

Association for Information Systems

AIS Electronic Library (AISeL)

ICIS 2019 Proceedings

Business Models and Digital Transformation

Engagement on Digital Platforms: A Theoretical Perspective

Yinan Yu

University of Memphis, yinan.yu2@mail.mcgill.ca

Jui Ramaprasad

McGill University, jui.ramaprasad@mcgill.ca

Follow this and additional works at: <https://aisel.aisnet.org/icis2019>

Yu, Yinan and Ramaprasad, Jui, "Engagement on Digital Platforms: A Theoretical Perspective" (2019). *ICIS 2019 Proceedings*. 9.

https://aisel.aisnet.org/icis2019/business_models/business_models/9

This material is brought to you by the International Conference on Information Systems (ICIS) at AIS Electronic Library (AISeL). It has been accepted for inclusion in ICIS 2019 Proceedings by an authorized administrator of AIS Electronic Library (AISeL). For more information, please contact elibrary@aisnet.org.

Engagement on Digital Platforms: A Theoretical Perspective

Short Paper

Yinan Yu

University of Memphis
3675 Central Ave, Memphis, TN, USA
yyu4@memphis.edu

Jui Ramaprasad

McGill University
1001 Sherbrooke Street West
Montreal, QC, Canada
jui.ramaprasad@mcgill.ca

Introduction

In this short paper, we develop a comprehensive definition of digital platform engagement as *a user's degree of voluntary allocation of personal cognitive, emotional, and behavioral resources to a platform related interaction*. We define each of these aspects of engagement – cognitive, emotional, and behavioral – as they relate to different objects with which users can interact: other users, the content/product that the service is offering, and the platform itself. We provide distinct conceptualizations of each of these dimensions of engagement as it relates to the objects that the users interact with, with the goal of resolving inconsistencies and disentangling concepts that are confounded with one another and to ultimately inform further academic research and practice.

We argue that it is critical to adequately distinguish different types of platform engagement and their link to revenue generation because they are key to the success of digital platforms. While engagement has been examined in the IS literature, it has been done thus far in a relatively un-integrated manner, with definitions and operationalizations varying across papers. For instance, prior work has defined engagement as “actions taken by the user to initiate interactions with other users” (Jung et al. 2019). Other scholars have conceptualized engagement as a set of experiences that represent how users engage with a website (Calder et al. 2009). Engagement has also been defined as creating online word-of-mouth (Chu and Kim 2011) or user-generated content (Goh et al. 2013). Others have defined and studied related concepts such as contribution (Rishika and Ramaprasad 2019), participation in discussion communities (Bateman et al. 2011), active participation in B2B communities (Gharib et al. 2016), and collaboration (Faraj et al. 2011). These conceptualizations all fall under the umbrella of engagement, but vary in terms of the object with which interactions take place and the type of interactions between a user and the object of interaction. Since these prior works represent different manners of engagement as one concept without distinction, we are unable to differentiate the impacts and outcomes related to engagement clearly.

Hence, these diverse approaches to define engagement have led to confusion about the fundamental nature of engagement, and the impacts that engagement can have. A coherent and comprehensive definition of platform engagement, and a clear delineation of the different aspects of platform engagement are critical to disentangle the relationships between engagement and business outcomes (e.g., platform monetization), and further, to understand the drivers of platform engagement. We suggest that a complete and coherent conceptualization of engagement can help alleviate this confusion.

Motivation

The new business models enabled by digital platforms and the ecosystems built around them drive the most profound change in the global macroeconomic environment today. With the aid of platform technology, platform businesses bring two or multiple distinct groups of end users together, so that they are affiliated with the platform and can interact with each other directly (Hagiu and Wright 2015). Groundbreaking innovative business models, such as ride sharing, crowdfunding, crowdsourcing, and so on, are embracing the transformational power of platforms. The top 15 public platform companies already represent \$2.6 trillion in market capitalization worldwide (Accenture 2016).

By providing participative infrastructure and governance conditions, digital platforms consummate matches among users, facilitate the exchange of products and information, and thus create value for all participants (Parker et al. 2016). A key component of the success of digital platforms rests on users engaging in technology-enabled interactions with different objects relating to the platform (i.e. the product or content on the platform, other users on the platform, and the platform itself). On digital platforms, different types of users (consumers, producers, and some of them may play both roles at various times) connect and conduct interactions with one another using the functions provided by the platforms. Engaged users invest their cognitive energy, affective resources, and behavioral effort when they use technology features to, for example, evaluate products or services, consume or contribute information, and interact with other users. In the process, they exchange, consume, and sometimes co-create something of value.

