

# Personality Traits Hierarchy of Online Shoppers

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## Abstract

Over the past decade, B2C e-commerce has flourished and enjoyed a growth rate unrivaled by the traditional retail business. This study is meant to contribute to the underdeveloped area of traits study concerning online shoppers. Specifically, the hierarchical trait theory of the 3M Model is applied as the theoretical foundation of the research. SEM was employed to analyze the relationships between research constructs. Major findings include: (1) all five middle level traits, i.e. Innovativeness, Need for Cognition, Trust, Value Consciousness, and Buying Impulsiveness are related to Online Purchase Intention, (2) The Elemental Traits of Openness to Experience, Conscientiousness, Need for Arousal, and Need for Material are related to one or two middle level traits respectively. Moreover, this study empirically validated the Four-level Traits Hierarchical Model and demonstrated that traits can be the driving force behind human motivation and intention.

**Keywords:** Online purchase intention, Trait theory, Big five, 3M model

## 1. Introduction

There is little doubt that the Internet has experienced exponential growth in numbers of users in recent years. At the same time, consumer purchase decisions are increasingly made in an online environment and online shopping has become the fastest growing retailing channel. As forecasted by Forrester Research, US online retail sales grew 12.6% in 2010 to reach \$176.2 billion, with an expected 10% compound annual growth rate from 2010 to 2015 (Forrester Research, 2011). In Taiwan, according to a report released by Taiwan Network Information Center, 61% Web Users aged 12 and above have online shopping experience (TWNIC Report, 2011). Despite the impact of the “world financial tsunami” on the traditional retailing business, online sales still increased by more than 32% and 13% in Taiwan and the U.S. in 2008, respectively.

The fundamental importance of research on online consumer behavior is undeniable. As to the determinants of consumers' online behavior, however, demographics variables such as age, gender, income and more mutable personal factors like individual attitudes and personal perceptions have been frequently studied. During the years, the major focus of the studies was on investigating factors affecting intention and adoption of consumer online purchases, and the dominant theories employed were attitudinal theoretical models like the Theory of Reasoned Action (TRA) and its family theories, including the Technology Acceptance Model (TAM) and Theory of Planned Behavior (TPB). Personality variable like traits have been under-investigated (Cheung, Chan and Limayem, 2005).

Personality studies have long been an important research tool for examining human behavior. In the fields of marketing and consumer behavior, research work dealing with the personality dates from motivation research in the 1950s. One of the research streams of personality studies is trait theory (Kassarjian, 1971). Personality traits refer to broad behavioral consistencies in the conduct of people (Pervin, 1996) and form the structural basis of individual differences. Since personality traits are so decisive in human various kind of behavior (Mount et al. 2005), including undoubtedly online shopping motivations and behavior (Huang and Yang, 2010), and the research area dominated only by attitudinal models is not a sound basis for scientific progress, it is high time to investigate and identify various traits of online shoppers.

Though trait theory is seen as one of the mainstreams of motivation and personality studies in consumer research, it is also under some heavy criticism. Most empirical studies were either found too small amounts of variance in the tested “broad” variables like the Big Five (Kassarjian and Sheffert, 1991) or focused too narrowly on

domain-specific traits and led to innumerable concepts and scales (John and Srivastava, 1999). In order to avoid investigating only by piecemeal fashion and have a more holistic and comprehensive view of personality antecedents of online shoppers, this study adopted a hierarchical viewpoint of personality traits (Mowen, 2000; Mowen et al. 2007) and empirically tested the traits of different “level” concerning online shopping intention and their interrelationship.

This article is organized as follows. In the next section, we first review some of the major findings of trait hierarchy theories and online shoppers’ personality factors to build the theoretical background. Research model and hypotheses will be subsequently developed. Research methods and results will be then reported. Finally, we summarize our findings and discuss the practical and theoretical implications, as well as the limitations of this paper.

## **2. Theoretical Background**

### *2.1 Personality Traits Hierarchy*

A trait is a temporally stable, cross-situational individual difference. It is a characteristic of an individual that exerts pervasive influence on a broad range of trait-relevant responses (Ajzen, 2005) and determines our affective, behavioral, and cognitive style (Mount et al., 2005). The assumption that personality traits exist within a hierarchy based on their degree of abstractness was shared by a number of researchers (Allport, 1961; Lastovicka, 1982; Costa and McCrae, 1995; Mowen and Spear, 1999). Costa and McCrae (1995), in their research and development of the Revised NEO Personality Inventory (NEO-PI-R), began by looking for the broadest and most pervasive themes that recurred in personality measures. After the five “domains” were identified, specific cognitive, affective, and behavioral tendencies that might be grouped in many different ways under each domain were factor analyzed. Eventually, lower level traits “facets” corresponding to these groupings were identified. For example, agreeableness is comprised of six facets of trust, straightforwardness, altruism, compliance, modesty, and tender-mindedness.

Gorden Allport (1961), one of the founders of trait theories, has taken another viewpoint of personality hierarchy. He suggested that traits are classified by the degree to which they pervade behavior. At the highest level of pervasiveness are the traits known as cardinal dispositions, a trait dominates an individual’s entire life. At the next level are central dispositions and the last level of traits names secondary dispositions, which are dispositions operant only in limited setting or roles. Lastovicka (1982) imported this viewpoint and contended that lifestyle traits can be seen as secondary dispositions, because lifestyle research promises the explanatory power of personality with direct consumer behavior relevance. Thus, lifestyle traits are less abstract than standard personality traits.

Another empirical research based on the ideas of Allport’s hierarchical approach tradition was conducted by Mowen and Spears (1999). In their study of compulsive buying among college students, a three-level hierarchy of personality traits was proposed. That is, cardinal, central, and surface traits. The hierarchical approach to personality identified by Mowen and Spears assumed that central traits result from combined effects of multiple cardinal traits. In a similar manner, surface traits result in part from the combined effects of the central and cardinal traits.

