off between costs and benefits, the cost-benefit framework proposes that consumers will consider expected benefits and expected costs when choosing information sources. In other words, consumers will decide whether or not to use the information source considering expected benefits and costs associated with that information source.
Therefore, a consumer will use a greater number of information sources when costs of searching are relatively low.

The cost-benefit framework is the model which has been used most frequently in the studies on choosing information sources for saving and investing decisions. Studies that apparently rely on the cost-benefit framework are Loibl and Hira (2009) and Finke, Huston, and Winchester (2011). In these studies, it was assumed that factors such as age, income, and education may influence the perceived costs and benefits of households who decide to use a financial planner.

*The value-intention framework*

The value intention framework is an applied version of the cost-benefit framework first suggested by Dodds, Monroe, and Grewal (1991) and Zeithaml (1988). In the value-intention framework, consumers estimate the value of a certain behavior considering its consequences including costs and benefits. The results of the estimation differ according to individuals. Thus, consumers’ willingness to perform a certain behavior is interpreted as a function of the perceived value. As the perceived value of the behavior increases, the individual is more likely to perform the behavior. Studies that are interested in the perceived value of information sources can employ the value-intention framework. For instance, the value-intention framework was used as a theoretical framework in Lee and Cho (2005).
Schimidt and Spreng (1996) suggested the model of external information search. In addition to costs and benefits, the framework suggested by Schimidt and Spreng included “abilities” as an attribute that enables or disables Internet use. While “motivation” boosts the use of the Internet, “abilities” works as a barrier to choosing the Internet. In general, the ability to use the Internet is positively associated with a higher level of education, negatively associated with age, and is less influenced by liquidity constraints.

The economics of information

Although the focus of this study is information channel selection rather than the amount of search, it is noticeable that Stigler’s seminal work discussing the optimal amount of search is also based on the cost-benefit framework. In the economics of information, consumers decide whether or not to search based on perceived costs and benefits of the search. It is basically assumed that considering the price dispersion, the more information a consumer has the more they will benefit in terms of price reduction. Thus, the optimum amount of information search is theorized to be the point at which the expected marginal return of the search and the cost of search are equated (Stigler, 1961).

2.4.2 The least-effort framework

The basic assumption of the least-effort framework is that consumers ignore the quality of information obtained but consider the amount of effort involved. Thus, the
least-effort framework suggests that consumers will select the information source of which the minimum amount of effort or cost is expended, ignoring the quality of the information. According to this framework, information sources with the least psychological burden and financial cost will be preferred by consumers (Hardy, 1982). In other words, consumers minimize the cost of information acquisition while possibly sacrificing the quality of information.

Although it is not very persuasive in explaining why consumers prefer certain information sources, the least-effort framework has a forte in explaining consumers’ behaviors considering psychological costs. For example, Tseng and Yang (2011) reported that Taiwanese consumers wanted to use heuristics in searching for information on saving and investing. In this study, consumers who wanted to reduce the associated effort with information search used heuristics, thus simplifying the investment decision-making process.

2.4.3 Household production theory

Becker’s (1965) household production theory simplified a reality and suggested a framework that explains how the household allocates its time among market work, household work, and leisure time. As we have 24 hours a day, everyone has 168 hours a week. This time constraint is imposed on everybody. Under this time constraint, a person’s goal is maximizing the households’ utility.

Household utility is assumed to be obtained from three sources: market goods and services, home goods and services, and leisure time. First, market goods and services can
be purchased by paying in the market. Those monetary resources are obtained by allocating his or her time on the labor market. Second, home goods and services are produced in the household by combining market goods and services with the household’s labor, time, and other resources. Thus, market goods and services purchased on the market are used as inputs into the home production of goods and services with time (Muth, 1966). Third, leisure yields direct satisfaction. As an individual obtains utility from each of these three sources, his or her preference can be represented by the combination of the above three sources. As marginal utility of market goods and services, home goods and services, and leisure decrease, an individual will choose the most preferred mixture of market work and household work, considering the marginal production in household production under the time constraint.

Some of the market goods were directly consumed and yielded utility. The remaining goods were combined with household labor and became home goods. People also obtained some utility by consuming home goods. Finally, people enjoy leisure time, for instance, listening to music and obtained utility. This is a work-leisure model of the household (Bryant & Zick, 2006). Household production theory recognizes the value of household labor that produces home goods and services. However, the job satisfaction of doing market work and household work is ignored for simplicity sake. Bryant and Zick (2006) argued that the model excluding job satisfaction is accurate enough whether it comes from market work or household work. See Bryant and Zick (2006) for further information. Theoretical frameworks recently used in empirical studies are summarized in Table 2.4.
<table>
<thead>
<tr>
<th>Theoretical frameworks</th>
<th>Empirical Studies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cost-benefit framework</td>
<td>Finke, Huston, and Winchester (2011)</td>
</tr>
<tr>
<td></td>
<td>Loibl and Hira (2009)</td>
</tr>
<tr>
<td>The value intention framework</td>
<td>Lee and Cho (2005)</td>
</tr>
<tr>
<td>(Dodds, Monroe, &amp; Grewal, 1991; Zeithaml, 1988)</td>
<td></td>
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<tr>
<td></td>
<td>Evans (2009)</td>
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<tr>
<td>Help-seeking framework (Grable and Joo, 1999)</td>
<td>Grable and Joo (2001)</td>
</tr>
<tr>
<td></td>
<td>Kim (2005)</td>
</tr>
</tbody>
</table>

*Table 2.6 Theoretical frameworks used in empirical studies*
3.1 Assumptions of household production theory

In household production theory, a household’s satisfaction is derived only from the consumption of market goods $C$, home goods $G$, and leisure time $L$. Markets goods are purchased in the market and denoted by $C$. Home goods are produced and consumed by the household and denoted by $G$. The quantity of the leisure time of the individual who had the opportunity of being employed in the labor market is denoted by $L$. As household satisfaction can only be obtained from $C$, $G$, and $L$, a households’ utility function is algebraically expressed as the combination of these three: market goods $C$, home goods $G$, and leisure time $L$, as below.

The essence of household production theory is considering time constraints. There are three possible uses of total time $T$: $M$, $H$, and $L$. Market work means all the time devoted to labor that will be compensated by payment and is denoted by $M$. Household work means all the time devoted to household production activities and family management.
activities and is denoted by H. As above, the quantity of the individuals’ leisure time is denoted by L. As there are 168 hours in a week, the sum of M, H, and L should not be greater than 168 hours in any given week.

3.2 Household production of the financial planning service

The CFP Board has accepted that consumers can do their own financial planning using software packages, magazines, and self-help books (The CFP Board, 2012). These resources needed for the development of financial planning services have become available through the Internet. In this dissertation, every individual is hypothesized as being able to seek financial information from two sources, considering costs and benefits. The Internet is denoted by and a financial planner is denoted by . Financial information on the Internet is defined as an input for the household production of financial planning G.

The following is a process of producing the financial planning service at home. The Internet provides financial information to consumers. represents an individual’s use of the Internet for seeking financial information. It takes some time to scan and understand on-line financial information. Time devoted for such household work is denoted by H. In addition to the Internet use and time H, the cognitive ability of the individual and the complexity of household finances are included in the financial knowledge production function below. Cognitive ability increases the efficiency of processing on-
line financial information. A consumer with a higher cognitive ability can generate the household production of financial plans more efficiently. Although the complexity of household finances is amenable to change in the long run, the complexity of household finance is given to households in the short run. As household finances have a more complex structure, producing the financial planning service at home becomes tougher. In household production function, Internet use and time are separated from the cognitive ability, and the complexity of household finance, since the individual can only alter and, not and.

A consumers’ financial planner use is the market service. In this dissertation, we ignore time for the consumption of market good.

Household production of the financial planning service increases the utility of the household, as well as financial planner use.

In household production theory, it is assumed that market goods C and home goods G are substitutable for one another. Therefore, a consumer will obtain as much satisfaction from the professional financial planning service as from the self-developed financial plan. Perceived benefits of the professional financial planning service and the self-
developed financial plan are the same. Thus, we can propose a hypothesis on the relationship between internet use and financial planner use.

3.3 Impacts of constraints

A consumer’s choice between the Internet and a financial planner reflects the trade-off between benefits and costs. As benefits of the professional financial planning service and the self-developed financial plan are assumed to be equated, the optimality of a consumer’s choice will reflect mainly the costs accompanied with the choice. If the Internet and a financial planner are both available and are perfect substitutes, the choice between a financial planner and the Internet is dependent upon the price of using a financial planner and the Internet.

A financial planner is the monetary resource-intensive information source while the Internet is the time-intensive information source (Lin & Lee, 2004). Financial planners’ service provision is compensated by commissions, fees, or a combination of both. Thus, use of a financial planner is possible through the consumption of the monetary resource. But contrast, understanding on-line financial information requires significant amounts of time. It is clear that these characteristics of information sources, time constraints, monetary constraints and human resource constraints influence usage levels of the Internet and a financial planner.

Although consumers can do their own financial planning, there are occasions when consumers possibly need help from a financial planner. Constraints surrounding a
consumers’ decision making environment possibly influence those occasions. Variables such as demographic characteristics (e.g., gender, age, race/ethnicity) and socio-economic characteristics (e.g., risk tolerance) of consumers have received a significant amount of attention in the literature as preference shifters, whereas constraints have not.

In this dissertation, we focus on time constraints, monetary constraints and human resource constraints. We hope to explain why some consumers choose the Internet rather than a financial planner by emphasizing the role of the constraints.

Bryant and Zick (2006) explained a consumer’s time allocation as follow: For instance, a man in the single household received \( w \) dollars per hours from \( M \) hours of employment. He earned labor income \( E \).

\[
\text{Income} = \text{labor income } E \text{ and non-labor income } V.
\]

He purchased some market goods \( C \), whose price is denoted by \( p \). Thus, the budget line for purchasing market goods and market services is following.

When consumers use the Internet as well as a financial planner, time is allocated to market work, household work, and leisure.
Thus, full income is allocated to market goods, home goods and leisure.

3.3.1 Time constraints

Variables associated with time constraints are weekly hours for market work and the presence of a young child under the age of 5 in the household.

*Weekly hours for market work*

As more time is allocated to market work, less time is available for household work and leisure. Although there is no way to figure out how much time is allocated to household work and leisure, we can propose the following hypotheses.

**H 1: The weekly hours of market work will have an effect on uses of the Internet and a financial planner for saving and investment.**

H 1A: As the weekly hours for market work increase, consumers will be less likely to be Internet users rather than financial planner users.

H 1B: As the weekly hours for market work increase, consumers will be less likely to be Internet users rather than non-users.
H 1C: As the hours for market work increase, consumers will be less likely to be financial planner users rather than non-users.

H 1D: As the hours for market work increase, consumers will be less likely to be mixed users rather than non-users.

H 1E: As the hours for market work increase, consumers will be more likely to be Internet users rather than mixed-users.

H 1F: As the hours for market work increase, consumers will be more likely to be financial planner users rather than mixed-users.

Presence of a young child under age 5

The presence of a young child under the age of 5 increases the hours apportioned to childcare. According to the 2003 American Time Use Survey (ATUS), both parents of young children under the age of 5 spent more time on caring for their children, and less time on leisure and sports, compared to parents of older children aged between 6 to 17 (Krantz-Kent, 2005). As the hours apportioned to caring for children increased, less time will be spent on other household production activities, market work, and leisure. Thus, the presence of a young child under the age of 5 in the household also implies the presence of time constraints. We propose that a household with a young child under the age of 5 is less likely to use the time-intensive source, the Internet, for establishing a financial plan rather than a financial planner (H 2A). Also, consumers under time constraints will search using fewer sources (H 2B-H 2F).
H 2: The presence of a young child under age 5 will have an effect on uses of the Internet and a financial planner for saving and investment.

H 2A: Consumers with young children under age 5 will be less likely to be Internet users rather than financial planner users.

H 2B: Consumers with young children under age 5 will be less likely to be Internet users rather than non-users.

H 2C: Consumers with young children under age 5 will be less likely to be financial planner users rather than non-users.

H 2D: Consumers with young children under age 5 will be less likely to be mixed users rather than non-users.

H 2E: Consumers with young children under age 5 will be more likely to be Internet users rather than mixed-users.

H 2F: Consumers with young children under age 5 will be more likely to be financial planner users rather than mixed-users.

3.3.2 Monetary constraints

When the monetary constraint is relieved, the household is capable of having more market goods and is capable of producing more home goods. We will specify the monetary constraint with the log of financial assets. In the theoretical framework
suggested above, the total income was expressed as \( w \). We considered \( w \) as the price of time. Thus, what is remaining is the unearned income, \( u \). A financial asset is defined as the source of unearned income, \( a \).

**H 3: Financial assets will have an effect on uses of the Internet and a financial planner for saving and investment.**

H 3A: As financial assets increase, consumers will be less likely to be Internet users rather than financial planner users.

H 3B: As financial assets increase, consumers will be more likely to be Internet users rather than non-users.

H 3C: As financial assets increase, consumers will be more likely to be financial planner users rather than non-users.

H 3D: As financial assets increase, consumers will be more likely to be mixed users rather than non-users.

H 3E: As financial assets increase, consumers will be less likely to be Internet users rather than mixed-users.

H 3F: As financial assets increase, consumers will be less likely to be financial planner users rather than mixed-users.
3.3.3 Human resource constraints

The demand for financial planning services is possibly dependent upon the consumers’ ability and efficiency in conducting financial planning. Attributes which relate to their capability are the complexity of households’ financial situations, the households’ financial knowledge, and their cognitive abilities (Hanna, 2011). In this section, we will define human resource constraints with proxy variables, age, education, and financial understanding. Differences in human resource constraints will explain why some consumers choose the Internet while others choose a financial planner.

