JYVÄSKYLÄ STUDIES IN COMPUTING
241

Jungwon Kuem

Four Essays on IT Users' Psychological States and Behaviors

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ABSTRACT

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This dissertation is intended to study information technology (IT) users' psychological states and behaviors. It consists of four essays. The first essay examines how people react to social networking services (SNS). In this essay, we attempted to extend the existing model, which includes dedication- and constraint-based mechanisms, by additionally including the obligation-based mechanism underlying SNS-related behavior. The second essay is designed to investigate individuals' smartphone use. In particular, we focused on the role of smartphone addiction in shaping individuals' perceptions about their smartphone. The third essay is about online community behavior. Drawing on the model of engagement, we developed a conceptual model by introducing a relatively new notion of prominence. Finally, the fourth essay developed and tested a theoretical framework on Non-Work-Related Computing. Drawing on the concept of recovery, we investigated the antecedents and performance-related consequences of recovery factor.

Keywords: social networking services (SNS), smartphone addiction, online communities, non-work-related computing

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During my doctoral studies in Jyväskylä, I have had lots of unforgettable memories, which makes me consider Jyväskylä my home away home. I always missed here when I was out of this beautiful town. The most unforgettable experience happened when Mikko and Kati took great care of me when I had a health problem. I later realized that my health wasn't as serious as what I had imagined. But, without their support and help, I would have never been able to get back to my doctoral study. Besides, I have lots of good memories with my Jyväskylä family, Kati, Hadi, Alain, Hemin, Naomi, and Tapio. Kati always embraced me with warm love. I will cherish her advice on life and marriage forever. Hadi has been supportive and sympathetic since my first day in Oulu even before coming to Jyväskylä. Hemin and I, we had a lot in common. Taking with him was not only fun but also productive as we worked on similar research topics. Alain always made me cheerful. Other episodes still in my mind, all memories of Jyväskylä are invaluable to me. Having these colleagues in my life shows that I am a truly lucky person. I will be always missing these friends that I met in Jyväskylä.

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Jyväskylä June 07, 2016
Jungwon Kuem

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INCLUDED ARTICLES

LIST OF INCLUDED ARTICLES

I. A Tripartite Model of Postadoption Behaviors in the Context of Social Networking Services

II. An In-Depth Look at Technology Addiction: A Refined Model and Empirical Study of Smartphone Use

III. Engagement and Prominence: Their Complementary Roles in the Context of Online Community Behavior

IV. How Non-Work-Related Computing (NWRC) Impacts Employees' Recovery and Performance-related Outcomes

1 INTRODUCTION

IT users' psychological states and behaviors are major topics especially for Web service companies and organizations, whose working media are IT artifacts (i.e., computer, smartphones, mobile pad etc.). This is because from the feeling and their activities with IT artifacts influence IT users' subsequent behaviors on the Web contexts (e.g., knowledge contribution in online communities and participation in SNS etc.) and their outcomes in their life (e.g., perception: usefulness of online communities etc.) and workplace (e.g., their attention capacity during working hours). Especially, in the case of enthusiastic IT users, who always be with and depend on IT artifacts, their life and outcomes in workplace are highly affected by their IT use behavior and feeling with their IT use. Therefore, it is crucial to understand the underlying mechanisms that are embedded in IT use. Thus, we tried to understand the underlying mechanisms in several contexts of IT use in considering each context's unique features.

In the first essay on SNS use, we examine how people react to SNS. Considerable effort has been put into gaining a better understanding of members' perceptions and behavior on SNS, nevertheless only little research has systematically examined SNS members' psychological status, its antecedents, and its behavior outcomes in the context. In prior literature, Kim and Son [4] proposed dedication- and constraint-based mechanisms underlying online community behavior. We attempt to extend this model by including an obligation-based mechanism for a better understanding of IT user behavior in the context of SNS. Our model was tested with data collected from 382 actual users of Facebook. The results of structural equation modeling analysis empirically supported the tripartite model and our research hypotheses. A major contribution of this paper to IS research is the first association of the obligation-based mechanism as a complement to the dedication- and constraint-based mechanisms already included in the original model of postadoption phenomena by Kim and Son [4].

