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Research Spotlights

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Research Spotlights

Effect of Knowledge-Sharing Trajectories on Innovative Outcomes in Temporary Online Crowds (p. 685)
Ann Majchrzak, Arvind Malhotra

How can managers get the most innovation from crowdsourcing? Many companies use crowds of employees and/or the public to solicit ideas about a problem or question. There is currently only one way in which these crowdsourcing events are conducted: asking individuals for their ideas or well-considered proposals and then asking the rest of the crowd to help refine the ideas. In fact, most crowdsourcing innovation platform vendors offer only this one way to do crowdsourcing. Our research demonstrates that this is NOT the way that generates the most innovation from the crowd. We coded and analyzed the content of all time-stamped posts made in five different crowdsourcing events, identified different knowledge-sharing trajectories used by the crowds, and then determined which trajectories were more likely to precede the most innovative ideas, as judged by managers and independent raters. We found that, when crowd members shared knowledge to identify a validated paradox inherent in the problem the crowd was addressing BEFORE they offered their ideas for solving the problem, their ideas were more innovative than three other knowledge-sharing trajectories—including idea generation. Managers, therefore, should change the way they use crowdsourcing to foster knowledge-sharing BEFORE idea generation.

Creating Value in Online Communities: The Sociomaterial Configuring of Strategy, Platform, and Stakeholder Engagement (p. 704)
Michael Barrett, Eivor Oborn, Wanda Orlikowski

Healthcare systems around the world are strained on many fronts, including managing capacity and costs as well as providing effective patient care. As a result, patients are increasingly required to take on more responsibility for their own health. Within this emerging policy context, our study examines how private firms can develop online communities to help patients and related stakeholders over time. We find that these online communities can generate a range of benefits—including financial, knowledge, service, reputational, and technological value—for a range of stakeholders across the healthcare ecosystem. For example, patients can gain support living with chronic illnesses while also learning about available care and treatment options. Hospitals and healthcare charities can improve their services and reputations, while pharmaceutical companies can benefit from faster and more targeted recruiting of participants in clinical trials. We further find that these various benefits change over time with shifts in strategy, digital platform, and participation in the online community.

The insight for management: Online communities can generate multiple forms of value for diverse stakeholders as business strategies shift over time in concert with changes in the digital platform and forms of engagement.

Intellectual Property Norms in Online Communities: How User-Organized Intellectual Property Regulation Supports Innovation (p. 724)
Julia Bauer, Nikolaus Franke, Philipp Tuertscher

Intellectual property (IP) issues are crucial for the success of crowdsourcing initiatives and online communities in general. The stunning collective intelligence visible in these new organizational forms is fueled by the principles of free revealing and exchange of ideas and knowledge. To safeguard these activities, it is of paramount importance to protect community members against free riders stealing their IP. However, it appears hopeless to rely on formal copyright law. Given millions of temporary, anonymous, and globally dispersed members in online communities, it is virtually impossible for a central actor to screen, arbitrate, and enforce formal IP law. In our study, we find that communities instead can self-organize IP norms and their enforcement. In our study of the Threadless online community, a huge crowd that engages in designing T-shirts, we identified a highly effective system of social norms that regulate the use of IP, supporting innovation and safeguarding the innovator. The possibility of such a self-organized IP norms system is good news for companies willing to engage in crowdsourcing, as it means that another important

and difficult function of new product ideation can be delegated to the crowd—with high effectiveness and at low cost.

Coordinating Interdependencies in Online Communities: A Study of an Open Source Software Project (p. 751)

Aron Lindberg, Nicholas Berente, James Gaskin, Kalle Lyytinen

Online communities coordinate their work differently than traditional organizations. Coordination is about managing interdependencies, and in this paper we explore how online communities manage complex interdependencies in large, distributed knowledge-intensive projects. To do so, we study an open source software project, Rubinius. We find that this community coordinates work through a variety of patterns of action, or "routines," in the development process. In particular we identify two general types of routines—direct implementation and knowledge integration. Direct implementation involves navigating across discrete chunks of work and then quickly and directly solve problems. Knowledge integration involves an ad hoc collaborative process to leverage the expertise across the community to discuss complex problems and generate solutions. Online communities such as open source software projects are a next-generation form of organizing and this research moves our understanding forward about how complex work gets accomplished in these forms of organizations.