Age

Medical studies have provided evidence that a significant proportion of the senior population (those aged 70 and more) is affected by the decline of cognitive abilities and a few of them will experience dementia. As discussed in Kim (2005), Brickman, Habeck, Zarahn, Flynn, and Stern (2007) showed changes in brain regions using a magnetic resonance imaging machine and tested attention, language ability, memory and executive functioning. In their results, it was revealed that participants generally experienced difficulties in learning and decision-making. Also, Plassman et al. (2008) reported that approximately 22% of those 71 years and more had a cognitive impairment without dementia in the U.S. The cognitive impairment influences attention, language, judgment, memory, reading and writing abilities.

H 4: Age will have an effect on uses of the Internet and a financial planner for saving and investment.
H 4A: As age increases, consumers will be less likely to be Internet users rather than financial planner users.

H 4B: As age increases, consumers will be less likely to be Internet users rather than non-users.

H 4C: As age increases, consumers will be less likely to be financial planner users rather than non-users.

H 4D: As age increases, consumers will be less likely to be mixed users rather than non-users.

H 4E: As age increases, consumers will be more likely to be Internet users rather than mixed-users.

H 4F: As age increases, consumers will be more likely to be financial planner users rather than mixed-users.

Education

Level of attained education is a factor which is highly correlated with cognitive ability (Albert & Teresi, 1999; Ganzach, 2000). Albert and Teresi (1999) used levels of education as a predictor of cognitive ability with reading ability. Also, Ganzach (2000) reported that cognitive ability and educational expectations determine levels of educational attainment. These studies enable us to use levels of education as a proxy for cognitive ability. Lin and Lee (2004) showed that consumers with a bachelor’s degree or more tend to search with information sources that require more knowledge (i.e., books,
newspapers, or the Internet). It is because a high level of cognitive ability is essential to identifying and locating financial information on the Internet and transposing it into existing knowledge frames. Based on the above, we propose that individuals with high levels of education are more likely to use the Internet rather than a financial planner (H 5A).

**H 5: Education will have an effect on uses of the Internet and a financial planner for saving and investment.**

H 5A: As the respondents’ education level increases, consumers will be more likely to be Internet users rather than financial planner users.

H 5B: As the respondents’ education level increases, consumers will be more likely to be Internet users rather than non-users.

H 5C: As the respondents’ education level increases, consumers will be more likely to be financial planner users rather than non-users.

H 5D: As the respondents’ education level increases, consumers will be more likely to be mixed users rather than non-users.

H 5E: As the respondents’ education level increases, consumers will be less likely to be Internet users rather than mixed-users.

H 5F: As the respondents’ education level increases, consumers will be less likely to be financial planner users rather than mixed-users.
Financial understanding

The purpose of measuring financial understanding was to record the level of understanding for the contents of the SCF. Later, Huston, Finke and Smith (2012) suggested that this variable is closely related to the level of financial sophistication involved. The absence of financial literacy in the SCF can be compensated for using this variable.

H 6: Financial understanding will have an effect on uses of the Internet and a financial planner for saving and investment.

H 6A: As the respondents’ financial understanding increases, consumers will be more likely to be Internet users rather than financial planner users.

H 6B: As the respondents’ financial understanding increases, consumers will be more likely to be Internet users rather than non-users.

H 6C: As the respondents’ financial understanding increases, consumers will be more likely to be financial planner users rather than non-users.

H 6D: As the respondents’ financial understanding increases, consumers will be more likely to be mixed users rather than non-users.

H 6E: As the respondents’ financial understanding increases, consumers will be less likely to be Internet users rather than mixed-users.

H 6F: As the respondents’ financial understanding increases, consumers will be less likely to be financial planner users rather than mixed-users.
3.3.4 Financial complexity of the household

Campbell (1988) suggested that the complexity of a task can be understood from three perspectives: complexity as a psychological experience, complexity as a task-person interaction, and complexity as a function of objective characteristics. Based on the third perspective which defines complexity as a function of objective characteristics, we can measure the complexity of household finances by considering specific financial characteristics of the household. Topi, Valacich, and Hoffer (2005) also defined the concept of task complexity as an objective characteristic of a task that influences the perceived difficulty. In order to measure the complexity of household finances, Peterson (2006) considered the number of financial goals, the number of financial accounts, and the number of people in the household. Peterson’s use of proxy variables seems reasonable considering the task complexity measures of Vakkari (1999). Vakkari (1999) proposed that pre-determinability of information requirements, processes and the number of possible outcomes should be considered in order to judge the complexity of the task. Pre-determinability of information requirements means an actor is capable of knowing what is needed in advance, in order to accomplish the task. When the household has a larger number of goals, financial accounts, and members, pre-determinability of financial planning will be decreasing.

Households with simpler structures of household finances have lower needs for professional financial planning services, compared to households with complex structures of household finance (Warschauer, 2002). Information needs for a household with a simple financial situation can more easily be fulfilled through independent information
searches through the Internet. An example of a household with a simple financial structure is a one person household with no savings. In contrast, households with multiple financial goals and financial accounts might have higher needs for comprehensive financial advice. Comprehensive financial advice is not easily found on the Internet. Thus, we propose that as the level of financial complexity in a household increases, it is less likely that the Internet can provide a complete answer to a household’s financial planning needs (H 7A). Also, we propose that higher levels of complexity would increase needs for financial information, thus consumers will use the Internet, a financial planner, or both rather than not use anything (H 7B; H 7C; H 7D); and finally that consumers will become mixed users rather than one-source users (H 7E; H 7F).

**H 7: Number of financial goals will have an effect on uses of the Internet and a financial planner for saving and investment.**

H 7A: As the number of financial goals increases, consumers will be less likely to be Internet users rather than financial planner users.

H 7B: As the number of financial goals increases, consumers will be less likely to be Internet users rather than non-users.

H 7C: As the number of financial goals increases, consumers will be more likely to be financial planner users rather than non-users.

H 7D: As the number of financial goals increases, consumers will be more likely to be mixed users rather than non-users.
H 7E: As the number of financial goals increases, consumers will be less likely to be Internet users rather than mixed-users.

H 7F: As the number of financial goals increases, consumers will be less likely to be financial planner users rather than mixed-users

**H 8: Number of financial accounts will have an effect on uses of the Internet and a financial planner for saving and investment.**

H 8A: As the number of financial accounts increases, consumers will be less likely to be Internet users rather than financial planner users.

H 8B: As the number of financial accounts increases, consumers will be less likely to be Internet users rather than non-users.

H 8C: As the number of financial accounts increases, consumers will be more likely to be financial planner users rather than non-users.

H 8D: As the number of financial accounts increases, consumers will be more likely to be mixed users rather than non-users.

H 8E: As the number of financial accounts increases, consumers will be less likely to be Internet users rather than mixed-users.

H 8F: As the number of financial accounts increases, consumers will be less likely to be financial planner users rather than mixed-users
H 9: Number of people in the household will have an effect on uses of the Internet and a financial planner for saving and investment.

H 9A: As the number people in the household increases, consumers will be less likely to be Internet users rather than financial planner users.

H 9B: As the number people in the household increases, consumers will be less likely to be Internet users rather than non-users.

H 9C: As the number people in the household increases, consumers will be more likely to be financial planner users rather than non-users.

H 9D: As the number people in the household increases, consumers will be more likely to be mixed users rather than non-users.

H 9E: As the number people in the household increases, consumers will be less likely to be Internet users rather than mixed-users.

H 9F: As the number people in the household increases, consumers will be less likely to be financial planner users rather than mixed-users.

The hypothesized effects of independent variables and uses of the Internet and a financial planner for saving and investment are summarized in table 3.1.
<table>
<thead>
<tr>
<th>Types of Constraints</th>
<th>Variables</th>
<th>IT vs. FP</th>
<th>IT vs. None</th>
<th>FP vs. None</th>
<th>Mixed vs. None</th>
<th>IT vs. Mixed</th>
<th>FP vs. Mixed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time Constraints</td>
<td>Work hrs/week</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td></td>
<td>Presence of a child &lt; age 5</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Monetary Constraints</td>
<td>Financial Asset</td>
<td>-</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Human resource Constraints</td>
<td>Age</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td></td>
<td>Education</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Financial Understanding</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Financial Complexity</td>
<td># of financial goals</td>
<td>-</td>
<td>-</td>
<td>+</td>
<td>+</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td># of financial accounts</td>
<td>-</td>
<td>-</td>
<td>+</td>
<td>+</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td># of people in the households</td>
<td>-</td>
<td>-</td>
<td>+</td>
<td>+</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

Table 3.1 A summary table of hypotheses
CHAPTER 4
DATA AND METHODOLOGY

The dataset used in this study are presented in 4.1. The empirical model and the measurements of variables are specified in 4.2.

4.1 Data

4.1.1 Data

The Survey of Consumer Finances (SCF) is a triennial survey of American households sponsored by the Federal Reserve Board and the U. S. Department of Treasury. The administration of the survey has been conducted by the National Opinion Research Center at the University of Chicago since 1992. As a national dataset on finances of American households, being able to use SCF data provides several benefits to this dissertation. First, we can measure households’ monetary constraints, time constraints, human resource constraints by using variables provided in the SCF data set. Second, these variables of interests have consistently been measured in the SCF. Therefore, we can retrospectively look at Internet use for saving and investing decision-
making. Third, we can generalize results when we combine datasets across years, as more than 4,000 households were sampled each survey year based on the reliable sampling frame. In the study, the 2001, 2004, and 2007 SCF data were used.

**Weighting**

The sampling frame of the SCF consists of two parts. Sixty-five percent of the final sample was selected using a standard multi-stage random sampling method considering area-probability. The remaining thirty-five percent consist of high income and/or high net worth households, selected from federal tax data (Kennickell, 2008). In order to obtain estimates representative of the U. S. population, descriptive analyses were weighted. Based on discussion in Lindamood, Hanna, and Bi (2007) multinomial logit analyses were averaged using all five implicates.

### 4.1.2 Repeated Imputation Inference (RII)

One of the methodological issues surrounding the SCF is item non-response (e.g., skipped questions, item refusals, “Don’t knows”). When the likelihood of missing a variable is completely at random, item non-response can be safely deleted. Otherwise, use of the Repeated Imputation Inference (RII) provides more consistent estimates and regression coefficients than a single imputation inference. The SCF datasets since 1989 have had five implicates estimated for each variable for each household, with calculated values for some variables replacing missing values (Lindamood et al., 2007). If the five implicates are averaged for a variable, the distribution of the variable should be representative, but variance estimates will be underestimated. Rubin (1987) developed
the RII technique to solve this problem of variance underestimation (Montalto & Sung, 1996).

However, this study reported results of significant tests from averaging all five implicates, as SAS does not provide the necessary output covariance matrices to use the RII technique with a multinomial logit analysis. In the example of Lindamood et al. (2007), logit analyses using the RII technique produced higher estimates of levels of p-values than the averaging method, and based on their comparisons, I established more rigorous criteria than the conventional significance level (P<0.05). For parameter estimates to be considered significant, the P value must be <.03. For the six multinomial logit models I tested, with a total of 186 variables, two coefficients were not significant using P<.03 but had a P<.05. The variables met these conditions were a “very good” level of financial understanding in model B and homeownership in model C.

4.2 Empirical specification of variables

4.2.1 Dependent variable

The dependent variable in this dissertation was the use of information sources for making saving and investment decision. Respondents of the SCF survey are allowed to provide a maximum of 10 information sources as a response to this question. Specifically, the respondents were asked to answer the following question:

“Please look at this list. What sources of information do you (and your family) use to make decisions about saving and investments? (Do you call around, read newspapers, magazines, material you get in the mail, use information from television, radio, the
Internet, or advertisements? Do you get advice from a friend, relative, lawyer, accountant, banker, broker, or financial planner? Or do you do something else?

In the 2007 SCF codebook, if any of the variables X7112, X7113, X7114, X7115, X7116, X7117, X7118, X7119, X7120, X7121, X6865, X6866, X6867, X6868, X6869 included the code for “financial planner” the household was coded as using a financial planner. If any of these variables had the code for “the Internet” the household was coded as using the Internet.

Use of a financial planner for saving and investment

Use of a financial planner is measured with a binary variable. If a respondent answered that he or she used a financial planner, the value of dichotomous variable equals 1 and 0 otherwise. Whether or not a financial planner was accredited with the Certified Financial Planner (CFP) designation cannot be identified.

Use of the Internet for saving and investment

Use of the Internet is measured with a binary variable. If respondents answered that they used the Internet, the value of dichotomous variables is equal to 1 and 0 otherwise. This measurement item does not specify the timing of using information sources.

4.2.2 Independent variables

The next sets of variables are independent variables of interest. Internet use for financial planning was predicted in the multinomial logic model. In our multinomial logit
model, probabilities involved with each group (i.e., Non-users, Internet users, financial planner users, and mixed users) will vary with independent variables. The independent variables for the model are discussed below.

*Time constraints: the number of hours devoted for market work, presence of young children*

*The number of hours devoted to market work*

The number of hours devoted to market work is recorded in the SCF in detail. The questions asked were “How many hours do you work on your main job in a normal week?” and “How many hours do you work on your second job in a normal week?” If a respondent has a second job, we will combine the total time worked both jobs. Otherwise, the time worked for the main job will be considered as a time constraint. If the respondent does not participate in market work (e.g., not working but not retired, retired), the number of hours devoted to market work is zero.