Meanwhile, switching costs and network effects caused by these interaction activities lay the foundation of value creation for the platform business model. As more users engage with the platform, the platform is more likely to attract other users on both the same-side and the cross-side, and the increased user base creates more value for the existing users. Increased engagement and its subsequent network effects mean users become stickier to the platform, which creates higher cost of switching to other platforms. In this way, the platform has the potential to leverage engagement in order to monetize users based on network effects and switching costs. For instance, platform engagement has been shown to increase users' willingness to pay for premium subscription in platforms that employ the freemium business model and the spread of positive word-of-mouth (WOM) (Bapna et al. 2018; Ray et al. 2014).

Although information systems (IS) scholars have recognized the key role played by engagement in digital platform management and have started examining this concept, existing studies present diverse and inconsistent definitions and operationalizations (see Table 1) (e.g., Bapna et al. 2018; Chen et al. 2018; Khansa et al. 2015; Oestreicher-Singer and Zalmanson 2013; Lee et al. 2018; Ray et al. 2014; Zhang et al. 2013). While platform engagement is a multidimensional concept and involves various objects, most papers only touch on one certain dimension without explicit explanation, and without acknowledging that there are additional dimensions of engagement that they do not explore. Therefore each paper studying "engagement" actually refers to multiple different dimensions of engagement. For instance, while Bapna et al. (2018) use "engagement" to refer to users' content generation and consumption and social interactions, Ray et al. (2014) refer to users' enthusiasm and feeling of meaningfulness. At the same time, there are a large number of papers examining engagement, but they use different terminology. For example, Chen et al. (2018), Bapna et al. (2018), and Zhang et al. (2013) all study behavioral engagement on digital platform, but call it "voluntary contribution", "engagement", and "continued participation", respectively. Such inconsistent definitions and operationalizations hinder the academic progress in this area because scholars are unable to communicate efficiently, it is difficult to accumulate knowledge across studies when concepts used by different researchers are not comparable, and importantly it can lead to confusion about how to interpret and synthesize the empirical evidence around the effects of different engagement dimensions on various outcomes across different types of platforms.

This confusion and inconsistency stem from a lack of a comprehensive definition of platform engagement. That is, IS studies on platform engagement exhibit a large variety of definitions regarding engagement objects and resources. We insert existing IS studies in Table 2 to demonstrate that IS research has thus far focused on a limited scope when looking at platform engagement. First, a majority of studies only focus on user engagement with the product exchanged or content consumed on the platform. Interactions with other users and the platform itself are largely ignored. However, one of the most important characteristics of two-sided digital platforms is the existence of network effects, both direct and indirect. Social interactions among users play an important role in boosting the user base growth and therefore network effects, which would profoundly increase the platform's overall profitability. Second, most of the existing studies focus on only one of the engagement resources—emotional, cognitive, or behavioral (we will explain in more detail in the next section)—as both explanatory variable and outcome variable. This leads to an incomplete nomological network. For example, when only focusing on the cognitive engagement, papers usually examine behavioral engagement as the outcome variable. Namely, these studies only focus on the interrelationship among different engagement resources and without actually establishing the legitimacy of studying engagement (e.g., how it influences other platform metrics). Such inconsistent conceptualizations result in an incomplete nomological network of engagement with important antecedents, consequences, and mechanisms left largely unexamined. This hinders future studies in this area.

Table 1 Definitions and Dimensionality of Engagement in the IS Platform Literature