Toward a Theory of Remixing in Online Innovation Communities (p. 773)

Michael A. Stanko

In online innovation communities, remixing is the community's use of an existing innovation as source material or inspiration to aid in the development of further innovations. Some innovations are remixed many times, taking the source material in directions the original innovator may not have dreamed of. Other innovations are ignored, failing to generate remixes. This research sets out to answer the question, "Why are particular innovations remixed by an online innovation community?" Based on data from the Thingiverse community, analysis shows that community interaction (measured as the number of comments regarding the innovation by community members) is critical in fostering remixing, while front page presence has no significant effect. If remixing is sought, promoting the innovation on an online community's home page will not be efficient. Where remixing is desired, promotional efforts should be focused on tactics generating interaction between community members. Observability (measured as the number of posted images) has an inverse U-shaped relationship with remixing; suggesting the value placed on learning. Innovators wishing to foster remixing would also be well served to avoid very high levels of observability. Remixing is an interesting form of knowledge collaboration that is changing what it means for an innovation to diffuse.

Turbulent Stability of Emergent Roles: The Dualistic Nature of Self-Organizing Knowledge Coproduction (p. 792)

Ofer Arazy, Johannes Daxenberger, Hila Lifshitz-Assaf, Oded Nov, Iryna Gurevych

Our study investigates new forms of organizing for knowledge coproduction that are characterized by self-organizing communities and ambiguous role definitions. We center our investigation on emergent roles—defined in terms of prototypical activity patterns—and study the temporal dynamics underlying emergent roles at both individual and organizational levels. A study of the coproduction of 1,000 articles in Wikipedia, stretching over a decade and including 700,000 coproduction activities made by 200,000 distinct participants, reveals a dualism between levels of analysis. Whereas individuals' behavior shows much turbulence in the way in which they enter and leave projects, often changing the emergent role they enact, at the organizational level the characteristics of emergent roles remains highly stable across time (despite fundamental changes in Wikipedia's governance structure and norms). We posit that the mechanism enabling the emergence of this stable structure at the organizational level is artifact-centric coordination, such that participants mutually adjust as they continuously respond to the evolving requirements of the co-produced artifact. Contributing to this implicit coordination are the distinct affordances of Wikipedia's platform (e.g. version control, transparency), as well as policies governing coproduction (namely, the open and unconstrained article editing process). The primary implication for practitioners engaged in knowledge coproduction—custodians of online communities and managers of firms looking to adopt the self-organized model, alike—is that given the appropriate conditions, stable order in coproduction work can organically emerge. For example, given an appropriate incentive scheme and a supporting infrastructure, a software firm may open its boundaries and invite skilled users to take part in the software development process, allowing teams of internal and external programmers to self-organize around tasks. Future research could expand on our work by further exploring the conditions under which such "turbulent stability" emerges,

investigating other types of organizations. To conclude, our study shows that ordered patterns in the structure of co-production work may organically emerge, even in a seemingly chaotic setting where individuals voluntarily decide on how and when to participate.

Folding and Unfolding: Balancing Openness and Transparency in Open Source Communities (p. 813)
Maha Shaikh, Emmanuelle Vaast

Open source communities rely on openness and transparency as guiding principles for source code and development processes. However, this study shows how openness and transparency at times need to be balanced out with moments of less open and transparent work. Temporary closure and opacity can help some developers deal with difficulties in the open and transparent context and bring about new ideas. This study holds implications for open innovation and open development processes by highlighting the value of making it possible for some to occupy, momentarily, quiet spaces of work whose output is subsequently brought to the open.