Mowen (2000) subsequently proposed a four-level hierarchy of traits: the elemental, compound, situational, and surface traits. The major purpose of employing his Meta-Theoretic Model of Motivation and Personality (3M Model) is to identify predictive traits at each level in the personality hierarchy of certain consumer behavior as well as their causal relations (Mowen et al. 2007). According to Mowen (2000), the Big Five, i.e. openness to experience, conscientiousness, extraversion, agreeableness, and neuroticism, were seen as the most basic and broadest human traits. He further added material needs, need for arousal, and physical/body needs and formed his eight elemental traits, defined as “represent the broadest reference for performing programs of behavior” (Mowen, 2000; p. 21). Since the surface-level is chosen or developed as the immediate psychological factor which represents the enduring tendency of consumers behavior with respect to a product category or behavioral domain, in practice, compound traits and situational traits antecedent of specific surface traits are the focus of investigation. Moreover, which elemental traits predict compound and situational traits, and/or in turn predict surface traits, should be proposed and investigated.

### *2.2 Traits Affecting Online Purchase*

In the online context, several personality traits seem to be the major influencers of shopping behavior, in which need for cognition (NFC) and general innovativeness represent the “broader” compound traits, and trust, value consciousness, as well as buying impulsiveness are more situational specific. Moreover, online purchase

intention as a trait is the “immediate” disposition of online shopping behavior.

### 2.2.1 Need for Cognition

The Internet is an environment rich with information, and more cognitive effort is needed for sorting and comprehending the great amount of information at hand. The personal inclination or not to engage in elaborating cognitive activities or information processing depends on different internal motivations. Need for cognition was defined as an “individual’s tendency to engage in and enjoy effortful cognitive endeavors” (Cacioppo et al., 1984; p. 306). Persons scoring high on the NFC Scale intrinsically enjoy thinking, whereas persons scoring low on the scale tend to avoid effortful cognitive work. Research showed that high need for cognition individuals report greater enjoyment of complex tasks (Cacioppo et al., 1984) and need to structure relevant situations in meaningful, integrated ways (Cohen et al., 1955).

The easy and rapid interaction on the Web means that interactive information needs to be structured by the user, and this activity requires extensive cognitive effort (Ariely, 2000). Information processing increases as interactivity increases, an interactive website will result in an increase in information processing for low-NFC individuals (Sicilia et al., 2005). NFC has a strong effect on information seeking behavior on the Web (Das et al., 2003). Studies also show that consumers search the Web for product and price information lead to purchases on the Web (Donthu and Garcia, 1999).

### 2.2.2 Innovativeness

The concept of innovativeness is well known due to the diffusion of innovations paradigm, which provides explanations for when and how a new idea, practice, or technique is accepted, rejected, or reevaluated over time in a given society (Rogers, 1995). Midgley and Dowling (1978) viewed innovativeness as a personality trait construct possessed to a greater or lesser degree by all individuals. It is believed to be a continuous variable normally distributed within a population of consumers and generalizable across products.

Empirically, there are two conceptually distinct dimensions of innovativeness that are often measured—global innovativeness and context-specific innovativeness. The former is a personality dimension that cuts across the span of human behavior, while the latter refers to innovative attitudes and behaviors within a certain category (Flynn and Goldsmith, 1993). Global innovativeness is exactly what Midgley and Dowling (1978) referred to as a personality trait construct. Innovativeness with IT is negatively related to Internet anxiety (Thatcher et al., 2007). A few attempts have been made to investigate the influence of personal innovativeness in online consumer behavior. Positive relationships between personal innovativeness and online shopping (Citrin et al., 2000) and intention to shop online (Eastlick and Lotz, 1999; Limayem et al., 2000) were reported. Moreover, both general innovativeness and domain-specific internet innovativeness are predictive of online buying and buying intentions (Goldsmith, 2002).

### 2.2.3 Propensity to Trust

One of the most widely investigated topics of e-commerce is how trust influenced the willingness of consumers to purchase online. Trust is a willingness to be vulnerable to the actions of another person or people (Mayer et al., 1995). The lack of trust, on the other hand, is one of the main inhibitors of consumer participation in e-commerce with the online vendor whom they are engaging in business (e.g. Jarvenpaa and Tractinsky, 1999; Reichheld and Scheffer 2000).

Since trust was emerging as a potentially central aspect leading to IT acceptance and is especially needed in the case of gaining and retaining consumers of online vendors, the dimensionality of trust construct has been investigated by many e-commerce researchers (Gefen, 2002; McKnight and Chervany, 2002; Tan and Sutherland, 2004). Tan and Sutherland (2004) formed their multi-dimensional trust model with dispositional, institutional, and interpersonal trusts as antecedents of intention to trust in online purchase behavior. The disposition to trust can be looked upon as the necessary foundation in the formation of trust, as it is a prerequisite for the other dimensions of trust.

### 2.2.4 Value Consciousness

Inexpensiveness is one of the main reasons people shop online in Taiwan (TWNIC Report, 2011). Value consciousness therefore can be one of the determinant factors which drive consumers adopted e-commerce. Lichtenstein et al. (1990) defined value consciousness as “a concern for paying low prices, subject to some quality constraint” (p. 56). They further explained that though a consumer recognizes one brand as offering the highest ratio of quality to price, it may not necessarily be the best value for the particular consumer because that value may exceed his requirement. Therefore, what “subject to some quality constraint” means is that the highest value for certain consumer is viewed as the lowest priced product that meets his or her specific quality

requirement. Given the current state of economy, there was a negative relationship between the level of status consumption and value consciousness (Eastman and Eastman, 2011). In search of the predictors of bargain proneness, Mowen (2000) placed value consciousness at the situational trait level, because people express a disposition to be value conscious within the general context of purchasing goods and services.