The second essay on addictive IT use is designed to investigate individuals' smartphone use. Excess IT use has been known as a harming factor to personal and professional lives. Given the potential for negative consequences resulting from smartphone addiction, it is important for us to have a deeper un-

derstanding of its nature, causes, and effects. Drawing on incentive-sensitization theory [6], we proposed a nomological network that centers on a second-order factor of smartphone addiction. The proposed model was empirically evaluated against longitudinal data collected from 441 smartphone users. The analysis of our structural equation modeling indicates that our two-factor measurement of smartphone addiction, consisting of heightened desire and social benefit, is more parsimonious and better represents smartphone addiction than an alternative four-factor model implied in the literature. Overall, our study significantly contributes to the IS literature by showing the relative efficacy of the theory-driven, context-specific two-factor structure compared with other representations of addiction.

In the third essay on online community behavior, we investigate the role of prominence and engagement in knowledge contribution and continuance intention. Prior online community literature stressed on the engagement construct, which operates based on users' willfulness on participation (e.g., moderating discussion) [5]. However, online community users not always continue to use online communities based on their willfulness, but their motivation to use of online communities is also affected by other psychological factors. Thus, to find the other mechanism that leads to continuance intention and knowledge contribution in online communities, we developed a conceptual model by introducing a relatively new notion of prominence in drawing on the model of engagement by Ray [5]. We used structural equation modeling to test our proposed model against data collected from 492 actual members of online communities. We find that our proposed model, as compared with prior research, results in a 23% increase in the explained variance of knowledge contribution. Our findings significantly contribute to IS research by adapting to the online community context the prominence construct that constitutes a distinctive phenomenon on its own and complements the engagement construct in explaining online community behavior.

In the fourth essay on employees' non-work-related computing (NWRC), we designed to investigate the role of recovery on employees' performance-related outcomes (i.e., attentional capacity and initiativeness). IS scholars have not investigated the influence of NWRC on employees' psychological and performance-related outcomes, meanwhile considerable efforts put into understanding the impact of work-related IT use on employees' psychological states and performance [2, 3]. This is important because NWRC directly and indirectly influence employees' work quantity and quality during working hours. By drawing on the concept of recovery, we found out the mechanism that shows the relationship between NWRC and employees' performance in providing the antecedents and performance-related outcomes of the recovery in NWRC context.

In total, this study assessed the IT users' psychological states and behavior of over 2496 IT users in several IT use contexts. Our empirical results support our conceptual models, providing theoretical insights and strategic insights in practice. The brief summaries of the four essays are given in Table 1.

