การใช้ Control Theory เพื่ออธิบายว่าเหตุใดผู้บริโภคมีอัตราการใช้อินเตอร์เนตแตกต่างกัน: การศึกษาเชิงประจักษ์ กลุ่มผู้บริโภคในกรุงเทพมหานคร

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Received: August 13, 2020
Revised: February 18, 2021
Accepted: February 18, 2021

บทคัดย่อ

การวิจัยในครั้งนี้มีจุดประสงค์ที่จะศึกษาถึงสาเหตุ ผู้บริโภคที่เห็นประโยชน์ของการใช้เทคโนโลยีจะพยายามเรียนรู้ที่จะใช้ อินเตอร์เนตบ่อยๆเพื่อช่วยในการดำเนินชีวิตประจำวันง่ายขึ้น การวิจัยใช้ Control Theory เพื่ออธิบายอัตราการใช้อินเตอร์เนตที่แตกต่างกัน ซึ่งทฤษฎีนี้เสนอว่าผู้บริโภคเมื่อมีอายุมากขึ้นจะมีความสามารถลดลงในการเอาชนะสิ่งต่างๆตามปัจจัยสภาพแวดล้อมในการดำเนินชีวิต ระเบียบวิธีวิจัยจะใช้วิธี สหสัมพันธ์บางส่วน และ สหสัมพันธ์ระหว่างกลุ่มด้วยวิธี Fisher's Z transformations ข้อมูลจากประเทศไทยสนับสนุนสมมุติฐานในงานวิจัยนี้ ผลการวิจัยพบว่า การที่ผู้บริโภคเลือกที่จะจัดการกับปัญหาต่างๆที่มีเมื่อใช้อินเตอร์เนต โดยการเลือกที่จะปรับทัศนคติตนเอง แบบ Selective Primary Control ในระดับสูงจะมีอัตราการใช้อินเตอร์เนตที่มากกว่า กลุ่มผู้ใช้อินเตอร์เนตที่มีทัศนคติ แบบ Selective Primary Control ในระดับต่ำ นอกจากนี้ผลการวิจัยพบว่า การที่ผู้บริโภคเลือกที่จะปรับทัศนคติตนเอง แบบ Compensatory Secondary Control ในระดับสูง จะมีอัตราการใช้อินเตอร์เนตที่น้อยกว่า กลุ่มผู้ใช้อินเตอร์เนตที่มีทัศนคติแบบ Compensatory Secondary Control ในระดับต่ำ แนวทางการปฏิบัติจากผลงานวิจัยโดยภาคธุรกิจที่อยากปรับพฤติกรรมการใช้อินเตอร์เนต ควรพยายามทำให้ผู้ใช้อินเตอร์เนตที่เพิ่มความผูกพันต่อเป้าหมายในการใช้อินเตอร์เนต และควรพยายามทำให้กลุ่มผู้บริโภคลดการวางเฉยต่อเป้าหมายในการใช้อินเตอร์เนต

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Using Control Theory to Explain Differences in Internet Usage: An empirical study of Thai consumers in Bangkok

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Received: August 13, 2020
Revised: February 18, 2021
Accepted: February 18, 2021

Abstract

This paper investigates the effect of different strategies consumers employ when they use the Internet to accomplish goals in life. Many individuals who believe that technologies can help them solve problems and accomplish goals in their daily lives invest time and effort into using the Internet.It explores differences in the context of control theory, which explains behaviour on the basis of strategies consumers use to control outcomes in their lives. We suggest that control theory is appropriate for exploring the factors that can explain individuals response to the Internet as this theory focuses on the individual's goal and regulatory behaviors across the life-span. The survey utilises self-administered questionnaires via convenience sampling among Thai consumers in Bangkok, Thailand. We use partial correlations to test the relationships between the four types of control strategies and frequency of Internet use. Moreover, we test the significance of the correlations between the two age groups using Fisher's Z transformations. The study findings show that Internet users who employ a selective primary control (goal engagement) strategy tend to make heavier use of the Internet, compared to their counterparts who do not employ such a strategy. Moreover, Internet users who use compensatory secondary control (goal disengagement) strategy tend to make lighter use of the Internet, compared to their counterparts who do not employ such a strategy. Our findings suggest the need for marketers to understand consumers' perceptions in order to change their Internet usage habits by employing strategies that promote goal engagement, and deter goal disengagement of these consumers.

Keywords: Older consumers, consumer behaviour, Internet adoption, control theory, goal engagement

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Introduction

Since its inception, the Internet has generated a huge level of excitement, and like no other technology it has captivated the media's and marketers' attention (Hu & Jasper, 2015; O'Cass & Fenech, 2003). As the Internet is essentially a global medium, it is one of the most significant marketing tools for the global marketplace (Chong, Chan & Ooi, 2012; Hill, 2012). The global nature of the Internet, combined with the nature of the communications that it can convey, makes it a perfect vehicle for international interactive marketing (Ting et al.,2019; Lee & Lee, 2014).

Because studies show that the length of time spent using the Internet increases the likelihood of online purchases (Bellman, Lohse & Johnson, 1999; Varma Citrin, Sprott, Silverman & Stem, 2000; Lohse, Bellman & Johnson, 2000), companies should be interested in understanding the reasons that promote heavy use of the Internet. Who are the heavy users of Internet? What makes consumers spend more time online, compared to those who spend less time using the Internet? Such information would be useful not only in identifying heavy users of this channel of distribution, but also in effectively communicating with this consumer segment (Nimrod, 2013). To date, there is little information or theory to guide businesses in reaching the growing segment of consumers who prefer to shop online, and understanding individual differences and underlying reasons for previously uncovered differences between heavy and light users would be important in business strategy and theory development.

In the present study, we suggest that control theory is relevant in explaining individuals' response to the Internet and its frequency of use. Control Theory is suited to analyzing the concept of Internet usage in consumer behavior because this theory focuses on the individual's goal and development regulation across the life-span. This theory suggests that a person's need for control is manifested in various forms via strategies he or she employs to achieve certain goals, which serve as explanations of Internet usage frequency. Also, previous study recommends that "with regard to Internet usage...researchers should investigate the impact of an individual's personal goals on their use of the Internet" (Porter & Donthu, 2006, p.1006). It is expected that these goals influence the directions, vigor, energy, persistence of action and finally termination. Additionally, after carefully researching, this phenomenon has never been explained by using Control Theory. We present data to show how control theory could complement previous diffusion models.

Background and Hypotheses

Previous research relevant to understaning individual differences in the use of new technologies is based on adoption models. Two popular models relevant to the acceptance of new technologies are the technology readiness model (TRM) and the technology acceptance model (TAM). The TRM is developed to measure people's general beliefs

and thinking about technology, assuming that one or more of its four dimensions (technology optimism, innovativeness, technology discomfort, and insecurity of technology) affect the person's propensity to use technological innovations (Parasuraman, 2000).