#### 2.2.5 Buying Impulsiveness

Impulse purchase has been an important topic in consumer behavior research for over 60 years. However, the focus of interest has shifted from calculating which products were bought unplanned after the customers visited the store to a consumer's emotional or psychological states in acting impulsively (Rook and Hoch, 1985; Rook, 1987). From this psychological approach, Rook and Fisher (1995) conceptualized the impulsive buying tendency as a personality trait that varies among people and will influence their degree of actual impulse buying behavior. Compared to those who make a planned purchase, people who buy impulsively are more likely to be unreflective in their thinking, to be emotionally attracted to the object, and to desire immediate gratification (Hoch and Loewenstein, 1991; Thompson et al., 1990; Zhang et al., 2007).

Investigating the factors that underlie the tendency to buy impulsively, Youn and Faber (2000) found that three general personality factors, lack of control, stress reaction, and absorption, were related to impulse buying tendencies. The lack of control dimension demonstrates that a general characteristic of impulsivity may lead to acting impulsively in a specific consumption context. The association with stress reaction suggests that impulse buying may serve a mood regulating function for some people. Finally, the relationship between absorption and impulse buying suggests that some people may be particularly susceptible to environmental stimuli that can contribute to their impulsive behavior.

For an online buying context, Rook and Fisher (1995) speculated that impulse buying would be higher online compared to store shopping because the normal evaluations of consumers are less of an inhibited factor. An empirical study of online shopping has confirmed that consumer's impulsiveness has a positive effect on online purchase intention (Zhang et al., 2006).

#### 2.2.6 Online Purchase Intention

The theory of reasoned action (Fishbein and Ajzen, 1975) has been used extensively as a model of rational behavior in social psychology. It suggests that a person's intention to perform or not to perform a specific behavior is the immediate determinant of behavior. Intention has been conceptualized as the disposition most closely linked to a specific action tendency and defined as the amount of effort one is willing to exert to attain a goal (Ajzen, 1991). In the expectancy value tradition, intentions can be conceived of as goal states that are the result of a conscious process that takes time, requires some deliberation, and focuses on consequences (Loewenstein et al., 2001).

In the online shopping research, heavily employed attitudinal theoretical models of TRA, TPB, And TAM (Cheung et al., 2005), a substantial number of studies devoted to investigate determinants of online purchase intention and reported a satisfying variance accounted for actual shopping behavior (e.g. Korzaan, 2003; Zhang et al., 2006). Ajzen (2005) lamented the historical and largely artificial boundaries between personality and social psychology that have resulted in divergent research traditions that have tended to obscure the conceptual similarities of the trait and attitude concepts. From a personality point of view, online shopping intention can be seen as an enduring disposition of consumer to display certain behavior (i.e. purchase) in certain context (i.e. computer-mediated environment).

### 3. Research Model and Hypotheses

Mowen's (2000) 3M model is employed to investigate personality traits within each level predictive of online shopping intention. It is assumed that the effects of seven elemental traits proposed by Mowen's model (excluding physical/body needs) will be full mediated by compound and/or situational traits, which in turn, affect the dependent variable. For the hierarchical relations of compound, situational, and surface traits, on the other hand, a partial mediated model is proposed, i.e., compound traits will have direct as well as indirect (through situational traits) effects on the surface traits of online purchase intention.

Openness to experience is comprised of six facet traits: fantasy, aesthetics, feelings, actions, ideas, and values (Costa and McCrae, 1995). While values refer to the readiness to re-examine traditional social, religious, and political values, ideas can be defined as the tendency to intellectually curious and open to new ideas. Innovativeness was conceptualized by Midgley and Dowling (1978) as "the degree to which an individual is receptive to new ideas and makes innovative decisions" (p. 236). Vishwanath (2005) found that tolerance for novelty and tolerance for complexity significantly impacted innovativeness. It is reasonable to infer that an

innovative person will re-examine traditional values before receiving new ideas and be inclined to take action to try and adopt the innovation.

H<sub>1a</sub>: Openness to experience will be positively associated with innovativeness.

Extraversion is the degree to which a person is ambitious, active, assertive, gregarious, sociable, and excitement-seeking (Costa and McCrae, 1995). Extraverts tend to enjoy human interactions and to take pleasure in activities that involve large social gatherings. Introverts, in contrast, are more reserved, less outgoing, and less sociable. Rogers (1995) described that innovators have an obsession with “venturesomeness” and risk, which leads to a proclivity to adopt. This risk-taking propensity is consistent with the extravert disposition toward excitement-seeking and uncertainty preference. Therefore, a negative relationship between introversion and innovativeness should be found.

H<sub>1b</sub>: Introversion will be negatively associated with innovativeness.

Berenbaum (2002) studied the relationships between different types of pleasure-eliciting activities and dimensions of personality and found that, of three types of activities: social, intellectual, and basic needs, intellectual activities were positively associated with openness to experience. The trait need for cognition seeks to identify differences among individuals in their tendency to engage in and enjoy thinking (Cacioppo and Petty, 1982). Berenbaum’s (2002) research implicitly indicates the association between NFC and openness to experience.

H<sub>1c</sub>: Openness to experience will be positively associated with need for cognition.

Conscientiousness is comprised of competence, order, dutifulness, achievement, striving, self-discipline, and deliberation facet traits (Costa and McCrae, 1995). Deliberation is a term directly related to thinking, whereas order and self-discipline traits determine any fruitful cognitive effort. Moreover, the domain is characterized by such descriptors as purposeful, organized, and task-oriented. Because persons high in need for cognition are hypothesized to demonstrate a willingness to engage in effortful cognitive activity, a hypothetical relationship between need for cognition and conscientiousness seems to reflect the motivation to engage in concerted thought.

H<sub>1d</sub>: Conscientiousness will be positively associated with need for cognition.

Trust is one of the six facet trait belongs to agreeableness domain (Costa and McCrae, 1992). Tan and Sutherland (2004) contented that dispositional trust is antecedent of institutional trust and proposed a causal relationship of agreeableness and disposition to trust.

H<sub>2a</sub>: Agreeableness will be positively associated with propensity to trust.

