

# New Perspectives on the Development, Adoption, and Application of Information Systems

Jung Lee<sup>a</sup>, L. G. Pee<sup>b</sup>, Jinyoung Min<sup>c\*</sup>

<sup>a</sup> Associate Professor, Division of Global Business & Technology, Hankuk University of Foreign Studies, Korea

<sup>b</sup> Assistant Professor, Wee Kim Wee School of Communication and Information, Nanyang Technological University, Singapore

<sup>c</sup> Assistant Professor, College of Business, Chosun University, Korea

---

## I . Introduction

In the past decade, we have observed the rapidly changing research trend in information systems (IS) in response to the fast-developing information technology (IT) sector and the surrounding environment (Sundararajan et al., 2013). Sizzling topics, such as social media and big data, have dominated the field in recent years, and interests in new technologies, such as FinTech and Internet of things (IoT), are increasing (Whitmore et al., 2015). Discussing the capacity of these technologies in changing our daily lives and influencing businesses is undoubtedly exciting and meaningful.

However, despite the rapid development of IS research trends, fundamental questions, such as how to develop, adopt, and apply IS, still seek for answers (Heumann et al., 2015). The development, adoption, and application of IS represent fundamental issues in its use and are among the most researched topics

in this discipline. Decades of research on these topics have enriched our understanding on how to better manage IS and improve their outcomes (Ward and Peppard, 2016).

In this editorial note, we first provide a brief overview of research on the development, adoption, and application of IS by: 1) describing the evolution of research focus based on highly cited journal articles, and 2) identifying new perspectives based on studies presented in recent conferences affiliated with the Association for Information Systems. We focus on conferences because they tend to have a faster review process and can better capture current trends and emerging ideas than journal articles. We then discuss the papers selected in this special issue, together with the impressions gleaned by the reviewers during the review processes. Finally, the future of IS studies and that of the Asia Pacific Journal of Information Systems (APJIS) is briefly discussed.

---

\*Corresponding Author. E-mail: [saharamin@chosun.ac.kr](mailto:saharamin@chosun.ac.kr) Tel: 82622306812

## II. Research Trends in IS Development, Adoption, and Application

The main objective of research on IS development is to understand how it should be organized to deliver improved systems with reduced costs. IS development involves activities such as requirement analysis, project planning, system design, coding, integration, implementation, and maintenance. Prior research has investigated the standardization and measurement of the development process, as well as tools, techniques, and practices in IS development (Dybå and Dingsøy, 2008).

Earlier research dating back to the 1990s focused on IS development methods, user participation, and project learning. For example, Brinkkemper (1996) proposed and illustrated a framework for method engineering that identified development methods, techniques, tools, and methodologies. Cavaye (1995) clarified that user participation could vary in terms of the proportion of user participants (type), degree of participant responsibility, aspects of system design participation (content), phase of development (extent), formality of organization, and participant influence on outcomes. Lyytinen and Robey (1999) demonstrated that failure to learn and learning to expect failure were important factors that led to IS development project failures.

Studies between 2000 and 2009 started to look beyond the participation of users and examined how they worked with IS professionals. For example, Barki and Hartwick (2001) showed that interpersonal conflicts in teams with both users and IS professionals were reflected by disagreement, interference, and negative emotion. Conversely, conflict management was found to have positive effects on IS development outcomes, although it did not substantially mitigate

the negative effects of interpersonal conflicts in these outcomes. Tiwana and McLean (2005) developed the concept that creativity resulted primarily from the integration of the individually held expertise of team members. The diverse specialized knowledge in a team (e.g., business knowledge, IT knowledge), the quality of intra-team working relationships, and the cross-domain absorptive capacity members stimulate creativity primarily because they enhance the integration of individual knowledge at the project level.

Research during this period had also focused on globally distributed IS development projects and examined the complexity and agility of IS development. Kotlarsky and Oshri (2005) studied the importance of social ties and knowledge sharing in distributed IS development teams and found that human-related issues, such as rapport and transactive memory, were instrumental to collaborative work. Xia and Lee (2005) defined the key components of project complexity to be structural organizational, structural IT, dynamic organizational, and dynamic IT complexities. They also developed valid measures for the construct. Conboy (2009) established a definition and taxonomy of agility in IS development based on a structured literature review. The application of this taxonomy in practice was then demonstrated through a series of thought trials conducted in a large multinational organization.

Research articles published between 2010 and 2014 indicate that agility remains a topic of interest (e.g., Hummel et al., 2015). Other emerging topics include the development of ontologies for IS development (e.g., Beydoun et al., 2014), the realization of benefits from IS development projects (e.g., Doherty et al., 2012), and the conceptualization of system development ambidexterity (Tiwana, 2010).