The TAM proposes that perceived usefulness and perceived ease of use are principles related to a new technology that influence an individual's attitude toward and use of that technology (Davis, 1989). Analysis of empirical findings using TAM shows that these results are not totally consistent or clear, in part because many significant factors (e.g., computer self efficacy, image, situational involvement, intrinsic involvement, training, gender, job relevance and direct experience) mediate the effect of perceived usefulness and perceived ease of use (Huh & Kim, 2008; Jackson, Chow & Leitch, 1997; Karahanna, Straub & Chervany, 1999; Lee and Coughlin, 2015, Legris, Ingham& Collerette, 2003; Venkatesh & Morris, 2000; Venkatesh & Davis, 2000). The need for improving the TAM model or replacing it with a model that provides theoretical explanations for individual differences has been raised by other researchers (e.g., Chen and Chan, 2014, Igbaria, Zinatelli, Cragg & Cavaye, 1997; Jackson et al., 1997). In overcoming deficiencies in previous models,Porter & Donthu (2006) suggest that an individual's personal goals may play a role in explaining inconsistencies between beliefs and actions. Despite merit in these models and suggestions, previous research on IT has been more successful in offering explanations for individual differences in the adoption process (e.g., adopters vs. non-adopters, early vs. late adoption) than in explaining differences in the frequency of use of the recently adopted IT products and services. Such explanations in the context of Internet, would be relevant to businesses, since research shows that Internet frequency use affects online consumer spending (Bellman, Lohse & Johnson, 1999; Varma Citrin, Sprott, Silverman & Stem, 2000; Lohse, Bellman & Johnson, 2000). They would also be relevant to explaining usage of related IT products such as smart phones (Chong, Chan & Ooi,2012).

Control Theory

Control theory focuses on "the distinction between primary control and secondary control strategies; the proposition that striving for primary control holds the main function in the motivational system, and the idea of selectivity and compensation as fundamental requirements of optimizing life course development" (Heckhausen, Wrosch & Schulz, 2010, p. 32). The theory proposes that, because human behaviour is so variable and flexible, two requirements must be fulfilled in order to maximize goal striving. First, investment of behavioural resources must be selective because only a small number of goals can be successfully pursued at any given time. Second, in the event of unsuccessful goal striving, compensation for failure is necessary

to reserve motivation for upcoming goal striving (Kay, Shane and Heckhausen, 2017; Hamm et al., 2016, Heckhausen & Schulz, 1995; Rothbaum, Weisz, & Snyder, 1982).

Heckhausen and Schulz (1995) explain the difference between primary and secondary control as applies to lifespan development. Primary control refers to behaviours directed at the external world and involves attempts to change the world to suit the needs and desires of the individual. In contrast, secondary control refers to efforts of the individual directed at managing his or her mental states and adapt to various situations rather than changing one's world. Both types may be employed by individuals because they are motivated to influence their environment throughout the lifespan (primacy of primary control). However, changes in primary control potential as a result of maturation and aging necessitate adjustment of primary control goals. Thus, a developmental progression is proposed in which primary control strategies are optimal when a goal or task can still be accomplished, and secondary control strategies become necessary to help the individual disengage when a goal is no longer attainable (e.g., Baltes, 1987; Heckhausen, Dixon, & Baltes, 1989). Moreover, the integration of these two fundamental control dimensions produces a set of four strategies: selective primary and compensatory primary control and selective secondary and compensatory secondary control.

Selective primary control (SPC) entails goal engagement which focuses on the investment of resources, such as effort, time, abilities, and skills into the pursuit of a chosen goal, including the development of skills by processes of acquisition and practice. Heckhausen et al. (2010) give the example of striving for career promotion: The person who has set this goal for herself or himself with a selective primary control strategy will invest more time and effort into work.

Compensatory primary control (CPC) entails goal engagement which relates to asking for others' help or assistance. It is necessary when the given internal resources of the individual prove insufficient to attain the chosen goal. Heckhausen et al. (2010) again give an example in the context of a person's striving for career promotion: The person who has set this goal for herself or himself may use a compensatory primary control strategy such as seeking advice from more senior colleagues on effective strategies to help her or him increase the likelihood of career success.

Selective secondary control (SSC) serves to enhance the selectivity of resource investment in the continuous pursuits of primary control goals. In motivational psychology terms, selective secondary control strategies can be linked to volitional strategies. Selective secondary control strategies are about increasing the value of the chosen goal and safeguarding motivational commitment to the goal (Hamm et al., 2016; Haynes, Heckhausen & Chipperfiled, 2009). Heckhausen et al. (2010) again give the example of striving for

career promotion: The person who has set this goal for herself or himself with a selective secondary control strategy will dream of the positive consequences and pride that would come with achieving their career promotion.

Finally, compensatory secondary control (CSC) entails disengagement from the active pursuit of a goal that is not readily obtainable. This type of control is a safeguard against the potential negative effects of failure on the motivational resources of the individual. In the context of striving for career promotion, when the career promotion is unachievable, the person who uses compensatory secondary control strategy will use self-protective strategies, such as making self-protective casual attribution (avoiding self-blame) and downward social comparisons, or focusing on successes in other domains (Heckhausen et al., 2010). Heckhausen et al. (2010) summarize and group empirical evidence and propositions derived from control theory into four topics: (a) The adaptiveness of primary control, (b) life-span trajectories of primary and secondary control, (c) optimization of goal choices and use of control strategies, and (d) action phase of goal choice, goal engagement and goal disengagement. Hall et al. (2006) state that secondary control strategies can help to turn a successful experience into a motivational resource for primary control striving. Moreover, Poulin and Heckhausen (2007) explain that selective secondary control strategies can defend against the negative effects of main stressful life events on goal engagement. Empirical evidence acquired from use of the control theory is comprised a set of 15 specific propositions. These propositions are grouped into four topics in following (Heckhausen, Wrosch, & Schulz, 2010).

(a) The adaptiveness of primary control; example studies follow. Papousek (1967) reports that infants learn head movements that were correlated with external events such as acoustic signals. Monkeys persisted for hours in trying to open complicated door latches (Harlow, 1953). Heckhausen et al. (2010) confirm that primary control has benefits in almost every situation when goals are attainable and controllability is high.

(b) Life-span trajectories of primary and secondary control; example studies follow. Adults at various ages expect increasing developmental losses and decreasing gains in psychological functioning across adulthood and mostly in older age (Heckhausen, Dixon, & Baltes, 1989). Elderly people report using more goal disengagement and more downward goal adjustment that allow the individual to protect herself or himself (Heckhausen et al., 2010).

(c) Optimization of goal choices and use of control strategies; example studies follow. Several studies explained that individuals not only choose goals that have benefits for the individual but also that those choices match their control capacity (Haase et al., 2008).

Furthermore, previous studies state that individuals separate themselves from goals that are no longer achievable because of losses in control capacity related to aging, age-related societal opportunities and disability (Ebner et al., 2006).

(d) Action phase of goal choice, goal engagement and goal disengagement; example studies follow. Hall et al. (2006) state that secondary control strategies can help to turn a successful experience into a motivational resource for primary control striving. Moreover, Poulin & Heckhausen (2007) explain that selective secondary control strategies can defend against the negative effects of main stressful life events on goal engagement. Previous studies are presented in the following tables.

Table 1.