*Presence of a young child*

The other variable related to the opportunity cost of time is the presence of a young child. Parents of young children under the age of 5 spent more time on caring for their children than parents of older children (Krantz-Kent, 2005). Thus, the value of the parental time spent in childcare is an important element of child costs (Apps & Rees, 2001). Among empirical studies, Lee and Cho (2005) measured the opportunity cost of time with the presence of a child under the age of 5 in addition to income. In this study, the age of a household member recorded in the SCF was used to investigate the presence
of a child under the age of 5. The SCF list the basic information of household members up to a maximum of 12 people. If there is a child in the household, his or her age was recorded. If the age of children is less than 5, we can say time allocation is constrained for the household.

*Monetary constraints: log of financial assets, home ownership*

*Log of financial assets*

Monetary constraints were measured by a log of financial assets. Financial assets represent unearned income V. I used a log of financial assets because there might not be a linear relationship between financial assets and logged odds of using the Internet and/or a financial planner for making saving and investment decisions. When the respondent reported no financial assets in the household, a log of .01 was used as a substitute.

*Homeownership*

If respondents answered that they are homeowners, the value of dichotomous variables is equal to 1 and 0 otherwise.

*Human resource constraints: age, education, financial understanding of the respondent*

*Age*

The age of the household head is measured with a continuous variable and re-coded as a categorical variable: less than 30, 30-39, 40-49, 50-59, 60-69, 70 and over. The group aged 70 and over, in particular, expected to have weaker abilities in
conducting information searches using relatively new technology. We treat age as a categorical variable in order to allow for non-linear effects.

Education

The educational attainment of the household head is measured with a continuous variable and recoded as a categorical variable: less than high school, high school diploma or equivalent, some college education, Bachelor’s degree, and graduate school.

Financial understanding

Before completing the administration of an interview, an interviewer evaluates the respondents’ general understanding of the survey contents. This survey item was originally included in order to manage the data quality. Although a direct measure of financial literacy is not supported in the SCF, we can use this item as a proxy of financial literacy. The survey questionnaire of the SCF includes questions on the details of households’ balance sheets. Therefore, language ability and background knowledge on the American financial market is required to understand the questions. Respondents’ understanding has been evaluated with four levels: excellent, good, fair, and poor.

Complexity of the household finances: Number of saving goals, financial accounts, and people in the household

In order to measure the complexity of household finance, Peterson (2006) considered the number of saving goals, the number of financial accounts, and the number of people in the household. Peterson assumed that households have more complex
structures of household finances as the numbers of savings goals, financial accounts, and people in the household increase. Although the number of people in the household was not significant in Peterson’s empirical analysis using the SCF, we will maintain the format of measure for complexity of the household finance.

Number of saving goals

Ignoring the contents of the saving goals listed (i.e., children's education, wedding, pay taxes), we will use the number of savings goals listed as a proxy for the complexity of household finances. In the SCF, a respondent can record up to six savings goals. Reasons for savings were asked although some households might not save all the time. Basically, an interviewer asked “what are your family's most important reasons for savings?” If a respondent replied his or her household does not save or cannot save, an alternative question would be “if you were saving now, what would be the most important reason for you to do so?” The minimum value of this variable is zero, while the maximum is six.

Number of financial accounts

We can use the number of financial accounts possessed by the household as a proxy for the complexity of household finances. The number of financial accounts possessed by the respondent was recorded up to 150. However, we ignored the number and the volume of each account as we wanted to limit this value. Instead, we considered 12 types of financial accounts including 1) checking accounts, 2) IRA and Keogh accounts, 3) certificates of deposits (CDs), 4) savings or money market accounts, 5)
mutual/hedge funds, 6) saving bonds, 7) bonds other than saving bonds (e.g., other corporate, municipal, government bonds or bills), 8) publicly traded stock, 9) brokerage account, 10) annuities, 11) trust or managed investment account, and 12) Cash value life insurance policies. Pensions from a current job were excluded. Consequently, the minimum value of this variable is zero, while the maximum is 12. By doing so, only the number of different types of financial accounts was counted and used as a proxy for the complexity of household finances. Assume that person A has a diversified portfolio with 96 stocks and person B has a brokerage account, mutual funds, and MMA. If we use the raw number of financial accounts as a number of financial accounts, then A has 96 accounts and B has 3 accounts. By counting only the different types of financial accounts, we can say that A has 1 account and B has 3 accounts. The later way represents the concept of financial complexity better.

*Number of people in the household*

The number of people in the household is a proxy for the life cycle stage at the timing of the survey, particularly when it is considered with the age of the household head. In the early life cycle stage, the household has only one or two dependents, but the number of people in the household increases as the households’ life cycle stage matured. In the later life cycle stage, number of people in the household decreases again because children matured and eventually leave the household. Compared to one person households, households with large numbers of dependents have complexly-structured household finances as various needs co-exist in the household (i.e., educational funds, children’s first car, and retirement funds). Therefore, we include the number of people in
the household as a measure of complexity of household finances. The maximum value of this variable is 12. 12 or more people in the household were recorded as 12.
<table>
<thead>
<tr>
<th>Contents</th>
<th>Types of variables</th>
<th>Alternatives</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Uses of information sources</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Internet use for saving and investing</td>
<td>Dichotomous variable</td>
<td>0 = did not use the IT</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1 = use the IT</td>
</tr>
<tr>
<td>Financial planner use for saving and investing</td>
<td>Dichotomous variable</td>
<td>0 = did not use the FP</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1 = use the FP</td>
</tr>
<tr>
<td><strong>The number of hours devoted for market work</strong></td>
<td>Continuous variable</td>
<td>[0, ..., 168]</td>
</tr>
<tr>
<td>How many hours do you work on the main job in a normal week?</td>
<td>Continuous variable</td>
<td>[0, ..., 168]</td>
</tr>
<tr>
<td>How many hours do you work on second job in a normal week?</td>
<td>Continuous variable</td>
<td>[0, ..., 168]</td>
</tr>
<tr>
<td><strong>Presence of a young child</strong></td>
<td>Dichotomous variable</td>
<td>0 = No child under age 5</td>
</tr>
<tr>
<td>Household member’s age</td>
<td></td>
<td>1 = Presence of a child under age 5</td>
</tr>
<tr>
<td><strong>Financial assets</strong></td>
<td>Continuous variable</td>
<td>Log of [1, ..., 999999999]</td>
</tr>
<tr>
<td>checking accounts other than money market</td>
<td></td>
<td></td>
</tr>
<tr>
<td>savings accounts</td>
<td></td>
<td></td>
</tr>
<tr>
<td>money market deposit accounts (MMDA)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>money market mutual funds (MMMFA)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>call accounts at brokerages</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Home-ownership</strong></td>
<td>Dichotomous variable</td>
<td>0 = Renter</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1 = Homeowner</td>
</tr>
<tr>
<td><strong>Human Resource Constraints</strong></td>
<td>Dichotomous variable</td>
<td></td>
</tr>
<tr>
<td>How old are you?</td>
<td></td>
<td>0 = Less than 30</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1 = 30-39</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2 = 40-49</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3 = 50-59</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4 = 60-69</td>
</tr>
<tr>
<td></td>
<td></td>
<td>5 = 70 and over</td>
</tr>
<tr>
<td>Education</td>
<td>Dichotomous variable</td>
<td>0 = Less than High school</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1 = High School Diploma</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2 = Some college</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3 = Bachelor degree</td>
</tr>
<tr>
<td>R’s understanding of the questions was...</td>
<td>Dichotomous variable</td>
<td>0 = Poor</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1 = Fair</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2 = Very Good</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3 = Excellent</td>
</tr>
<tr>
<td><strong>Financial Complexity</strong></td>
<td>Continuous variable</td>
<td>[1, ..., 6]</td>
</tr>
<tr>
<td>The number of saving goals</td>
<td>Continuous variable</td>
<td>[1, ..., 12]</td>
</tr>
<tr>
<td>The number of financial accounts</td>
<td>Continuous variable</td>
<td>[1, ..., 12]</td>
</tr>
<tr>
<td>1) any checking accounts</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2) any Keoghs or IRAs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3) any CDs or certificates of deposit</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4) any savings or money market accounts</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5) any mutual funds or hedge funds</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6) any U.S. government savings bonds</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7) any other corporate, municipal, government, or other type of bonds or bills</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8) any stock</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9) a brokerage account</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10) an annuity</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11) a trust or managed investment account</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12) cash value life insurance policies</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of people in the primary economic unit</td>
<td>Continuous variable</td>
<td>[1, ..., 12]</td>
</tr>
</tbody>
</table>

**Table 4.1 A summary table of Dependent and Independent Variables**
4.2.3 Control variables

Demographic variables: gender, race/ethnicity, marital status, employment status

Gender

The gender of the respondent was measured with a dichotomous variable: male or female.

Race-ethnicity

Race/ethnicity of the respondent was measured with four dichotomous variables: White; Black/African American; Hispanic; Asian and others. The Asian and others category includes Asian, American Indian, Alaska Native, Native Hawaiian, and others.

Marital status

Marital status of the respondent was measured with four dichotomous variables: married; single male; single female; partner. The SCF separated un-married, co-habiting couples from married couples.

Employment status

Employment status was measured with four dichotomous variables: employed; self-employed; no work but not retired; retired.

Risk tolerance

The level of risk tolerance was measured by a variable with four possible responses, but I recoded to create a dichotomous variable by combining three of the
responses into one category and the other response into another category. Respondents who replied that they were willing to take “substantial financial risks expecting to earn substantial returns,” “above-average financial risks expecting to earn above average returns,” and “average financial risks expecting to earn average returns” were categorized into the some risk tolerant group. Respondents who replied that they were not willing to take any financial risks were categorized as the no risk tolerance group.

**Survey year**

Three dichotomous variables were created for the survey year: year 2001, year 2004, and year 2007.
### Contents

<table>
<thead>
<tr>
<th>Types of variables</th>
<th>Alternatives</th>
</tr>
</thead>
</table>

**Demographic variables**

**Gender**
- Dichotomous variable
  - 0 = female
  - 1 = male

**Racial/ethnic characteristics**
- Dichotomous variable
  - 0 = White non-Hispanic
  - 1 = Black
  - 2 = Hispanic
  - 3 = Other/Asian

**Marital status**
- Dichotomous variable
  - 0 = married
  - 1 = single male
  - 2 = single female
  - 3 = partner

**Employment status**
- Dichotomous variable
  - 0 = Employee
  - 1 = Self employed
  - 2 = No work but not retired
  - 3 = Retired

**Risk tolerance**
- Dichotomous variable
  - 0 = No risk
  - 1 = Some risk

**Survey year**
- Dichotomous variable
  - 0 = Year 2001
  - 1 = Year 2004
  - 2 = Year 2007

*Table 4.2* A summary table of control variables
4.3 The multinomial logit model

The statistical model used in this dissertation for multivariate analysis is the multinomial logit model. Use of the multinomial logit model is appropriate when we test the choices among alternatives that are neither hierarchical nor ordered. In this dissertation, we apply the multinomial logit model to information source choices of individuals, based on certain independent variables. The model is similar to the binary logit model, but rather than consisting of a binary outcome, the multinomial logit model consists of a series of dependent variables. I analyze factors related to being in one of four groups, that I categorize as “Internet users,” “Financial planner users,” “Mixed users,” and “Non-users.” See Figure 4.1. These four categories are groupings based on the Internet and a financial planner, as given in Table 4.2.
Figure 4.1 Decision-making tree for a multinomial logit model
<table>
<thead>
<tr>
<th>Constructed title</th>
<th>Information source used</th>
</tr>
</thead>
<tbody>
<tr>
<td>Internet (IT) users ( )</td>
<td>The Internet</td>
</tr>
<tr>
<td>Financial Planner (FP) users ( )</td>
<td>A Financial planner</td>
</tr>
<tr>
<td>Mixed users ( )</td>
<td>The Internet and a financial planner</td>
</tr>
<tr>
<td>Non-users ( )</td>
<td>None*</td>
</tr>
</tbody>
</table>

*Non-users might use information sources other than the Internet and a financial planner.

**Table 4.3** Information source used in grouping
Following their model, the equations in the multinomial logit model are specified as

\[
\begin{align*}
\text{is chosen if} & \quad (4.1) \\
\text{is chosen if} & \quad (4.2) \\
\text{is chosen if} & \quad (4.3) \\
\text{is chosen if} & \quad (4.4) \\
\text{where} & \\
\end{align*}
\]

Table 4.3 presents the meanings of dependent variables. The dependent variables of the multinomial logit model are the odds of being in any group relative to any other group. Six models were generated by the multinomial logit model to estimate the effects
of time constraints, monetary constraints, human resources constraints, and financial complexity, after controlling socio-demographic variables.
<table>
<thead>
<tr>
<th>ID</th>
<th>Dependent variables</th>
<th>Description</th>
<th>Focus</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>—</td>
<td>The odds of being Internet users relative to being financial planner users</td>
<td>IT users vs. FP users</td>
</tr>
<tr>
<td>B</td>
<td>—</td>
<td>The odds of being Internet users relative to being non-users</td>
<td>IT users vs. Non-users</td>
</tr>
<tr>
<td>C</td>
<td>—</td>
<td>The odds of being financial planner users relative to being non-users</td>
<td>FP users vs. Non-users</td>
</tr>
<tr>
<td>D</td>
<td>—</td>
<td>The odds of being mixed users relative to being non-users</td>
<td>Mixed users vs. Non-users</td>
</tr>
<tr>
<td>E</td>
<td>—</td>
<td>The odds of being Internet users relative to being mixed users</td>
<td>What types of Internet users do not use financial planners?</td>
</tr>
<tr>
<td>F</td>
<td>—</td>
<td>The odds of being financial planner users related to being mixed users</td>
<td>What types of financial planner users do not use the Internet?</td>
</tr>
</tbody>
</table>

*Table 4.4 Meanings of dependent variables*
CHAPTER 5

RESULTS

Results from the empirical analysis are presented and discussed in this chapter. Use of information sources for saving and investing can be grouped into four types: (1) Internet (only) users; (2) financial planner (only) users; (3) mixed users; (4) non-users. Respondents who used both the Internet and a financial planner are called “mixed users.” Also, respondents who used neither the Internet nor a financial planner are called “non-users.” The first section, 5.1, presents and discusses descriptive statistics for all respondents, Internet users, financial planner users, mixed users and non-users. Since the following discussions of descriptive statistics are not based on significance tests, it is possible that some of the comparisons are not significant. The second section, 5.2, presents results from the multinomial logit model on six different dependent variables. Results from testing these hypotheses are also presented and discussed in this section.