Neuroticism is the basic trait that describes an enduring tendency to experience negative emotional states. Individuals who score high on neuroticism are more likely to experience such feelings as anxiety, anger, and depression (Costa and McCrae, 1995). They are often self-conscious, respond more poorly to environmental stress, and are more likely to interpret normal situations as threatening. Tan and Sutherland (2004) proposed that neuroticism is negatively related to trust. People score higher in neuroticism dimension are more inclined to show anxiety and vulnerability, implicating lack of trust to other people and environment, as well as unfamiliar situations they encountered.

H<sub>2b</sub>: Neuroticism will be negatively associated with propensity to trust.

Conscientiousness is comprised of competence, order, dutifulness, achievement, striving, self-discipline, and deliberation facet traits (Costa and McCrae, 1995). Moreover, the domain is characterized by such descriptors as purposeful, organized, and task-oriented. Individuals who score high on this dimension behave with deliberation and constrain from excessiveness. They have clear goals in mind and strive to achieve them with discipline. In the shopping situation, it can be reasoned that a conscientious person is prone to evaluate thoroughly what to “give” and what they will “get”. Therefore, deliberation on the value received can be motivated by the conscientiousness trait.

H<sub>2c</sub>: Conscientiousness will be positively associated with value consciousness.

The construct value consciousness was conceptualized within a general context of purchasing goods and services, implicating a disposition of restraint from excessive acquisition of material goods and status consumption (Eastman and Eastman, 2011). Need for material is the need to collect and possess material goods and identified as an elemental trait from evolutionary psychology perspective (Mowen, 2000; Mowen et al., 2007). Mowen (2000) found in two studies that a need for material was significantly negatively associated with value consciousness. Therefore, a negative relationship of these two constructs in online context should be expected.

H<sub>2d</sub>: Need for material will be negatively associated with value consciousness.

The consumer's mood or emotional state (Rook, 1987; Weinberg and Gottwald, 1982) is one of the factors that affect impulse buying behavior. Youn and Faber (2000) found that three general personality factors, lack of control, stress reaction, and absorption, were related to impulse buying tendencies. The association with stress reaction suggests that impulse buying may serve a mood regulating function for some people. The relationship between absorption and impulse buying suggests that some people may be particularly susceptible to environmental stimuli. The behavior of shoppers weak in will power (Hoch and Loewenstein, 1991) to outside stimuli may be due to the more neurotic, i.e. lower in mood, and higher arousal need of the individuals (Sun and Wu, 2011). Need for arousal was a construct conceptualized by Mowen (2000) as one of the elemental traits and defined as the desire for stimulation and excitement. The construct describes individual differences in the chronic need to increase the level of stimulation experienced by the person.

Therefore, positive relations between elemental traits neuroticism and need for arousal to buying impulsiveness are proposed.

H<sub>2e</sub>: Neuroticism will be positively associated with buying impulsiveness.

H<sub>2f</sub>: Need for arousal will be positively associated with buying impulsiveness.

Moreover, an empirical study concerning materialism and money spending attitudes showed that materialism is related to impulse buying (Sun and Wu, 2011). Those who had higher materialism scores are also high on impulse buying (Troisi et al., 2006). Materialism is a construct similar to need for material. Therefore, consumers higher in need for material disposition tend to act more impulsively in a buying condition.

H<sub>2g</sub>: Need for material will be positively associated with buying impulsiveness.

Trust and innovativeness were studied extensively as the determinants of Internet using, online shopping, and adoption of other new technology such as wireless mobile service (see e.g. Lu et al., 2008; Roy and Ghose, 2006), yet none has established any causal relationship between these two constructs. One possible explanation is that both trust and innovativeness were conceptualized as situational constructs. Innovativeness measures were confined in the domain-specific variables such as personal innovativeness of IT. Global innovativeness is seldom investigated.

It is reasonable to think that innovators, in order to complete the tasks or achieve a better performance, have more confidence and rely upon new ideas, practices, or objects. To adopt new information technology, they must assume that the system and its components are functioning normally, i.e., that they are trustworthy. Moreover, the elemental trait of openness to experience and extraversion are hypothesized to have positive relationships with trust (Tan and Sutherland, 2004). It is proposed that the effects of these two elemental traits on propensity to trust will be fully mediated by compound trait innovativeness

H<sub>3a</sub>: Innovativeness will be positively associated with propensity to trust.

The sheer volume of information available on the Web can make information-seeking a cognitively challenging task. Since persons high in a need for cognition are hypothesized to demonstrate a willingness to engage in effortful cognitive activity, research has shown a positive and significant relationship between need for cognition and Web usage (Das et al., 2003). However, a person high on impulse buying tendency, who shops spontaneously and unreflectively (Rook and Fisher, 1995), may lack the ability to thinking before purchasing. According to this line of reasoning, the less a person's need for cognition is, the greater their tendency to make impulsive shopping decisions should be, even in an online context. Therefore, a negative relation should be found between need for cognition and buying impulsiveness.

H<sub>3b</sub>: Need for cognition will be negatively associated with buying impulsiveness.

Innovative consumers, who are willing to try new types of technology, should be the ones most likely to engage in e-commerce is still a valid issue. Many empirical studies have found a positive relationship between domain-specific innovativeness and various online consumer behaviors (e.g. Eastlick and Lotz, 1999; Citrin et al., 2000; Limayem et al., 2000). This study, by contrast, will test the direct effect of general innovativeness to online shopping intention.

H<sub>4a</sub>: Innovativeness will be positively associated with online purchase intention.

The Web's role as a major communication and marketing media has been criticized as a major cause of information overload. The amount of information available online can make information-seeking a nightmare. Most research concerning need for cognition focuses on the effectiveness of different persuasive messages toward high- and low-NFC consumers, but what is seldom discussed is if persons who score low in NFC avoid

receiving any messages at all. Consumers are not a captive audience. High-NFC consumers may be inclined to shop online because of the information-rich environment, while low-NFC persons avoid engaging in such cognitive demanding shopping tasks. Therefore, a direct relationship between need for cognition and online purchase intention is proposed.

H<sub>4b</sub>: Need for cognition will be positively associated with online purchase intention.