Previous Studies on the Control Theory

Theoretical proposition	Citation	Findings[1]
	(a) Primacy of primary control	
1. Primary control striving has benefits	Fiksenbaum, Greenglass, and Eaton (2006)	Older adults: Use of proactive coping associated with fewer health hassles and disabilities
	Gitlin, Hauck, Winter, Dennis, and Schulz (2006)	Older adults with functional constraints: Primary control strategy use predicted lower mortality risk; primary-control enhancing interventions lowered mortality risk in participants with low and high baseline primary control striving (table continues)
	J. Heckhausen (1999)	German adults: Primary control striving is associated with higher self-esteem
	Pakenham (1999)	Multiple sclerosis patients' problem-focused coping predicted improved subjective health depression, social adjustment
	Wahl, Becker, and Burmedi (2004)	Older adults with macular degeneration: Greater use of primary control strategies predicted fewer constraints in everyday activities and, as a consequence, better adaptation to vision loss and more positive effect
	Wrosch, Schulz, and Heckhausen (2002)	Caregivers for older adults: Greater use of health-related primary control strategies predicted fewer depressive symptoms
	Wrosch, Schulz, et al. (2007)	Older adults with health problems: Greater use of health-related primary control strategies protects against enhanced depressive symptoms and diurnal cortisol secretion
	Wrosch and Schulz (2008)	Health-related primary control strategies prevent an increase of chronic and functional health problems over time among older adults who experience daily physical symptoms

Theoretical proposition	Citation	Findings[1]
(a) Life-span trajectories of primary and secondary control		
2. Adults expect to lose primary control capacity with increasing age	J. Heckhausen and Baltes (1991)	Young, middle-aged, and older adults expect less controllable developmental changes at higher adult age levels
	J. Heckhausen, Dixon, and Baltes(1989)	Young, middle-aged, and older adults expect fewer developmental gains and more losses at higher adult age levels
	Lang and Heckhausen (2001)	Negative correlation between age of adult (young vs. middle-aged vs. older) and perceived control of development
	Lachman and Firth (2004)	25–75-year-old adults (MIDUS): stable sense of personal mastery, older adults perceive greater constraints to control but also greater control of life overall
	Wrosch and Heckhausen (2002)	Younger adults who perceive high control of life regrets experience less intense regret effect; older adults who perceive low control of life regret experience less intense regret
3. Primary control striving is stable and secondary control striving increases across adulthood	Brandtsta¨dter and Renner (1990)	35–65 years: with age decrease in tenacious goal pursuit and increase in flexible goal adjustment
	J. Heckhausen (1997)	Young, middle-aged, and older adults express stable striving for primary control and steadily increasing willingness to adjust goals to realities with increasing age
	Menec, Chipperfield, and Perry (1999)	Adults older than 65 years: Negative correlation between age and primary control strategies
	Wrosch and Heckhausen (1999)	Older compared with younger, separated adults reported fewer partnership goals and more compensatory secondary control striving
	Wrosch, Heckhausen, and Lachman (2000)	25–75-year-old adults (MIDUS): Across adulthood, increasing persistence in goal pursuit and more lowering of aspirations, positive reappraisal lower in younger adults Benefits: positive reappraisal more closely associated to better subjective well-being among older adults than among younger adults

Theoretical proposition	Citation	Findings[1]
	Wrosch and Heckhausen (2002)	Older compared with younger adultsreported more avoidance of self-blame for long-term life regrets
	Wrosch, Bauer, and Scheier (2005)	Older compared with younger adultswere more disengaged from undoing their life regrets
	Wrosch, Scheier, Miller, Schulz, and Carver (2003)	Study 2: Older compared with younger adults reported higher self capacity for goal disengagement (table continues)
	(b) Optimization of goal choice and use of control strategies	
4. Optimization heuristics have effects on outcomes via their regulatory role for using primary and secondary control stratgies	J. Heckhausen, Carmody, Haase, and Poulin (2008)	Preliminary evidence from two studies: Heuristics of optimization influence subjective well-being as a function of their effect on specific control strategies involved in goal engagement and goal disengagement
5. People choose to engage with a goal when the opportunities for goal attainment are favorable	Chang, Chen, Greenberger, Dooley, And Heckhausen (2006)	High school seniors: Educational and occupational goals have higher priority, earlier expected attainment, more perceived control than family and material goals
	Cross and Markus (1991)	Nomination of feared and hoped-for possible selves. Occupation: young adults / middle-aged adults _ older adults. Physical fitness/health: older adults _ middle-aged adults _ young adults. Education: young adults _ middle-aged adults _ older adults
	Ebner, Freund, and Baltes (2006)	Growth-oriented goals: young adults _ middle-aged adults _ older adults. Benefits: young adults' prevention-of-loss goals negatively related with well-being
	Gitlin, Hauck, et al. (2006); Gitlin,Winter, et al. (2006)	70 years and older with functional difficulties: More primary control striving predicts improved survival; primary control enhancing intervention via occupational and physical therapy improved everyday functioning, quality of life, and survival
	Gitlin, Hauck, Dennis, and Schulz(2007)	African American and Caucasian older adults: For African Americans only, the effect of functional difficulties on depression was buffered by the use of control strategies directed at the goal of maintaining everyday activities

Theoretical proposition	Citation	Findings[1]
	Haase, Heckhausen, and Ko¨eller (2008)	German high school graduates facing urgent search for apprenticeship: Primary control striving and goal engagement for apprenticeship predicted obtaining an apprenticeship in girls and positive affect in boys and girls (table continues)
	Haynes, Heckhausen, Chipperfield, Newall, and Perry (in press)	Very old adults who use primary control striving or a multi-strategy approach of goal engagement and disengagement where appropriate report better physical and psychological well-being
	J.Heckhausen (1997)	Gain-oriented goals: young adults _ middle-aged adults _ older adults. Loss-oriented goals: older adults _ middle-aged adults _ young adults. Work, family, finance goals: young adults _ older adults. Health, leisure, community goals: middle-aged adults _ older adults _ young adults
	J. Heckhausen and To masik (2002)	High school seniors calibrate vocational aspirations to school grades
	J. Heckhausen, Wrosch, and Fleeson (2001)	Goal selection and control striving for having a child in childless women in their 30s. Benefits: Childless women in their 30s with higher primary control striving for having a child have fewer depressive symptoms. For childless women in their 40s, the inverse is true: Higher primary control striving predicts more depressive symptoms
	Menec et al. (1999)	Older adults with better perceived health are more engaged in primary control goals
	Nagy, Ko˜ller, and Heckhausen(2005)	Benefits: High-school seniors who worry more about their urgent apprenticeship search also apply for more positions
	Nurmi (1992)	Young adults: Goals regard career entry, education, family building. Middleaged adults: career development, socializing children. older adults: life purpose
	Ogilvie, Rose, and Heppen (2001)	Gain-oriented (“acquire”) goals: adolescents _middle-aged _ older adults. Loss-oriented (“keep”) goals: older adults _ adolescents _ middle-aged adults