Assessing the Impact of Granular Privacy Controls on Content Sharing and Disclosure on Facebook (p. 848)
Huseyin Cavusoglu, Tuan Q. Phan, Hasan Cavusoglu, Edoardo M. Airoldi

What is the role of privacy controls in managing disclosures, and therefore privacy dangers, on online social networks (OSNs)? When users have more granular controls, do users actually limit their content sharing or perceive privacy risks less severely and share even more content? When OSNs give users more powerful controls, do OSNs aim to address privacy concerns only or promote more open sharing of user-generated content as well? The authors evaluate a unique dataset from Facebook comprising wall posting and private messaging activities of 13,145 users and test the reactions of users to the introduction of new controls that can limit the recipients of wall posts. The results show that Facebook users, on average, increase use of wall posts and decrease use of private messages. Also, users' disclosure patterns reflect increased openness in content sharing. These average effects are realized immediately and last over time. However, privacy sensitive users, surprisingly, start sharing more content via wall posts and less content via messages after the introduction of new controls. Thus, enhanced privacy controls are neither a panacea to privacy issues as some hope for, nor lead to more open content sharing, as others fear.

More Harm than Good? How Messages That Interrupt Can Make Us Vulnerable (p. 880)
Jeffrey L. Jenkins, Bonnie Brinton Anderson, Anthony Vance, C. Brock Kirwan, David Eargle

System-generated alerts provide timely information. However, these interruptions come at a high cost in terms of increased stress and decreased productivity. This is due to dual-task interference (DTI), a cognitive limitation in which even simple tasks cannot be simultaneously performed without significant performance loss. In many contexts, failing to heed an alert—the interruption itself—can introduce critical vulnerabilities. We use functional magnetic resonance imaging to explore how (1) DTI occurs in the brain in response to interruptive alerts, (2) DTI influences security message disregard, and (3) the effects of DTI can be mitigated by finessing the timing of the interruption. Further, we apply these findings in an online behavioral experiment in the context of a web-browser warning. We demonstrate a practical way to mitigate the DTI effect by presenting the warning at low-DTI times, and show how mouse cursor-tracking and psychometric measures can be used to validate low-DTI times in other contexts. This paper provides a theoretically-grounded, cost-effective approach to reduce the effects of DTI for a wide variety of interruptive messages that are important but do not require immediate attention.

The insight for management: Presenting system-generated alerts at low-DTI times can result in improved security behavior.

When Being Hot Is Not Cool: Monitoring Hot Lists for Information Security (p. 897)
Yonghua Ji, Subodha Kumar, Vijay Mookerjee

Recent new-generation security monitoring technology enables session-based monitoring where sessions, rather than raw individual events are monitored to prevent attacks. We study the two sequential tasks of profiling and monitoring in our model and examine the operational and managerial issues arising in security monitoring. We find that a size-based policy is quite robust, and perform almost as well as more sophisticated policies. Furthermore, we show that an outsourcing contract rewarding a security vendor based on the number of suspicious events detected creates an incentive problem; an additional reporting on the number of sessions monitored is necessary to achieve a social optimum. Also, penalty schemes commonly used in security outsourcing practice do not achieve the social optimum. We show how to choose the penalty coefficient properly to implement a socially optimal penalty-based contract. In the future, it will be interesting to explore situations where attackers adapt to monitoring technology or

where tasks of profiling and monitoring can be outsourced to different security vendors.

The insight for management: A size-based policy is simple to manage and produces good performance, and a reward-based contract is preferred to a penalty-based one which requires additional knowledge to determine the fixed payment.