TABLE 1 Main Contributions of Dissertation Articles

	Article Title	Main Contributions
1	A Tripartite Model of Post-adoption Behaviors in the Context of Social Networking Services	SNS are increasingly an essential part of everyday life as people spend more time socializing on the Internet. This research offers a tripartite model that suggests that online behavior is regulated by three distinct mechanisms, i.e., dedication-, constraint, and obligation-based mechanisms. The contribution of this study to IS research is not limited to the specific tripartite model but rather extended to a new, flexible, and powerful way of thinking related to online behavior in general. We expect that our theoretical approach will offer valuable insights into not only SNS but also into other forms of online services involving interpersonal relationships such as online communities, virtual worlds, and online collaboration.
2	An In-Depth Look at Technology Addiction: A Refined Model and Empirical Study of Smartphone Use	This study is to develop and test a theory-driven model of technology addiction within the context of smartphone use. Drawing on incentive-sensitization theory, we proposed a nomological network that centers on a second-order factor of smartphone addiction. Overall, the present study significantly contributes to the IS literature by offering a refined model of smartphone addiction that effectively describes longitudinal patterns in pathological smartphone use while correcting critical biases in existing models.
3	Engagement and Prominence: Their Complementary Roles in the Context of Online Community Behavior	This paper highlighted the critical role of community prominence in determining members' continuance intention in online communities. While Ray [5] were the first to show the central role of engagement as a parsimonious construct that epitomizes members' effortful contribution to their community, they did not discuss how community prominence can operate simultaneously with engagement to better characterize community behavior. Our findings significantly contribute to IS research by adapting to the online community context the prominence construct that constitutes a distinctive phenomenon on its own and complements the engagement construct in explaining online community behavior.
4	How Non-Work-Related Computing (NWRC) Impacts Employees' Recovery and Performance-related Outcomes	This study is to reveal the underlying mechanism in which NWRC leads to employees' psychological recovery and performance-related outcomes. By drawing upon the notion of recovery [7], we attempt to develop a model of NWRC showing the influence of NWRC on performance-related outcomes such as employees' personal initiative and attention capacity. The contribution of this study to IS research is to explain how NWRC leads to beneficial and detrimental consequences at the same time in IT user's psychological states. Practically, our research reveals proper and improper NWRC activities in terms of employees' recovery experience.

2 SUMMARY OF INCLUDED ARTICLES

2.1 Article I: A Tripartite Model of Postadoption Behaviors in the Context of Social Networking Services

SNS are increasingly an essential part of everyday life as people spend more time socializing on the Internet. In that, considerable effort has been put into gaining a better understanding of members' perceptions and behavior on social networking services (SNS). Nevertheless, little research has systematically examined SNS members' psychological status, its antecedents, and its behavioral outcomes. Drawing on the dual model of postadoption behavior [4] and commitment theory [1], we proposed a theoretical framework that describes the nature of the dedication-, constraint-, and obligation-based mechanisms that regulate postadoption phenomena in the context of SNS. Specifically, our proposed model (Figure 1) suggests the antecedents, types of commitment, and consequences of the three mechanisms.

The proposed model was tested with data collected from 382 actual users of Facebook. The results of structural equation modeling analysis empirically supported the tripartite model and our research hypotheses. First, the dedication-based mechanism was substantiated by the relationships between satisfaction, affective commitment, and active participation. Second, in the constraint-based mechanism, past investments were found to affect continuance commitment, which in turn determined inattention to alternatives. Third, we found evidence of the obligation-based mechanism through the effect of social support on normative commitment as well as the effect of normative commitment on moderating comments. At the same time, however, a number of intermechanism relationships were found between antecedents and commitment, which implies that the formation of commitment involves a more complex process than what the tripartite model suggests. Overall, this research note contributes to IS research by combining two different perspectives into a coherent view of postadoption phenomena in the context of SNS.

