



Information Systems Research

Publication details, including instructions for authors and subscription information:
<http://pubsonline.informs.org>

Research Spotlights

To cite this article:

(2018) Research Spotlights. Information Systems Research 29(4):iii-vi. <https://doi.org/10.1287/isre.2018.0824>

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An Economic Analysis of Customer Co-design (p. 787)

Amit Basu, Sreekumar Bhaskaran

Advances in information technologies and Internet-based systems, as well as production technologies in several industries, including construction, automobiles, apparel, and publishing, have enabled firms to cost-effectively incorporate customer preferences and even engage customers in the design process. Despite such improving capabilities, customers may hesitate to participate in product co-design, perhaps due to concerns about having to pay much more for the custom products they help design. This is justified by the fact that once the customer has invested significant time and effort in co-designing a product, the firm can extract the entire consumer surplus through higher prices. At the same time, the firm allowing its customers to co-design products would be unlikely to commit to a price up-front before knowing the complete design of the custom product, since it would then face significant risk of losing money. In this paper, the authors show how a firm can motivate its customers to participate in co-design. The authors also show how offering co-design can impact the firm's product (line) strategies and the quality of its products, including motivating the firm to increase the quality of its standard products. The effect of market and firm characteristics on the value of engaging customers in the co-design process is also examined. The results of this modeling and analysis provide valuable insights for managers considering investment in information technology, such as online software and design tools, to facilitate customer co-design.

Examining Gifting Through Social Network Services: A Social Exchange Theory Perspective (p. 805)

Hee-Woong Kim, Atreyi Kankanhalli, So-Hyun Lee

The widespread use of social network services (SNS) has changed the way in which gifting is carried out in online settings. Gifting services are being offered by several SNS providers as a new revenue model based on friendship in a SNS. Thus, it is important to understand how gifting services through SNS may impact the revenue of SNS providers and what drivers may impact the undertaking of SNS gifting. The authors

conducted a field study where data on member gifting was collected from KakaoTalk at two times, separated by 4 months. They found that expected benefits (i.e., reciprocity, pleasure, relationship support, convenience, and immediacy of gift sending) and costs (i.e., impersonality) indirectly impact SNS gifting frequency through the assessment of perceived worth. The findings serve to explain how people assess and decide to undertake SNS gifting through this new form of online gifting. The insight for management: The perceived worth drives members' SNS gifting directly. In order to increase the perceived worth of SNS gifting, SNS providers should enhance its diverse benefits. Specifically, hedonic (*pleasure*), social (*relationship support*), functional (*convenience of gift purchase and immediacy of gift sending*), and normative (*gift reciprocity*) benefits increase perceived worth directly, while symbolic (*symbolic representation*) benefit increases the worth indirectly (through relationship support). Among these, relationship support and convenience are stronger determinants of perceived worth for providers to focus on as prior factors.

Platform Synergy: Architectural Origins and Competitive Consequences (p. 829)

Amrit Tiwana

As software-intensive, platform-based models proliferate a growing variety of industries such as mobile computing, gaming, corporate IT, healthcare, and retail, the underlying architecture of such systems is increasingly inseparable from their success. This study investigates this phenomenon in the software platforms industry, which includes ecosystems such as AndroidOS, iOS, and Blackberry, each with thousands of apps that their adopters use. The *internal* architecture of apps has yet to receive attention in previous platform studies, which predominantly study apps' platform-facing, external architecture. The authors develop an explanation of how the interplay between an app's internal and external architecture helps leverage the platform to out-compete rival apps. For app developers, the authors show how market advantage accrues from practicing a design philosophy in the internal design of their apps contrary to conventional wisdom. The mantra for creating a competitive edge is modular on the outside and monolithic on the inside. For platform owners, creating app APIs and platform services addresses only one

piece of the puzzle in making their platform indispensable. If they simultaneously encourage app developers to make their apps more tightly-coupled internally, the greater the benefits to platform functionality. This is consequential for how a *platform* fares against its rivals.

Exit, Voice, and Response on Digital Platforms: An Empirical Investigation of Online Management Response Strategies (p. 849)

Naveen Kumar, Liangfei Qiu, Subodha Kumar

In this study, the authors investigate the impact of management engagement, as measured by business owner responses, on business performance using online review website Yelp.com. This study fills an important gap by providing a deep understanding of the dynamics of online management engagement on business performance and the spillover effect of management response on nearby businesses. Direct engagement through digital platforms is vital to building a relationship of trust with consumers. Businesses who do not connect with consumers using digital platforms may find themselves slowly losing ground, specifically by observing a negative impact on their key business performance measures as time goes by. The authors provide practical insights for businesses that would like to improve their key business performance measures by engaging with their consumers online to improve their experiences. These findings have direct implications for both the business owners and the digital platforms: Digital platforms can help businesses develop the right engagement strategies by taking the online response strategies of the nearby businesses into account.