Table 5.1 presents the proportion of U.S. households using the Internet, a financial planner, both or none of them for the combined 2001, 2004, and 2007 samples. In order to make saving and investment decisions, about 16% of households reported
Internet use only in the combined dataset, while 15% of households reported financial planner use only in the same dataset. The proportion of households using the Internet increased from 12% in 2001 to 21% in 2007. However, the proportion of households using a financial planner decreased, from 18% in 2001 to 15% in 2007. In addition, a substantial growth is observed for mixed users, with 4% in 2001 compared to 7% in 2007. In spite of increases for Internet users, financial planner users, and mixed users, more than 50% of respondents are still non-users.
<table>
<thead>
<tr>
<th>Year</th>
<th>Internet only users (only+mixed)</th>
<th>Financial planner only users (only+mixed)</th>
<th>Mixed users</th>
<th>Non-users</th>
</tr>
</thead>
<tbody>
<tr>
<td>2001</td>
<td>12.3% (16.1%)</td>
<td>17.8% (21.6%)</td>
<td>3.8%</td>
<td>66.1%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>100%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(N=4,442 )</td>
</tr>
<tr>
<td>2004</td>
<td>15.9% (21.0%)</td>
<td>18.6% (23.7%)</td>
<td>5.1%</td>
<td>60.5%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>100%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(N=4,519)</td>
</tr>
<tr>
<td>2007</td>
<td>21.0% (28.3%)</td>
<td>14.7% (21.9%)</td>
<td>7.3%</td>
<td>57.1%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>100%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(N=4,418)</td>
</tr>
<tr>
<td>Percent of All Households</td>
<td>16.1% (20.8%)</td>
<td>14.9% (19.7%)</td>
<td>4.8%</td>
<td>64.3%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>100%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(N=13,379)</td>
</tr>
</tbody>
</table>

**Table 5.1** Internet use and financial planner use during 2001-2007

(Row statistics, percentages based on weighting with the SCF weight variable X42001)
5.1 Characteristics of sample households

Table 5.2 presents selected characteristics of the 13,379 households used in this study. On average, the sample households worked 44 hrs per week and the mean level of financial assets held by respondents was $199,240. A majority of the households were couple households, with 51% of households being married couples and 7% unmarried (cohabiting) couples, 15% of households were single male, and 27% were single female. The Survey of Consumer Finances attempts to interview the financially more knowledgeable spouse or partner in couple households, with just under half of married couples having the wife as the respondent (Lindamood et al., 2007). In the combined 2001-2007 datasets, a female was the respondent in 46% of married couple households and in 56% of unmarried couple households. For all households, 45% of respondents were male and 55% of respondents were female. In terms of racial/ethnic characteristics, 75% of respondents were White, 13% of respondents were Black, 9% of respondents were Hispanic, and 4% of respondents were Others or Asian.

Substantial portions of respondents might lack sophisticated investing experiences and have low demands for financial information, considering that 25% of them had financial assets of only $0-$1,900 and another 25% had financial assets of $1,901-$20,650. Also, respondents were well-educated consumers with a good level of financial understanding, given that one third of respondents (33%) had a B.S. degree and nearly half of the respondents (48%) had an excellent level of financial understanding.
5.2 Rates of Internet only, financial planner only, mixed use, and non-users by characteristics of households (Row statistics)

*Variables related to time constraints*

Table 5.2 presents the rates of using the Internet only, a financial planner only, both, or neither by weekly working hours and presence of a young child under the age of 5. Among those who worked 40 to 59 hrs per week, the rate of using the Internet was higher than the rate of using a financial planner (20% vs. 15%). This tendency was consistent among those who worked 60 or more hrs per week (20% vs. 19%). However, among those who worked 0 hrs per week, the rate of using the Internet only was lower than the rate of using a financial planner only (8% vs. 13%). In addition, those with young children under the age of 5 showed a higher proportion of using the Internet only, compared to those without young children (19% vs. 15%).

*Variables related to financial constraints*

The rate of using the Internet only for making saving and investment decisions rose steadily as levels of financial assets increased, from 11% for those with $0 to $1,900 in financial assets to 19% for those with more than $375,500 in financial assets. In contrast, the rate of using a financial planner only rose quite dramatically as levels of financial asset increased, from 6% for those with $0 to $1,900 in financial assets to 27% for those with more than $375,500 in financial assets. In addition, the likelihood of using the Internet only was approximately the same for homeowners and renters (16% vs. 17%), whereas the likelihood of using a financial planner only were higher for homeowners than renters (18% vs. 9%). 

88
Variables related to human resource constraints

Consumers’ preferences on financial information sources were apparently different across age groups. The proportions of Internet only users were highest for those who are aged younger than 30 and those who are aged 30-39. The proportion of financial planner only users, on the other hand, was lowest for those who are aged younger than age 30.

As education levels increased, the proportions of Internet only users, financial planner only users, and mixed users increased. For instance, the proportion of Internet only users increased from 5% for those with less than a high school degree to 24% for those with a B.S. degree. The proportions of Internet only users and financial planner only users increased also with financial understanding.

Variables related to financial complexity

The proportions of Internet only users, financial planner only users, and mixed users rose as the number of financial goals increased. For instance, the proportion of Internet only users increased from 6% for those with no goals to 29% for those with 4 to 6 goals. For the number of financial accounts, the proportion of Internet only users increased from 6% for those with no account to 21% for those with 4 to 6 accounts. Compared to the above two proxy variables for financial complexity, patterns with the number of people in the household were a bit confusing. The proportion of Internet only users was highest for those with 4-5 people in the household; it, then decreased.
Other control variables

There was a gap between male and female respondents in terms of the rate of being Internet only users, with 20% of male respondents and 13% of female respondents using the Internet but not a financial planner for savings and investment decisions. For using a financial planner only, there was not a gender difference, with male respondents having approximately the same rate as female respondents. Male respondents had a higher rate of being mixed users than female respondents, 6% versus 4%. The SCF question about information sources was based on the family (“What sources of information do you (and your family) use to make decisions about saving and investments?”), so for couple households the question presumably reflected either spouses or partners, not just the respondent. The proportion of Internet only users was higher for married respondents (19%) than for respondents in partner relationships (17%) and for single male (17%), and lowest for single females (11%). Married respondents had the highest rate of being financial planner only users (17%) compared to single female (13%), respondents in partner relationships (12%), and single males (11%).
<table>
<thead>
<tr>
<th>Variable</th>
<th>Category</th>
<th>All households</th>
<th>IT only users (16.1%)</th>
<th>FP only Users (14.9%)</th>
<th>Mixed users (4.8%)</th>
<th>Non-users (64.3%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Work hours/week</td>
<td>0</td>
<td>28.4%</td>
<td>8.0%</td>
<td>12.5%</td>
<td>2.2%</td>
<td>77.3%</td>
</tr>
<tr>
<td></td>
<td>1-39</td>
<td>11.8%</td>
<td>13.7%</td>
<td>15.5%</td>
<td>3.1%</td>
<td>67.7%</td>
</tr>
<tr>
<td></td>
<td>40-59</td>
<td>49.8%</td>
<td>20.4%</td>
<td>15.3%</td>
<td>6.3%</td>
<td>58.0%</td>
</tr>
<tr>
<td></td>
<td>&gt;59</td>
<td>10.0%</td>
<td>20.2%</td>
<td>19.0%</td>
<td>6.7%</td>
<td>54.2%</td>
</tr>
<tr>
<td>A young child under age 5</td>
<td>Yes</td>
<td>22.5%</td>
<td>18.6%</td>
<td>14.3%</td>
<td>4.9%</td>
<td>62.2%</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>77.6%</td>
<td>15.3%</td>
<td>15.1%</td>
<td>4.7%</td>
<td>64.8%</td>
</tr>
<tr>
<td>Financial Asset</td>
<td>0-$1,900</td>
<td>25.2%</td>
<td>10.7%</td>
<td>5.6%</td>
<td>1.3%</td>
<td>82.4%</td>
</tr>
<tr>
<td></td>
<td>$1,901-$20,650</td>
<td>24.8%</td>
<td>16.4%</td>
<td>10.1%</td>
<td>3.9%</td>
<td>69.6%</td>
</tr>
<tr>
<td></td>
<td>$20,651-$113,500</td>
<td>25.0%</td>
<td>17.9%</td>
<td>18.4%</td>
<td>5.1%</td>
<td>58.5%</td>
</tr>
<tr>
<td></td>
<td>$113,501-$375,500</td>
<td>15.0%</td>
<td>19.4%</td>
<td>24.6%</td>
<td>7.5%</td>
<td>48.6%</td>
</tr>
<tr>
<td></td>
<td>&gt;$375,501</td>
<td>10.0%</td>
<td>19.2%</td>
<td>27.0%</td>
<td>11.0%</td>
<td>42.9%</td>
</tr>
<tr>
<td>Homeowner</td>
<td>Yes</td>
<td>68.5%</td>
<td>15.9%</td>
<td>17.6%</td>
<td>5.5%</td>
<td>61.0%</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>31.5%</td>
<td>16.5%</td>
<td>9.1%</td>
<td>3.1%</td>
<td>71.3%</td>
</tr>
<tr>
<td>Age of the respondent</td>
<td>&lt;30</td>
<td>14.2%</td>
<td>21.5%</td>
<td>10.5%</td>
<td>4.6</td>
<td>63.5%</td>
</tr>
<tr>
<td></td>
<td>30-39</td>
<td>18.6%</td>
<td>22.3%</td>
<td>13.5%</td>
<td>6.7</td>
<td>57.5%</td>
</tr>
<tr>
<td></td>
<td>40-49</td>
<td>22.3%</td>
<td>19.8%</td>
<td>15.3%</td>
<td>5.4</td>
<td>59.4%</td>
</tr>
<tr>
<td></td>
<td>50-59</td>
<td>18.2%</td>
<td>14.7%</td>
<td>19.0%</td>
<td>6.2</td>
<td>60.1%</td>
</tr>
<tr>
<td></td>
<td>60-69</td>
<td>11.9%</td>
<td>11.2%</td>
<td>17.9%</td>
<td>3.5</td>
<td>67.4%</td>
</tr>
<tr>
<td></td>
<td>&gt;69</td>
<td>14.7%</td>
<td>2.9%</td>
<td>13.0%</td>
<td>0.7</td>
<td>83.5%</td>
</tr>
<tr>
<td>Education of the respondent</td>
<td>&lt;H.S</td>
<td>14.8%</td>
<td>5.0%</td>
<td>5.8%</td>
<td>0.6%</td>
<td>88.6%</td>
</tr>
<tr>
<td></td>
<td>H.S</td>
<td>34.2%</td>
<td>12.7%</td>
<td>13.4%</td>
<td>2.3%</td>
<td>71.6%</td>
</tr>
<tr>
<td></td>
<td>Some college</td>
<td>18.0%</td>
<td>16.8%</td>
<td>16.6%</td>
<td>5.0%</td>
<td>61.6%</td>
</tr>
<tr>
<td></td>
<td>B.S. degree</td>
<td>33.0%</td>
<td>24.1%</td>
<td>19.8%</td>
<td>9.1%</td>
<td>47.1%</td>
</tr>
<tr>
<td>Financial understanding of the respondent</td>
<td>Fair</td>
<td>0.9%</td>
<td>1.9%</td>
<td>3.9%</td>
<td>2.1%</td>
<td>92.1%</td>
</tr>
<tr>
<td></td>
<td>Good</td>
<td>8.9%</td>
<td>8.0%</td>
<td>10.3%</td>
<td>1.7%</td>
<td>80.3%</td>
</tr>
<tr>
<td></td>
<td>Very good</td>
<td>42.7%</td>
<td>13.7%</td>
<td>13.8%</td>
<td>4.0%</td>
<td>68.5%</td>
</tr>
<tr>
<td></td>
<td>Excellent</td>
<td>47.5%</td>
<td>19.9%</td>
<td>17.1%</td>
<td>6.1%</td>
<td>56.9%</td>
</tr>
</tbody>
</table>

