An exploration of the experience of flow by users of online investment services

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An Exploration of the Experience of Flow by Users of Online Investment Services

by

Narayan Devanathan

A thesis submitted to the graduate faculty
in partial fulfillment of the requirements for the degree of

MASTER OF SCIENCE

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Program of Study Committee:
John Eighmey (Major Professor)
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Graduate College
Iowa State University

This is to certify that the Master's thesis of

Narayan Devanathan

has met the thesis requirements of Iowa State University

Signatures have been redacted for privacy
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This one’s for Amma, Appa, and Sekhar. Isn’t it high time I put down a dedication to you on record, even if I know all along that I am what I am because of you?

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CHAPTER 1. INTRODUCTION

The World Wide Web has been referred to as the great marketing superhighway, with superior business advantages, and additional drivers like changing socio-demographics supporting it. Retailing on the Web touched $28 billion at the end of 2000, according to the US Census Bureau. Traditional categories of products/services for which online retailing occurs have included books and art, cards and gifts, clothes and accessories, computers/electronics, food and wine, home, garden and auto, music and film, sporting goods, toys and hobbies.

While it appears that the “Build, and they will come” philosophy has succeeded to some extent, for the most part what makes for a compelling online consumer experience is still inscrutable. That creating a compelling online experience is imperative at least, is recognized by marketers and pundits alike. Hoffman, Novak, and Chatterjee (1995), Morr (1997), Schwartz (1996) and Tchong (1998) have essayed causal explanations about marketing strategies that will attract visitors to web sites, but very little is known about the building blocks of the compelling online experience.

Hoffman and Novak (1996) proposed that creating a commercially compelling Web site depends on facilitating a state of flow (Csikszentmihalyi, 1977) for its consumers. A few other researchers previous to Hoffman and Novak (e.g. Csikszentmihalyi, 1990; Ghani, Supnick and Rooney, 1991; Trevino and Webster, 1992; Webster, Trevino and Ryan, 1993) also endeavored to use the flow concept to describe similar experiences, but in more general human-computer interactions.
In lay terms, the concept of flow is probably best described by the person who first conceptualized it, Mihaly Csikszentmihalyi (1997), as is reflected in this quote:

“Imagine that you are skiing down a slope and your full attention is focused on the movements of your body, the position of the skis, the air whistling past your face, and the snow-shrouded trees running by. There is no room in your awareness for conflicts or contradictions; you know that a distracting thought or emotion might get you buried face down in the snow. The run is so perfect that you want it to last forever.”

“If skiing does not mean much to you, this complete immersion in an experience could occur while you are singing in a choir, dancing, playing bridge, or reading a good book. If you love your job, it could happen during a complicated surgical operation or a close business deal. It may occur in a social interaction, when talking with a good friend, or while playing with a baby...The metaphor of flow is one that many people have used to describe the sense of effortless action they feel in moments that stand out the best in their lives. Athletes refer to it as ‘being in the zone,’ religious mystics as being in ‘ecstasy,’ artists and musicians as ‘aesthetic rapture.’”

Hoffman and Novak later adapted the flow theory to the online environment and to study consumer navigation behavior in the overall context of the World Wide Web.

This study moves in the opposite direction and explores the flow concept among a specific set of consumers in a specific online context. At first glance, a study of this genre would appear to have three distinct areas, each meriting individual attention and focus for analysis and study—flow, online investing services, and users thereof online. While these are
the three areas of focus, this study embraces them by making one the theoretical foundation, the second the situational context and the third the specific subject of study of the flow concept.

Users of online investment services, among other categories of consumers online, are the focus of this study. Exploratory analysis of the presence or absence of flow opportunities and experiences, their antecedents, characteristics and consequences are studied in this specific context, with variations of the theoretical models put forth by Csikszentmihalyi (1977) and Hoffman and Novak (1999) being used to devise an analytical model that is relevant and specific to this study, and other similar endeavors in the future.

The significance of context-specific studies such as this one is an important one for both researchers and practitioners: the experience of flow in an activity, and in a specific environment, is usually a highly desirable goal, and an individual who experiences flow will probably want to replicate it (Ghani and Deshpande, 1994). While such autotelic—intrinsically rewarding—experiences have been studied in various other contexts as described by artists, athletes, composers, dancers and scientists (Csikszentmihalyi, 1975), the implications for creating such autotelic experiences in the relatively new consumer channel of the World Wide Web can be enormous.

At a broader level, this study explores the factors that make using the Web a compelling customer experience, and some of the key consumer behavior outcomes of this compelling experience. Understanding how to facilitate such compelling experiences—flow opportunities—will be an important objective for online marketers (such as online investment firms). Framing and working towards this objective has implications for the practitioner, in the realms of commercial Web site design, online advertising, market
segmentation, and Internet marketing strategies. At a conceptual and theoretical level, analyzing consumers’ experience of flow in specific online contexts (like online investment services) will contribute to scholars’ expanding knowledge-base of interactive consumer behavior in an arena that has already seen upturns and downtrends that would otherwise take much longer in more traditional fields of study.

Through data collected from an online and offline flow survey questionnaire, constructs from previous theoretical flow research were tested to fit the conceptual model developed in this research. This report begins with a brief overview of the online investment services sector and consumer experiences from trade and industry data. Following this is a description of the flow construct from previous research, and how this study adapts earlier models to the specific context of this research. Subsequently, research questions and hypotheses are formulated involving the relationship of the various components of the model in relation to the flow experience of online users of investment services.

Succeeding chapters outline the methodology for data collection and analysis, present the empirical analysis of the data, provide a discussion of the plausible conclusions that can be drawn from the study, and end with suggestions and scope for future research as well as limitations of the present study.

The Online Investment Services Sector

One of the service categories to have adapted easily to the now-old medium of the World Wide Web is the investment services sector today. At the broader level of the financial services industry, a whole range of products and services—from accountants, banks and
credit unions, credit and loans, insurance and investment bankers, to tax services are now available at home or work from one’s computer.

Online brokerage accounts have been growing exponentially from slightly more than three million in 1997 to over 20 million at the end of the first quarter of 2001 (The Wall Street Journal, 2001). Investors using online brokers for a typical $10,000 trade pay commissions averaging $26, representing a 77% savings over the $111 average commission charged by full-service brokers, and a 44% savings over the $46 average of discount brokers. (http://www.xceedintelligence.com)

Traditionally, financial services firms have been early adopters of information technology (IT) solutions. What has happened more recently is a shift in the focus of spending. Spending used to be more on basic transaction and back-office operations processing. Now, financial services firms are spending IT dollars to develop more sophisticated views of their customers and build more customer information into their product offerings.

Since the advent of online investing services (itself a relatively recent phenomenon that arrived barely seven years ago), and the more recent boom and subsequent bust of the stock market in the previous year, online investors’ mindsets have undergone a few changes. Converting paper-based information and traditional commerce processes to the Web used to be big challenges facing the industry. One strategy traditional "brick-and-mortar" companies adopted to get a slice of this pie was to expand their operations into the virtual world, rather than build separate entities. Another, different kind of strategy to grab a share of this lucrative market is akin to the one adopted by E*Trade, the second largest online brokerage firm behind Charles Schwab. Through a "convergence" strategy, this E-firm offers E-loans,
investment banking and research through E*Offering, becoming one of the largest "virtual financial institutions" or "digital financial media company," as E*Trade likes to dub itself (Timothy Long, 1999).