Theoretical proposition	Citation	Findings[1]
	Rothermund and Brandtsta¨dter (2003)	58–81 years: Increase in active striving to counteract functional impairments until 70 years; for adults older than 70 years, decline of such striving (table continues)
	Salmela-Aro, Nurmi, Saisto, and Halmesma¨ki (2001)	Pregnant women's choices for child-birth and family-related goals report decreasing depressive symptoms among early pregnancy, 1 month before childbirth, and 3 months after childbirth; increasing self/personal goals have an inverse effect
	Sheldo&Kasser (2001)	Identity goals: young adults _ older adults. Generativity goals: older adults _ young adults
	Wahl et al. (2004)	Older adult patients with macular degeneration: Compensatory primary control strategies (seeking help) increased shortly after initial diagnosis
	Wrosch, Heckhausen, and Lachman (2000)	Benefits: Young adults' primary control strivings predict subjective wellbeing
	Wrosch, Schulz, et al. (2007)	63 years and older: Health-related goal engagement prevents physical symptoms from enhancing depression and maladaptive diurnal patterns of cortisol secretion
	Wrosch and Schulz (2008)	63 years and older: Health-related goal engagement prevents daily physical symptoms from enhancing chronic and functional health problems assessed 2 years later
6. Goal disengagement: People choose to dis engage from a goal when the opportunities for goal	attainment are unfavorable Boerner (2004)	Benefits: Disposition for flexible goal adjustment among middle-aged and older adults with vision loss is associated with fewer mental health problems (social dysfunction and depression), particularly among younger adults
	Brandtsta¨dter and Rothermund (1994)	Benefits: Middle-aged adults' downscaling of domain importance buffers effects of domain-specific control loss on general perceptions of personal control
	Carver, La Voie, Kuhl, and Ganellen (1988)	Benefits: College students' dispositional inability to disengage after failure is associated with depression (table continues)

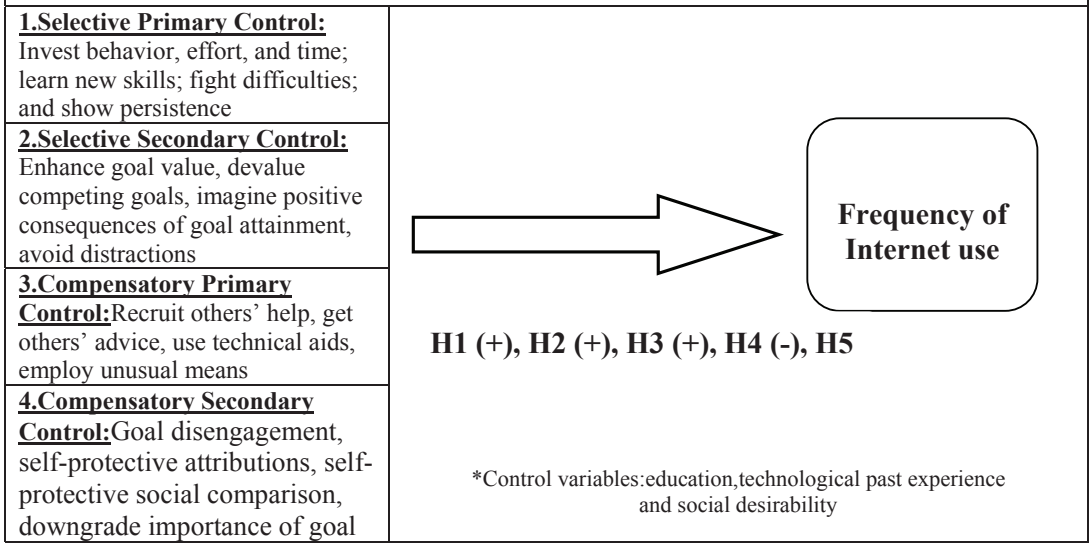
Theoretical proposition	Citation	Findings[1]
	Chipperfield et al. (2007)	Older women but not men with serious acute health conditions (heart attack, stroke) report less primary control striving
	deRijk, Le Blance, Schaufeli, and de Jonge (1998)	Benefits: intensive care unit nurses suffered more burnout when low perceived control and high job demands were coupled with high desire for control
	Ebner et al. (2006)	Loss and maintenance goals: older adults _ middle-aged adults _ young adults Benefits: Older adults' maintenance-of-functioning goals positively related to well-being
	Evers et al. (2001)	Benefits: multiple sclerosis patients' acceptance of illness and disability associated with improved health status and mood during following year
	Forsythe and Compas (1987)	Benefits: College students' mental health symptoms were predicted to match between perceived control of distressing major and daily events and problem versus emotion-focused coping
	J. Heckhausen (1997)	Loss-oriented goals: older adults _ middle-aged adults _ young adults.Work, family, finance goals: young adults _ older adults
	J. Heckhausen et al. (2001)	Post-deadline women in their 40s and 50s reported fewer child-wish goals, reported fewer control strategies of goal engagement, and showed worse incidental recall of child-related sentences than did pre-deadline younger women in their 30s. Benefits: Post-deadline women with less primary control striving for child-bearing report fewer depressive symptoms; inverse effect for pre-deadline women; less incidental recall of child-related sentences among post-deadline women correlates with less negative affect

Source: Heckhausen, Wrosch, & Schulz, (2010, p.42)

Hypotheses

The conceptual research model, shown in Figure 1, depicts the hypothesized relationships between the four control strategies and Internet use. The model summarizes the proposed hypotheses while the rationale for each is provided in the paragraphs that follow.

Figure 1.
Conceptual framework



The arrival of the Internet helps many individuals live, communicate and collect information about products and services more easily (Lokken et al., 2003). Consumers may reach important goals by investing greater effort and resources into tasks required to achieve them (Wrosch, Heckhausen & Lachman, 2000). Selective primary control typically is about self-learning, and appears relevant to the use of the Internet for achieving goals such as obtaining information about products and services (Lokken, Cross, Halbert, Lindsey, Derby & Stanford, 2003). Therefore, it is expected that consumers who employ higher goal engagement strategies (i.e., selective primary control) will use the Internet more, compared to those who employ such strategies to a lesser extent.

H1: Among Internet users, there is a positive relationship between level of selective primary control and frequency of Internet use.

Selective secondary control strategies, in contrast, help consumers stay focused on their goal and shift to implementation (Heckhausen & Wrosch, 2010). These strategies are about increasing the value of the chosen goal and safeguarding motivational commitment to the goal (Haynes, Heckhausen & Chipperfiled, 2009). Thus, persons who perceive the positive consequences that would result from their ability to use the Internet, such as shopping online to save time and transportation

costs compared to visiting traditional stores (Hui & Wan, 2007), may use the Internet more compared to those who do not think of such positive consequences.

H2: Among Internet users, there is a positive relationship between level of selective secondary control and frequency of Internet use.

Interpreting control theory in the context of Internet use, compensatory primary control is about seeking advice from social contacts, such as family, friends and peers on effective strategies to help enhance their Internet knowledge (Heckhausen & Wrosch, 2010). For consumers who have set this goal, use of compensatory primary control strategy would involve seeking advice from friends or Internet experts in making a purchase and setting up their computer to help them increase the likelihood of Internet usage (Heckhausen et al., 2010; Yap, Soetarto & Sweeney, 2013). Moreover, Gilly and associates (2012) find that many older consumers receive help from an adult child or other relative in making a purchase, or setting up their computer and Internet. Thus, it is expected that consumers who use the Internet more frequently employ goal engagement strategies (i.e., compensatory primary control), compared to their lower-frequency-user counterparts.