A great amount of research has already shown that trust in Internet security and the integrity of online vendors posed a central issue in online consumer behavior (see e.g. Jarvenpaa and Tractinsky, 1999; Pavlou and Gefen, 2004; Reichheld and Scheffer, 2000). However, most researches focused on the trustworthiness of certain online vendors and treated trust as a multi-dimensional construct. This study will test the relationship at a “macro” level, i.e., the trust propensity in the online shopping environment as a whole. A positive relationship between propensity to trust and online shopping intention is proposed.

H<sub>5a</sub>: Propensity to trust will be positively associated with online purchase intention.

One of the most important elements of information that consumers seek on the Web is price information (Ratchford et al., 2003). Besides information from vendors about availability of products and services, consumers spent most of their time making price comparisons online (Bhatnagar and Ghose, 2004). Empirical research has shown that the Internet has lowered the purchase prices for consumers who used it as product information source (Zettelmeyer et al., 2006). Since price is one of the major impetuses for online purchases, consumers who are more conscious of value should turn to the Internet as the shopping channel providing the best deal. Value consciousness is proposed to be positively related to online shopping intention.

H<sub>5b</sub>: Value consciousness will be positively associated with online purchase intention.

In an online buying context, Rook and Fisher (1995) speculated that impulse buying would be higher online compared to in-store shopping because the normal evaluations of consumers are less of an inhibiting factor. An empirical study of online shopping showed that consumer’s impulsiveness has a positive effect on online purchase intention (Zhang et al., 2006). Therefore, the following hypothesis is proposed.

H<sub>5c</sub>: Buying impulsiveness will be positively associated with online purchase intention.

Figure 1 is the research model proposed by this study. The relations of constructs are drawn according to above-mentioned 18 hypotheses.

#### 4. Methodology

Survey research methodology was applied by this study for data collection and measurement process. Both online and paper-based surveys were conducted to gather the data. The questionnaire was posted on the [www.my3q.com](http://www.my3q.com), one of the leading academic online survey websites in Taiwan. At the same time, traditional paper-based questionnaires were disseminated through friends, colleagues, and fellow students, in order to diversify the sources of sample.

Measuring instruments were adapted from pre-validated measures in marketing and personality research. Items for measuring elemental traits (the Big Five, need for arousal, and need for material resources) were adapted from scales developed by Mowen (2000). Innovativeness scale was adapted from Hurt et al. (1977). The other compound trait need for cognition was measured by Mowen’s (2000) scale. Of the situational traits, propensity to trust was adopted from pavlou and Gefen (2004) and value conscientiousness from Lichtenstein et al. (1990), while buying impulsiveness was adopted from Weun et al. (1988). Items for measuring online purchase intention, the surface trait, was adopted from Limayem et al. (2000). Items were measured using a five-point Likert scale with anchors ranging from strongly disagreed (1) to strongly agreed (5).

By the cut-off date, a convenience sample with the sample size of 626 responses was collected. Among the 626 responses received, 8 were discarded as incomplete, with 618 usable responses. Of these 618 responses, 249 were from online survey and 369 from paper-based survey. Since there were no significant differences concerning independent variables measured between the two sources of samples, the samples were combined for further analysis.

The major characteristics of the 618 subjects are described in Table 1. They are gendered in female somewhat more than in male (Female, 60%), a little less than half is in the age ranging 20~30 (48.9%), higher educated (university, 59.7%), over 70% with monthly disposal income lower than NT\$ 20,000, and rather heavy users of the Web, 44% of surveyed used the Web 3 hrs. or more a day in average.

LISREL was used for data analysis. The data-analytic strategy and procedures adopted in this research follow the two-step approach recommendations of Anderson and Gerbing (1988). This study assessed reliability and

construct validity by conducting confirmation factor analysis. Then, the structure model was examined.

Reliability is examined using both the Cronbach's  $\alpha$  and the composite reliability (CR) value. As listed in Table 2, all of Cronbach's  $\alpha$  were greater than 0.70 (Nunnally, 1978), CR values were equals or greater than 0.78, well above the common acceptance levels of 0.60 (Bagozzi and Yi, 1988). Table 2 also showed that all AVE were greater than variance due to measurement error, i.e. exceeding .50, signifying desirable convergent validity of the measurement. Discriminant validity was evaluated for the measurement scales using criteria of t test of covariance matrix estimation. Most values were higher than 1.96, indicating discriminant validity of the measurement.

Moreover, Confirmatory Factor Analysis (CFA) was applied to evaluate validity of the model. The value of  $\chi^2$  is 1506.05, degrees of freedom (d.f.) is 662,  $\chi^2$ /d.f. equals 2.275, Comparative Fit Index (CFI) reaches 0.92, Root Mean Square Error of Approximation (RMSEA) is 0.045, and 90% Confidence Interval for RMSEA [0.042;0.048], Standardized Root Mean Square Residual (SRMR) 0.052. All indices fit nicely except GFI is 0.89 and AGFI a little lower than commonly cited criteria of 0.9 (Hair et al., 1998). However, as GFI higher 0.8 could be interpreted as reasonable fit (Doll et al., 1994; Jöreskog & Sörbom, 1996), the proposed model provided an adequate fit.

As to the structural model, the model goodness-of-fit statistics is given in Table 3. Overall, based on the fit measures, the proposed model provides a good fit to the data. The value of  $WLS\chi^2$  was 1663.76, d.f. was 663,  $\chi^2$ /d.f. equaled 2.509, CFI reached 0.92, RMSEA was 0.049, and 90% Confidence Interval for RMSEA [0.046;0.052], SRMR 0.075. GFI was 0.88 and AGFI 0.86. The value of the RMSEA statistics was 0.049, indicating that the proposed structural equation model is a good approximation to the one in the population. Other fit indices like SRMR, GFI, and AGFI provided additional support for the inference that the model is acceptable. For SRMR, whose lower bound is 0, lower values (i.e. close to 0) are inferred as good fit (Kelloway, 1998).

Thirteen of the eighteen structural parameters that describe the relationship between the factors were statistically significant (see Figure 2).