But with the conservatism that investors are showing today after the recent stock market downturn, and their increased inclination to diversify their portfolios and spread their risks, a reverse trend is emerging. In fact, online brokers are expanding their offerings, and firms that once focused on online research and calculators—to help investors do it themselves—are now offering advice and hand-holding from human brokers, over the phone and face to face (The Wall Street Journal, 2001).

In such a scenario, understanding what impels existing online investment services users to keep coming back for “optimal online investing experiences”—flow—and what components constitute the optimal experiences that will bring new customers to the virtual trading posts of a globalized E-economy is not an insignificant imperative for such firms that compete in this industry. Theoretical modeling of such attitudinal, behavioral, environmental, social and individual characteristics, both antecedent and consequent, of the flow experience will enable practitioners and researchers alike to scrutinize and benefit from the inner workings of this fast-paced driver of economic progress.
CHAPTER 2. THEORETICAL FOUNDATIONS

An analytical framework that integrates motivation, personality, and subjective experience to possibly explain online interactive behavior of Internet users is the flow theory proposed by Csikszentmihalyi (1977, 1988, 1990). Defined by Csikszentmihalyi as a psychological state in which the person feels simultaneously efficient, motivated, and happy, flow is the "process of optimal experience" preceded by a set of antecedent conditions necessary for its achievement, and a set of consequences that result from this experience. The concept of flow has been used to describe a perceived optimal experience when people are engaged in an activity with high involvement, concentration and enjoyment, and experience an intrinsic interest and the sense of time distortion. According to Csikszentmihalyi, the flow state is achieved when all levels of consciousness are in harmony with each other, and people become so absorbed in their activities that irrelevant thoughts and perceptions are screened out. Traditionally, flow has been used as a measure of human behavior in many areas including sports, music, work, and computer usage. Csikszentmihalyi also conceptualized flow as an optimal experience that stems from people’s perceptions of challenges and skills in given situations. At a given moment, individuals are aware of a certain number of opportunities challenging them while they assess how capable they are of coping with the challenges. Thus the achievement of an equilibrium state between skills and challenges, both of them at an above-threshold level (usually the average weekly level measured for a subject) is imperative for flow.
According to Csikszentmihalyi, the other important antecedent condition for flow occurring is the presence of focused attention on the part of the individual to the task at hand. The state of flow itself is characterized by a merger of action, awareness, concentration, and a sense of potential control. Such control perceptions, along with focused energy and activity increase the positive effects of the skill-challenge trade-off, and often result in increased learning, skill, and positive experience, apart from the effects that Csikszentmihalyi predicts, viz., loss of self-consciousness, time distortion and autotelic experiences (Moneta & Csikszentmihalyi, 1996).

**Existing Conceptual Definitions**

Various other researchers have attempted to extrapolate the concept of flow to different contexts and also to extend the theory’s applicability to different fields of study, modifying the definition of flow accordingly. Privette and Bundrick (1987) compared it to peak experience and peak performance. Mannell, Zuzanek, and Larson (1988) matched Csikszentmihalyi’s definition in their study. Massimini and Carli (1988) focused on the skill-challenge balance as did LeFevre (1988) too. A significant advance, specifically in relation to flow in the context of computer-mediated communicated was made by Hoffman and Novak (1996). They redefined flow (in computer-mediated environment) as “the state occurring during network navigation which is (1) characterized by a seamless sequence of responses facilitated by machine interactivity (2) intrinsically enjoyable (3) accompanied by a loss of self-consciousness, and (4) self-reinforcing. Increased learning, exploratory and participatory behaviors, positive subjective experiences, a perceived increased sense of control, and time
distortion are some positive consequences of flow. Other negative effects include longer completion times (for tasks), over-involvement, and nonproductive computer interactions.

Identifiable as most important to the entire process of flow are two key antecedent conditions. These are the perceived skill levels of and challenges to the user, and the level of balance achieved between them. A higher level of equilibrium between these two factors is accompanied by a narrowing focus of awareness to filter out irrelevant perceptions and thoughts, and to focus attention on the interaction with the machine (Hoffman & Novak, 1996).

The present study focuses on plotting some of these pre- and post-conditions to flow in a basic model that could be applicable to the analysis of consumers' behavioral experiences with online financial services. Specifically, the influence of balance between skill and challenge, and enjoyment and self-image perceptions of the user as predictors of the flow experience, and of the flow experience itself as a predictor of learning and addiction as its consequences are depicted in the proposed working model postulated in Appendix 1.

**Previous Constructs and Measurements of Flow**

Earlier studies by Hoffman & Novak (1996), and Farnall & Eighmey (1999) have proposed operationalization of the dimensions of control, attention, curiosity, and enjoyment as measures of flow. Farnall & Eighmey used scales initially developed to measure uses and gratifications dimensions of commercial Web sites to create an index of flow. This involved selection of eight items from totally 44 uses and gratifications scalar items that closely paralleled the four dimensions of flow as outlined in previous research. These eight items
were then factor analyzed to study their relation to the four flow dimensions mentioned above.

Hoffman & Novak built upon Csikszentmihalyi’s original operationalization of flow and included in its measurement the analysis of skill and challenge components, (in)congruence between skill and challenge thresholds, nine indicative characteristics of the flow state including (a) balance between perceived skills and perceived challenges (b) merging of action and awareness (c) presence of clear goals (d) presence of unambiguous feedback (e) concentration on task at hand (f) sense of control over oneself and the environment (g) loss of self-consciousness (h) transformation of time and (i) autotelic or enjoyable nature of the experience; in addition, they also recommended measurement of the consequences of flow as part of flow measurement.

The present study is based upon previous models that examine a limited subset of these components of flow in computer-mediated communication (e.g., Trevino & Webster 1992; Webster, Trevino & Ryan 1993; Ghani, Supnick & Rooney 1991; Ghani & Deshpande 1994).

Ghani, Supnick and Rooney (1991), in their study of computer-mediated interaction, found control and challenges predicted flow, which they operationalized as four items for enjoyment and four for concentration. Ghani and Desphande (1994), while studying flow among individuals using computers in the workplace, supplemented this in a later study by including skill and challenge as well, postulating with their model that skill leads to control which leads to flow, which is also affected by perceived challenge. This model also specifies that flow occurs when challenges and skills are both high. Trevino and Webster (1992), in their study of workers’ perceptions of flow during email and voice mail interactions, used an
operational definition of flow that consisted of four items measuring control, attention focus, curiosity and intrinsic interest. Their study omitted the use of challenge but included the measurement of skill. Csikszentmihalyi’s (1997) study defining flow in terms of congruence of skills and challenges also significantly contributes to the model developed in the present study.

For purposes of this study, flow is defined as a state of involvement in the activity of using online investment services, (1) preceded by an above-threshold congruence of skill in using online investment services on one hand and challenges posed by the activity and the environment on another hand (2) accompanied by enjoyment of the activity of using online investment services (3) influenced by beliefs and perceptions of self-image and (4) resulting in increased learning about the usage of online investment services on one hand, and addictive behavior with regard to the activity at hand, on another.