H3: Among Internet users, there is a positive relationship between the level of compensatory primary control and frequency of Internet use.

Older adults experience loss of social contacts after retirement and declines in the successful outcome of their efforts due to health limitations (e.g., mental and physiological declines, impairments) (Thanasrivanitchai, Moschis & Shannon, 2016). In the context of Internet use, control theory suggests that when the task is unachievable, the person who uses compensatory secondary control strategy will use self-protective strategies, such as making self-protective casual attribution and downward social comparisons, or focusing on successes in other domains (Heckhausen & Schulz, 1995; Heckhausen et al., 2010). Therefore, it is expected that consumers who use the Internet less frequently, compared to their more frequent-user counterparts, are likely to employ a goal disengagement strategy (i.e., compensatory secondary control).

H4: Among Internet users, there is a negative relationship between the level of compensatory secondary control and frequency of Internet use.

Next, in line with previous argument that compensatory secondary control strategies deter the older person's frequency of Internet use, we also expect that the employment of such strategies would be relevant to helping us understand reasons to explain differences in Internet usage. Finally, a basic premise of control theory is that people employ different strategies over the course of their lives in order to compensate for age-related losses

they are likely to experience (Heckhausen & Schulz, 1995; Heckhausen et al., 2010). Given the wide variability in the aging processes and resulting losses due to bio-physical, social, and psychological changes associated age (Moschis, 1992), we expected the two age groups to employ different strategies to compensate with loss of control. Thus we hypothesized that:

H5: Among users of the Internet in middle and later life, older adults employ different control strategies, compared with their younger counterparts.

Methodology

Sample

The survey utilises self-administered questionnaires via convenience sampling among Thai consumers in Bangkok, Thailand. This method is considered an easy way to present questions; a useful method for eliciting long or complex responses; a more confidential option than personal interviews, and a particularly appropriate lower cost technique for closed ended questions (Aaker, Kumar & Day, 2007). Moreover, convenience samples are considered acceptable for use in theory testing studies (Calder, Phillips & Tybout, 1981). The majority of studies employing control theory have focused on European and U.S. based populations (Bailis, Chipperfield & Perry, 2005; Chipperfield, Campbell & Perry, 2004; Heckhausen et al., 1989; Heckhausen et al., 2010; Wrosch, Dunne, Scheier & Schulz, 2006). It is not known to what extent the findings for populations in Western countries can be generalized to customers in Asian countries, such as Thailand, not only because many studies have shown that cultural different may be a constraint that affects the behavioral intention of an individual (Sun & Zhang, 2006) but also because of norms, and other socio-demographic factors different from those of Western countries such as the USA, where nearly previous work on Control Theory was carried out.

To minimize bias of the sample characteristic, we collect data in different locations, such as airports, malls, parks, hospitals and major residential communities. The English version of the questionnaire was translated into Thai and then back into English again by professional translators to ensure the quality of the translation and reduce measurement error. The survey was pretested, and minor revisions were made before it was administered.

A total of three hundred and eighty five (385) usable surveys are obtained from Thai respondents. Because maturation and aging necessitate adjustment of primary control goals and secondary control strategies become necessary to help the individual disengage when a goal is no longer attainable, our study focused on individuals most likely to experience such changes. As there is a wide variability in aging and people increasingly experience loss of control of their environment with age due a variety of "losses" (physical, mental, social) that become noticeable in early-to-middle 40s

(Moschis, 1992). Since age progresses, people increasingly have difficulty in reading fine print and need more time to adjust to certain light conditions. Such physiological changes affect the way older consumers respond to products or services and they generate different needs for marketing offerings (Thanasrivanitchai, Moschis & Shannon, 2016).

Table 2

Respondents summary

	Frequency	%
Age		
65 year old& over	278	72.2
45 - 64 year old	107	27.8
Total	385	100.0
Gender		
Male	188	48.8
Female	197	51.2
Total	385	100.0
Monthly Incomes		
Below 25,000 THB	159	41.3
25,000-55,000 THB	148	38.5
More than 55,000 THB	78	20.2
Total	385	100.0
Marriage Status		
Married	257	66.8
Single/Divorced/Widowed/ Separated	128	33.2
Total	385	100.0
Education Level		
High school or lower	122	31.7
Bachelor degree	163	42.3
Graduated degree	100	26.0
Total	385	100.0
Employment		
Retired or not employed	131	34.0
Employed part-time	95	24.7
Employed full-time	159	41.3
Total	385	100.0

A total of 385 participants were conducted in Bangkok, Thailand. To ensure a varied mix of the sample, airports, major malls, major parks, major hospitals and major residential communities were identified. The English version of the questionnaire was translated into Thai and back translated into English by professional translators to ensure the quality of the translation and reduce measurement error (Brislin, 1970). The survey was pre-tested, and minor revisions were made before the final survey was administered.

Measurement

In our study, we employ the same measures of variables that have been frequently used in previous studies that have appeared in leading scientific journals. For Internet usage, we employ the scale developed by Porter and Donthu (2006) (Table 3). The four control measures that are employed in the present study are adapted from the OPS (Optimization in Primary and Secondary Control) scale, which consists of 33 items (Chipperfield, Perry, Bailis, Ruthig & Loring, 2007; Haynes et al., 2009). Although we use previously developed scales to assess task-specific control strategies, it is necessary to confirm that each of the scales are reliable in this study.

Table 3

Scales and reliabilities for multi-item constructs [a]