## 5. Results

As we can see on Figure 2, the relationship of the elemental trait openness to experience and compound trait innovativeness is significant at .001 level.  $H_{1a}$  is supported. Openness to experience and conscientiousness are also related to need for cognition, both significant at .001 level.  $H_{1c}$  and  $H_{1d}$  are supported. Three elemental traits are associated with two situational traits. Conscientiousness related to value consciousness at .001 level; need for arousal and need for material related buying impulsiveness at the level of 0.5 and .001 respectively.  $H_{2c}$ ,  $H_{2f}$ , and  $H_{2g}$  are supported.

The significantly negative relation, at .001 level, of need for cognition and buying impulsiveness and some positively relation of NFC and propensity to trust at .05 level, provides the evidences for the supported  $H_{3a}$  and  $H_{3b}$ . Both compound trait innovativeness and NFC are related to the surface trait online purchase intention at .01 level.  $H_{4a}$  and  $H_{4b}$  are all supported. Situational traits propensity to trust, value consciousness and buying impulsiveness are all associated with online purchase intention, significant at .001 level.  $H_{5a}$ ,  $H_{5b}$ ,  $H_{5c}$  are supported.

In summary, 13 of 18 hypotheses tested in the model are supported (see Table 4).

As for the variances extracted by the structural equations (see Figure 2), compound traits of innovativeness and need for cognition and situational traits trust propensity, value consciousness, and buying impulsiveness jointly explain 31% of the variation in online purchase intention; innovativeness accounts for 1% of the variance in propensity to trust, conscientiousness for 9% in value consciousness, and need for cognition, need for arousal, and need for material jointly account for 16% of the variance in buying impulsiveness; 34% of the variation in innovativeness is captured by openness to experience alone and 19% of the variation in need for cognition can be explained by openness to experience and conscientiousness.

## 6. Discussion

The primary finding of this research is that a set of important related trait factors tend to be associated with a consumer's intention to participate in e-commerce activities. Of the situational traits, this study confirmed that propensity to trust, buying impulsiveness, and value consciousness are all strong predictors of the willingness of consumers to engage in online purchase. Even after the Web rapidly evolved and took center stage in many people's communication and working activities, the finding that a disposition to trust is still an indispensable factor that determines the intention to purchase online was announced a decade ago (Jarvenpaa and Tractinsky,



1999; Reichheld and Scheffer, 2000). The impulse buying tendency has been thoroughly studied in the traditional shopping context (Rook and Fisher, 1995). This study confirmed that impulse buying is also strongly related to shopping intention in an online environment (Sun and Wu, 2011). Another trait construct that originated from traditional retail marketing, value consciousness, was first tested in e-commerce and proved to have good predictive power. The rationale seems straightforward. It is widely accepted that electronic marketplaces have reduced consumers' search costs (Alba et al., 1999) and a Nielsen survey revealed that consumers' primary reason for visiting websites is to search for product information (as cited by Bhatnagar and Ghose, 2004). Therefore, value conscious consumers are easily attracted by this advantage and inclined to shop online.

Both hypothesized relations of compound traits to situational traits are supported. Innovativeness is a predictor of propensity to trust and need for cognition is negatively related to buying impulsiveness. Trust and innovativeness have been studied extensively as determinants of Internet use, online shopping, and adoption of other new technologies (see e.g. Lu et al., 2008; Roy and Ghose, 2006), yet seldom is the interrelationship of these two constructs discussed. This study demonstrates that more innovative people do seem more disposed to trust. Moreover, impulsive shoppers are those who score low in NFC. The evidence provided by this study is indisputable. More impulsive consumers tend to be susceptible to product stimuli (Youn and Faber, 2000) and unable or unwillingly to engage in concerted processing of product information.

As to the relationship between situational traits and basic elemental traits, the need for arousal and need for material were both predictive of buying impulsiveness, but neuroticism was not. This study confirmed the materialistic dimension of the impulse buyer, who had higher materialism scores as well as higher scores on impulse buying (Troisi et al., 2006). The different results for neuroticism and need for arousal are harder to explain. As previously stated, it is hypothesized that the need for arousal influenced buying impulsiveness through the mechanism of mood regulating function, and that more neurotic persons are more "moody" and need outside stimuli to reinstate an inner balance. Moreover, impulsiveness is one of the facet traits that compose neuroticism (Costa and McCrae, 1995). It may be that impulsiveness and buying impulse use similar terminology but tap different dispositional dimensions, and that consumers who more easily become emotionally attached to products can be motivated by sensation seeking rather mood regulating.

Propensity to trust is neither related to neuroticism nor agreeableness. Again, the result contradicted the facet traits paradigm proposed by Costa and McCrae (1995), in which trust is one of the six facets of agreeableness. One possible explanation is that, as Mowen (2000) "contracted" the Big Five to unidimensional constructs and subsequently developed scales, some facets, i.e. sub-traits, are lost. Trust, though strongly predictive of online purchasing behavior, is the only one of the situational traits unrelated to any of the elemental traits. This seems conceptually and theoretically unacceptable. Further research is needed to find the reason for this discrepancy.

Value consciousness is negatively related to the need for material as this study proposed, but is statistically insignificant. Therefore, value conscious consumers are not necessarily shy of materialism. Rather, they are concerned more about the value acquired in the market exchange. This disposition is strongly related to conscientiousness. Conscientiousness, referring to an organized, orderly, and efficient carrying out of tasks, is a personality trait that has been verified by many meta-analyses as the sole predictor of numerous outcomes at work in I/O psychology. This study proved that conscientiousness can be also a useful trait for predicting the tendency to carry out purchase tasks efficiently, which is mediated by value consciousness as well as need for cognition.

Except conscientiousness, openness to experience is also an elemental trait antecedent to the need for cognition. Openness to experience was first labeled "culture" by Norman (1963) and is seen by many psychologists as a manifestation of the intellectual component of personality. It is of no surprise that a strong relationship was found. Moreover, this study tested and confirmed a positively direct effect of NFC on online shopping, the first study to import the construct to investigate consumers' Web behavior.