A slightly modified version of the traditional operationalization of flow, as defined by Csikszentmihalyi, and Hoffman & Novak, will be undertaken. This will involve measuring skill levels of users, and challenges posed by the activity of using online investment resources. The methodology adopted for this study builds upon the model in Figure 1, and is also detailed in a subsequent section.

While this study’s model builds upon previous models, it is different in many ways. For one, it has been specifically adapted to represent investor experience in the online environment relevant to investment services. Second, it focuses on examining in close-up items of enjoyment and self-image, the skill-challenge congruence and its relation to flow measurement, as also the flow outcomes of learning and addiction. Finally, by redefining the
original flow model in this fashion, this study provides a step toward developing context-specific models of flow.

Figure 1: Flow: Antecedents and Consequences in the Flow Experience of Online Investment Services Users

Theoretical Relationships Among Model Constructs and Hypotheses

Hypothesis 1: Skill-challenge congruence is a significant predictor of flow among users of online investment services.

Adapting from Ajzen's (1988) definition of skill, in the context of online investment services, skill can be seen as referring to the user's capacity for action during the online navigation process that is part of his or her consumption experience of the investment service on the Internet. Modifying Hoffman & Novak (1996) to the current context, challenges
specify the consumer’s opportunities for action during the usage of online investment services. It is also important to note that challenge is measured not as the challenge in using computers, hardware, software, or the Internet, but rather focuses on the concept of perceived challenges (Moneta & Csikszentmihalyi, 1996) relative to the activity or task at hand. Finally, as Csikszentmihalyi and Csikszentmihalyi (1988) suggest, only when consumers perceive that the usage of online investment services contains challenges congruent with their own skills can flow potentially occur. Ghani & Deshpande (1994) also posited that skill directly affects flow, as does perceived challenge, and that flow occurs when challenges and skills are both high. In a slight variation from the normal method of measuring indicators of flow, Trevino & Webster (1992) fit an alternative causal model in their study of workers’ perceptions of flow during email and voice mail interactions wherein skill was measured but not challenges. In their study, Ellis, Voelkl and Morris (1994) measured the skill-challenge congruence through a two-stage analysis comprising the formation of a single categorical variable based on the level of skill and challenge at the first stage, and the creation of a dummy variable using regression analysis to represent the balance of the perceived challenges and skills. The current hypothesis in this study is taken from most traditional definitions of flow that have appeared previously in the literature and suggests that high congruence of skill and challenge predicts flow in the context of usage of online investment services.

**Hypothesis 2:** Enjoyment (of the activity of using the Internet for investment services) is a significant predictor of flow among users of online investment services.
Hypothesis 3: Self-image perceptions of the users are a significant predictor of flow among users of online investment services.

Enjoyment, derived from a previous scalar model developed by Ghani & Deshpande (1994) and from Csikszentmihalyi (1990), and self-image perceptions obtained from Hoffman & Novak (1996), have been postulated in recent studies as influential antecedents of flow. It is possible to hypothesize, in fact, that these two factors are significant predictors of flow among users of online investment services. According to Csikszentmihalyi (1990), enjoyment is an important indicator of flow, and is a complex variable that includes one’s perception of enjoyment and interest. Enjoyment is also relating to an activity being autotelic or intrinsically rewarding. When pursuing an autotelic activity, the original goal of an extrinsic reward, if present, ceases to matter, and is replaced by intrinsic motivation. In their study of usage of the World Wide Web, Atkinson and Kydd (1997) measured enjoyment using a three-item scale (‘enjoyable,” “pleasant,” and “fun”) to measure the concepts of playfulness and motivation. In talking about self-image perceptions, Csikszentmihalyi (1988, p. 24)) has postulated that flow can occur when “all the contents of consciousness are in harmony with each other, and with the goals that define the person’s self”. Positive self-image perceptions during and from the activity of online investment services usage can affirm self-beliefs of the users and facilitate a state of harmony that is essential for flow to occur.

Hypothesis 4: Flow experienced by users of online investment services is a significant predictor of increased learning and addiction.
Hoffman, Novak & Yung (1999) and Hammond, McWilliam and Diaz (1997) studied the relationship between flow and exploratory behavior and found that a respondent’s skill at using the Web will increase more rapidly than their evaluation of the challenge of the Web (which may even decline over time), in other words, a decline in flow also. Related to the concept of exploratory behavior, this study posits a variable called learning predicting that flow will lead to learning. Other researchers (Carroll & Rosson, 1987; Katz, 1987) found that, for computer users, this activity takes the form of greater experimentation, browsing, and exploratory behaviors. Ghani (1991) posited that flow was significantly related to exploratory behavior in his study of a group of students in an introductory class. In addition, a relatively recent concept in the context of usage of the Internet in general—addiction—is tested for its dependent relationship on flow. The study posits that flow is a predictor of addiction. Definition and construct identification of this variable has been adapted from the Center for Online and Internet Addiction’s studies on Internet addiction (http://www.netaddiction.com/resources/internet_addiction_test.htm).
CHAPTER 3. METHODOLOGY

Sample

A total of 120 online and offline respondents were drawn from a convenience sample. Primary criteria for selection of the sample included at least one experience with online investment services (for information or investment or both). The sample included students, working professionals, homemakers, and had representation of both genders; participation was sought through e-mail invitations and personal invitations to a convenience sample that was not bounded by geographic restrictions.

250 questionnaires were sent out in all, both over e-mail and through personal contact, of which there were 129 responses. Of these, nine were treated as invalid responses due to large sections of incomplete responses. The remaining 120 formed the total sample size for the purpose of the study. The first communication that prospective respondents received was an invitation letter outlining the purpose of the study and a request for their participation through a survey. The first wave of questionnaires elicited 79 responses. Subsequently, there was a second wave of responses that yielded 50 filled questionnaires.

Questionnaire design

In the invitation to the survey, respondents were told directly that the study aims to assess their communication needs and to better understand investors’ usage of online investment resources. The survey questionnaire included four broad sections:

(1) Demographic and usage-related questions

(2) The second part comprises items to measure the presence/absence of factors contributing to flow, and the level of congruence of respondents’ skills and
challenges in the given environment. These include items like enjoyment and self-image perceptions.

(3) The third part includes items to measure the consequences of the experience of online users of investment services.

(4) The final part of the questionnaire elicits responses directly relating to the respondents’ flow experience(s) with regard to online investment services.

A draft of the questionnaire is provided in Appendix 2.

Construct Definition

While the focus of the model outlined in this study is on skill-challenge balance and flow, other items measured contribute toward construct and relationship definition of other antecedents, characteristics and consequences of flow.

While most of the items are operationalized on a five-point Likert scale, three measures rate users’ internet experience, investment experience and online investing experience.

The survey instrument was adapted mainly from a previous study by Novak, Hoffman and Yung (1999).