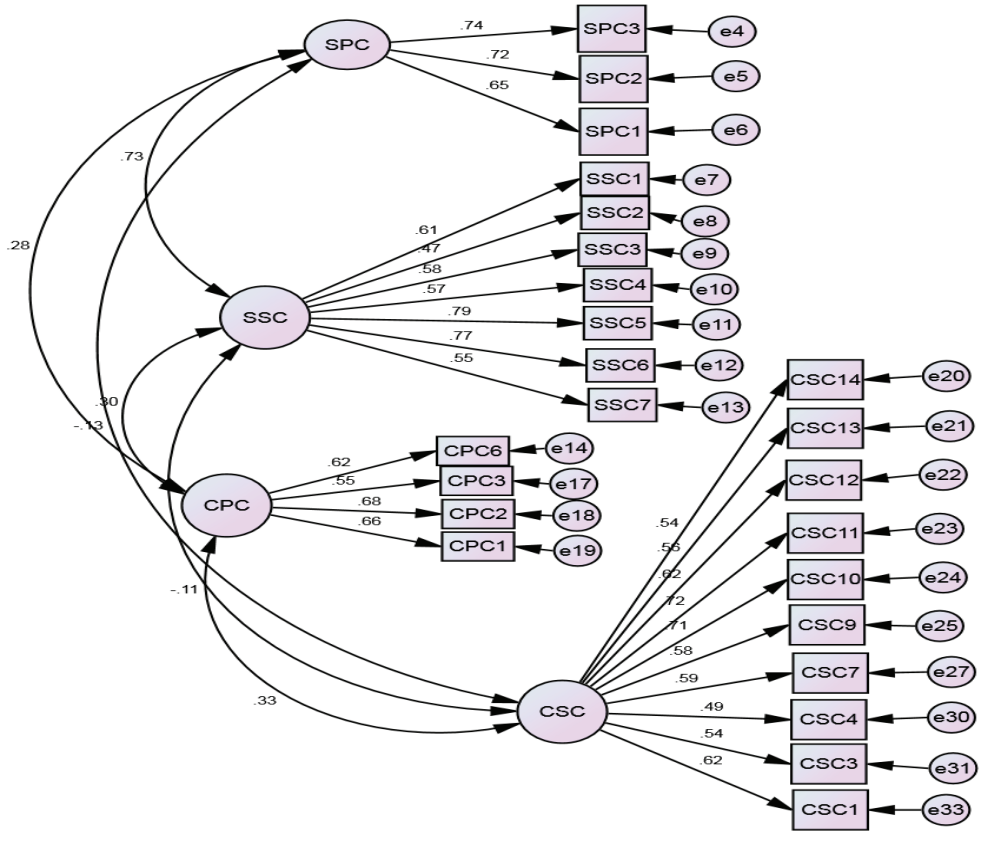
	Cronbach's alpha	Number of Items
Selective Primary Control [SPC, .75, .50][b]	**.74**	**3**
I do whatever is necessary to learn how to make a better use of it. I put forth more effort to figure out and solve the problem. I don't give up until I figure out and solve the problem.		
Selective Secondary Control [SSC, .82, .40][b]	**.80**	**7**
I think that eventually I will overcome any difficulty. I don't think of anything else till I find out the reason I have difficulty. I tell myself that the Internet is very important for me and I must know how to use it. I think of the good things I could do on the Internet after I solve the problem. I keep saying to myself that eventually I will be able to overcome the problem. I think of the satisfaction that I will receive from overcoming the difficulty. The emotional support I will receive from others makes me believe I can overcome any Internet problem.		
Compensatory Primary Control [CPC, .72, .40][b]	**.71**	**4**
I ask some professional or expert to help me. I ask someone else to do some things on the Internet for me. I rely on people I know to help me do things on the Internet most people my age do by themselves. I turn to my family or friends for advice when I am having trouble with using the Internet.		
Compensatory Secondary Control [CSC, .85, .36][b]	**.84**	**10**
I tell myself that there are more important things than spending time trying to figure out how to use the Internet. I see the Internet as being less important to me than to most people. I look for the positive side of this shortcoming, like spending time on more important things rather than figuring out the Internet problem. I tell myself that despite my not using the Internet, I am better off than many others. I look for what I could learn, instead of figuring out the Internet problem. I focus my thoughts on other more important aspects of my life. I tell myself that I mustn't set my goals too high about technologies. I think about how I can put more energy in other things than the Internet. I tell myself that it is unrealistic to continue trying to use technologies as I have in the past. I expect less of myself in using technologies in the future.		
Technological past experience	**.82**	**3**

Scales and reliabilities for multi-item constructs [a]

	Cronbach's alpha	Number of Items
I enjoy using technological products that allow Internet connection. I have experience in using any technological products that allow Internet connection. I use more technological products that allow Internet connection, than most people my age that I know. **Internet Usage**	**.85**	**3**
I use the Internet quite often. I spend a lot of time on the Internet. I have been using the Internet for a very long time now. **Social Desirability**	**.77**	**5**
I'm always willing to admit it when I make a mistake. I always try to practice what I preach. I never resent being asked to return a favor. I have never been irked when people expressed ideas very different from my own. I have never deliberately said something that hurt someone's feelings.		
[a] Scale items were based on four-point Likert-type scales (1= "Strongly Disagree", 4 = "Strongly Agree") [b] Entries in parentheses for construct are composite reliability estimate and average variance extracted, respectively.		

Figure 2.

Confirmatory factor analysis result of four types of control strategies



Convergent validity refers to the awareness that measurement items in the constructs indicate certain correlation and are measured through the use of confirmatory factor analysis (Churchill & Iacobucci, 2005). A confirmatory factor analysis (CFA) is appropriate for use when the researchers have some knowledge and empirical evidence about the items of latent variable patterns and the CFA can represent a measurement model with the indication of validity (Byrne, 2007). As a result, nine items were eliminated because of low internal consistency reliability score, leaving a total of 24 items. The loading of each items are in figure 2. The CFA model summary in Table 4 indicates a good fit (CMIN=2.57; CFI=.87; RMSEA=.06; RMR=.04). It can be seen that four variables of control strategies in Table 3 show acceptable levels of construct reliability (CR ≥ 0.60). Cronbach's alpha coefficient is utilised to test reliability of the constructs (Cronbach, 1951). Cronbach's reliability alpha coefficients for all scales range from .71 to .85 (Table 3). The average percentage of variance extracted (VE) measures average percentage of the variation in the measured indicators explained by the construct and the VE value should greater than or close to the minimum benchmark of 0.4 to be acceptable (Diamantopoulos & Siguaw, 2000). It can be seen that four variables for control strategies in Table 3 show marginal acceptable average percentage of variance extracted.

Table 4

CFA Model fit summary

Goodness-of-fit measures	Recommended values	Source	Sample (n=385)
CMIN/DF index	≤ 3.0	Hair et al. (2006)	2.57
AGFI	≥ .8	Wang & Yang (2008)	.84
GFI	≥ .8	Wang & Yang (2008)	.86
RMR	≤ .05	Hair et al. (2006)	.04
RMSEA	≤ .08	Hair et al. (2006)	.06
CFI	≥ .8	Wang & Yang (2008)	.87
TLI	≥ .8	Wang & Yang (2008)	.85

To check discriminant validity for the measures, the average variance extracted (VE) percentages of a pair of two constructs should be larger than the squared correlation between the two constructs (Churchill & Iacobucci, 2005). These correlations indicate how much unique information each variable contributes to the analysis. If two predictor variables are very highly correlated, then they contribute shared information to the analysis. It can be seen that the value of average VE of all variables in Table 5 are higher than the squared correlations, suggesting discriminant validity. Correlations for each pair of constructs

were examined. These correlations indicate how much unique information each variable contributes to the analysis. To the extent two predictor variables are very highly correlated, they bias the results regarding their influence. It can be seen that all variables in Table 6 have relatively low correlations, suggesting discriminant validity.

Table 5

Control strategies discriminant validity Tests

Average VE / Sq Correlation	SPC	SSC	CPC	CSC
Selective primary control (SPC)				
Selective secondary control (SSC)	.34*			
Compensatory primary control (CPC)	.04*	.05*		
Compensatory secondary control (CSC)	.01*	.01*	.06*	

Note: * Value is significant at the level of .05 (1-tailed).

Table 6

Pearson correlation check for discriminant Validity

Correlation	TPE	SPC	SSC	CPC	CSC	SD	Internet usage
Technological past experience (TPE)	**1**						
Selective primary control (SPC)	.22*	**1**					
Selective secondary control (SSC)	.32*	.58*	**1**				
Compensatory primary control (CPC)	.07	.19*	.22*	**1**			
Compensatory secondary control (CSC)	-.17*	-.10*	-.09*	.25*	**1**		
Social Desirability (SD)	.03	.19*	.206*	.14*	.07	**1**	
Internet usage	.20*	.24*	.265*	-.06	-.35*	.10*	**1**

Note: * Value is significant at the level of .05. level (1-tailed).