Innovativeness is also strongly related to openness to experience and has a direct effect on online purchase intention. The latter can be interpreted as a reconfirmation of the vital role that innovativeness plays on Web behavior, even during a period when information technology is no longer a novelty.

The practical implication of this research is to identify different segments of online shoppers based upon the network of traits linked to the surface dispositions. The Web heralds many new marketing opportunities. From the perspective of consumers, the motivation to turn to the new technology may be quite different. Three market segments thus emerged. The primary use of the Internet (other than e-mail) is for information retrieval (France et al., 2002) and online shoppers appear to be attracted to the ease with which they can find information on the Internet, including detailed product information and a survey of the wide variety of choices on offer (Ward and

Lee, 2000). For more conscientiousness consumers who are high in NFC and value consciousness, convenient information search makes bargain hunting easier. This may not true for more impulsive buyers who are low in NFC and have a disposition for material need. The variety of product choices and the ease of closing deals with just a few clicks can be the motivation for them to participate in e-commerce. The third market segment is comprised of consumers who are more open-minded and innovative, and/or have more confidence in online transaction. They are potential customers for high-priced and inventive products offered by online vendors.

### 7. Limitations and Future Research

It is widely accepted that the self-selection issue posed a problem in the questionnaire survey process and is a special methodological concern. It is especially true when we conduct any consumer behavior research because there is no general online shoppers' "population" can be identified.

The results of this study should be interpreted and accepted with caution. As previously stated, it should be noted that constructs like the Big Five were measured using Mowen's unidimensional scales instead of common Goldberg's adjectives (Goldberg, 1992) or NEO PI-R items (Costa and McCrae, 1992). The domain of construct tapped is not identical.

Future studies may investigate potential factors besides the constructs proposed by this study that may be significant in predicting online purchase intention. Variety seeking, classified as the tendency to make hedonic purchases associated with feeling and psychosocial motivations (Baumgartner, 2002), may be a future situational trait candidate. Gender differences posed another interesting research question. Is there any difference in personality concerning online shopping behavior between female and male? Furthermore, what are the major differences between shoppers and non-shoppers in different trait levels? All these comparisons are worthy of investigation and can be with fruitful results.

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Table 1. Demographic Profile of the Sample

Variable	Categories	Number	Percentage %
Daily Web Usage	Less than 1 hr.	69	11.2
	1~2	147	23.8
	2~3	128	20.7
	3~4	65	10.5
	More than 4 hrs.	209	33.8
Gender	Female	371	60.0
	Male	247	40.0
Age	19-	52	8.4
	20~30	302	48.9
	31~40	158	25.6
	41~50	68	11.0
	51+	38	6.1
Education	Middle School or less	3	0.5
	High School	50	8.1
	Professional School	138	22.3
	University	369	59.7
	Graduate School	58	9.4
Disposal Income (NT \$)	5,000 or less	149	24.1
	5,000~10,000	167	27.0
	10,000~20,000	170	27.5
	20,000~30,000	60	9.7
	30,000~40,000	32	5.2
	40,000~50,000	27	4.4
	50,000 or more	13	2.1

Table 2. Construct Values of Cronbach's  $\alpha$ , CR, and AVE

Construct	Cronbach's $\alpha$	CR	AVE
Openness to Experience	0.808	0.81	0.59
Agreeableness	0.794	0.80	0.58
Introversion	0.856	0.86	0.68
Conscientiousness	0.804	0.81	0.58
Neuroticism	0.872	0.86	0.67
Need for Arousal	0.826	0.84	0.56
Need for Material	0.769	0.79	0.57
Innovativeness	0.817	0.84	0.64
Need for Cognition	0.791	0.79	0.56
propensity to trust	0.937	0.94	0.84
Value Consciousness	0.836	0.84	0.64
Buying impulsiveness	0.777	0.78	0.55
Intention to purchase online	0.944	0.94	0.85

CR: Composite Reliability / AVE: Average Variance Extracted

Table 3. Model Fit Indices Summary

$\chi^2$	1663.76
d.f.	663
$\chi^2/d.f.$	2.509
RMSEA	0.049
90% Confidence Interval for RMSEA	[0.046 ; 0.052]
SRMR	0.075
CFI	0.92
GFI	0.88
AGFI	0.86

Table 4. Hypotheses Testing Results

	Relationship of constructs			Result
H <sub>1a</sub>	Openness to Experience	→	Innovativeness	Supported
H <sub>1b</sub>	Introversion	→	Innovativeness	Not supported
H <sub>1c</sub>	Openness to Experience	→	Need for Cognition	Supported
H <sub>1d</sub>	Conscientiousness	→	Need for Cognition	Supported
H <sub>2a</sub>	Agreeableness	→	Propensity to Trust	Not supported
H <sub>2b</sub>	Neuroticism	→	Propensity to Trust	Not supported
H <sub>2c</sub>	Conscientiousness	→	Value Consciousness	Supported
H <sub>2d</sub>	Need for Material	→	Value Consciousness	Not supported
H <sub>2e</sub>	Neuroticism	→	Buying Impulsiveness	Not supported
H <sub>2f</sub>	Need for Arousal	→	Buying Impulsiveness	Supported
H <sub>2g</sub>	Need for Material	→	Buying Impulsiveness	Supported
H <sub>3a</sub>	Innovativeness	→	Propensity to Trust	Supported
H <sub>3b</sub>	Need for Cognition	→	Buying Impulsiveness	Supported
H <sub>4a</sub>	Innovativeness	→	Online Purchase Intention	Supported
H <sub>4b</sub>	Need for Cognition	→	Online Purchase Intention	Supported
H <sub>5a</sub>	Propensity to Trust	→	Online Purchase Intention	Supported
H <sub>5b</sub>	Value Consciousness	→	Online Purchase Intention	Supported
H <sub>5c</sub>	Buying Impulsiveness	→	Online Purchase Intention	Supported