A five-item scale for enjoyment, a three-item scale for self-image, a six-item scale for skill, a two-item scale for challenge, a six-item scale for timelessness, a three-item scale for learning, and a six-item scale for addiction were initially selected and used in the survey. In addition, flow was directly measured in the study with a three-item scale following a narrative description of flow.
A factor analysis of the scalar items refined them in the following manner. Table 1 shows the factor analysis results from the items analyzed. Items that grouped together were included in the analysis. The items were loaded into SPSS for factor analysis and the results in this table represent relationships among interrelated variables from the analysis. Questions were set on a five-point Likert scale with choices of strongly disagree (1), somewhat disagree (2), neither agree nor disagree (3), somewhat agree (4), and strongly agree (5). Adapting from previous literature, skill, challenge, enjoyment, and self-image were the factors that were examined.

Factor 1 showed a high loading on the theme related to skill with a variance of 20.5% (Eigenvalue of 5.3). “I am extremely skilled at using the web for investing purposes,” “I need an experienced person nearby when I use the web for investing purposes” (negative item), “I know somewhat less about using the web for investing than most users” (negative item), “I need someone to tell me the best way to use the web for investing purposes” (negative item), and “I know where to go on the web for the investment information I want” had loadings of 0.790, 0.839, 0.869, 0.790 and 0.552 respectively for this factor.

Factor 2 loaded on the learning theme with a variance of 15.5% (Eigenvalue of 2.8). “Using the web for investing purposes makes me ready for bigger challenges” was the top item with a factor loading of 0.743.

Factor 3 loaded on the enjoyment theme with a variance of 15.2% (Eigenvalue of 2.05), with the top item being “Using the web for investing purposes is fun,” with a factor loading of 0.901.
Factor 4 loaded on the addiction theme with a variance of 12.7% (Eigenvalue of 1.7). “I find myself preoccupied with using the web for investing purposes when I am offline” was the top item with a factor loading of 0.868.

Factor 5 loaded on the challenge theme with a variance of 12.5% (Eigenvalue of 1.00), with two items, “Using the web for investing purposes does not challenge me” (negative item) and “Using the web for investing purposes challenges me to perform to the best of my ability,” with factor loadings of 0.770 and 0.841 respectively.

With an $\alpha$ of 0.833, enjoyment was reduced to a three-item scale. Self-image was measured on a single-item scale with an $\alpha$ of 0.952. The challenge items returned an $\alpha$ of 0.701, the skill scale was reduced to a five-item scale with an $\alpha$ of 0.878, learning returned a three-item scale with an $\alpha$ of 0.822, and addiction, on a three-item scale had an $\alpha$ of 0.749. Flow items returned an $\alpha$ of 0.905.

These measures were taken as the key constructs in the model plotted for this study.
Table 1. Factor Analysis: Antecedents and Consequences of Flow

<table>
<thead>
<tr>
<th>FACTORS AND LEADING ITEMS</th>
<th>Factor Loading</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Factor: Skill</strong>: 20.5% of variance; Eigenvalue: 5.3; N=120</td>
<td>0.830</td>
</tr>
<tr>
<td>Item: I am extremely skilled at using the web for investing purposes</td>
<td>0.888</td>
</tr>
<tr>
<td>Item: I know somewhat less about using the web for investing than most users (<em>negative</em>)</td>
<td>0.704</td>
</tr>
<tr>
<td>Item: I know where to go on the web for the investment information I need</td>
<td>0.825</td>
</tr>
<tr>
<td>Item: I need an experienced person nearby when I use the web for investing purposes (<em>negative</em>)</td>
<td>0.848</td>
</tr>
<tr>
<td>Item: I need someone to tell me the best way to use the web for investing purposes (<em>negative</em>)</td>
<td>0.700</td>
</tr>
<tr>
<td><strong>Factor: Learning</strong>: 15.5% of variance; Eigenvalue: 2.8; N=120</td>
<td>0.743</td>
</tr>
<tr>
<td>Item: Using the web for investing purposes stretches my capabilities</td>
<td>0.714</td>
</tr>
<tr>
<td>Item: Using the web for investing purposes makes me ready for bigger challenges</td>
<td>0.856</td>
</tr>
<tr>
<td>Item: I find myself ready to take bigger risks when I use the web for investing purposes</td>
<td>0.901</td>
</tr>
<tr>
<td><strong>Factor: Enjoyment</strong>: 15.2% of variance; Eigenvalue: 2.05; N=120</td>
<td>0.628</td>
</tr>
<tr>
<td>Item: Using the web for investing purposes is appealing</td>
<td>0.412</td>
</tr>
<tr>
<td>Item: Using the web for investing purposes is fun</td>
<td>0.868</td>
</tr>
<tr>
<td>Item: Using the web for investing purposes is fascinating</td>
<td>0.845</td>
</tr>
<tr>
<td><strong>Factor: Addiction</strong>: 12.7% of variance; Eigenvalue: 1.7; N=120</td>
<td>0.770</td>
</tr>
<tr>
<td>Item: I stay online longer than I intended when I use the web for investing purposes</td>
<td>0.841</td>
</tr>
<tr>
<td>Item: I find myself preoccupied with using the web for investing purposes when I am offline</td>
<td></td>
</tr>
<tr>
<td>Item: I find myself trying to cut down the time I spend online using the web for investing purposes</td>
<td>0.845</td>
</tr>
<tr>
<td><strong>Factor: Challenge</strong>: 12.5% of variance; Eigenvalue: 1.00; N=120</td>
<td>0.770</td>
</tr>
<tr>
<td>Item: Using the web for investing purposes does not challenge me (<em>negative</em>)</td>
<td>0.841</td>
</tr>
<tr>
<td>Item: Using the web for investing purposes challenges me to perform to the best of my ability</td>
<td></td>
</tr>
</tbody>
</table>


CHAPTER 4. RESULTS

This study was conceived with the objectives of studying skill-challenge congruence, enjoyment and self-image perceptions, learning and addictive behaviors of users of online investment services in the overall context of the World Wide Web. Basing itself on the theory of flow conceived by Csikszentmihalyi and later developed by various other researchers, this study surveyed users of online investment services regarding their usage behaviors and their experience with such services.

The basic analytical approach looked at the similarities and differences between the flow concepts that emerged in the study and those found in previous research. From an extensive study of previous research, it appeared appropriate to use the flow concept for this study.

Outline of Analytical Procedure

Primary theoretical concepts analyzed included enjoyment, self-image perceptions, skill, challenge (all of the preceding being grouped as antecedents or indicators of flow by previous research), flow, learning, and addiction (the last two being grouped as consequences of flow by previous research).

Regression equations were the statistical tools used to search for predictive relationships between the antecedents of flow and flow on one hand, and between flow and its consequences on another hand. The three hypotheses framed earlier in the study explore these relationships in detail.
Descriptive statistics were also used to characterize the new scales generated from previous flow and related literature. Items on the Likert scale ranged from 1 to 5, and care was taken to interpret some of the negatively worded items.

Survey Results

Of the 250 questionnaires distributed, 129 people submitted a completed survey. Of these, nine were found to be invalid due to large sections of missing data. Thus, the completion rate for this study is 48%. It is to be noted though that this survey used a convenience sample and not a true random sample.

The average respondent was relatively young, highly educated, and more likely to be a male than a female. Ninety-six of the respondents (80 percent) were relatively young, aged under 35 years, while the rest (20 percent) were above 35 years of age. Almost all the respondents were highly educated, having completed college or a graduate or professional degree. While 43.3 percent of the respondents had completed college, 45.0 percent of them had a graduate or professional degree. Of the 120 responses, 25.8 percent were from female respondents and 74.2 percent were from male respondents.