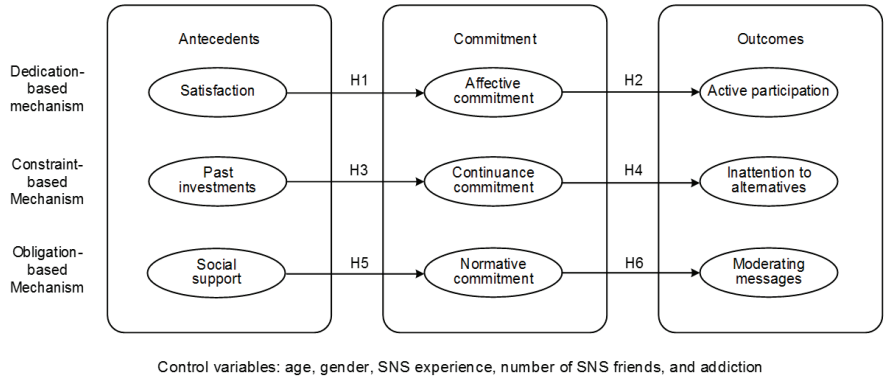
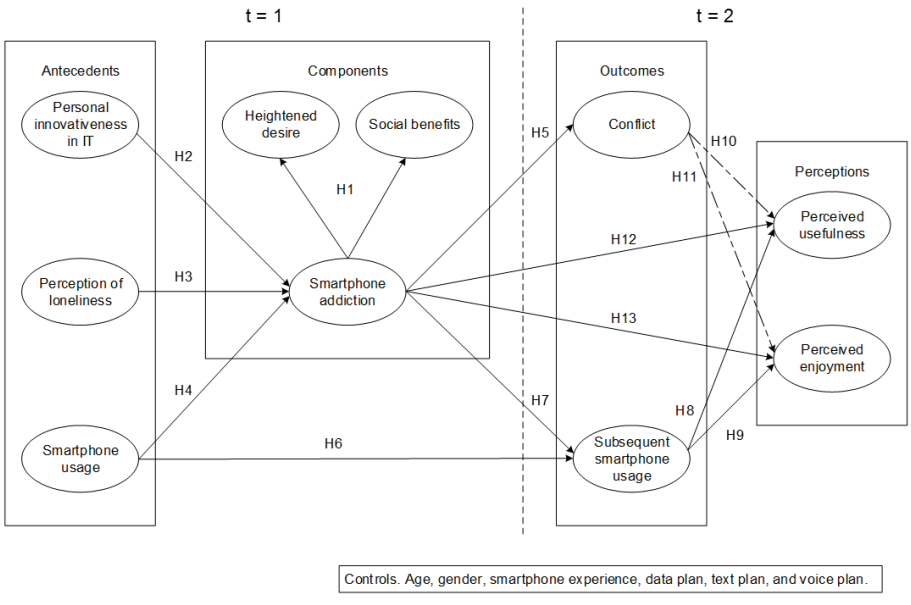


FIGURE 1 Tripartite Model

2.2 Article II: An In-Depth Look at Technology Addiction: A Refined Model and Empirical Study of Smartphone Use

Smartphones are increasingly becoming an integral part of people's lives. Although these devices are normally useful sources of entertainment, some people are becoming habituated to them to the extent of harming their personal and professional lives. Given the potential for negative consequences resulting from smartphone addiction, it is important for researchers to have a deeper understanding of its nature, causes, and effects. The objective of this study was to develop and test a theory-driven model of technology addiction within the context of smartphone use. Drawing on incentive-sensitization theory, we proposed a nomological network (Figure 2) that centers on a second-order factor of smartphone addiction.

The proposed model was empirically evaluated against longitudinal data collected from 441 smartphone users. The analysis of our structural equation modeling indicates that our two-factor measurement of smartphone addiction, consisting of heightened desire and mobile social interaction, is more parsimonious and better represents smartphone addiction than an alternative four-factor model implied in the literature. In addition, our findings suggest that prior research that identified addiction with negative consequences could be misleading. Contrary to traditional views, addiction and its negative consequences have different effects on subsequent perceptions such as perceived usefulness and perceived enjoyment.



Note: Straight line arrows represent positive relationships, and dotted line arrows represent negative relationships.

FIGURE 2 Nomological Network of Smartphone Addiction

We also found that personal innovativeness in IT and a perception of belonging explain a large amount of variation in smartphone addiction because these antecedents represent individual characteristics related to the components of smartphone addiction. Overall, the present study significantly contributes to the IS literature by offering a refined model of smartphone addiction that effectively describes longitudinal patterns in pathological smartphone use while correcting critical biases in existing models.

2.3 Article III: Engagement and Prominence: Their Complementary Roles in the Context of Online Community Behavior

Online communities depend on the ongoing contributions of their members, but convincing members to actively contribute new content and help grow their communities has been challenging. We propose that prominence, a concept still in its infancy in information systems (IS) research, is essential to the success of online communities. Community prominence denotes the extent to which an online community is top-of-mind for its members. As such, prominence differs from the previously introduced engagement construct, in that, while engagement is willful, prominence is effortless. We constructed and tested a framework (Figure 3) that shows how separation distress, i.e., distress resulting from

separation from one's online community, serves as an intermediary through which prominence complements engagement in explaining continuance intention and knowledge contribution.