| Study | Concept | Definition | Dimensionality | Object | Antecedent/ Consequence |
|---|-----------------------------|---|--|---------------------------|---|
| Engagement as antecedent | | | | | |
| Oestreicher-Singer and Zalmanson (2013) | Participation | User participation including content consumption, content organization, community involvement and community leadership. | Unidimensional: B | Product/content, Platform | Willingness to pay |
| Ray et al. (2014) | Online community engagement | The enthusiasm of members for contributing to their community because they feel it is an action that is effective, meaningful, and challenging. | Multidimensional: Cognitive (C), Emotional (E) | Product/content, Platform | Knowledge contribution, positive WOM |
| Engagement as consequence | | | | | |
| Bapna et al. (2018) | Social engagement | Social engagement on online community includes user generated content, social interactions and content consumption | Unidimensional: B | Product/content, Users | Premium subscription |
| Chen et al. (2018) | Voluntary contribution | Providing answers on knowledge-sharing platform | Unidimensional: B | Product/content | Motivating mechanisms implemented through IT artifacts |
| Khansa et al. (2015) | Active participation | Contributing questions and answers in online Q&A communities | Unidimensional: B | Product/content | Artifacts, membership, and habit |
| Lee et al. (2018) | Consumer engagement | Consumer engagement is defined as likes, comments, shares, and click-through on brands' Facebook pages. | Unidimensional: Behavioral (B) | Product/content | Social media advertising content |
| Ray et al. (2014) | Online community engagement | The enthusiasm of members for contributing to their community because they feel it is an action that is effective, meaningful, and challenging. | Multidimensional: Cognitive (C), Emotional (E) | Product/content, Platform | Knowledge self-efficacy, self-identity verification, community identification |
| Zhang et al. (2013) | Continued participation | Providing subsequent messages include both thread-initiating messages and follow-up messages to other messages in innovation communities | Unidimensional: B | Product/content | Community response, member's role |

This short paper, aims to explore the theoretical foundation, provide a broader and coherent definition, and create a comprehensive typology. Then, we will link this typology of engagement to monetization strategies employed by digital platforms, to serve as a framework for digital platforms to generate revenue. To do this, we first review previous literature to understand how engagement is studied in other areas, such as marketing and organizational behavior. We extract the resources involved in platform engagement (i.e., cognitive, emotional, and behavioral), based on these works to deconstruct this concept. Then we provide a general definition for platform engagement, and sub-level definitions for each of the three dimensions.

Next, since platform businesses are characterized as multi-sided markets, they involve different types of participants, such as consumers, producers, third-party advertisers, and the platform itself. Thus, we introduce the “object” dimension to describe whether the user is engaged with the product exchanged on the platform, other users, or the platform itself. Based on these two aspects (i.e., resource and object), we put forward a typology of platform engagement. We provide tags and examples for each of the nine types of the engagement. This paper is still a research in progress, as we are currently refining our theory of engagement, and intend to next explain why and how different types of engagement would differently impact business outcomes (e.g., monetization and word-of-mouth).

Table 2 IS Platform Literature Classification

| Object Resource | Product/Content | Users | Platform |
|--------------------|--|---------------------|---|
| Cognitive | Ray et al. (2014) | | Ray et al. (2014) |
| Emotional | Ray et al. (2014) | | |
| Behavioral | Bapna et al. (2018); Chen et al. (2018); Khansa et al. (2015); Oestreicher-Singer and Zalmanson (2013); Lee et al. (2018); Zhang et al. (2013) | Bapna et al. (2018) | Oestreicher-Singer and Zalmanson (2013) |

Theoretical Background

Engagement has been widely studied in different fields in social science, such as sociology, psychology, and political science¹. Our conceptualization of platform engagement draws on literature in management/organizational behavior and marketing, which explores the concept from a management perspective and in a business context. Grounded in person-role relationship and group theory, work engagement is conceptualized as both a psychological state wherein employees bring their personal selves into work roles and feel energetic and absorbed, and a behavioral dimension of investing effort (e.g., Kahn 1990; Macey and Schneider 2008; Rich et al. 2010). Customer engagement, rooted in marketing relationships and interactive service experience, has also been conceptualized as a multi-dimensional concept, reflecting cognitive absorption, emotional dedication, and behavioral interaction with a product/service (e.g., Bordie et al. 2011; Kumar and Pansari 2016).

These definitions consistently show that engagement is a multidimensional concept that predominantly consists of cognitive, emotional, and behavioral aspects. First, engagement as a cognitive state embraces some forms of absorption, commitment, and empowerment (e.g., Macey and Schneider 2008; Mollen and Wilson 2010; Pansari and Kumar 2016; Spreitzer 1995). Second, existing studies have also identified the importance of positive affectivity and the energetic state of engagement, i.e. the emotional aspect of engagement. These factors tie to individuals' satisfaction, dedication, and feeling of “connectedness” they obtain from their work or their interaction experience with a brand (e.g., Macey and Schneider 2008). Third, there are various behavioral manifestations of engagement, which goes beyond basic task completion and product purchase to organization citizenship behavior (Rich et al. 2010), referring the brand to others, and generating feedback and word-of-mouth, and so on (e.g., Kumar and Pansari 2016; Harmeling et al. 2017; Pansari and Kumar 2016). These three dimensions are indispensable aspects of engagement and could influence each other. For example, emotional engagement also involves a sense of commitment that

induces prosocial behavior and organization citizenship behavior. These behaviors will in turn lead to individuals' enjoyment and involvement.