Online and Investment Activity

Table 2 shows when respondents first started using the web. For an overwhelming percentage of the respondents, it has been at least over two years since they first started using the Web, showing them to be well versed with the activity of going online. While 59.2 percent (71 respondents) have been online for over three years, 22.5 percent (27 respondents) have been using the web for at least over two years now.
Table 2. Respondents’ Experience in Using the Web

<table>
<thead>
<tr>
<th>Frequency</th>
<th>Percent</th>
<th>Valid Percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Valid</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>over 6 months and up to a year ago</td>
<td>9</td>
<td>7.5</td>
<td>7.5</td>
</tr>
<tr>
<td>over 1 year and up to 2 years ago</td>
<td>13</td>
<td>10.8</td>
<td>10.8</td>
</tr>
<tr>
<td>over 2 years and up to 3 years ago</td>
<td>27</td>
<td>22.5</td>
<td>22.5</td>
</tr>
<tr>
<td>over 3 years ago</td>
<td>71</td>
<td>59.2</td>
<td>59.2</td>
</tr>
<tr>
<td>Total</td>
<td>120</td>
<td>100.0</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Table 3 shows the estimated time per week of personal use of the Web by respondents. A sizeable percentage of them use the Web for over five hours a week. Among these are 50.0 percent of them who use it for 5-10 hours a week, and 22.5 percent who spend between 10 and 20 hours a week on the Web for personal use.

Table 4 shows that a majority of the respondents have been investing in the capital market for at least over 6 months. Of the 120 respondents, 19.2 percent have been doing so for 6 months to a year, 40.0 percent have been investing for over a year to 2 years, 15.0 percent have been investing for 2 to 3 years, while 15.8 percent have been investing for over 3 years now.

Table 5 shows the respondents’ preference about the method of investment. A majority of them (88.3 percent) use an agent or agency (online or offline) while 10.0 percent of the respondents do so on their own using online and offline resources.
Table 3. Respondents’ Estimated Time Per Week of Personal Use of the Web

<table>
<thead>
<tr>
<th>Frequency</th>
<th>Percent</th>
<th>Valid Percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>over 10 hours and up to 20 hours a week</td>
<td>27</td>
<td>22.5</td>
<td>22.5</td>
</tr>
<tr>
<td>over 5 and up to 10 hours a week</td>
<td>60</td>
<td>50.0</td>
<td>72.5</td>
</tr>
<tr>
<td>over 1 hour and up to 5 hours a week</td>
<td>33</td>
<td>27.5</td>
<td>100.0</td>
</tr>
<tr>
<td>Total</td>
<td>120</td>
<td>100.0</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Table 4. Respondents’ Investment Experience

<table>
<thead>
<tr>
<th>Frequency</th>
<th>Percent</th>
<th>Valid Percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>less than 6 months ago</td>
<td>12</td>
<td>10.0</td>
<td>10.0</td>
</tr>
<tr>
<td>over 6 months and up to a year ago</td>
<td>23</td>
<td>19.2</td>
<td>29.2</td>
</tr>
<tr>
<td>over 1 year and up to 2 years ago</td>
<td>48</td>
<td>40.0</td>
<td>69.2</td>
</tr>
<tr>
<td>over 2 years and up to 3 years ago</td>
<td>18</td>
<td>15.0</td>
<td>84.2</td>
</tr>
<tr>
<td>over 3 years ago</td>
<td>19</td>
<td>15.8</td>
<td>100.0</td>
</tr>
<tr>
<td>Total</td>
<td>120</td>
<td>100.0</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Table 6 shows that a majority of the respondents started using the Web for investing purposes recently. While 55 percent of them have been using the Web for investing purposes from 6 months to a year, 34.2 percent have been using it for less than 6 months.
Table 5. Respondents’ Preferred Method of Investment

<table>
<thead>
<tr>
<th>Method</th>
<th>Frequency</th>
<th>Percent</th>
<th>Valid Percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>use an agent or agency</td>
<td>106</td>
<td>88.3</td>
<td>88.3</td>
<td>88.3</td>
</tr>
<tr>
<td>Go through an investment club</td>
<td>2</td>
<td>1.7</td>
<td>1.7</td>
<td>90.0</td>
</tr>
<tr>
<td>do it on your own using online resources</td>
<td>8</td>
<td>6.7</td>
<td>6.7</td>
<td>96.7</td>
</tr>
<tr>
<td>do it on your own using online and offline</td>
<td>4</td>
<td>3.3</td>
<td>3.3</td>
<td>100.0</td>
</tr>
<tr>
<td>resources</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>120</td>
<td>100.0</td>
<td>100.0</td>
<td></td>
</tr>
</tbody>
</table>

Table 6. Respondents’ Experience Using the Web for Investing Purposes

<table>
<thead>
<tr>
<th>Experience</th>
<th>Frequency</th>
<th>Percent</th>
<th>Valid Percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>less than 6 months ago</td>
<td>41</td>
<td>34.2</td>
<td>34.2</td>
<td>34.2</td>
</tr>
<tr>
<td>over 6 months and up to a year ago</td>
<td>66</td>
<td>55.0</td>
<td>55.0</td>
<td>89.2</td>
</tr>
<tr>
<td>over 1 year and up to 2 years ago</td>
<td>9</td>
<td>7.5</td>
<td>7.5</td>
<td>96.7</td>
</tr>
<tr>
<td>over 3 years ago</td>
<td>4</td>
<td>3.3</td>
<td>3.3</td>
<td>100.0</td>
</tr>
<tr>
<td>Total</td>
<td>120</td>
<td>100.0</td>
<td>100.0</td>
<td></td>
</tr>
</tbody>
</table>

Table 7 shows the estimated time per week of use of the Web for investing purposes. About 98 percent use it for 5 hours or less per week for investing purposes, 44.2 percent use
it for 5 to 10 hours a week, while 46.7 percent use it for 1 to 5 hours a week, 7.5 percent use it less than one hour a week.

Table 7. Respondents' Estimated Time Per Week of Use of the Web for Investing Purposes

<table>
<thead>
<tr>
<th></th>
<th>Frequency</th>
<th>Percent</th>
<th>Valid Percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Valid</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>over 20 hours and up to 40</td>
<td>2</td>
<td>1.7</td>
<td>1.7</td>
<td>1.7</td>
</tr>
<tr>
<td>hours a week</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>over 5 and up to 10 hours a</td>
<td>53</td>
<td>44.2</td>
<td>44.2</td>
<td>45.8</td>
</tr>
<tr>
<td>week</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>over 1 hour and up to 5 hours</td>
<td>56</td>
<td>46.7</td>
<td>46.7</td>
<td>92.5</td>
</tr>
<tr>
<td>a week</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 hour a week and less</td>
<td>9</td>
<td>7.5</td>
<td>7.5</td>
<td>100.0</td>
</tr>
<tr>
<td>Total</td>
<td>120</td>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Tables 8 through 10 show the results for the self-reported measures of flow that were derived from three items registering responses to a textual definition of flow. Table 8 shows the responses to the question “Have you ever experienced flow?” Table 9 shows results for the question “How often have you experienced flow?” Table 10 shows results for the question “Most of the time I am on the Web for investing purposes I experience flow.” Over half (52.5 percent) of the respondents definitely reported recognizing the experience of flow while using the Web for investing purposes, while 40 percent of them are of the opinion that what they experienced could be flow. The remaining percentage (7.5 percent) was of the opinion that they had not experienced flow. Subsequently, a third (32.5 percent) of the respondents reported experiencing flow frequently (“very often”) while using the Web for investing purposes. To the question of whether they experienced flow most of the time that they used the Web for investing purposes, over half of the respondents (52.5 percent) reported that they did not.
Table 8: Frequencies: Flow Occurrences While Using the Web for Investing Purposes