The present study uses three control variables: Education, previous technological experience, and social desirability. The decision to accept a new technology is related to the amount of knowledge one has regarding how to use that technology appropriately, with complex technologies such as the Internet requiring more knowledge (Rogers, 1995).

Previous studies suggest that less educated persons report insufficient knowledge as one of the main reasons that they decide not to use the Internet; they have more computer anxiety and less sophisticated cognitive structures that deters their ability to learn in new environments (NTIA, 2002). Kinney et al. (2003) confirm that many consumers will not use complex technologies, such as the Internet, except when their skill and knowledge level match those of complex technologies. Therefore, the present study uses education as a control variable.

Technological past experience can also be a factor, because the more technologies are used by consumers while they were younger and healthier, the more likely they will be willing to use more advanced technologies when they become older and their capabilities decline (Mynatt & Rogers, 2001; Patterson, Johnson & Spreng, 1997). For both light and heavy Internet users, higher levels of computer experience are associated with lower levels of computer anxiety (Chua, Chen & Wong, 1999). Thus, this study also uses technological past experience as another control variable. The Technological Past Experience Scale was adapted from a scale used by Patterson et al. (1997). One item was eliminated due to poor loading, leaving a total of three items. The purified 3-item scale has a Cronbach's alpha reliability of .82.

A major source of response error identified by researchers is the propensity for subjects to "fake good" or "fake bad" responses (Meehl & Hathaway, 1946). Moreover, Huang, Liao and Chang (1998) state that social desirability response bias affects the validity of a measure. This study also uses social desirability as a control variable. We employ the 10-item version of the Marlowe-Crowne Social Desirability Scale (Strahan & Gerbasi, 1972). Purification of this measure resulted in the elimination of five items. The purified five-item scale has a Cronbach's alpha reliability of .77.

Results

For all hypotheses, we use partial correlations to test the relationships between the four types of control strategies and frequency of Internet use. Because several explanatory variables were inter-correlated, the effect of each variable on Internet usage frequency is tested by partialing out the effects of other explanatory and control variables to ensure validity of the test results. Also, because people increasingly experience various forms of losses with age (physical, social, psychological; Moschis, 1992) i.e., hence loss of control of their environment, each hypothesis is tested for the entire sample as well as for each of the two age sub-samples, expecting control theory and the derived hypotheses to hold more for the older than the younger age groups. We test the significance of the correlations between the two age groups using Fisher's

Z transformations. As it's probably most commonly be used to test the significance of the difference between two correlation coefficients, r1 and r2 from independent samples.

Hypothesis 1 posits a positive relationship between level of selective primary control and frequency of Internet use. As shown in Table 7, the partial correlation between level of selective primary control and frequency of Internet use is not supported (r =.07, ns). Looking at the separate analyses for the subsamples (Table 8), we find that the partial correlation between selective primary control and Internet usage frequency is also not significantly different between older adults (age 65 or over) and younger older adults (age between 45 and 64 years) (Z = -.71, ns). Older adults also reported higher ratings in selective primary control than younger counterparts. The empirical evidence with respect to age differences in primary control is inconsistent. Cross-sectional studies have shown an age-graded increase (Heckhausen et al., 1998), in stability (Heckhausen, 1997; Peng, 1993; Peng & Lachman, 1994), yet also a decrease (Brandtstadter & Renner, 1990; Brandtstadter, Wentura & Greve, 1993). Possible explanations for these conflicting findings might relate to self-selected and nonrepresentative samples as well as to differences in the constructs and empirical indicators used.

Table 7 (H1-H4)

Partial correlations among each sub-control theory constructs and Internet usage, controlling for other three sub-control theory constructs, technological past experience, education and social desirability

	Total	Age between 45 and 64 years	Age 65 and over
Selective primary control (SPC) & Internet usage (IU)	.07	.01	.09
Selective secondary control (SSC) & IU	.15**	.25**	.07
Compensatory primary control (CPC) & IU	-.06	.02	-.10*
Compensatory secondary control (CSC) & IU	-.28**	-.20*	-.30**
Note: * Partial Correlation is significant at the level of .05. ** Partial Correlation is significant at the level of .01.			

Hypothesis 2 predicts a positive association between selective secondary control and frequency of Internet usage. This hypothesis is supported, as the partial correlation between frequency of Internet usage and selective secondary control is significant (r =.15, p <.01). Looking at the separate analyses for the subsamples, we find that the partial correlation between compensatory primary control and frequency of using the Internet is significant only for older adults who are between 45 and 64 years (younger older adults) (r = .25, p <.05) but not for those who are 65 or over (r =.07, ns). These differences in the partial correlation

coefficients are significantly different between older adults and younger older adults (Z = 1.63, p <.05) (Table 8). This finding appears consistent with the assertion that older adults are intensive users with evolving motivational reasons for their use (Hamm et al., 2016; Kay, Shane and Heckhausen, 2017; Ng, 2008; Tak & Hong, 2005; Thanasrivanitchai, Moschis & Shannon, 2017; Vuori & Holmlund-Rytkonen, 2005).

Hypothesis 3, which predicts a positive association between compensatory primary control and Internet use, is not supported. Furthermore, we find that the negative partial correlation between compensatory primary control and frequency of using the Internet is significant only for older adults who are 65 or over (r = -.10, p <.05) but not for those who are younger older adults (r =.02, ns). The partial correlation between frequency of using the Internet and compensatory primary control is in the opposite than expected direction. Also, we find that the partial correlation between compensatory primary control and frequency of using the Internet is not significantly different between the two age groups, as shown in Table 8 (Z = 1.06, ns).

Possible reasons for these unexpected findings might relate to an older person's self-concept changing in later life and perceiving themselves as relatively powerless after retirement(Atchley, 1987; Carstensen, 1995; Heslop & Marshall, 1991; Moschis, 1987). For this reason, older adults may feel uncomfortable to ask for other people's suggestion in making a purchase and setting up their computer to help them increase the likelihood of Internet usage.

Hypothesis 4 posits a negative relationship between compensatory secondary control and Internet usage frequency. This hypothesis is supported, as the resultant relationship between the two variables is significant (r = -.28, p <.01). Internet users who score low on compensatory secondary control tend to report a higher Internet usage frequency, compared to their counterparts who scored high on this variable. Looking at the separate analyses for the subsamples, we find that the negative partial correlation between compesatory secondary control and frequency of using the Internet is much stronger for older adults who are 65 or over (r = -.30, p <.01) than for those who are between 45 and 64 years (younger older adults) (r =-.20, p <.05). However, we find that the partial correlation between compensatory secondary control and Internet usage frequency is not significantly different between the two age groups, as shown in Table 6 (Z = .94, ns). Many studies have confirmed age-differential validation of primary and secondary control strategies. Relating to compensatory secondary control, cross-sectional studies provide covergent evidence that older adults, as compared with younger adults, frequently make use of strategies associated with compensatory secondary control (Hamm et al., 2016; Heckhausen, Schulz & Wrosch, 1998; Thanasrivanitchai, Moschis & Shannon, 2017; Wrosch et al., 2000).