Extrinsic versus Intrinsic Rewards for Contributing Reviews in an Online Platform (p. 871)

Warut Khern-am-nuai, Karthik Kannan, Hossein Ghasemkhani

Since the importance of online reviews has become apparent, several online retailers have started to provide monetary rewards to users for sharing their opinions on retailers' review platforms. In this study, the authors take advantage of the sudden introduction of such incentives by a prominent online retailer in the United States to study how monetary rewards affect users and their behavior. The authors compare the reviews and user activities on this platform with those on Amazon.com, which does not pay users for reviews. Using this natural experiment design, the authors find that after the introduction of the rewards, users on the platform that provides monetary incentives wrote reviews that were of lower quality and significantly more positive. Interestingly, the authors also find that intrinsically-motivated reviewers contributed fewer reviews after the introduction of monetary incentives, but the quality of their reviews did not

appear to be impacted. Finally, even though the platform enjoys an increase in the number of new reviewers, disproportionately more reviews were written for products that were already highly rated.

Surviving in Global Online Labor Markets for IT Services: A Geo-Economic Analysis (p. 893)

Irfan Kanat, Yili Hong, T. S. Raghu

This study investigates the survival of IT freelancers in online labor markets (OLM) such as Freelancer.com. The findings are of interest to three groups: (1) platform providers, (2) freelancers, and (3) buyers of freelancer services. Through this analysis of the tenure of freelancers in OLM, the authors were able to identify differences between freelancers from developed and developing countries in terms of survival. The authors observe that providers from developed countries are less likely to flourish in OLMs. Developing country providers can earn a living and perhaps build a career in OLMs, but OLMs are not as favorable to developed country providers. However, continued participation from developed country providers is still seen, even in job categories dominated by developing country providers. The authors believe this is due to inexperienced providers from developed countries having a slight advantage over similar providers in the developing world, as they are perceived to be higher quality. This observation suggests OLM may serve different roles for developed and developing country providers. As found in the context of open source projects before, the providers may use OLM experience as a signal for employment in traditional labor markets.

Estimating Contextual Motivating Factors in Virtual Interorganizational Communities of Practice: Peer Effects and Organizational Influences (p. 910)

Kexin Zhao, Bin Zhang, Xue Bai

Interorganizational communities of practice (IOCoPs) bring together professionals from different organizations and provide an important tool for knowledge management and professional development. IOCoP participants are simultaneously embedded in two different social environments: the virtual community itself and organizations these participants are affiliated with. Therefore, it is important to carefully disentangle contextual motivating factors from online peers within the community as well as these individuals' work environment. Using a rich dataset from a virtual IOCoP on financial information exchange protocols, the authors theorize and empirically estimate the incentives to participate and contribute in virtual IOCoPs from a multilevel perspective. The authors find evidence for both endogenous and exogenous peer effects in their virtual IOCoP. The existence of endogenous peer effects suggests the positive spillover effects of individuals' efforts to participate in the virtual environment. At the same

time, exogenous peer effects indicate that individuals' characteristics also matter to their online peers. At the organizational level, individuals' online behavior outside of organizational boundaries is still subject to influences from their work environment. This multi-level framework focusing on interrelationships among individuals, network structures, and institutions provides a deeper and richer portrait of IOCoPs, an important form of digitally mediated collaboration.

Electronic Markets and Geographic Competition Among Small, Local Firms (p. 928)

Brent Kitchens, Anuj Kumar, Praveen Pathak

Electronic markets catering to small, local businesses help to eliminate barriers for reaching customers online, increasing awareness and engagement with little investment required. But as any business joins one of these markets, access is simultaneously available to its competitors as well. This research examines the impact on competition from this democratization of the online channel. The authors find that electronic markets create intensified local competition in areas surrounding the businesses offering deals through their platforms, spurring other businesses to offer deals at increasing discounts. This is primarily driven by lesser known businesses or those with lower quality reputations who may join the market to gain awareness among potential customers. The impact on competition is also more intense in areas of lower differentiation between vendors, either in price or type of offerings. This research has implications for electronic market managers, who may use it to concentrate sales efforts in areas likely to generate higher levels of competition and therefore more demand. There are also implications for small business owners considering joining an electronic market, who should take into account the environment in which they operate and anticipate responses from competitors in their local area.

