

Minitrack Introduction: Strategy, Information, Technology, Economics, and Society (SITES)

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The 2020 edition of the SITES minitrack comprises three sessions that showcase the economics of IS in the force field of society. Companies are dealing with embedded customers who naturally produce externalities, at times positive and at times negative. Thus, even individual interactions can have global impacts, and conversely, a costly product campaign might go unnoticed because of a failure to influence pivotal agents. Firms also have to anticipate the economic and social interactions within their customer base, for instance, due to sharing of their products in various aftermarket exchanges. Finally, it is important to understand how to motivate and move a crowd to one's advantage, given the connectedness of the individuals within. This year's papers lead us on an interesting journey, presenting different perspectives from which to tackle these issues.

The first session of this year's SITES minitrack revolves around the "Mobilization of Groups and Crowds" with contributions that examine the interaction of incentives and information on networks of users. The first paper, on "Product-driven Entrepreneurs and Online Crowdfunding," by Bin Gu, Lin Hu, and Zhenhua Wu, notes that entrepreneurs—by turning to a crowd—are able not only to raise capital for their ventures, but also to obtain advance demand information in addition to raising capital. "Product-driven" entrepreneurs would take such information into account by tailoring their product designs accordingly, whereas "profit-driven" entrepreneurs would focus on maximizing the difference between revenues and costs, without special regard for consumer preferences. The authors' model provides an analysis under the assumption that consumers cannot observe entrepreneurs' types but that the platform can, so that by encouraging the participation of one type over another favorable influence can be exerted over the product quality in the post-funding stage. While there may be an abundance of moving parts in the model, it is mainly the authors' raising awareness about the underlying issues more than the specific conclusions of this conceptual model that deserve the reader's attention.

Speaking of which, the contribution, "Attention or Appreciation? The Impact of Feedback on Online Volunteering" by Alan Dennis, Jane Tan, and Fujie Jin, examines how the count of page views (attention) versus the number of five-star ratings (appreciation) influences the repeat-volunteering behavior of college-admission counselors. The authors find empirical evidence to support the thesis that appreciation encourages future volunteering. In contrast, attention tends to fuel self-satisfaction with the volunteering accomplished, with little to encourage future participation.

Last, "Run for the Group: The Impacts of Offline Teambuilding, Social Comparison and Competitive Climate on Group Physical Activity – Evidence from Mobile Fitness Apps," by Zilong Liu, Yuan Zhang, Jie Zhang, and Xiaolong Song, examines peer and group effects on the motivation to invest time in exercising. Using a proprietary dataset tracking outdoor runners in about 150 groups for the better part of a year, the authors find that both intra-group (peer) effects and inter-group comparisons add significant motivation for exercise. An interesting new feature of this study is the application of social comparison theory, both at the level of group members and at the level of group identity (measured by members' sense of belonging).

The second session, on "Cooperation and Sharing in Product Markets," features first "Close Encounters between AMC and MoviePass" by Deb Dey, Rajiv Mukherjee, and Atanu Lahiri. The paper examines the relationship between a consumption-bundling intermediary (MoviePass) and a chain of movie theaters (AMC), considering the digital platform as a potential entrant that the movie theater may want to deter. Deterrence itself becomes easier the closer the incumbent's technological capabilities (such as the ability to provide a subscription platform) matches that of the entrant.

The next contribution, entitled "Effects of Flexibility, Security, and Information Features on Supplier Participation in the Sharing Economy: An Empirical Study," by Kwangjin Lee, Johannes Bauer, Soo Jeong Chris Hong, and Nelson Granados, examines the

agents' willingness to act as suppliers for a ridesharing intermediary based on work conditions, such as minimum wage, benefit plans, or minimum required up-time. The authors find that drivers tend to opt to work for platforms in the sharing economy that allow them to effectively complement their main occupation, which is usually found outside the sharing economy.

Concluding this session, the paper "Nonlinear Pricing of Shareable Products," by Thomas A. Weber, derives an optimal nonlinear pricing scheme for shared goods where the original vendor is able to charge for transitions from one user to another. The resulting menu of "screening" contracts, which depends on the product's durability (an instrument chosen by the firm), is robust with respect to the distribution of consumer types. This turns the quadratic schedule of (purchase price, sharing tariff)-tuples into a pricing solution that can be made optimal by tuning its few parameters.

The third and final session, on "Dealing with Risk and Vulnerabilities," begins with "IT Risk Factor Disclosure and Stock Price Crashes" by Victor Song, Hasan Cavusoglu, Gene Moo Lee, and Li Zhi Ma, who find that the disclosure of IT risk factors (as part of the 10-K annual report required by the SEC) is positively associated with the likelihood of a future stock-price crash. One of the main reasons is that by the time of disclosure the downside risk has become so severe that investors are likely to react strongly to the firm's impending liability.

Conversely, in the final paper of this year's SITES mini-track, entitled "Information Disclosure and Security Vulnerability Awareness: A Large-Scale Randomized Field Experiment in Pan-Asia," by Yunhui Zhuang, Yunsik Choi, Shu He, Chung Man Alvin Leung, Gene Moo Lee, and Andrew Whinston, the authors find that firms, upon receiving information about IT security vulnerabilities, tend to invest significantly more in security measures than those left unaware. They suggest that a published firm-level vulnerability index may allow for the implementation of regulatory "carrots" (e.g., a tax subsidy on security investments) and "sticks" (e.g., a tax penalty for low cyber-security scores). The findings indicate that firms' incentives to improve their cybersecurity may be influenced significantly by fairly simple regulatory measures, such as the distribution of a comparative vulnerability index.

In terms of key takeaways from this year's edition of the SITES minitrack, we note the important realization that in a connected world a disciplined "second-order design" is needed to achieve objectives. That is, individuals cannot be incentivized in isolation but their social and economic contexts matter. An agent's response to a principal's design (where the "principal" may represent a firm, a platform, a regulator, and so forth) are determined not only by the direct (first-order) effect of the design on the bilateral principal-agent interaction, but also by the indirect (second-order) effect of the design on agent-to-agent interactions. For example, changing the way shareable products are purchased and shared creates both first-order influence on the retail market and second-order influence on the sharing market, incidentally resulting in two revenue streams. Or receiving information about IT security vulnerabilities encourages investment in additional security not only to deal directly with the vulnerability (first-order effect) but also because a low index reflects low performance in a community of peers (second-order effect).

Virtually every paper in this year's SITES mini-track contains the flavor of these two-level considerations, where the contact between principal and each agent is "multilateral," in the sense that the principal's structured intervention takes into account the influence on the target agent by others. Thus, when trying to create value with a fitness app, first-order functionality is only one ingredient that is insignificant compared with the role a well-designed within-group and between-group information exchange might play in motivating each individual user to participate.

The second-order design alluded to earlier is but a primitive first step in an attempt at "ecosystem design." It aims at enveloping a user's online and offline paths with corporate and social interactions, both targeted and unstructured, so as to maximize the principal's net benefit from the entire user base, as evaluated by a particular objective (expected profit for a firm, volunteer hours and fundraising success by a university, or welfare for a social planner). Research is needed on the corresponding design of multi-level incentives and on the interactions of would-be principals to forge alternative ecosystems or a common domain of complementary interactions. While 2020 SITES might be a milestone, it can only be a beginning for improving our understanding of what lies ahead.