Table 5.2 Continued

Table 5.2 Rates of Internet only, financial planner only, mixed use, and non-users by characteristics of households (Row percents; combined 2001-2007 datasets)
<table>
<thead>
<tr>
<th>Variable</th>
<th>Category</th>
<th>All households</th>
<th>IT users only (16.1%)</th>
<th>FP Users only (14.9%)</th>
<th>Mixed users (4.8%)</th>
<th>Non-users (64.3%)</th>
</tr>
</thead>
<tbody>
<tr>
<td># of financial goals</td>
<td>0</td>
<td>4.1%</td>
<td>6.0%</td>
<td>3.3%</td>
<td>0.7%</td>
<td>90.1%</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>51.5%</td>
<td>14.1%</td>
<td>14.2%</td>
<td>3.6%</td>
<td>68.2%</td>
</tr>
<tr>
<td></td>
<td>2-3</td>
<td>41.5%</td>
<td>18.7%</td>
<td>16.7%</td>
<td>6.2%</td>
<td>58.5%</td>
</tr>
<tr>
<td></td>
<td>4-6</td>
<td>2.9%</td>
<td>28.5%</td>
<td>19.0%</td>
<td>11.2%</td>
<td>41.3%</td>
</tr>
<tr>
<td># of financial accounts</td>
<td>0</td>
<td>8.1%</td>
<td>5.7%</td>
<td>4.9%</td>
<td>1.1%</td>
<td>88.4%</td>
</tr>
<tr>
<td></td>
<td>1-3</td>
<td>61.4%</td>
<td>15.2%</td>
<td>11.5%</td>
<td>3.3%</td>
<td>70.0%</td>
</tr>
<tr>
<td></td>
<td>4-6</td>
<td>25.6%</td>
<td>20.6%</td>
<td>23.4%</td>
<td>8.2%</td>
<td>47.9%</td>
</tr>
<tr>
<td></td>
<td>7-12</td>
<td>4.9%</td>
<td>20.2%</td>
<td>29.7%</td>
<td>12.1%</td>
<td>38.0%</td>
</tr>
<tr>
<td># of people in the household</td>
<td>1</td>
<td>29.7%</td>
<td>12.4%</td>
<td>13.5%</td>
<td>4.0%</td>
<td>70.2%</td>
</tr>
<tr>
<td></td>
<td>2-3</td>
<td>48.9%</td>
<td>16.6%</td>
<td>15.9%</td>
<td>4.8%</td>
<td>62.8%</td>
</tr>
<tr>
<td></td>
<td>4-5</td>
<td>18.4%</td>
<td>20.3%</td>
<td>14.9%</td>
<td>6.2%</td>
<td>58.6%</td>
</tr>
<tr>
<td></td>
<td>6-12</td>
<td>3.0%</td>
<td>18.5%</td>
<td>14.3%</td>
<td>2.8%</td>
<td>64.4%</td>
</tr>
<tr>
<td>Gender of the respondent</td>
<td>Male</td>
<td>45.0%</td>
<td>19.8%</td>
<td>14.8%</td>
<td>5.7%</td>
<td>59.7%</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>55.0%</td>
<td>13.1%</td>
<td>15.0%</td>
<td>4.0%</td>
<td>67.9%</td>
</tr>
<tr>
<td>Racial/ethnic characteristics of the respondent</td>
<td>White</td>
<td>74.6%</td>
<td>16.6%</td>
<td>16.5%</td>
<td>5.2%</td>
<td>61.8%</td>
</tr>
<tr>
<td></td>
<td>Black</td>
<td>13.1%</td>
<td>12.3%</td>
<td>11.8%</td>
<td>4.3%</td>
<td>71.6%</td>
</tr>
<tr>
<td></td>
<td>Hispanic</td>
<td>8.9%</td>
<td>12.8%</td>
<td>8.3%</td>
<td>2.1%</td>
<td>76.8%</td>
</tr>
<tr>
<td></td>
<td>Other/Asian</td>
<td>3.5%</td>
<td>28.0%</td>
<td>10.4%</td>
<td>3.2%</td>
<td>58.4%</td>
</tr>
<tr>
<td>Marital status</td>
<td>Married</td>
<td>50.9%</td>
<td>18.5%</td>
<td>17.2%</td>
<td>5.7%</td>
<td>58.7%</td>
</tr>
<tr>
<td></td>
<td>Partner</td>
<td>7.4%</td>
<td>17.0%</td>
<td>12.4%</td>
<td>4.1%</td>
<td>66.5%</td>
</tr>
<tr>
<td></td>
<td>Single male</td>
<td>14.5%</td>
<td>17.0%</td>
<td>11.2%</td>
<td>4.6%</td>
<td>67.2%</td>
</tr>
<tr>
<td></td>
<td>Single female</td>
<td>27.2%</td>
<td>10.8%</td>
<td>13.4%</td>
<td>3.3%</td>
<td>72.5%</td>
</tr>
<tr>
<td>Employment status</td>
<td>Employee</td>
<td>57.3%</td>
<td>20.0%</td>
<td>15.1%</td>
<td>6.0%</td>
<td>58.9%</td>
</tr>
<tr>
<td></td>
<td>Self-employed</td>
<td>10.5%</td>
<td>17.0%</td>
<td>20.9%</td>
<td>4.9%</td>
<td>57.1%</td>
</tr>
<tr>
<td></td>
<td>Not working but not retired</td>
<td>14.8%</td>
<td>12.2%</td>
<td>9.9%</td>
<td>3.4%</td>
<td>74.6%</td>
</tr>
<tr>
<td></td>
<td>Retired</td>
<td>17.4%</td>
<td>6.0%</td>
<td>14.8%</td>
<td>2.0%</td>
<td>77.2%</td>
</tr>
<tr>
<td>Risk tolerance</td>
<td>No risk</td>
<td>41.3%</td>
<td>9.5%</td>
<td>7.8%</td>
<td>0.9%</td>
<td>81.7%</td>
</tr>
<tr>
<td></td>
<td>Some risk</td>
<td>58.7%</td>
<td>20.7%</td>
<td>19.9%</td>
<td>7.5%</td>
<td>51.9%</td>
</tr>
<tr>
<td>Survey year</td>
<td>2001</td>
<td>33.2%</td>
<td>11.6%</td>
<td>14.5%</td>
<td>3.2%</td>
<td>70.7%</td>
</tr>
<tr>
<td></td>
<td>2004</td>
<td>33.8%</td>
<td>15.6%</td>
<td>15.5%</td>
<td>3.9%</td>
<td>65.0%</td>
</tr>
<tr>
<td></td>
<td>2007</td>
<td>33.0%</td>
<td>21.0%</td>
<td>14.7%</td>
<td>7.3%</td>
<td>57.1%</td>
</tr>
</tbody>
</table>

Table 5.2 Rates of Internet only, financial planner only, mixed use, and non-users by characteristics of households (Row percents; combined 2001-2007 datasets)
5.3 Multinomial Logit Results

The multinomial logit regression model was used to test the hypotheses about the influences of time constraints, monetary constraints, human resource constraints, and financial complexity on the likelihoods of choosing the Internet over a financial planner for searching saving and investing information (Model A), controlling for everything else. Multinomial logit results are based on a combination of the 2001, 2004, and 2007 SCF datasets. The estimates are shown in Table 5.3. In addition to model A, the effects of the constraints were also tested for the other comparison sets, including Internet users versus non-users (model B), financial planner users versus non-users (model C), mixed users versus non-users (model D), Internet users vs. mixed users (model E) and financial planner users vs. mixed users (model F). Results from these models are also presented in Table 5.3. The last two models estimated what types of Internet users do not use a financial planner (model E) and what types of financial planner users do not use the Internet (model F). In the multinomial logit results (Table 5.3), the monetary constraints and human resource constraints variables were mostly significant, whereas the impacts of some variables, such as time constraints and financial complexity, were not statistically significant.
### Table 5.3 Multinomial Logit Results

<table>
<thead>
<tr>
<th>Category</th>
<th>Model A. IT vs. FP Odds ratio</th>
<th>P-value</th>
<th>Model B. IT vs. Non-Users Odds ratio</th>
<th>P-value</th>
<th>Model C. FP Users vs. Non-user Odds ratio</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>0.4155</td>
<td></td>
<td>-4.2938</td>
<td>&lt;.0001***</td>
<td>-4.7093</td>
<td>&lt;.0001***</td>
</tr>
<tr>
<td>Work hrs/week</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Employment status</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Employee</td>
<td>-0.00283</td>
<td>0.5910</td>
<td>-0.00627</td>
<td>0.997</td>
<td>0.1004</td>
<td>0.000162</td>
</tr>
<tr>
<td>Base</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Self-employed</td>
<td>-0.2084</td>
<td>0.812</td>
<td>-0.2802</td>
<td>0.756</td>
<td>&lt;.0001***</td>
<td>-0.0718</td>
</tr>
<tr>
<td>Not employed</td>
<td>-0.1698</td>
<td>0.832</td>
<td>-0.2183</td>
<td>0.804</td>
<td>0.0200*</td>
<td>0.966</td>
</tr>
<tr>
<td>Retired</td>
<td>-0.2559</td>
<td>0.783</td>
<td>-0.1615</td>
<td>0.851</td>
<td>0.2160</td>
<td>0.0834</td>
</tr>
<tr>
<td>A child &lt; 5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Yes</td>
<td>-0.0067</td>
<td>0.938</td>
<td>-0.0732</td>
<td>0.929</td>
<td>0.3567</td>
<td>-0.00948</td>
</tr>
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<td>Log Financial Asset</td>
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</tr>
<tr>
<td>Less than 30</td>
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<tr>
<td>30-39</td>
<td>-0.0976</td>
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<td>40-49</td>
<td>-0.2544</td>
<td>0.775</td>
<td>-0.2432</td>
<td>0.784</td>
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<td>0.0112</td>
</tr>
<tr>
<td>50-59</td>
<td>-0.6568</td>
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<td>0.0517</td>
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<tr>
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<td>-1.0275</td>
<td>0.358</td>
<td>-1.0890</td>
<td>0.337</td>
<td>&lt;.0001***</td>
<td>-0.0614</td>
</tr>
<tr>
<td>70 and over</td>
<td></td>
<td></td>
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<td></td>
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</tr>
<tr>
<td>High school</td>
<td>0.1854</td>
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<td>0.5248</td>
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<td>0.3394</td>
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<tr>
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<td>1.269</td>
<td>0.7489</td>
<td>2.115</td>
<td>&lt;.0001***</td>
<td>0.5105</td>
</tr>
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<td>B.S. degree</td>
<td>0.4090</td>
<td>1.505</td>
<td>1.0218</td>
<td>2.779</td>
<td>&lt;.0001***</td>
<td>0.6129</td>
</tr>
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<td>Financial understanding</td>
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<tr>
<td>Good</td>
<td>0.2988</td>
<td>1.348</td>
<td>0.9751</td>
<td>2.651</td>
<td>0.1211</td>
<td>0.6763</td>
</tr>
<tr>
<td>Very Good</td>
<td>0.6211</td>
<td>1.861</td>
<td>0.3981</td>
<td>1.2930</td>
<td>3.644</td>
<td>0.0367</td>
</tr>
<tr>
<td>Excellent</td>
<td>0.8586</td>
<td>2.360</td>
<td>0.2427</td>
<td>1.5417</td>
<td>4.672</td>
<td>0.0127</td>
</tr>
<tr>
<td># of goals</td>
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<td>1.023</td>
<td>0.5151</td>
<td>1.1756</td>
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</tr>
<tr>
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<td>0.0781</td>
<td>1.081</td>
<td>&lt;.0001***</td>
</tr>
<tr>
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<td>0.7252</td>
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</tr>
<tr>
<td>Gender</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>0.5385</td>
<td>1.713</td>
<td>&lt;.0001***</td>
<td>0.3732</td>
<td>1.452</td>
<td>&lt;.0001***</td>
</tr>
<tr>
<td>Racial/ethnic characteristics</td>
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<td></td>
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<td></td>
<td></td>
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</tr>
<tr>
<td>Black</td>
<td>-0.2932</td>
<td>0.746</td>
<td>0.0179*</td>
<td>-0.1411</td>
<td>0.868</td>
<td>0.1522</td>
</tr>
<tr>
<td>Hispanic</td>
<td>-0.0638</td>
<td>0.946</td>
<td>0.6793</td>
<td>-0.1276</td>
<td>0.880</td>
<td>0.2690</td>
</tr>
<tr>
<td>Other/Asian</td>
<td>0.5677</td>
<td>1.764</td>
<td>0.0066**</td>
<td>0.3242</td>
<td>1.383</td>
<td>0.0092*</td>
</tr>
<tr>
<td>Marital status</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Married</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Partner</td>
<td>-0.0396</td>
<td>0.961</td>
<td>0.7738</td>
<td>-0.0379</td>
<td>0.963</td>
<td>0.7289</td>
</tr>
<tr>
<td>Single male</td>
<td>-0.0202</td>
<td>0.980</td>
<td>0.8675</td>
<td>-0.3116</td>
<td>0.732</td>
<td>0.0015*</td>
</tr>
<tr>
<td>Single female</td>
<td>-0.1620</td>
<td>0.850</td>
<td>0.1585</td>
<td>-0.1203</td>
<td>0.887</td>
<td>0.2177</td>
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<tr>
<td>Homeowner</td>
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</tr>
<tr>
<td>Yes</td>
<td>-0.3586</td>
<td>0.699</td>
<td>0.0020**</td>
<td>-0.2037</td>
<td>0.816</td>
<td>0.0058*</td>
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<tr>
<td>Risk Tolerance</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No risk</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Some risk</td>
<td>-0.2014</td>
<td>0.818</td>
<td>0.0260*</td>
<td>0.5145</td>
<td>1.673</td>
<td>&lt;.0001***</td>
</tr>
<tr>
<td>Survey year</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2001</td>
<td>0.2725</td>
<td>1.313</td>
<td>0.0014*</td>
<td>0.4242</td>
<td>1.528</td>
<td>&lt;.0001***</td>
</tr>
<tr>
<td>2007</td>
<td>0.4927</td>
<td>1.637</td>
<td>&lt;.0001***</td>
<td>0.8760</td>
<td>2.401</td>
<td>&lt;.0001***</td>
</tr>
</tbody>
</table>