<table>
<thead>
<tr>
<th>Frequency</th>
<th>Percent</th>
<th>Valid Percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Valid</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Definitely sure</td>
<td>2</td>
<td>1.7</td>
<td>1.7</td>
</tr>
<tr>
<td>I have not</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Somewhat sure</td>
<td>7</td>
<td>5.8</td>
<td>5.8</td>
</tr>
<tr>
<td>I have not</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not sure</td>
<td>48</td>
<td>40.0</td>
<td>40.0</td>
</tr>
<tr>
<td>Somewhat sure</td>
<td>47</td>
<td>39.2</td>
<td>39.2</td>
</tr>
<tr>
<td>I have</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Definitely sure</td>
<td>16</td>
<td>13.3</td>
<td>13.3</td>
</tr>
<tr>
<td>I have</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>120</td>
<td>100.0</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Table 9: Frequencies: Frequency of Flow Occurrences While Using the Web for Investing Purposes

<table>
<thead>
<tr>
<th>Frequency</th>
<th>Percent</th>
<th>Valid Percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Valid</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Never</td>
<td>2</td>
<td>1.7</td>
<td>1.7</td>
</tr>
<tr>
<td>Rarely</td>
<td>36</td>
<td>30.0</td>
<td>30.0</td>
</tr>
<tr>
<td>sometimes</td>
<td>43</td>
<td>35.8</td>
<td>35.8</td>
</tr>
<tr>
<td>Very often</td>
<td>39</td>
<td>32.5</td>
<td>32.5</td>
</tr>
<tr>
<td>Total</td>
<td>120</td>
<td>100.0</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Table 10: Frequencies: Whether Flow Occurs While Using the Web for Investing Purposes Most of the Time

<table>
<thead>
<tr>
<th>Frequency</th>
<th>Percent</th>
<th>Valid Percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Valid</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Strongly disagree</td>
<td>2</td>
<td>1.7</td>
<td>1.7</td>
</tr>
<tr>
<td>Somewhat disagree</td>
<td>61</td>
<td>50.8</td>
<td>50.8</td>
</tr>
<tr>
<td>Neither agree nor disagree</td>
<td>44</td>
<td>36.7</td>
<td>36.7</td>
</tr>
<tr>
<td>Somewhat agree</td>
<td>13</td>
<td>10.8</td>
<td>10.8</td>
</tr>
<tr>
<td>Total</td>
<td>120</td>
<td>100.0</td>
<td>100.0</td>
</tr>
</tbody>
</table>
The following sections focus on each of the three hypotheses.

**Hypothesis 1: Skill-challenge congruence is a significant predictor of flow among users of online investment services.**

To measure congruence between high level scores of skill and challenge, the cases were recoded into a binary variable for each of skill and challenge to obtain high and low levels of the two variables. A new variable called balance was then computed using the high scores of the skill and challenge scales to denote their congruence. Table 11 shows the results of the regression performed with the newly computed item balance (denoting skill-challenge congruence) as the predictor and flow (derived from combining the three flow self-measures) as the dependent variable. With a beta coefficient of 0.346 at a significance levels of .001 for balance, the results are significant and ratify the hypothesis that skill-challenge congruence is a significant predictor of flow.

**Hypothesis 2: Enjoyment (of the activity of using the Internet for investment services) is a significant predictor of flow among users of online investment services.**

**Hypothesis 3: Self-image perceptions of the users are a significant predictor of flow among users of online investment services.**

The enjoyment scale, computed by combining three items from the original questionnaire (“using the web for investing purposes is fun”, “using the web for investing purposes is appealing”, “using the web for investing purposes is fascinating”) and self-image (“using the web for investing purposes is part of my self-image”) were used to perform a regression analysis with flow as the dependent variable. Results, depicted in Table 11, show that both enjoyment and self-image perceptions are predictors of flow. With coefficients of
0.514 and 0.317 at .000 significance levels respectively, enjoyment and self-image are validated as important indicators of flow.

Table 11. Regression Analysis: Balance, Enjoyment and Self-Image as Predictors of Flow

<table>
<thead>
<tr>
<th>Model</th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>Std. Error</td>
</tr>
<tr>
<td>(Constant)</td>
<td>.129</td>
<td>.353</td>
</tr>
<tr>
<td>ENJOYMENT</td>
<td>.514</td>
<td>.098</td>
</tr>
<tr>
<td>SELF IMAGE</td>
<td>.317</td>
<td>.045</td>
</tr>
<tr>
<td>BALANCE</td>
<td>.346</td>
<td>.099</td>
</tr>
</tbody>
</table>

Predictors: (Constant), ENJOY, SIMAGE, BALANCE
Dependent Variable: FLOW

**Hypothesis 4: Flow experienced by users of online investment services is a significant predictor of increased learning and addiction.**

Addiction was recomputed by combining two items from the original survey (“I find myself preoccupied with using the web for investing purposes when I am offline”, “I find myself trying to cut down the time I spend online using the web for investing purposes”). Learning was recomputed by combining three items from the questionnaire (“using the web for investing purposes stretches my capabilities”, “using the web for investing purposes makes me ready for bigger challenges,” “I find myself ready to take bigger risks when I use the web for investing purposes”). These two dependent variables were then analyzed in a regression equation with flow as the independent variable. In both cases, the results, as
depicted in Tables 12 and 13, show that flow leads to increased learning, and has a negative relationship with addiction. With coefficients of 0.447 and (-)0.348 at the .000 significance levels, learning and addiction are seen as consequences that can be predicted by the occurrence of flow among users of online investment services.

Table 12. Regression analysis: Learning as a Consequence of Flow

<table>
<thead>
<tr>
<th>Model</th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
<th>B</th>
<th>Std. Error</th>
<th>Beta</th>
<th>t</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Constant)</td>
<td></td>
<td></td>
<td>2.078</td>
<td>.187</td>
<td>.447</td>
<td>11.133</td>
<td>.000</td>
</tr>
<tr>
<td>FLOW</td>
<td></td>
<td></td>
<td>.447</td>
<td>.060</td>
<td>.568</td>
<td>7.500</td>
<td>.000</td>
</tr>
</tbody>
</table>

Predictors: (Constant), FLOW
Dependent Variable: LEARN

Table 13. Regression analysis: Addiction as a Consequence of Flow

<table>
<thead>
<tr>
<th>Model</th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
<th>B</th>
<th>Std. Error</th>
<th>Beta</th>
<th>t</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Constant)</td>
<td></td>
<td></td>
<td>2.649</td>
<td>.251</td>
<td>.370</td>
<td>10.551</td>
<td>.000</td>
</tr>
<tr>
<td>FLOW</td>
<td></td>
<td></td>
<td>-.348</td>
<td>.080</td>
<td>-.370</td>
<td>-4.331</td>
<td>.000</td>
</tr>
</tbody>
</table>

Predictors: (Constant), FLOW
Dependent Variable: ADDICTION
CHAPTER 5: DISCUSSION

The following sections outline the implications of the study, its limitations and provide some suggestions for future research.