Research on IS adoption and implementation focuses on identifying and understanding factors influ-

encing the acceptance and use of IS by individuals, teams, and organizations. The theoretical models commonly studied include technology acceptance model (TAM), unified theory of acceptance and use of technology (UTAUT), innovation diffusion theory, and technology-organization-environment (TOE) framework (Gangwar et al., 2014; Liu et al., 2008). Many reviews of research on the topic have been conducted (e.g., Gangwar et al., 2014; Jeyaraj et al., 2006; Liu et al., 2008; Michael et al., 2015; Turner et al., 2010). Overall, earlier research had mostly focused on the antecedents and effects of perceived ease of use and usefulness in different contexts (e.g., role, task, personality, demography, system type, geographical region). Other predictors were also identified, with computer experience, top management support, and availability of user support being the most significant (Jeyaraj et al., 2006). More recently, there has been increasing focus on actual measures of adoption and application (Turner et al., 2010) and moderating factors. Recent studies also tend to integrate different theories to address the limitations of different theoretical models (Gangwar et al., 2014). As technology advances, researchers have shifted their attention from IS such as Electronic Data Interchange and Enterprise Resource Planning to Social IS, Cloud Computing, Health IS, Green IS, and FinTech.

New perspectives and topics on the development, adoption, and application of IS presented in recent conferences include:

- 1) Research attention on IS development agility continues to expand, and researchers are seeking to increase intimate understanding of agility in practice. For example, Vial and Rivard (2015) conducted a case study on the approach used by three IS development project teams to achieve agility. They also identified actions that contributed to the achievement of various facets of agility.
- 2) An emerging topic is the design science approach to IS development. For example, Miah and McKay (2016) introduced a design science approach for developing decision support systems that incorporated professional value, interaction, intentions, practices, and problem solving. Their approach emphasized the view of practitioners and the behavioral aspect of system design.
- 3) The value of further enhancing our understanding of existing concepts and frameworks is recognized. For example, Tan et al. (2015) expanded the role of user participants and proposed that they could act as reference users who could influence the development of packaged enterprise systems and their acquisition. Their influence could manifest through the mechanisms of attaching, staging, and shaping of technology. Similar studies suggest that opportunities to enhance our knowledge on dominant concepts and frameworks, such as the iterative system development approach, remain considerable. For example, studies can examine how data collected from implemented IS can be used to refine existing IS or develop new IS.
- 4) The social influence of IS is highlighted. Traditional IS studies had focused on the internal problems of organizations. By contrast, recent studies focus more on how organizational information systems interact with society to co-create values. For example, the role of IS in the sharing economy wave is discussed along with the successful cases of Uber, AirBnB, or Carsharing businesses (Lee et al., 2016). These studies verify how well-developed IS

applications can accelerate the adoption of new IS and reshape industries.

- 5) The data-driven approach in IS studies continuously receives attention. Several years have passed since the big data phenomenon has emerged. Numerous IS studies have implied the potential of data-intensive IS applications and have discussed the effects from new perspectives. For example, the innovative utilization methods of the data are frequently discussed with the development and application of IS (Wu and Hitt, 2015).

### III. Articles in This Special Issue

Submissions were gathered from authors from various faculties and countries. All the editors were pleased to read and review the papers. However, several papers with considerable potential were not selected because of the tight timeline. We hope those papers will have the chance to be published in upcoming regular issues of APJIS. We, the editors, appreciate all the authors who have made successful submissions and revisions. The following are the summaries of the three papers selected for this special issue.

#### 3.1. Paper 1 - "Antecedents of Online Shopping Success: A Reexamination and an Extension"

This paper impressed the reviewers for its theoretical strength and innovative approach. This study first divides online shopping website qualities into information and system qualities based on a service-scape framework and then argues that both classifications affect service quality. It further strengthens these ideas by conceptualizing each of this type of

quality as a second-order formative construct that comprises the most salient quality dimensions. This article on online shopping success looks beyond the initial adoption to study continuous usage, such that the intention to conduct further business is affected by various IS dimensions. Accordingly, this paper provides valuable insights to the readers on understanding IS.

#### 3.2. Paper 2 - "Stochastic Traffic Congestion Evaluation of Korean Highway Traffic Information System with Structural Changes"

This paper has attracted the interest of the reviewers given the uniqueness of its topic and the strength of its analysis. It was further appreciated because the main authors are from the statistics department who are interested in IS effectiveness. The study collected upbound and downbound speed, density, and flow data observed through a vehicle detector system between two cities. The authors investigated the structural change in traffic phenomena based on the obtained data, evaluated congestion flow and cost, and assessed the effect of a scenario-specific transportation policy. The approach is suggested to diagnose and resolve traffic congestion in traffic IS. This article on traffic demonstrates how technology can help collect data that can be used in the design and development of future traffic IS, which is one of the new perspectives identified earlier in this note.