Our results show that, as expected, both prominence and engagement have significant effects on separation distress that, in turn, is directly related to continuance intention but lacks a direct link with knowledge contribution. Importantly, after taking separation distress into account, engagement is no longer a significant determinant of continuance intention, nor is prominence a determinant of knowledge contribution. We find that our proposed model, as compared with prior research, results in a 23% increase in the explained variance of knowledge contribution. Our findings significantly contribute to IS research by adapting to the online community context the prominence construct that constitutes a distinctive phenomenon on its own and complements the engagement construct in explaining online community behavior. Practically, given that prominence and engagement have different antecedents and exhibit different behaviors, different managerial strategies are required to stimulate prominence and empower engagement.

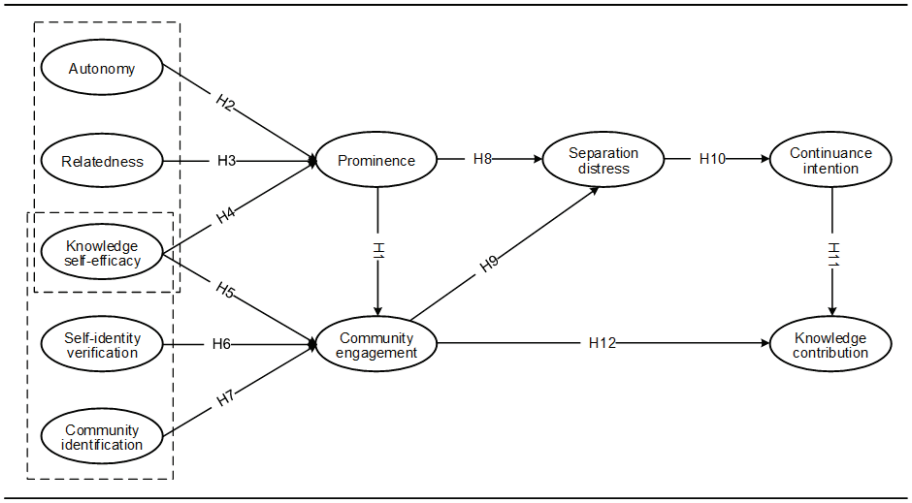


FIGURE 3 Conceptualization of Proposed Model

2.4 Article IV: How Non-Work-Related Computing (NWRC) Impacts Employees' Recovery and Performance-related Outcomes

The pervasiveness of the Internet in the workplace allows employees to use an organization's IT artifact for personal purposes that are not related to their work—a phenomenon known as non-work-related Computing (NWRC). Despite controversies on the effects of NWRC, either positive or negative, on employees' performance and psychological states, previous research has not revealed the underlying mechanism that relates NWRC to its performance-related consequences. By drawing upon the notion of recovery, we proposed a theoretical framework that describes the impact of NWRC relating to recovery that influence employees' performance. Our proposed model (Figure 4) investigated the antecedents and performance-related consequences of the recovery factor.

We conducted a field study with a two-step recall questionnaire based on data collected from 280 employees. Our findings indicate that three aspects of NWRC (psychological detachment, relaxation, and a sense of mastery) influence recovery, which in turn determine employees' performance-related outcomes (attentional capacity and personal initiative). Overall, this study gives researchers and practitioners a useful conceptual tool for analyzing the proper and improper NWRC activities in terms of employees' recovery experiences.