(P*<.03, P**<.001, P***<.0001)
<table>
<thead>
<tr>
<th>Category</th>
<th>Model D.</th>
<th>Model E.</th>
<th>Model F.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Estimate</td>
<td>Odds ratio</td>
<td>P-value</td>
</tr>
<tr>
<td>Intercept</td>
<td>-0.8732</td>
<td>&lt;.0001***</td>
<td>2.5794</td>
</tr>
<tr>
<td>Work hrs/week</td>
<td>-0.00060</td>
<td>0.999</td>
<td>0.8045</td>
</tr>
<tr>
<td>Employment status</td>
<td>Employee</td>
<td>Base</td>
<td>Base</td>
</tr>
<tr>
<td></td>
<td>-0.3587</td>
<td>0.699</td>
<td>0.003***</td>
</tr>
<tr>
<td></td>
<td>Retired</td>
<td>0.0363</td>
<td>1.037</td>
</tr>
<tr>
<td>A child &lt; 5</td>
<td>No</td>
<td>Base</td>
<td>Base</td>
</tr>
<tr>
<td>Log Financial Asset</td>
<td>Less than 30</td>
<td>Base</td>
<td>Base</td>
</tr>
<tr>
<td></td>
<td>40-49</td>
<td>0.813</td>
<td>0.2393</td>
</tr>
<tr>
<td></td>
<td>50-59</td>
<td>0.653</td>
<td>0.0193**</td>
</tr>
<tr>
<td></td>
<td>60-69</td>
<td>0.383</td>
<td>&lt;.0001***</td>
</tr>
<tr>
<td></td>
<td>70 and over</td>
<td>-2.2405</td>
<td>0.106</td>
</tr>
</tbody>
</table>
| Education                  | High school            | Base                   | Base                   | 0.5337                | 1.705                 | 0.1000                 | -0.00894              | 0.991                 | 0.9792                | -0.1943               | 0.823                 | 0.5668                | 0.0464                | 0.628                 | 0.1744                | 0.7399                | 0.477                 | 0.0273*                |<.0001***              |}

(P<.03, **P<.001, ***P<.0001)
5.3.1 Internet use vs. financial planner use (Model A)

The first column of table 5.3 presents the multinomial logistic regression results of the likelihood of being Internet users versus financial planner users. The effects of monetary constraints (financial assets) and human resource constraints (age less than 30 vs. age over 50; less than High school education vs. college education) were statistically significant in explaining choices between the Internet and a financial planner. Contrary to the hypothesis, the effects of time constraints (weekly work hours; presence of a young child under the age of 5) were not significant. Table 5.4 summarizes the hypotheses and the empirical results on the likelihood of being Internet users versus financial planner users.

Year 2001 was the reference category in terms of survey years. Controlling for everything else, households in years 2004 and 2007 were more likely to choose the Internet over financial planners. Next, we can find the effects of demographic variables. The coefficient for male respondent was positive and significant, but we need to consider the combined effect of this variable with the effects of the marital status dummy variables. Married couple households with a male respondent were much more likely to be Internet only users rather than financial planner only users. The coefficient for unmarried (partner) couples is small and not significant, so we can give the same interpretation for male respondents in partner couples. For single male households, we have a similar gender effect because the coefficient is very small. Others and Asians were more likely to choose the Internet while Blacks were less likely to choose the Internet, compared to Whites. Homeownership and risk tolerance also made differences in respondents’ decisions in using the Internet over a financial planner. Home-owners were less likely to choose the
Internet and those with some risk preferences were less likely to use the Internet. Those who were self-employed were less likely to use the Internet rather than employees.
<table>
<thead>
<tr>
<th>Types of constraints</th>
<th>Hypotheses</th>
<th>Expected Effect</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time constraints</td>
<td>H 1A: As the weekly hours for market work increases, consumers will less likely to be Internet users rather than financial planner users.</td>
<td>-</td>
<td>N/S</td>
</tr>
<tr>
<td></td>
<td>H 2A: Consumers with young children under age 5 will less likely to be Internet users rather than financial planners.</td>
<td>-</td>
<td>N/S</td>
</tr>
<tr>
<td>Monetary constraints</td>
<td>H 3A: As financial assets increase, consumers will less likely to be Internet users rather than financial planner users.</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Human resource constraints</td>
<td>H 4 A: As age increases, consumers will less likely to be Internet users rather than financial planner users.</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>H 5A: As the respondents’ education level increases, consumers will more likely to be Internet users rather than financial planner users.</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td></td>
<td>H 6A: As the respondents’ financial understanding increases, consumers will more likely to be Internet users rather than financial planner users.</td>
<td>+</td>
<td>N/S</td>
</tr>
<tr>
<td>Financial complexity</td>
<td>H 7A: As the number of financial goals increases, consumers will less likely to be Internet users rather than financial planner users.</td>
<td>-</td>
<td>N/S</td>
</tr>
<tr>
<td></td>
<td>H 8A: As the number of financial accounts increases, consumers will less likely to be Internet users rather than financial planner users.</td>
<td>-</td>
<td>N/S</td>
</tr>
<tr>
<td></td>
<td>H 9A: As the number of people in the household increases, consumers will less likely to be Internet users rather than financial planner users.</td>
<td>-</td>
<td>N/S</td>
</tr>
</tbody>
</table>

Table 5.4 Hypothesized effects and empirical results for IT users and FP users (Model A)
5.3.2 Internet use vs. Non-use (Model B)

The second column of table 5.3 presents the multinomial logistic regression results of the likelihood of being Internet users versus non-users. The effects of variables related to monetary constraints (financial assets), human resource constraints (age; education; financial understanding), and financial complexity were very clearly shown in this model. When we set age 30 or less as a reference category, respondents in the age ranges of 40-49, 50-59, 60-69, and 70 or over were less likely to use the Internet. The magnitude of the results incremented as age increased. Less than high school education was a reference category for education. Compared to whose with less than a high school education, those with high school diploma, some college education, and a B.S. degree were more likely to use the Internet. The effects of education were also incremented as education levels increased. Financial understanding also had significant positive effects. The effects of variables on financial complexity were mostly positive. The effect of time constraints was not significant as in other models. Table 5.5 summarizes the hypotheses and the empirical results on the likelihood of being Internet users versus financial planner users.

With the reference category of the year 2001, respondents in years 2004 and 2007 were more likely to be Internet users over non-users, controlling for everything else. The coefficient for male respondent was positive and significant, but we need to consider the combined effect of this variable with the effects of the marital status dummy variables. Married couple households with a male respondent were much more likely to be Internet only users rather than non-users. The coefficient for unmarried (partner) couples is small and not significant, so we can give the same interpretation for male respondents in
partner couples. The coefficient for single male is negative and significant, so the combined effect of gender and that variable can be calculated by adding the coefficients (0.3432-.3116), which mean that there is not much of a difference between single males and married couples with a female respondent. Others/Asians were more likely than whites to use the Internet only versus being non-users.

In addition, homeownership had a significant negative effect, while risk tolerance had a significant positive effect. Employees were the reference category in terms of employment status. Compared to employees, those who were self-employed and not employed were less likely to be Internet users over non-users.
<table>
<thead>
<tr>
<th>Types of constraints</th>
<th>Hypotheses</th>
<th>Expected Effect</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time constraints</td>
<td>H 1B: As the weekly hours for market work increases, consumers will less likely to be Internet users rather than non-users.</td>
<td>-</td>
<td>N/S</td>
</tr>
<tr>
<td></td>
<td>H 2B: Consumers with young children under age 5 will less likely to be Internet users rather than non-users.</td>
<td>-</td>
<td>N/S</td>
</tr>
<tr>
<td>Monetary constraints</td>
<td>H 3B: As financial assets increase, consumers will more likely to be Internet users rather than non-users.</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Human resource constraints</td>
<td>H 4B: As age increases, consumers will less likely to be Internet users rather than non-users.</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>H 5B: As the respondents’ education level increases, consumers will more likely to be Internet users rather than non-users.</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td></td>
<td>H 6B: As the respondents’ financial understanding increases, consumers will more likely to be Internet users rather than non-users.</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Financial complexity</td>
<td>H 7B: As the number of financial goals increases, consumers will more likely to be Internet users rather than non-users.</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td></td>
<td>H 8B: As the number of financial accounts increases, consumers will more likely to be Internet users rather than non-users.</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td></td>
<td>H 9B: As the number of people in the household increases, consumers will more likely to be Internet users rather than non-users.</td>
<td>+</td>
<td>N/S</td>
</tr>
</tbody>
</table>

*Table 5.5* Hypothesized effects and empirical results for IT users and non-users (Model B)
5.3.3 Financial planner use vs. Non-use (Model C)

The third column of table 5.3 presents the multinomial logistic regression results of the likelihood of being financial planner users versus non-users. Effects of monetary constraints (financial asset) and human resource constraints (age less than 30 vs. age 70 or over; education) were statistically significant in explaining choices between the Internet and a financial planner. In particular, the effects of education categories were clearly shown among variables related to human resource constraints. As expected in the hypotheses, financial complexity measurements had positive effects on being financial planner users, except for the number of people in the household. However, time constraint related variables were found not to be significant as in other models. Table 5.6 summarizes the hypotheses and the empirical results on the likelihood of being Internet users versus financial planner users.

The respondents in the year 2004 and 2007 were more likely to use a financial planner compared to the respondents in the year 2001. However, the magnitude of the time effect for financial planners was relatively smaller than that of Internet users. The effect of male respondent was negative and significant, so couple households with male respondents were somewhat less likely to use a financial planner only versus being non-users. The effect of single male was negative and significant, so single male households were substantially less likely to use a financial planner only versus married couples with female respondents. Homeownership and risk tolerance had a positive impact.
<table>
<thead>
<tr>
<th>Types of constraints</th>
<th>Hypotheses</th>
<th>Expected Effect</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time constraints</td>
<td>H 1C: As the weekly hours for market work increases, consumers will less likely to be financial planner users rather than non-users.</td>
<td>-</td>
<td>N/S</td>
</tr>
<tr>
<td></td>
<td>H 2C: Consumers with young children under age 5 will less likely to be financial planner users rather than non-users.</td>
<td>-</td>
<td>N/S</td>
</tr>
<tr>
<td>Monetary constraints</td>
<td>H 3C: As financial assets increase, consumers will more likely to be financial planner users rather than non-users.</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Human resource</td>
<td>H 4C: As age increases, consumers will less likely to be financial planner users rather than non-users.</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>constraints</td>
<td>H 5C: As the respondents’ education level increases, consumers will more likely to be financial planner users rather than non-users.</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td></td>
<td>H 6C: As the respondents’ financial understanding increases, consumers will more likely to be financial planner users rather than non-users.</td>
<td>+</td>
<td>N/S</td>
</tr>
<tr>
<td>Financial complexity</td>
<td>H 7C: As the number of financial goals increases, consumers will more likely to be financial planner users rather than non-users.</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td></td>
<td>H 8C: As the number of financial accounts increases, consumers will more likely to be financial planner users rather than non-users.</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td></td>
<td>H 9C: As the number of people in the household increases, consumers will more likely to be financial planner users rather than non-users.</td>
<td>+</td>
<td>N/S</td>
</tr>
</tbody>
</table>

Table 5.6 Hypothesized effects and empirical results for FP users and non-users (Model C)
5.3.4 Mixed use vs. Non-use (Model D)

The fourth column of table 5.3 presents the multinomial logistic regression results of the likelihood of being mixed users versus non-users. The effects of monetary constraints (financial assets) and human resource constraints (age less than 30 vs. age over 50; less than high school education vs. some college and more education) were statistically significant while effects of time constraints were not significant. Also, those with a higher number of financial goals and more financial assets were more likely to be mixed users. It is important that the number of people in the household had a significant negative impact on the likelihood of being mixed users. The variable “number of people in the household” was significant only in this model. Table 5.7 summarizes the hypotheses and the empirical results on the likelihood of being Internet users versus financial planner users.

The year 2001 was the reference category in terms of survey years. Controlling for everything else, respondents in later survey years were more likely to be mixed users than those in the year 2001. The magnitude of the time effect was larger for the year 2007. We could also find some demographic effects. Male respondents were more likely to be mixed users than female respondents. Single male respondents were less likely to be mixed users than married respondents. Self-employed respondents were less likely to be mixed users than employees. Finally, risk tolerance had a significant positive effect. Those with some levels of risk tolerance were more likely to be mixed users than those who prefer no risk.
<table>
<thead>
<tr>
<th>Types of constraints</th>
<th>Hypotheses</th>
<th>Expected Effect</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time constraints</td>
<td>H 1D: As the weekly hours for market work increases, consumers will less likely to be mixed users rather than non-users.</td>
<td>-</td>
<td>N/S</td>
</tr>
<tr>
<td></td>
<td>H 2D: Consumers with young children under age 5 will less likely to be mixed users rather than non-users.</td>
<td>-</td>
<td>N/S</td>
</tr>
<tr>
<td>Monetary constraints</td>
<td>H 3D: As financial assets increase, consumers will more likely to be mixed users rather than non-users.</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Human resource constraints</td>
<td>H 4D: As age increases, consumers will less likely to be mixed users rather than non-users.</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>H 5D: As the respondents’ education level increases, consumers will more likely to be mixed users rather than non-users.</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td></td>
<td>H 6D: As the respondents’ financial understanding increases, consumers will more likely to be mixed users rather than non-users.</td>
<td>+</td>
<td>N/S</td>
</tr>
<tr>
<td>Financial complexity</td>
<td>H 7D: As the number of financial goals increases, consumers will more likely to be mixed users rather than non-users.</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td></td>
<td>H 8D: As the number of financial accounts increases, consumers will more likely to be mixed users rather than non-users.</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td></td>
<td>H 9D: As the number of people in the household increases, consumers will more likely to be mixed users rather than non-users.</td>
<td>+</td>
<td>-</td>
</tr>
</tbody>
</table>

*Table 5.7* Hypothesized effects and empirical results for mixed users and non-users (Model D)
5.3.5 Internet use vs. mixed use (Model E)

The fifth column of table 5.3 presents the multinomial logistic regression results of the likelihood of being Internet users versus mixed users. The effect of human resource constraints was significant in age, only for those who were in the 40-49 age range vs. age 30 or less. Contrary to hypotheses, results showed that the effects of time constraints, monetary constraints, and most of the human resource constraints were not significant. However, those with a higher number of financial accounts were more likely to be mixed users rather than Internet users. Table 5.8 summarizes the hypotheses and the empirical results on the likelihood of being Internet users versus financial planner users.