Excessive Dependence on Mobile Social Apps: A Rational Addiction Perspective (p. 919)

Hyeokkoo Eric Kwon, Hyunji So, Sang Pil Han, Wonseok Oh

The addiction to mobile social applications, such as social networking sites (SNSs) and social games, is fast on the rise. This smartphone-driven "app-diction" problem involves compulsive and irrational behaviors with neurological and biological origins. Medical scientists regard the overindulgence in and dependence on mobile apps as a chronic disease that necessitates treatments. To curb digital addiction, government agencies in some regions have implemented coercive guidelines and regulations, but these measures have not had lasting success. In this study, the authors analyzed 13-month, individual-level panel data on the weekly mobile-based SNSs and social games consumption of users to determine the nature and pattern of addiction to such digital products. Contrary to conventional belief, we find that basic principles of economics provide useful knowledge about the causes of and solutions to the mobile app addiction. Our results indicate that the average social app user rationally adjusts their consumption over time. Substantial variations in addictive behaviors, however, exist across diverse demographic groups and app categories. For example, addictive behaviors toward SNSs are more irrational and myopic in nature among older, less-educated, high-income groups. Given the individual differences in addictive tendencies among social app users, we offer asymmetric policies that can effectively control compulsive behavior and improve public health.

The Impact of Fake Reviews on Online Visibility: A Vulnerable Assessment of the Hotel Industry (p. 940)

Theodoros Lappas, Gaurav Sabnis, Georgios Valkanas

Even though a significant body of work has focused on the detection of fake online reviews, there has been little examination of the vulnerability of individual businesses to such reviews. This study focuses on formalizing the visibility of a business to the customer base and on evaluating its vulnerability to fake review attacks. Using data from over 2.3 million reviews of 4,709 hotels from 17 cities, we study how visibility can be impacted by different attack strategies. We find that even limited injections of fake reviews can have a significant effect and explore the factors that contribute to this vulnerable state. We find that, in certain markets, 50 fake reviews are sufficient for an attacker to surpass the visibility of any of its competitors. We also compare the strategy of self-injecting positive reviews with that of injecting competitors with negative reviews and find that each approach can be as much as 40% more effective than the other across different settings. Finally, our work provides actionable insight on how businesses can protect their visibility and reputation from fake review attacks. Future work can expand our framework beyond the hotels domain and use our methodology as a blueprint for studying additional attack strategies.

Why Do Adults Engage in Cyberbullying on Social Media? An Integration of Online Disinhibition and Deindividuation Effects with the Social Structure and Social Learning Model (p. 962)

Paul Benjamin Lowry, Jun Zhang, Chuang Wang, Mikko Siponen

The dramatic increase in social media use has challenged traditional social structures and has led to increased problematic behaviors that were not anticipated. One of these behaviors that is especially concerning is the rise of adult cyberbullying. Commonly, this kind of behavior has been thought of as "kids' stuff," but adults are not only commonly engaging in it, many are doing it in the workplace and many are engaging in cyberbullying behaviors that are highly criminal (e.g., sexting, sending unwanted porn, threatening others, breaking into a person's system for revenge, and so on). Recent international court rulings are increasingly finding employers to have serious liability for employees who engage in cyberbullying at work, even when it involves targets or co-participants who do not work in the same organization. Social media platforms also face liabilities and risks for allowing unfettered adult cyberbullying on their platforms. Hence, understanding what causes such behavior and the role of social media is the first step to preventing on social media sites and in the workplace. Our study shows that heavy social media use combined with anonymity facilitates the social learning process of cyberbullying in social media in a way that fosters cyberbullying. As part of our study, we also looked at key social learning aspects of anonymity and looked at the role of cost/benefits, negative social influence, rationalizations, and personal morality. Importantly, anonymity is complex—it is not about merely being identified or not. Instead, we show that anonymity is something that is fostered by the design of a social media system, and it can be manipulated in terms of five dimensions

to increase/decrease anonymity: lack of identification, diffused responsibility, lack of proximity, knowledge of others on the system, and confidence in the system to function to protect one's anonymity.

The key takeaway for management in terms of anonymity is to provide oversight and processes that thwart felt anonymity in the workplace when employees are using social media, and to provide cost/benefit incentives to further back this up. They should also provide reasonable limits on social media use at work, as heavy users are the ones most prone to cyberbullying. The key takeaway for social media providers is to provide designs and processes that also thwart the five dimensions of anonymity.