Implications

At a time when the economy is in turmoil, and E-commerce across the Internet and across the board is witnessing a major slowdown, the relevance of this study is worth questioning. Given that the Internet has evolved to be more than just another marketing or communication channel, there is an imperative to study and explore various contexts of consumer behavior vis-à-vis the Web today. Being neither a one-to-one nor a one-to-many communications model, but rather a many-to-many formulate, the interactive nature of consumer and communication behavior on the Web possesses unique characteristics. Seen in light of the uniqueness of this medium, this study gains perspective by furthering existing studies that look at motivational and experiential factors driving behavior on the Web generally, and in turn, localizing the experience in a specific context, in this case, that of users of online investment services. As Novak (1999) puts it, the Internet is not just a simulated ‘virtual world’, but indeed “an alternative real, yet computer-mediated environment, in which the online consumer experience becomes paramount.”

The results of the study demonstrate the various behaviors of users of online investment services, particularly in relation to the concept of flow. Flow-related concepts from previous research such as self-image, enjoyment, skill, challenge, and others formed the basis of the measurement of such behaviors in this study.
The flow construct revolves around the concept that given a sufficiently high level of congruence between a user’s skills at a certain task and the challenges posed by that task to the user, when accompanied by intrinsic enjoyment, intense concentration and a sense of timelessness, users experience the flow state (Csikszentmihalyi, 1990; Hoffman & Novak, 1996).

Moving ahead from Hoffman, Novak & Yung’s study (1999) that was a retrospective general evaluation of customer experience on the Web, the model results in the present look at the process of flow, its antecedents and consequences in a specific online situation, viz., online investment services. Regression analyses show some of the key findings of the study including balance (of high levels of skill and challenge) as a predictor of flow. This suggests that regardless of whether online consumers are engaged in a task-oriented activity (like using online investment services) or an experiential activity (like surfing the Web), skill-challenge congruence remains an important predictor of flow. In addition, antecedents such as enjoyment and self-image perceptions were also seen as significant predictors of flow. Among the consequences of flow some of which were previously postulated in earlier models, learning was seen to be significantly predicted by flow as also was addiction (to the activity or task at hand). Both these factors could potentially be harnessed by marketers to the benefit of their brand/service. Further research could indicate the relationship between increased learning and addiction to repeat behavior when such users are engaged in the activity of using online investment services, perhaps in the same environment and context as before.

All of these facets of this study could potentially contribute to a better understanding and exploration of factors that determine the creation of commercial online environments that
involve the consumers adequately for marketers to obtain their goals of extended visits to
their Web sites, repeat visits, monetary and commercial transactions, among other objectives.
Primarily then, the model evolved in this study could serve as an initial step towards such an
understanding.

Limitations

Limited means of methodological research in the past in the measurement of the flow
concept in general, and in the context of online users in particular was a contention for this
study from the beginning. In light of this, the nature of the sampling procedure adopted for
this study has its limitations. But the size of the sample provided for a diverse set of
respondents, and the results of the study indicate that these respondents did indeed meet the
criteria for research of this genre.

Again, due to the nature of the sampling procedure, the completion rate of 48% for
this study does not have a comparable yardstick to be measured against. While this study
revealed no significant differences in the behavioral experiences of respondents due to age,
education or gender, future studies on a larger scale might reveal interesting insights.

The focus of a study of this kind being the online world, future studies might also
consider looking at using the Web itself as a medium and instrument for data collection
(different from e-mail responses). One other consideration future research can incorporate is
of focusing more narrowly on studying the flow concept with relation to a few specific Web
sites that online investors favor.
Appendix 1: Flow: Antecedents and Consequences in the Flow Experience of Online Investment Services Users
APPENDIX 2: INVITATION AND INFORMATION LETTER
INFORMATION AND INVITATION LETTER

Project Title: An Investigation of the Experience of Flow by Users of Online Investment Services
Principal Investigator: Narayan Devanathan
Survey Description: In this survey questionnaire, you will be asked questions about how you use online resources for investment related purposes.
Approximate duration: 10-15 minutes

Hello, my name is Narayan Devanathan. I’m a graduate student at Iowa State University in Ames, Iowa. I’m conducting a study of how online information gathering resources (relating to investment services) and investment tools are helping people.

Many users of investment-related online resources are sharing thoughts, ideas and information, apart from accessing information and processing transactions online. Some are benefiting from it, some experience frustration and challenges. Some are even experiencing the state of “flow,” wherein they lose track of time, become completely involved with what they are doing and derive enjoyment from the task at hand. I am seeking your help to understand how to improve the quality and quantity of investment-related information online so that more people may experience “flow.”

If you’re not 18 years of age, you are not eligible to complete this study. The survey should take about 10-15 minutes. I hope you can help me complete my study.

Your participation is, of course, voluntary. Any information you give during your participation will be employed for research purposes only. Any information you give will be strictly confidential and will be reported in such a way that identification of individual participants will not be possible.

If you would like a summary of the results, please e-mail me at dna@iastate.edu

Thank you.
APPENDIX 3: SURVEY QUESTIONNAIRE
PROJECT FLOW
Attitude and perceptions towards online investing questionnaire

Part I
1. How much time would you estimate that you personally use the Web?
   a. Over 40 hours a week
   b. Over 20 and up to 40 hours a week
   c. Over 10 and up to 20 hours a week
   d. Over 5 and up to 10 hours a week
   e. Over 1 and up to 5 hours a week
   f. One hour a week and less

2. When did you start using the Web?
   a. Less than 6 months ago
   b. Over 6 months and up to a year ago
   c. Over 1 year and up to 2 years ago
   d. Over 2 years and up to 3 years ago
   e. Over 3 years ago

3. When did you start investing in the capital market?
   a. Less than 6 months ago
   b. Over 6 months and up to a year ago
   c. Over 1 year and up to 2 years ago
   d. Over 2 years and up to 3 years ago
   e. Over 3 years ago

4. What kind of investment options do you prefer to invest in?
   a. Stocks & Shares
   b. Bonds
   c. Mutual Funds
   d. I don’t invest at all

5. Do you keep track of market indexes:
   a. Daily
   b. 2-3 times a week
   c. Once a week
   d. Once a month
   e. Once in 2-3 months
   f. Rarely
6. Do you keep track of the following market indexes?
   a. Dow Jones Industrial Average □ Yes □ No
   b. NYSE Index □ Yes □ No
   c. NASDAQ □ Yes □ No
   d. S & P 500 □ Yes □ No

7. When you make investments, do you:
   a. use an agent or agency?
   b. go through an investment club?
   c. do it on your own using offline resources?
   d. do it on your own using online resources?
   e. do it on your own using online and offline resources?