Table 8 (H5)

Comparisons of correlation coefficients between younger (age 45 to 64) and older (65 and over) groups using Fisher's z transformations (Z test)

Selective primary control (SPC) & Internet usage (IU)	-.71
Selective secondary control (SSC) & IU	1.63*
Compensatory primary control (CPC) & IU	1.06
Compensatory secondary control (CSC) & IU	.94
Note: * z-score is significant at the level of .05 Group 1: n=112 Group 2: n=273	

Hypothesis 5 posits differences in the employment of the four control strategies between the two age-group users of the Internet. In order to simultaneously test for these differences, we use multiple regression. We regress frequency of Internet use on all four control strategies separately for the younger age group (age 45-64) and the older age group (65+). To the extent that the two groups differ in their use of these strategies, we expect the regression coefficients from each of the resultant regressions to differ as a set. Therefore, we use Chow's F test of equivalence of the two resultant regressions. This hypothesis is not supported (F value =1.42, ns). A possible explanation for the lack of differences in control strategies might relate to the belief that older adults attempt to compensate for declines by making a greater effort (Wrosch et al., 2000). This finding further suggests that control theory might explain behaviour of people regardless of age or stage in life.

Discussion

The present study findings suggest that control theory could in part explain individual differences in using technologies in general that have been reported in previous studies (e.g., Gilly et al., 2012; Porter & Donthu, 2006). It sheds light on goal engagement and goal disengagement strategies related to Internet usage, and similar explanations might hold for using other technologies. Thus, control-related explanations of various phenomena are potentially interesting to explore in different cultural settings. In comparing light Internet users and heavy Internet users, the study findings suggest that selective secondary control (goal engagement strategy) may provide an explanation for the high rates of Internet adoption and usage among consumers. Moreover, the negative relationship between compensatory secondary control and Internet usage frequency suggest that light Internet users employ goal disengagement strategies to a greater extent

than heavy Internet users. An extensive use of compensatory secondary control will help an individual to compensate for failure and developmental losses that are more commonly experienced by many consumers (Wrosch et al., 2000).

While most of the emerged findings are in line with our expectations, we also find results that are not totally consistent with control theory. An unexpected finding among Internet users is the insignificant relationship between their preference for compensatory primary control strategies and Internet usage frequency. As the first study that attempts to apply control theory to explain usage frequency, the study is limited both in terms of context and method of analysis because of the exploratory nature. Our initial interpretation of the theory suggests that individuals who want to solve Internet-related problems using a compensatory primary control strategy would seek advice from Internet experts or social contacts. It is possible that this unexpected result is due to cultural or social norms. Thai consumers can feel uncomfortable to ask for other people's help, thus they may utilize strategies that guarantee a positive and well-regulated emotional climate (Carstensen, 1995). For example, instead of asking for other people's help about how to buy products online, it is possible that Thai consumers shop at traditional stores, because they can get help from more knowledgeable retail employees. Research by Kolsaker, Kelly and Choy (2004) supports this reason for the low purchasing of travel tickets online among consumers in another Asian country (Hong Kong). It is also possible that Thai people may be inclined to avoid asking for others' advice due to potentially negative feelings generated from others' responses, such as lower self-image associated with their self-evaluation and causal attributions (e.g., shame, feeling inept). It is possible that a virtuous cycle may take shape, in that those who more actively use the Internet, develop more skills and continue to use it more.

Managerial Implications and Directions for Future Research

Several caveats need to be mentioned so that the reader may view these findings in light of the study's limitations. First, there are some inherent limitations common to all types of cross-sectional studies (e.g., Podsakoff, MacKenzie, Lee & Podsakoff, 2003). As the value of any cross-sectional study, such asours, is in falsifying relationships rather than confirming them (Popper, 1959), statements about inferred causality should be held tentative.

Second, the study uses a convenience sample from only one Asian country. Although the hypotheses are grounded on theory, the results might differ if the study were to be replicated in different cultural settings, because Asian consumers may differ from those in Western countries (Hsu, Murphy & Purchase, 2001). Third, although the measures employed achieved acceptable reliability levels, there are issues of validity inherent in the employment

of instruments developed in Western counties by researchers in Eastern countries, such as Thailand (e.g., Diamantopoulos, Reynolds, & Simitras, 2006). Fourth, the use of a nonprobability sample may not allow generalizations about the relationships found when the sample is idiosyncratic and non-representative of the parent population (Churchill & Iacobucci, 2005).

Our findings suggest the need for marketers to understand consumers' perceptions in order to change their Internet usage habits by employing strategies that promote goal engagement (increase the selective secondary control level), and deter goal disengagement (decrease the compensatory secondary control level) of these consumers. For example, to help promote goal engagement, marketers can educate consumers about the relevance of the Internet to their information seeking needs as well as how the Internet can satisfy a wide variety of consumption and social needs (e.g., product purchases, social networking), especially among consumers who experience difficulty in shopping and interacting with others due to physical impairments. Moreover, Internet enhances a sense of independence and created a transition from helplessness to control and from passiveness to activeness. Similarly, marketers could increase the positive outcomes and pride that would come with the use of the Internet by providing additional product information. Moreover, consider offering trial of products or services so that older consumers can become more familiar with them, which may enhance the chance of adoption. Additional uses of the Internet for seniors include using the Internet to search for information on health topics because previous research states that firms operating in the health services industry benefit from having aging consumers online because online seniors tend to search for information related to medical products and services (Fox, 2004; Hamm et al., 2016). However, marketers should keep in mind that it can be more difficult and time-consuming for aging consumers to process information; thus, on-line communication should not be overwhelming, but slow, short, and simple (Thanasrivanitchai, Moschis & Shannon, 2016). Marketers could also develop strategies to deter goal disengagement by, for example, emphasizing ease of use in getting product information and making purchases with minimal confusion or difficulty. This advice would span products, services, and Internet Service Providers.Older consumers will be more concerned with functional benefits, such as convenience and ease of use, quality, reliability, and personalized service (Thanasrivanitchai, Moschis & Shannon, 2016).

Finally, theoretical notions of control can be examined across other areas of consumer behaviour where heavy Internet users have been found to differ from their light Internet user counterparts, such as adopting new products and ideas, especially new products and services offered through the Internet. Furthermore, more rigorous testing of these

and other theory-derived hypotheses should be performed, such as path analysis using SMART PLS or AMOS, in future studies of control theory testing, and the differences between groups could be undertaken using multiple group analysis. Control theory may provide insights not only into reasons for the person's level of use of certain technologies but also his or her reluctance to adopt new products in general and technological innovations in particular. It is hoped that the present study has provided the impetus and a blueprint for such further research. Additionally, Self-Esteem and Cognitive Age may be an interesting moderator variable for future research since this variable has the potential to moderate the relationship between four types of control strategies and Internet usage frequency. For example, older adults who still feel very young at heart may invest more time and effort (selective primary control) to solve the Internet problems.

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