This comparison set, Internet users vs. mixed users, shows what types of Internet users did not use a financial planner. With the reference year set at 2001, Internet users in the year 2007 were less likely to use the Internet with a financial planner, rather than use the Internet only. The significance of the time effect was evidenced in this model again. In addition, the effects of racial/ethnic characteristics, home-ownership, and risk tolerance were significant in figuring out Internet users who did not use a financial planner. With the reference category set as Whites, Black Internet users were more likely to use the Internet with a financial planner. However, others and Asian Internet users were more likely to use the Internet only. Home-owners were more likely to use the Internet with a financial planner rather than use the Internet only. Those who prefer some risks were also more likely to use the Internet with a financial planner rather than use the Internet only.
<table>
<thead>
<tr>
<th>Types of constraints</th>
<th>Hypotheses</th>
<th>Expected Effect</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time constraints</td>
<td>H 1E: As the weekly hours for market work increases, consumers will more likely to be Internet users rather than mixed users.</td>
<td>+</td>
<td>N/S</td>
</tr>
<tr>
<td></td>
<td>H 2E: Consumers with young children under age 5 will more likely to be Internet users rather than mixed users.</td>
<td>+</td>
<td>N/S</td>
</tr>
<tr>
<td>Monetary constraints</td>
<td>H 3E: As financial assets increase, consumers will less likely to be Internet users rather than mixed users.</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Human resource</td>
<td>H 4E: As age increases, consumers will more likely to be Internet users rather than mixed users.</td>
<td>+</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>H 5E: As the respondents’ education level increases, consumers will less likely to be Internet users rather than mixed users.</td>
<td>-</td>
<td>N/S</td>
</tr>
<tr>
<td></td>
<td>H 6E: As the respondents’ financial understanding increases, consumers will less likely to be Internet users rather than mixed users.</td>
<td>-</td>
<td>N/S</td>
</tr>
<tr>
<td>Financial complexity</td>
<td>H 7E: As the number of financial goals increases, consumers will less likely to be Internet users rather than mixed users.</td>
<td>-</td>
<td>N/S</td>
</tr>
<tr>
<td></td>
<td>H 8E: As the number of financial accounts increases, consumers will less likely to be Internet users rather than mixed users.</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>H 9E: As the number of people in the household increases, consumers will less likely to be Internet users rather than mixed users.</td>
<td>-</td>
<td>N/S</td>
</tr>
</tbody>
</table>

Table 5.8 Hypothesized effects and empirical results for IT users and mixed-users (Model E)
5.3.6 Financial planner use vs. mixed use (Model F)

The sixth column of table 5.3 presents the multinomial logistic regression results of the likelihood of being financial planner users versus mixed users. The effects of age and education were shown as expected. With the reference category set as those younger than 30, respondents aged more than 50 were more likely to be financial planner users rather than mixed users. Compared to those with less than high school education, those with a B.S. degree were less likely to be financial planner users rather than mixed users. Contrary to our hypotheses, the effects of time constraints, monetary constraints, and financial complexity were not significant. Table 5.9 summarizes the hypotheses and the empirical results on the likelihood of being Internet users versus financial planner users.

This comparison set, financial planner users vs. mixed users, shows what types of financial planner users did not use the Internet. In addition to the positive effect of age and the negative effect of education, the effect of gender and time were found. The effect of male respondent was negative, but none of the marital status variables were significant. This means that male respondents in couple households were less likely than female respondents to be financial planner only users versus mixed users, but the gender difference was less for single males, as the coefficient for single male was positive even though not significant. Also, financial planner users in later survey years were less likely to use a financial planner only rather than use a financial planner with the Internet, and those who preferred some risks were less likely to use a financial planner only rather than use a financial planner with the Internet. Finally, those who were self-employed were more likely to use a financial planner only rather than use a financial planner with the Internet.
<table>
<thead>
<tr>
<th>Types of constraints</th>
<th>Hypotheses</th>
<th>Expected Effect</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time constraints</td>
<td>H 1F: As the weekly hours for market work increases, consumers will more likely to be financial planner users rather than mixed-users.</td>
<td>+</td>
<td>N/S</td>
</tr>
<tr>
<td></td>
<td>H 2F: Consumers with young children under age 5 will more likely to be financial planner users rather than mixed-users.</td>
<td>+</td>
<td>N/S</td>
</tr>
<tr>
<td>Monetary constraints</td>
<td>H 3F: As financial assets increase, consumers will less likely to be financial planner users rather than mixed-users.</td>
<td>-</td>
<td>N/S</td>
</tr>
<tr>
<td>Human resource constraints</td>
<td>H 4F: As age increases, consumers will less likely to be financial planner users rather than mixed-users.</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td></td>
<td>H 5F: As the respondents’ education level increases, consumers will more likely to be financial planner users rather than mixed-users.</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>H 6F: As the respondents’ financial understanding increases, consumers will more likely to be financial planner users rather than mixed-users.</td>
<td>-</td>
<td>N/S</td>
</tr>
<tr>
<td>Financial complexity</td>
<td>H 7F: As the number of financial goals increases, consumers will more likely to be financial planner users rather than mixed-users.</td>
<td>-</td>
<td>N/S</td>
</tr>
<tr>
<td></td>
<td>H 8F: As the number of financial accounts increases, consumers will more likely to be financial planner users rather than mixed-users.</td>
<td>-</td>
<td>N/S</td>
</tr>
<tr>
<td></td>
<td>H 9F: As the number of people in the household increases, consumers will more likely to be financial planner users rather than mixed-users.</td>
<td>-</td>
<td>N/S</td>
</tr>
</tbody>
</table>

| Table 5.9 Hypothesized effects and empirical results for FP users and mixed-users (Model F) |
CHAPTER 6

DISCUSSIONS AND IMPLICATIONS

The first section of this chapter presents the major findings of this study and discusses it. The second section presents the implications for Internet users, financial planner users, mixed users, and non-users. The third section presents the limitations and suggestions for future research. Finally, a summary of the procedures and the key findings are given in the fourth section in the fourth section.

6.1 Discussions

6.1.1 Effects of time constraints

Based on Becker’s (1965) theory, we expected that situational demands of information seeking (e.g., shortage of free time) would be relevant in choosing a financial planner option rather than the Internet. Thus, we hypothesized that time constraints would cause an individual to choose the Internet rather than a financial planner (model A). Contrary to expectations, however, the effects of time constraints were not significant in any model. Furthermore, the results from the descriptive analysis show that substantial portions of consumers with heavy work
commitment (e.g., 60 and more hrs/week) were mixed users or Internet only users. We included the presence of a young child under the age of 5 in the model as a proxy for time constraints because caring for young children requires considerable time investments. However, there were no substantial differences in using the Internet and a financial planner, dependent upon the presence of a young child. Contrary to our expectations in hypotheses, time constraint variables did not influence Internet use and financial planner use. It seems that the Internet is favored by time-constrained individuals for its easy access and opportunities to save time (Savolainen and Kari, 2004). Given that over 70 million people subscribed to mobile broadband contracts and therefore used the Internet with a cell phone or a laptop computer at the end of 2011 (FCC, 2011b), it is expected that such effects of time constraints will be maintained in the 2010 SCF. However, if we could measure time constraints more directly and subjectively in terms of the psychological burden of information overload and shortage of free time, the effects of time constraints might be shown differently. The current measurements of time constraints were based on the objective aspects of time constraints (e.g., weekly working hours/week; presence of a young child under age 5) only.

6.1.2 Effects of monetary constraints

Financial assets include all kinds of liquid assets such as checking, saving, money market accounts, and call account. Chang (2005) argued that the level of financial assets is excellent in representing available socio-economic resources compared to other socio-economic variables (e.g., education, income). Also, home-ownership is a good proxy of the demands for professional financial planning services, as well as the ability to pay a financial planer. In the results, financial assets had positive effects on using one or both sources versus not using any source: Internet
only (model B), financial planner only (model C), and mixed use (model D). Even after controlling for the number of financial accounts, financial assets still lead to a demand for financial advice. Home-ownership also had positive effects on using a financial planner or both sources versus not using any source: financial planner only (model C), and mixed use (model D). Given that a financial planner was preferred by high-asset households as an information source with high credibility and low accessibility, financial firms who want to recruit high-asset households to their on-line financial websites should advertise their quality rather than emphasizing that they provide quick access to saving and investment information.

In terms of Internet use, however, financial assets and home-ownership decreased the likelihood of respondents choosing the Internet versus a financial planner (model A). Based on this finding, we can tentatively conclude that wealthier people with less monetary constraints still prefer a financial planner over the Internet.

6.1.3 Effects of human resource constraints

Age

Young consumers age less than 30 were much more likely to use the Internet for saving and investment in all models. Many of those who are in the youngest age group have not saved much money to work with a financial planner but the result was significant even after controlling for financial assets. Hargittai (2002) reported that individuals in their twenties are more able to find contents on five different topical domains including music listening, tax forms, local events, kids’ art and political information than their older counterparts. It seems that those in their twenties also have superior abilities in searching for financial information on the Internet. Next,
the effects of being in the fifties and sixties age groups were not significant on the likelihood of being a financial planner user versus a non-user (model C), but were significant on the likelihood of choosing a financial planner over the Internet (model A). Also, those with age 50 or more were more likely to be financial planner users rather than mixed users (model F). Targeting middle-aged consumers might be worthwhile for financial websites developers, given that consumers who can afford a financial planner might have access to the Internet. For the eldest age group, our results showed that those aged 70 or more are unlikely to be mixed users over non-users after controlling for monetary constraints (model D). In addition, very old consumers were unlikely to use the Internet over a financial planner (model A); the Internet over nothing (model B); a financial planner over nothing (model C). Cognitive abilities decline after age 60, but many of them are still confident about their financial decision-making skills and life-time investment experiences (Finke, 2012). If they can perceive the declines of their financial literacy skills, more of them might use a financial planner to reduce the risk of outliving assets. For example, the odds of using a financial planner increased by 6% with one year increase in age for elderly with an Instrumental Activities of Daily Living (IADL) Problem (Kim, 2005).

**Education**

Universities were one of the institutions to first adopt the computer and the Internet, thus significant portions of college graduates are likely to have some Internet experience during their schooling years. As expected, clear cut differences in Internet use were observed for those with a Bachelor’s degree. Highly educated groups seem to search for financial advice spontaneously using their intellectuality and information skills. Thus, the possibility of developing a self-
investment plan is highest for college graduates. In addition, college graduates were more likely
to search extensively using the Internet, a financial planner, or both (model B, C, and D). The
results implies the presence of higher demands for saving and investment advice among
respondents with a Bachelor’s degree after controlling for financial assets.

6.1.4 Effects of financial complexity

A higher number of goals and accounts increases the likelihood of using the Internet, a
financial planner, or both of them than for similar households with a simpler financial structure.
Therefore, the number of financial goals and accounts might be related to the demand for
financial advice. Besides, the result that the number of goals and number of accounts has no
significant effect on the use of the Internet over a financial planner suggests that monetary
constraints, human resource constraints, and demographic variables are more important than
financial complexity in choosing between the Internet and a financial planner. Consumers with
multiple financial goals and accounts might be confident in working independently with the
Internet on household finance. Also, consumers with simpler financial planning tasks seem not to
utilize the cost-effectiveness of on-line financial information. As shown in Peterson (2006), the
effect of the number of people in the household failed to capture the totality of household
complexity. Therefore, we can suggest not using the number of people in the household variable
in constructing a financial complexity index.
6.1.5 Effects of demographic variables and other variables

Gender

Early research on Internet access using data prior to 2000 reported the presence of gender gaps in Internet access (Bimber, 2000; Bucy, 2000). However, gender inequalities in Internet access have much decreased since then and are now almost non-existent (Dutton & Helsper, 2007). Although Internet access problems are now relieved, gender differences continue to be found in the use specific websites (Wasserman & Richmond-Abbott, 2005) and Internet self-efficacy (Torkzadeh, Chang, & Demirhan, 2006). Also in our results, male respondents were more likely to use the Internet for financial information than female respondents in models A, B, D, and F. It is likely that the gender gap exists in Internet use for making saving and investment decisions.