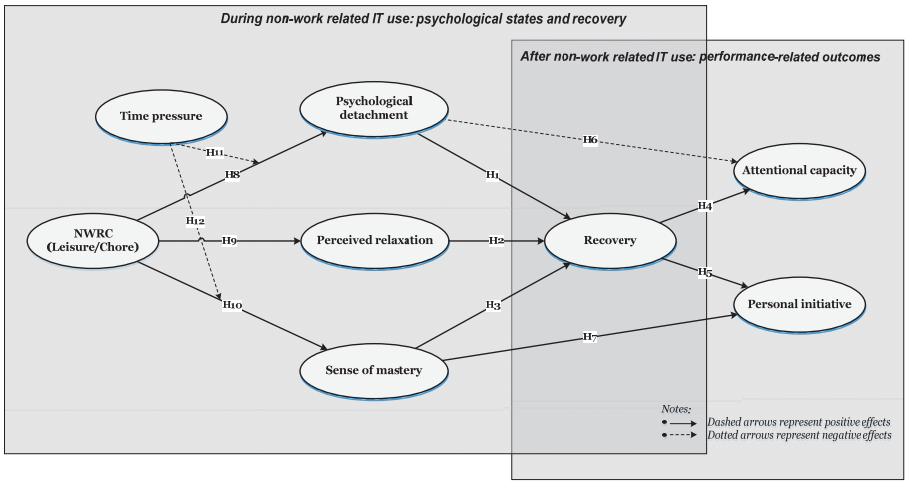


FIGURE 4 Conceptual Model of NWRC

YHTEENVETO (FINNISH SUMMARY)

Tämän väitöskirjatyön tarkoituksena on tutkia Informaatio Teknologian (IT) käyttöä ja sen syitä. Työ koostuu neljästä tutkimuksesta. Ensimmäinen tutkimus tutkii kuinka ihmiset reagoivat sosiaalisen median palveluihin (SMP). Ensimmäinen tutkimus pyrkii laajentamaan olemassa olevaa mallia, joka perustuu omistautumis- ja rajoitepohjaisiin mekanismeihin, lisäämällä vaatimuspohjaisen mekanismin SMP-käyttäytymiseen. Toinen tutkimus keskittyy tutkimaan älypuhelinten käyttöä yksilötasolla. Erityinen painoarvo toisessa tutkimuksessa annetaan älypuhelin addiktio-pohjaiselle käyttäytymiselle ja kuinka se vaikuttaa yksilöiden mielikuviin omistamistaan älypuhelimista. Kolmas tutkimus käsittelee tietoverkkoyhteisöjen käyttäytymistä. Perustuen sitoutumismalleihin, väitöskirjatutkimuksen kolmannessa osassa kehitettiin uusi konseptuaalinen malli. Viimeinen tutkimus käsittelee työhön liittymätöntä IT-käyttöä tutkimalla sen hyöty ja haittavaikutuksia valituissa tapauksissa.

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I

A TRIPARTITE MODEL OF POSTADOPTION BEHAVIORS IN THE CONTEXT OF SOCIAL NETWORKING SERVICES

by

Kuem, J., & Kim, S., & Ray, S. & Siponen, M.

Under a review at the Journal of Management Information Systems

II

AN IN-DEPTH LOOK AT TECHNOLOGY ADDICTION: A REFINED MODEL AND EMPIRICAL STUDY OF SMARTPHONE USE

by

Kuem, J., & Ray, S. & Kim, S. & Siponen, M.

Under a second round of review at Decision Sciences

III

ENGAGEMENT AND PROMINENCE: THEIR COMPLEMENTARY ROLES IN THE CONTEXT OF ONLINE COMMUNITY BEHAVIOR

by

Kuem, J., & Khansa, L. & Kim, S. & Siponen, M.

Under a review at the Journal of Management Information Systems

IV

HOW NON-WORK-RELATED COMPUTING (NWRC) IMPACTS EMPLOYEES' RECOVERY AND PERFORMANCE-RELATED OUTCOMES

by

Kuem, J., & Jiang, Z & Siponen, M.

Will be submitted to Information Systems Research