Definition and Classification of Platform Engagement

We define platform engagement as a user's degree of voluntary allocation of personal cognitive, emotional, and behavioral resources (e.g., time and energy) to a platform related interaction, which can involve a product/content, other users, or the platform itself. Consequently, platform engagement can be classified according to the two main aspects: resource and object.

First, platform engagement is a multi-dimensional concept stemming from the resources the user employs in his/her engagement. It is rooted in users' cognitive needs to evaluate products or content exchanged on the platform, accompanied by being immersed in emotions or feelings of attachment and connecting, and manifested in various kinds of interactions and participation activities. We further define *cognitive* engagement as a user's degree of absorption in thought in a focal object in a platform related interaction. It is characterized by being fully concentrated and deeply engrossed in the thought processing of a focal engagement object. *Emotional* engagement is a user's degree of affective dedication and the sense of belonging in a platform related interaction. It is characterized by a user's pleasure and satisfaction of products, emotional bonding with other users, and a sense of belonging to the platform. *Behavioral* engagement is a user's degree of action in a platform related interaction. It is the behavioral manifestation toward the platform, including activities ranging from fulfilling the user's personal needs to helping others and the whole platform. Table 3 shows the definitions of engagement in general and of the three dimensions, respectively.

Table 3 Definition of Platform Engagement

| Construct | Definition |
|-----------------------|---|
| Platform engagement | A user's degree of voluntary allocation of personal cognitive, emotional, and behavioral resources (e.g., time and energy) to a platform related interaction, which can involve a product/content, other users, or the platform itself. |
| Cognitive engagement | A user's degree of absorption in thought in a focal object in a platform related interaction |
| Emotional engagement | A user's degree of affective dedication and the sense of belonging in a platform related interaction. |
| Behavioral engagement | A user's degree of action in a platform related interaction. It is the behavioral manifestation toward the platform, including activities ranging from fulfilling the user's personal needs to helping others and the whole platform |

Second, platform engagement involves different objects, stemming from the multi-entity embedded platform structure, with which the user can engage. Product and content exchange are the most fundamental function facilitated by digital platforms and the basic form of platform participation. Content exchange could be further classified into content consumption, production, and curation, reflecting different levels of content engagement. Apart from exchange processes, platform engagement can also be user-focused. Users may be passionately involved with a platform because they want to connect some particular users, as their content is extremely interesting or they share similar tastes. Platforms are increasingly adopting social technologies, such as following other people, commenting, and messaging, to facilitate such social interactions, which enriches and strengthens the content generation processes and network effects consequently. Additionally, users are able to directly engage with the platform. Users utilize different platform features to fulfill their own needs (e.g., searching, tagging, and passing) or the needs of other participants and the whole community (e.g., initiating affinity groups and moderating discussions).

Furthermore, the two aspects are also interrelated with each other. For example, the relative importance of the cognitive, emotional, and behavioral dimensions may vary with the specific object with which the user is engaging in one particular situation. Table 4 provides the classification of platform engagement along the

two aspects. We provide a tag for each of the nine different types of engagement, aiming to capture the gist by a simple word.

Table 4 Preliminary Classification of Platform Engagement

| Object Resource | Product/Content | Users | Platform |
|------------------------|------------------------|---------------|---------------|
| Cognitive (Absorption) | Evaluation/Elaboration | Engrossment | Commitment |
| Emotional (Dedication) | Satisfaction | Connectedness | Belongingness |
| Behavioral (Action) | Consumption/Generation | Interaction | Participation |

In Table 5, we provide examples for each engagement type in the context of music streaming platforms. On the music streaming platform, for example, a user can start interacting with the platform by listening to the music (i.e. the product). The user invests cognitive resources when evaluating the music (e.g., the melody, genre, and lyrics, etc.), and emotional resources if she has a strong emotional feeling towards that music. Then she may decide to add the music to her playlist for future consumption. Aside from product-centered consumption, a user can also experience a user-centered engagement. She may like the collection of other users, and therefore feels emotionally connected with them because of their shared interests. Consequently, she may initiate some social interactions with the them (e.g., following or sending messages to them). Another object that the focal user can interact with is the platform itself. While using various functions of the platform, such as the search and recommendation, the user is cognitively evaluating their performance. A good platform that satisfies the user's own need would stimulate a sense of belonging to the community. Consequently, the user may contribute citizenship behavior to benefit other users and the whole platform.