#### 3.3. Paper 3 - "Your Expectation Matters When You Read Online Consumer Reviews: The Review Extremity and the Escalated Confirmation Effect"

The third paper attracted the attention of the re-

viewers for its new perspective on social influence. It examines how an initially perceived product value influences consumer purchase intention after reading online reviews with various tones. This article proposes that the associations among the initially perceived overall product value, the degree of confirmation resulting from reading the reviews, and final purchase intention differ across review tones, such that 1) when the tone is favorable, the effect of an initially perceived product value is stronger than when the tone is critical; and 2) when the tone is extreme, the effect of confirmation is stronger than when the tone is moderate.

#### IV. Conclusion

Topics and methodologies in the IS field have evolved to encompass various phenomena and perspectives. The recent study on methodology and topic trends in IS research found that certain topics had achieved considerable advances (e.g., e-business, IT value, security and privacy), whereas other topics had become obsolete (e.g., resource management,

telecommunications and networking, end user computing) in the recent 10 years. Along with the rise and fall of existing topics, new topics, such as social computing, social networks, and inter-organizational systems, have emerged. Among the methodological developments, the most prominent change is the sharp increase in the use of secondary data (Palvia et al., 2015). These shifts are inevitable given that recent technological developments have brought crucial changes to the social fabric in daily life and have made tasks that are previously considered difficult to realize to become readily achievable.

Although this special issue of APJIS delivers only a small fraction of this shift, it clearly represents the agreement on this transition. Actively accommodating a variety of topics and varying methodologies in the field implies that we, the IS researchers and practitioners, are agile, flexible, and well equipped to scrutinize our ever-changing technology-driven world. We hope that this special issue of APJIS provides us with the opportunity to become aware of our capabilities in diverging and reconciling multiple topics and methodologies as well as in moving forward to enrich the field of inexhaustible possibilities.

#### <References>

- [1] Barki, H., and Hartwick, J. (2001). Interpersonal Conflict and Its Management in Information System Development. *MIS Quarterly*, 25(2), 195-228.
- [2] Beydoun, G., Low, G., García-Sánchez, F., Valencia-García, R., and Martínez-Béjar, R. (2014). Identification of Ontologies to Support Information Systems Development. *Information Systems*, 46, 45-60.
- [3] Brinkkemper, S. (1996). Method Engineering and Meta-Modelling Method Engineering: Engineering of Information Systems Development Methods and Tools. *Information and Software Technology*, 38(4), 275-280.
- [4] Cavaye, A.L.M. (1995). User Participation in System Development Revisited. *Information & Management*, 28(5), 311-323.
- [5] Conboy, K. (2009). Agility from First Principles: Reconstructing the Concept of Agility in Information Systems Development. *Information Systems Research*, 20(3), 329-354.
- [6] Doherty, F.N., Ashurst, C., and Peppard, J. (2012). Factors Affecting the Successful Realisation of Benefits from Systems Development Projects: Findings from Three Case Studies. *Journal of Information Technology*, 27(1), 1-16.