Race

As shown in Hanna (2011), disparities in access to financial planners were observed among Others/Asian respondents. Different from White and Black respondents, the financial information search of Others/Asian respondents was centered on the Internet (model A; model B; model E). According to Hanna and Lindamood (2008), 69% of Asians in the 2000 US Census were foreign born. The foreign born population includes naturalized citizens, lawful permanent residents, refugees, asylees, legal non-immigrants (e.g., those on student, work, or certain other types of temporary visas), and persons residing in the country without authorization (Batalova, 2011). Given that substantial portions of Others/Asian respondents are foreign born, working face-to-face with a financial planner might have been challenging to those individuals who lack
proficient English speaking abilities. Those foreign born Others/Asians seem to choose the Internet as a substitute for a financial planner and try to develop a plan to invest in an efficient portfolio. Also, information about Others/Asian respondents tell us that their abilities, social support systems, and online skills in finding information to meet their particular needs might allow them to use the Internet to its maximum effect. According to the 2002 CPS, 95% of Others/Asian respondents lived in metropolitan areas, 40% were concentrated in managerial and professional specialty occupations, and 40% had incomes of $75,000 or more (Reeves & Bennett, 2003). Above all, Asians reported the highest percentage of those with a bachelor’s, master’s, professional, or doctorate degree. In 2009, nearly one out of two Asians aged 25 and over reported having a bachelor’s degree or higher level of education (Ryan & Siebens, 2009).

Given that consumers can prevent large potential losses from investments from erroneous financial decisions by using a financial planner, it is expected that those with low risk tolerance will be more likely to use a financial planner and other information sources such as the Internet (Hanna & Lindamood, 2010; Finke, 2012). In Tseng and Yang (2011), risk-averse individuals were more likely to search with the Internet, as well as with a financial planner. Tseng and Yang proposed that the information search can be used as a risk-reducing strategy in purchasing highly-risky investments, such as mutual funds. In our results, however, respondents with no risk tolerance were less likely to use the Internet, financial planners, or a combination of the two (model B; model C; model D). If respondents with no risk tolerance were using investment vehicles with small volatility (e.g., checking and savings accounts), they might have less demand for financial advice than those with high risk tolerance and thereby invest in the stock market.
**Survey year**

Internet use is increasing substantially, and there was a clear indication of the shift towards the Internet from financial planners in our results. The magnitude of the effect of dummy variables was greater for year 2007 than year 2004 when we set a reference as year 2001. It is highly likely that the more of shifts toward the Internet would be observed in year 2010.

**6.2 Implications**

Understanding the characteristics of those who use a financial planner and the Internet is useful in three aspects (Joo & Grable, 2001). First, it can improve services for those who already use the Internet and a financial planner. Second, it can increase the awareness of the benefits of using the Internet and a financial planner for non-users. Third, it can improve the extent of search for Internet users and financial planner users in the hopes of using more than one source. The following figure (6.1) summarizes the findings and provides the basis for the development of strategies to promote searching for financial information.

**6.2.1 Implications on mixed users**

The finding of this study has revealed that mixed users have increased from 4% to 10% during 2001 to 2007. A substantial growth in mixed users implies a possibility of new collaborative arrangements between the Internet and a financial planner. McMullan (2006) distinguished three types of patient-physician relationships on the Internet. In the first stage, with a health professional-centered relationship, experts feel threatened and respond defensively to
on-line information. In the next stage, in patient-centered relationship, experts collaborate with patients in searching and analyzing on-line information. In the most advanced stage, experts guide an appropriate use of on-line information for their patients. In the context of the personal financial planning industry, financial planners who are willing to adapt with internet savvy clients can provide better services to mixed users.

6.2.2 Implications on Internet users

Those with low financial assets and without home ownership might have chosen the Internet as a source of financial information because they cannot afford the financial planning service. Others/Asian immigrants who lack English-speaking abilities also chose the Internet because they cannot communicate proficiently with a financial planner. Those aged less than 30 are another group of individuals who chose the Internet instead of a financial planner, as they can work fast with the Internet. As broadband access to the Internet is now available through advanced types of devices (e.g., laptops, mobile phones), it is expected that more and more people will use the Internet for making saving and investment decisions. Although many individuals are currently using the Internet for saving and investment decisions, they can obtain more advanced advice by using a financial planner together with the Internet. Finke, Huston, and Cummings (2009) argued that estimating their own retirement preparedness is not an easy task for the average worker and consumers will use a financial planner if they perceive that a financial planner has better financial knowledge not available to them and if the benefits of using a financial planner are larger than the costs of using a financial planner. Thus, young Internet users are expected to be mixed users in their forties, if they have a higher number of financial
accounts, Black racial/ethnic characteristics, homeownership, some risk tolerance and self-employment at the moment (model E). If financial planners can market to those populations using on-line advertisement tools, then the number of mixed users will increase and the level of retirement preparedness would be enhanced.

**6.2.3 Implications on financial planner users**

In our results, males, less than 30, holding a B. S. degree were factors affecting financial planner users being mixed users. If policy makers and consumer educators wish to persuade consumers to utilize information sources, they should teach consumers about the value of informed decisions and the situations in which this value is likely to be realized (Lee & Cho, 2005; Finke, 2012). It is expected that more financial planner users will use the Internet in addition to their current use of a financial planner if benefits of being mixed users are acknowledged. By using the Internet in addition to a financial planner, consumers can have the potential to oversee financial planner. As a kind of a credence good, the quality of the financial planning service is not examined before and even after the purchase but access to the evaluations of other consumers is available through the Internet. Also, the Internet provides access to information previously only available to financial professionals. The Internet surly has the potential to redress power imbalances between a consumer and a financial planner due to information asymmetry. Thus, consumers can increase their control over financial planners by using the Internet (Harrison, Waite, & Hunter, 2006).
6.2.4 Implications on non-users

The majority (50%) of the respondents used in this study were non-users. Non-users have not yet to use the Internet nor a financial planner for saving and investment. The findings are meaningful in the sense that expecting who could be additional Internet users, financial planner users, and mixed users. From the results from models B, C, and D, I have observed the surprisingly high differences in financial assets, homeownership, age, education, gender, racial/ethnic characteristics, risk tolerance, number of financial assets and number of financial goals between non-users and any kind of users. Non-users were the group clearly staying behind. Empirical studies have shown that financial advice improves perceived retirement preparedness, increases risk-adjusted equity returns in stock investments, and reduces trading activities after controlling moral hazard behavior (Bluethgen et al. 2007; Finke, 2012; Kramer & Lensink, 2012). To the extent that differences in using the Internet and a financial planner for making saving and investment decisions might reinforce existing unequal distributions of net worth in a society, more attention needs to be focused on non-users’ usage of information sources for financial decision-making. If monetary constraints are the major barrier for being financial planner users or mixed users, the use of the Internet would be a good starting point for non-users.
**Figure 6.1** Strategic approach: How to promote extensive information search using multiple information sources
<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
<th>C</th>
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<tr>
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<tr>
<td>Age 70 or more (-)</td>
<td>Age 60-69 (-)</td>
<td>Some college (+)</td>
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<tr>
<td>B.S. degree (+)</td>
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<td>B.S. degree (+)</td>
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<td>Some college (+)</td>
<td># of financial accounts (+)</td>
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<tr>
<td>Black (-)</td>
<td></td>
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</tr>
<tr>
<td>Others/Asian (+)</td>
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<td>Male (-)</td>
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<tr>
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<tr>
<td>Some risk tolerance (-)</td>
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<td>Homeowner (+)</td>
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<td>Year 2004 (+)</td>
<td>Self-employed (-)</td>
<td>Some risk tolerance (+)</td>
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<td>Homeowner (-)</td>
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<td>Financial Asset (+)</td>
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<td>Age 50-59 (-)</td>
<td># of financial accounts (-)</td>
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<th>Black (-)</th>
<th>Male (-)</th>
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Table 6.1 A summary table of significant factors
6.3 Summary

Between the 2001 and 2007 SCF datasets, Internet use for saving and investment increased from 12% to 20% while reported financial planner use for the same purpose increased from 18% to 20%. In the 2010 SCF, it is expected that Internet use will exceed financial planner use for saving and investment decision-making. This result suggests that now the Internet is being proposed as the preferred source of information for financial decision-making.

This study aims to enhance our understanding of consumers’ use of the Internet and a financial planner for making saving and investment decisions using the SCF cross sectional surveys between 2001 and 2007. The proposed model is constructed based upon a household production theory. The results support the conceptualization that likelihoods of using the Internet and a financial planner is determined by monetary constraints and human resource constraints, but not by time constraints. Socio-demographic characteristics (e.g., gender, race, marital status, and employment status), risk tolerance, and dummy variables for the survey year influenced the likelihood of using the Internet and a financial planner as well.

This study is the first to analyze the use of the Internet with the use of a financial planner. In particular, this study identifies four consumer segments; Internet users, financial planner users, mixed users and non-users. As a method, the multinomial logit model was employed. Comparing one group to another group, we developed six comparison sets that were used as dependent variables for each model. The models addressed the effects of factors on being: A) Internet users vs. financial planner users, B) Internet users vs. Non-users, C) Financial planner users vs. Non-users, D) Mixed users vs. Non-users, E) Internet users vs. Mixed users, and F) Financial planner users vs. Non-users.
The first model (A) investigated factors related to choosing between the Internet versus a financial planner. The results from model A showed different characteristics of Internet users and financial planner users in terms of monetary constraints, human resources constraints, and socio-demographic variables. Compared to financial planner users, Internet users were relatively younger, less wealthy, more educated, male, Other/Asians, renters and risk averse in nature. An indication of shifts toward the Internet was clearly evidenced in year dummy variables. The second model (B) investigated factors related to choosing between the Internet versus nothing. The result showed that a very good or excellent level of financial understanding positively influenced Internet use for making saving and investment decisions. This result implies that attendees of financial education programs may continue self-learning through the Internet. The third model (C) investigated factors related to choosing between a financial planner versus nothing. When compared the results of model C to model B, it became apparent that many factors significant in model B were not significant in model C, although the direction of the effects were not reversed, except for home-ownership. Home-owners preferred a financial planner while renters preferred the Internet. Again, monetary constraints made a difference between Internet users and financial planner users. The fourth model (D) investigated factors related to choosing between mixed use vs. non-use. The two groups are contradictory in their search extents and were most different in their risk tolerance. Mixed users were more risk tolerant individuals whereas non-users were risk-averse individuals. The fifth and sixth models, models E and F investigated factors related to choosing mixed use vs. single source use. Not many factors were found to be significant in the last two models but strategies to persuade multiple source uses can be developed from the results.
This study analyzed complex relationships between the Internet versus using a financial planner for saving and investment decisions. A number of significant differences have been found by analyzing data with the reliable statistical method. Next, limitations and recommendations for future research will be suggested.

6.4 Limitations and recommendations for future research

A limitation is that although the SCF cross-section data between 2001 and 2007 used to investigate factors related to choosing between the Internet and a financial planner, it does not allow final conclusions about the causal effects of using the Internet or using a financial planner. The SCF panel data set 2007-2009 would give a better insight into how a financial planner is influenced when an individual used the Internet in advance of meeting with a financial planner. The increase in number of Internet users between 2001 and 2007 shows that the Internet accommodates consumers’ demand for financial planning in a new way that is basically financial planner-independent. If the market for Internet-only users evolves in this manner, the Internet may well threaten the financial planning industry rather than support them. With support from an investigation in the medical services context, it is not probable that the Internet will supplant rather than complement the demands for a financial planner (Lee, 2008). However, the financial planning industry might need to increase access, improve the quality of advice, and control costs more effectively.

In 2007, 21% of respondents used the Internet and an overlapping group (20%) used a financial planner, with 10% using both. If there is a disparity in investment outcomes due to the choice of
information sources, financial information on the Internet cannot be a substitute for a financial planner’s service. Although there is mixed evidence for the value of having a written comprehensive financial plan from a financial planner, the benefits of using financial planners have shown in Guiso and Jappelli (2006) and Bluethgen et al. (2008). On the other hand, the consequences of using on-line financial information has been revealed in Dewally (2000) and Antweiler and Frank (2004). There exists concern for the quality of on-line financial advice, like there are concerns for the quality of financial planners’ advice. Future studies should investigate the results of using the Internet for saving and investment decision-making and compare them with the results of using a financial planner.
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doi:10.1016/S0268-4012(01)00038-X


doi:10.1016/S0378-4266(00)00139-4


doi:10.1006/obhd.2000.2926


APPENDIX A

SAS CODES FOR
MULTINOMIAL LOGIT ANALYSES
*** Table 5.9 Multinomial Logit Results;********************************************************************************

* Model A;
**PROC logistic** descending data=data.dissertation20012007;
class job(ref='2') age(ref='25') redcl(ref='1') understanding(ref='1') race(ref='1') hh4(ref='1') survey_year(ref='1')/param=ref;
weight wt5;
model scombined(ref='2') = workhr job childunder5 logfin age redcl understanding numgoal numacc numdep respmal race hh4 homeowner some survey_year/ SELECTION=NONE LINK=GLOGIT;
where year>2000;
title 'MULTINOMIAL LOGIT Results with Reference as FP Users';
run;

* Model B, C, D;
**PROC logistic** descending data=data.dissertation20012007;
class job(ref='2') age(ref='25') redcl(ref='1') understanding(ref='1') race(ref='1') hh4(ref='1') survey_year(ref='1')/param=ref;
weight wt5;
model scombined(ref='4') = workhr job childunder5 logfin age redcl understanding numgoal numacc numdep respmal race hh4 homeowner some survey_year/ SELECTION=NONE LINK=GLOGIT;
where year>2000;
title 'MULTINOMIAL LOGIT Results with Reference as Non-Users';
run;

* Model E, F;
**PROC logistic** descending data=data.dissertation20012007;
class job(ref='2') age(ref='25') redcl(ref='1') understanding(ref='1') race(ref='1') hh4(ref='1') survey_year(ref='1')/param=ref;
weight wt5;
model scombined(ref='3') = workhr job childunder5 logfin age redcl understanding numgoal numacc numdep respmal race hh4 homeowner some survey_year/ SELECTION=NONE LINK=GLOGIT;
where year>2000;
title 'MULTINOMIAL LOGIT Results with Reference as Mixed Users';
run;