Table 5 Engagement of Music Streaming Platform

| Object Resource | Product/Content | Users | Platform |
|--------------------|--|--|---|
| Cognitive | Evaluate a piece of music | Evaluate a user's collection of music | Evaluate the function of a platform |
| Emotional | Like this music | Like the user's tastes, feel connected with her. | Feel a sense of belonging to the community |
| Behavioral | Listen to the music, collect the music, add it to the playlist, and write blogs. | Follow the user, message her. | Use search and recommend features, organize events. |

Future Work

In the next step, we will build a nomological network and theory of platform engagement. Table 6 provides several examples of potential antecedents and consequences of platform engagement. To achieve this goal, we will first examine the interrelationship between different types of engagement. For example, Ray et al (2014) show that users' community engagement increases their knowledge contribution on online discussion communities. According to our definition and classification, their so-called "community engagement" belongs to cognitive and emotional engagement (i.e., the enthusiasm of members for contributing to their community), and the knowledge contribution actually belongs to behavioral engagement. Therefore, cognitive and emotional engagement may lead to behavioral engagement. Furthermore, the interrelationship between different engagement resource may vary across different objects. Second, we will investigate the antecedents of engagement. Since we focus on examining digital

platforms in IS context, one particular antecedent that we will pay special attention to is technological features, such as social network features that facilitate social interaction and social tie creation, and content-based features such as recommendation systems. Third, we will study how platform engagement influences various platform performance metrics, such as monetization. Specifically, we are interested in examining how the relationship between engagement and monetization varies with different platforms and different users. The relative importance of different types of engagement may vary with the types of value that digital platforms aim to provide. We posit that the level of product differentiation and whether the content is hedonic vs. utilitarian will impact switching and multi-homing costs and ultimately the potential for monetization. For example, user engagement might be more important for platforms facilitating information exchange than those focused on economic transaction. In terms of user characteristics, we suggest that stage in user life cycle (users in early stages will have higher switching costs if they are engaged with the content as opposed to the community, whereas this may change as the users tenure in on the platform increases), heterogeneous vs. homogeneous preferences for content (e.g. a user with heterogeneous preferences will have higher costs if they can engage with more diverse content).

Table 6 Example of Antecedents and Consequences of Platform Engagement

| Antecedents | Platform Engagement | Consequences |
|--|--|--|
| <ul style="list-style-type: none"> • Technological features (e.g. social network features, content recommendation system) • Identity • Self-efficacy • Reciprocity • Reputation • Incentives • Mode of customer acquisition | <ul style="list-style-type: none"> • Cognitive engagement • Emotional engagement • Behavioral engagement • Interrelationship | <ul style="list-style-type: none"> • WOM generation • Monetization |

References

- Accenture Technology Vision. 2016. "People First: The Primacy of People in a Digital Age"
- Bapna, R., Ramaprasad, J. and Umyarov, A. 2018. "Monetizing Freemium Communities: Does Paying for Premium Increase Social Engagement?" *MIS Quarterly* (42:3), pp. 719–735.
- Bapna, R. and Umyarov, A. 2015. "Do Your Online Friends Make You Pay? A Randomized Field Experiment on Peer Influence in Online Social Networks," *Management Science* (61:8), pp. 1741–2011.
- Bateman, P. J., Gray, P. H, and Butler, B. S. 2011. "The Impact of Community Commitment on Participation in Online Communities," *Information Systems Research* (22:4), pp. 841–854.
- Brodie, R., Hollebeek, L., Juric, B., and Ilic, A. 2011. "Customer Engagement: Conceptual Domain, Fundamental Propositions, and Implications for Research," *Journal of Service Research* (14:3), pp. 252–271.
- Calder, B. J., Malthouse, E.C., and Schaedel U. 2009. "An Experimental Study of the Relationship between Online Engagement and Advertising Effectiveness," *Journal of Interactive Marketing* (23), pp. 321–331.
- Chao, Y. and Dardenger, T. 2013. "Mixed Bundling in Two-Sided Markets in the Presence of Installed Base Effects," *Management Science* (59:8), PP.1904–1926.
- Gharib, R.K., Philpott, E., and Duan, Y. 2016. "Factors Affecting Active Participation in B2B Online Communities: an Empirical Investigation," *Information and Management* (30:8), pp. 1073-1075.
- Chen, W., Wei, X., and Zhu, X. 2018. "Engaging Voluntary Contributions in Online Communities: A Hidden Markov Model," *MIS Quarterly* (42:1), pp.83–100.
- Chu, Shu-Chuan and Kim, Y. 2011. "Determinants of Consumer Engagement in Electronic Word-of-Mouth (eWOM) in Social Networking Sites," *International Journal of Advertising* (30:1), pp. 47-75.