- [7] Dybå, T., and Dingsøy, T. (2008). Empirical Studies of Agile Software Development: A Systematic Review. *Information and software technology*, 50(9), 833-859.
- [8] Gangwar, H., Date, H., and Raoot, A. (2014). Review on IT Adoption: Insights from Recent Technologies. *Journal of Enterprise Information Management*, 27(4), 488-502.
- [9] Heumann, J., Wiener, M., Remus, U., and Mähring, M. (2015). To Coerce or to Enable? Exercising Formal Control in a Large Information Systems Project. *Journal of information technology*, 30(4), 337-351.
- [10] Hummel, M., Rosenkranz, C., and Holten, R. (2015). The Role of Social Agile Practices for Direct and Indirect Communication in Information Systems Development Teams. *Communications of the Association for Information Systems*, 36(1), 15.
- [11] Jeyaraj, A., Rottman, W.J., and Lacity, C.M. (2006). A Review of the Predictors, Linkages, and Biases in IT Innovation Adoption Research. *Journal of Information Technology*, 21(1), 1-23.
- [12] Kotlarsky, J., and Oshri, I. (2005). Social Ties, Knowledge Sharing and Successful Collaboration in Globally Distributed System Development Projects. *European Journal of Information Systems*, 14(1), 37-48.
- [13] Lee, Z.W., Chan, T.K., Balaji, M., and Chong, A.Y.-L. (2016). Technology-Media Sharing Economy: Understanding User Participation in Collaborative Consumption through the Benefit Cost Perspective. *Proceedings of the 20th Pacific Asia Conference on Information Systems (PACIS) 2016*, Chiayi, Taiwan.
- [14] Liu, Z., Min, Q., and Ji, S. (2008). A Comprehensive Review of Research in IT Adoption. *Proceedings of the 4th International Conference on Wireless Communications, Networking and Mobile Computing 2008*, 1-5.
- [15] Lyytinen, K., and Robey, D. (1999). Learning Failure in Information Systems Development. *Information Systems Journal*, 9(2), 85-101.
- [16] Miah, S.J., and McKay, J. (2016). A New Conceptualisation of Design Science Research for DSS Development Research. *Proceedings of the 20th Pacific Asia Conference on Information Systems (PACIS) 2016*, Chiayi, Taiwan.
- [17] Michael, D.W., Nripendra, P.R., and Yogesh, K.D. (2015). The Unified Theory of Acceptance and Use of Technology (UTAUT): A Literature Review. *Journal of Enterprise Information Management*, 28(3), 443-488.
- [18] Palvia, P., Kakhki, M.D., Ghoshal, T., Uppala, V., and Wang, W. (2015). Methodological and Topic Trends in Information Systems Research: A Meta-Analysis of IS Journals. *Communications of the Association for Information Systems*, 37(1), 30.
- [19] Sundararajan, A., Provost, F., Oestreicher-Singer, G., and Aral, S. (2013). Research Commentary-Information in Digital, Economic, and Social Networks. *Information Systems Research*, 24(4), 883-905.
- [20] Tan, F.T.C., Tan, B., and Sun, Y. (2015). Social Shaping of Enterprise System Acquisition and Development: The Influence of Reference Users in XiZi Holdings. *International Conference on Information Systems*, Fort Worth, Texas, 2015.
- [21] Tiwana, A. (2010). Systems Development Ambidexterity: Explaining the Complementary and Substitutive Roles of Formal and Informal Controls. *Journal of Management Information Systems*, 27(2), 87-126.
- [22] Tiwana, A., and McLean, E.R. (2005). Expertise Integration and Creativity in Information Systems Development. *Journal of Management Information Systems*, 22(1), 13-43.
- [23] Turner, M., Kitchenham, B., Brereton, P., Charters, S., and Budgen, D. (2010). Does the Technology Acceptance Model Predict Actual Use? A Systematic Literature Review. *Information and Software Technology*, 52(5), 463-479.
- [24] Vial, G., and Rivard, S. (2015). Understanding Agility in ISD Projects. *International Conference on Information Systems*, Fort Worth, Texas, 2015.
- [25] Ward, J., and Peppard, J. (2016). *The Strategic Management of Information Systems: Building a Digital Strategy*, John Wiley and Sons.

- [26] Whitmore, A., Agarwal, A., and Da Xu, L. (2015). The Internet of Things – A Survey of Topics and Trends. *Information Systems Frontiers*, 17(2), 261-274.
- [27] Wu, L., and Hitt, L. (2015). How Do Data Skills Affect Firm Productivity: Evidence from Process-driven vs. Innovation-driven Practices *International Conference on Information Systems*, Fort Worth, Texas, 2015.
- [28] Xia, W., and Lee, G. (2005). Complexity of Information Systems Development Projects: Conceptualization and Measurement Development. *Journal of Management Information Systems*, 22(1), 45-83.

◆ About the Authors ◆

---



**Jung Lee**

Jung Lee is an Associate Professor at Hankuk University of Foreign Studies. She received Ph.D. degree in MIS from Korea University Business School. Her research interests include electronic word-of-mouth, trust/distrust and social media. She has published papers in journals including Decision Support Systems, Information & Management, Information Systems Frontiers, International Journal of Electronic Commerce, and presented papers at conferences including ICIS, AMCIS, and PACIS.

---



**L. G. Pee**

L. G. Pee received her Ph.D. in Information Systems and Bachelor of Computing from the National University of Singapore. Her research focuses on knowledge management in organizations and online communities. Her works have been published in journals such as Information & Management, IEEE Transactions on Engineering Management, and Journal of the Association for Information Systems. She has participated in academic conferences such as International Conference on Information Systems (ICIS) and Pacific Asia Conference on Information Systems (PACIS) as a presenter, associate editor, and track co-chair. One of Dr. Pee's KM studies was selected for the Best Paper Award in PACIS 2010. She also received the science award by NTT Docomo's Mobile Communication Fund in 2013.

---



**Jinyoung Min**

Jinyoung Min is an Assistant Professor in the College of Business at Chosun University. She received her Ph.D. in management engineering from Korea Advanced Institute of Science and Technology. Her research interests include social dynamics in social media, and human computer interaction. Her work has been published in Computers in Human Behavior, International Journal of Information Management, Journal of the Association for Information Science and Technology, etc.

---

Submitted: September 11, 2016; Accepted: September 29, 2016