8. When did you start using the Web for investing purposes?
   a. Less than 6 months ago
   b. Over 6 months and up to a year ago
   c. Over 1 year and up to 2 years ago
   d. Over 2 years and up to 3 years ago
   e. Over 3 years ago

9. How much time would you estimate that you use the Web for purposes relating to investing?
   a. Over 40 hours a week
   b. Over 20 and up to 40 hours a week
   c. Over 10 and up to 20 hours a week
   d. Over 5 and up to 10 hours a week
   e. Over 1 and up to 5 hours a week
   f. One hour a week and less

10. In the context of investing, do you use the Web:
    a. for information gathering/exchange
    b. for investing
    c. for both

10a. In a few lines, please tell us how you use online investment resources, and what you think of them.

________________________________________________________________________________________________________________________________________
________________________________________________________________________________________________________________________________________
________________________________________________________________________________________________________________________________________

11. I first used online resources for investing purposes after
    a. a friend recommended it to me
    b. a colleague recommended it to me
    c. I read an article about it
    d. I saw an ad about it
    e. my agent recommended it to me
    f. I researched this alternative offline
Part II
The following items present pairs of adjectives that describe ways you might feel when you use the web for purposes relating to investing.
For each pair, please circle the number that best describes how you feel.
If you feel that one of the two alternatives provides the best description of how you feel, then you should circle a number near that alternative. If you can’t decide between the alternatives, or if you feel neither describes how you feel, then select one of the middle numbers.
1=Strongly Disagree  2=Somewhat Disagree  3=Neither Agree Nor Disagree
4=Somewhat Agree  5=Strongly Agree

12. I find it fun to use the web for investment-related purposes
1 2 3 4 5
13. I find it appealing to use the web for investment-related purposes
1 2 3 4 5
14. I find it boring to use the web for investment-related purposes
1 2 3 4 5
15. I find it exciting to use the web for investment-related purposes
1 2 3 4 5
16. I find it fascinating to use the web for investment-related purposes
1 2 3 4 5
17. Using the web for investment-related purposes is part of my self-image
1 2 3 4 5
18. Using the web for investment-related purposes portrays an image of me to others
1 2 3 4 5
19. Using the web for investment-related purposes tells others about me
1 2 3 4 5
20. Using the web for investing does not challenge me
1 2 3 4 5
21. Using the web for investing challenges me to perform to the best of my ability
1 2 3 4 5
22. Using the web for investing provides a good test of my skills
1 2 3 4 5
23. I am extremely skilled at using the web for investing
1 2 3 4 5
24. I need an experienced person nearby when I use the web for investing
1 2 3 4 5
25. I know somewhat less about using the web for investing than most users
1 2 3 4 5
26. I need someone to tell me the best way to use the web for investing
1 2 3 4 5
27. I know where to go on the web for the investment information I need
1 2 3 4 5
28. I am in complete control when I use the web for investing
1 2 3 4 5
29. I experience a sense of effortless action when I use the web for investing
1 2 3 4 5
30. I feel a sense of autonomy when I use the web for investing
1 2 3 4 5
31. I feel playful when I use the web for investing
1 2 3 4 5
32. When I use the web for investing, my body is in the room, but my mind is inside the world created by the web sites I visit
1 2 3 4 5
33. When I use the web for investing, I tend to lose track of time
1 2 3 4 5
34. I feel spontaneous when I use the web for investing
1 2 3 4 5
35. I forget about my immediate surroundings when I use the web for investing
1 2 3 4 5
36. Time seems to go by very quickly when I use the web for investing
1 2 3 4 5
37. I am deeply engrossed when I am using the web for investing
1 2 3 4 5
38. I find that using the web for investing stretches my capabilities
1 2 3 4 5
39. I find that using the web for investing makes me ready for bigger challenges
40. I find myself ready to take bigger risks when I use the web for investing

Part III
The following items present pairs of adjectives which describe ways you might feel when you use the web for purposes relating to investing.
For each pair, please circle the number which best describes how you feel.
If you feel that one of the two alternatives provides the best description of how you feel, then you should circle a number near that alternative. If you can’t decide between the alternatives, or if you feel neither describes how you feel, then select one of the middle numbers.
1=Strongly Disagree 2=Somewhat Disagree 3=Neither Agree Nor Disagree 4=Somewhat Agree 5=Strongly Agree

41. I feel happy when I use the web for investment-related purposes
42. I feel pleased when I use the web for investment-related purposes
43. I feel satisfied when I use the web for investment-related purposes
44. I feel contented when I use the web for investment-related purposes
45. I feel in control when I use the web for investment-related purposes
46. I feel influenced when I use the web for investment-related purposes
47. I feel dominated when I use the web for investment-related purposes
48. I feel autonomous when I use the web for investment-related purposes
49. I stay online longer than I intended when I am using the web for investing
50. I find myself preoccupied with using the web for investing when I am offline
51. I find myself trying to cut down the amount of time I spend online using the web for investing and failing to do so
52. I feel depressed, moody or nervous when I am not using the web (for investing), but normal when I get back online again
53. My job performance or productivity often suffers because of my using the web for investing frequently.
54. I find myself choosing to spend more time online using the web for investing over going out with others.
55. We are interested in your opinions of the online channel for investment purposes vis-à-vis the conventional channel. Please provide a relative evaluation of the two types of channels on the following factors.

<table>
<thead>
<tr>
<th>Online channel Is better</th>
<th>Both are same</th>
<th>Conventional channel is better</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ease of use</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ease of access</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Security</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Personal control</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cost</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Returns [ ] [ ] [ ]
Risk of losing money [ ] [ ] [ ]
Degree of personalization [ ] [ ] [ ]
Information quality [ ] [ ] [ ]

Part IV: Flow while using the web for investing

The word “flow” is used to describe a state of mind sometimes experienced by people who are deeply involved in some event or activity. One example of flow is the case when a professional athlete is playing exceptionally well and achieves a state of mind where nothing else matters but the game; they are completely and totally immersed in it. The experience is not exclusive to athletes—many people report this state of mind when playing games, engaging in hobbies, or working.

Activities that lead to flow completely captivate a person for some period of time. When in flow, time may seem to stand still and nothing else seems to matter. Flow may not last for a long time on any particular occasion, but it may come and go over time. Flow has been described as an intrinsically enjoyable experience.

Thinking about your own use of the web for investing:

F1. Do you think you have ever experienced flow while using the web for investing?
   definitely sure I have not definitely sure I have
   [ ] [ ] [ ] [ ] [ ]

F2. In general, how frequently would you say you have experienced flow when you use the web for investing?
   never always
   [ ] [ ] [ ] [ ] [ ]

F3. Most of the time I use the web for investing I feel that I am in flow.
   strongly disagree strongly agree
   [ ] [ ] [ ] [ ] [ ]

Part V: Background information
56. Your gender:
   [ ] female [ ] male

57. Your age:
   [ ] Under 18 [ ] 18-24 [ ] 25-34 [ ] 35-44 [ ] 45-54

58. What is the highest level of education you have completed?
   [ ] less than high school [ ] high school graduate [ ] some college
   [ ] completed college [ ] some post-graduate [ ] graduate or professional degree

Thanks!


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