- Faraj, S., Jarvenpaa, S. L., and Majchrzak, A. 2011. "Knowledge Collaboration in Online Communities," *Organization Science* (22:5), pp. 1224-1239.
- Goh, Khim-Yong, Heng, Cheng-Suang, Lin, Z. 2013. "Social Media Brand Community and Consumer Behavior: Quantifying the Relative Impact of User- and Marketer-Generated Content," *Information Systems Research* (24:1), pp. 88-107.
- Hagiu, A. and Wright, J. 2015. "Multi-Sided Platforms," *International Journal of Industrial Organization* (43), pp.162-174.
- Harmeling, C., Moffett, J., Arnold, M., and Carlson, B. 2017. "Toward a Theory of Customer Engagement Marketing," *J. of the Acad. Marketing Science*. (45), pp. 312-335
- Harter, J. K., Schmidt, F. L., and Hayes, T. L. (2002). "Business-Unit-Level Relationship between Employee Satisfaction, Employee Engagement, and Business Outcomes: A Meta-Analysis," *Journal of Applied Psychology* (87:2), pp. 268-279.
- Jung, J., A. Umyarov, R. Bapna, J. Ramaprasad. 2019. "Love Unshackled: The Causal Effect of Mobile Application Adoption on Online Dating Behavior," *MIS Quarterly* (43:1), pp. 47-72.
- Kahn, W. 1990. "Psychological Conditions of Personal Engagement and Disengagement at Work," *Academy of Management Journal* (33:4), pp. 692-724.
- Kumar, V. and Pansari, A. 2016. "Competitive Advantage through Engagement," *Journal of Marketing Research* (53:4), pp. 497-514.
- Khansa, L., Ma X., Liginlal D. and Kim S. 2015. "Understanding Members' Active Participation in Online Question-and-Answer Communities: a Theory and Empirical Analysis," *Journal of Management Information Systems* (32:2), pp. 162-203.
- Lee, D., Hosanagar, K., and Nair, H. 2018. "Advertising Content and Consumer Engagement on Social Media: Evidence from Facebook," *Management Science*. Published online in Articles in Advance 18 Jan 2018.
- Macey, W. and Schneider, B. 2008. "The Meaning of Employee Engagement," *Industrial and Organizational Psychology* (1), pp. 3-30.
- Oestreicher-Singer, G. and Zalmanson, L. 2013. "Content or Community? A Digital Business Strategy for Content Providers in the Social Age," *MIS Quarterly* (37:2), pp. 591-616.
- Oracle. 2016. "Modernize Customer Engagement Digital Experience Solutions for Marketing & Business Services"
- Parker, G., Van Alstyne, W.M., Choudary, S.P. 2016. *Platform Revolution: How Networked Markets Are Transforming the Economy and How to Make Them Work for You*. WW Norton.
- Pansari, A. and Kumar, V. 2016. "Customer Engagement: the Construct, Antecedents, and Consequences," *J. of the Acad. Mark. Sci.* (45), pp. 294-311.
- Ray, S., Kim, S., and Morris, J. 2014. "The Central Role of Engagement in Online Communities," *Information Systems Research* (25:3), pp. 528-546.
- Rich, B. L., Lepine, J. A. and Crawford, E. R. 2010. "Job Engagement: Antecedents and Effects on Job Performance," *Academy of Management Journal* (53:3), pp. 617-635.
- Rishika Rishika, Jui Ramaprasad. 2019. "The Effects of Asymmetric Social Ties, Structural Embeddedness, and Tie Strength on Online Content Contribution Behavior," *Management Science*, Published online in Articles in Advance 15 Jan 2019
- Spreitzer, G.M. 1995. "Psychological Empowerment in the Workplace: Dimensions, Measurement, and Validation," *Academy of Management Journal* (38), pp. 1442-1465.
- Zhang, C. Hahn, J. and Prabuddha, D. 2013. "Research Note—Continued Participation in Online Innovation Communities: Does Community Response Matter Equally for Everyone?" *Information Systems Research* (24:4), pp.1112-1130.