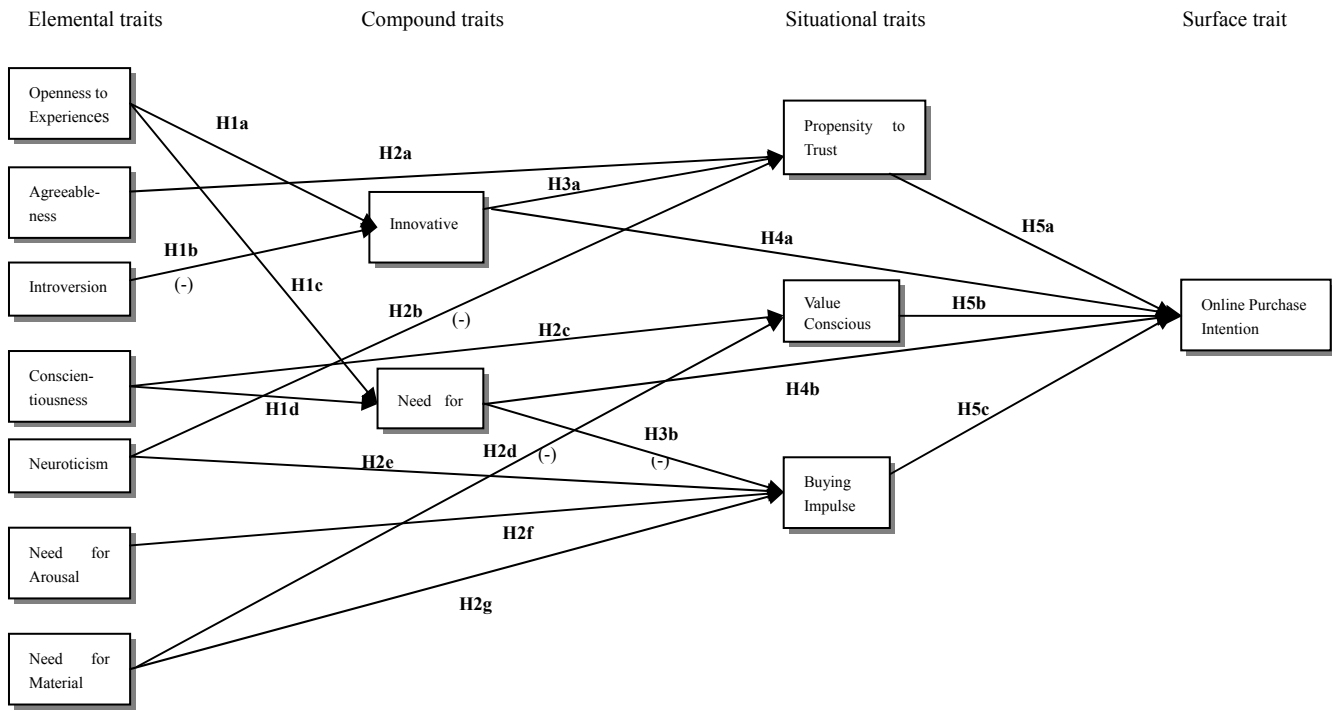


Figure 1. Research Model of This Study



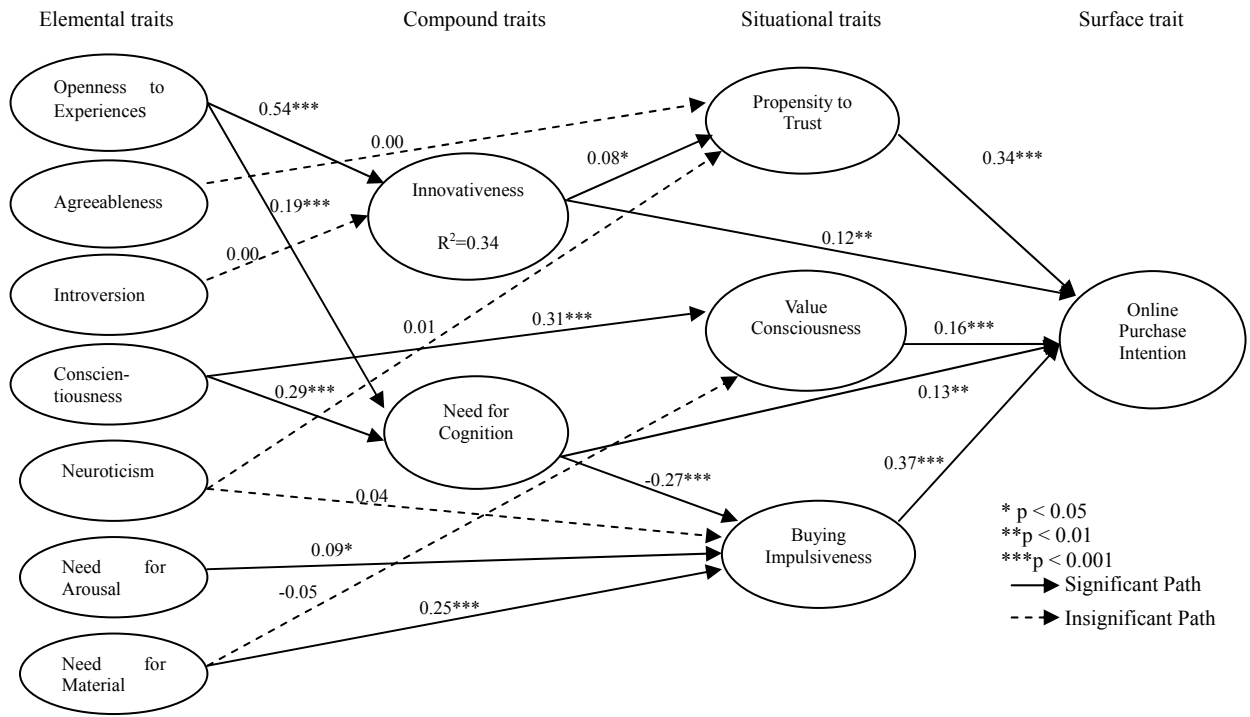


Figure 2. Results of Structural Modeling Analysis