Service Agreement Trifecta: Backup Resources, Price and Penalty in the Availability-Aware Cloud (p. 947)

Shuai Yuan, Sanjukta Das, R. Ramesh, Chunming Qiao

Availability or service uptime is a critical metric used by clients to evaluate cloud services; it is also an essential factor for a provider to consider since the interactions between the various Service Level Agreements (SLA) constructs are influenced by the availability commitment. Although steps are taken to improve availability of virtualized resources, frequent failures (such as disk failures) in the datacenters are still one of the many obstacles to the growth and wider adoption of cloud computing. Since providing backup resources helps support the SLA, the authors jointly consider the intertwined problems of resource allocation and pricing with the goal of cost-effectively

managing availability-related risks. The authors provide a mechanism to optimally determine the number of backup resources to allocate for a given SLA by learning from historical data and balancing the risks of under- and over-provisioning. The authors also derive a price-penalty schedule that presents an array of efficient choices for an SLA between a provider and a client. Furthermore, the authors develop a penalty deferral strategy that incentivizes profitable clients to continue with the service when an SLA is violated. Future research may study the availability-aware backup resource allocation problem with dynamic reallocations based on real-time needs.

Versioning and Information Dissemination: A New Perspective (p. 965)

Atanu Lahiri, Debabrata Dey

Version-to-upgrade is a common product-line strategy adopted by many manufacturers of information goods today. Results from prior research indicate that such a strategy is useful only when consumers collectively underestimate the true worth of a product. The authors show that such thinking understates the usefulness of version-to-upgrade. More specifically, the authors find that, even when there is no underestimation, such a strategy could be useful as long as there is a fraction of consumers who have prior knowledge of the product's true worth.

Decomposing the Variance of Consumer Ratings and the Impact on Price and Demand (p. 984)

Steffen Zimmermann, Philipp Hermann, Dennis Kundisch, Barrie Nault

This research develops a model that decomposes the variance of consumer ratings into two sources: taste differences about search and experience attributes of a durable good, and quality differences among individual instances of this good. The quality differences are manifested in the form of product failure whereby the goods are of inconsistent quality. The results of the model show that as the variance caused by taste differences grows, which implies a good is liked by some consumers and less liked by others, the price increases and demand decreases. Not surprisingly, when there is a higher failure risk in the good due to inconsistent quality resulting in higher variance from quality differences, both price and demand for the good decreases. Most critically, holding the average consumer rating as well as the total variance constant, increasing the relative share of variance caused by taste differences may lead to an increase in both price and demand for the good. Through this mechanism, price and demand can increase with an increase in total variance. Thus, risk-averse consumers may prefer a higher priced product with a higher variance in ratings when deciding

between two similar products with the same average rating.

Recommender System Rethink: Implications for an Electronic Marketplace with Competing Manufacturers (p. 1003)

Lusi Li, Jianqing Chen, Srinivasan Raghunathan

Recommender systems that inform consumers about their likely ideal product have become the cornerstone of eCommerce platforms. In this paper, the authors examine the effect of recommender systems in the context of a dominant retail platform that sells competing products from different manufacturers (e.g., Amazon's online marketplace). The authors find that the retail platform and the manufacturers do not always benefit from the recommender system. The benefit of a recommender system depends critically on the type of recommender system employed (profit-oriented or consumer-oriented), the recommender system precision, and consumers' awareness about products. Neither a consumer-oriented recommender system always hurts the sellers nor a profit-oriented recommender system always benefits the sellers. The optimal recommendation strategy for the retailer is mildly profit-oriented, and under this optimal recommendation strategy the retailer and manufacturers always benefit from the recommender system but the consumers and the society may not. Furthermore, an increase in either the recommender system precision or the fraction of consumers that are aware of at least one product induces the retailer to adopt a more profit-oriented recommendation strategy.

A Matter of Equality: Linear Pricing in Combinatorial Exchanges (p. 1024)

Martin Bichler, Vladimir Fux, Jacob Goeree

Pricing has always been a key focus of research in electronic market design. Nowadays, combinatorial exchanges are being used in day-ahead energy trading and other high-stakes markets, and technology allows using them in many more domains. Linear and anonymous competitive equilibrium prices are desirable in most multi-object auctions, but such prices typically do not exist in combinatorial exchanges. Unfortunately, non-linear and personalized prices such as Vickrey-Clarke-Groves payments are controversial and often

perceived as unfair. In fact, they have been rarely used in the multi-object markets in the field. In contrast, day-ahead energy markets compute linear and anonymous prices at the expense of allocative efficiency, and such prices are desirable also in other markets. The authors use the market design for a large-scale combinatorial exchange of fishery access rights as a motivating example and analyze trade-offs of different allocation and payment rules with respect to efficiency loss incurred and computational hardness. Via analytical models and numerical experiments, the authors show that these losses can be up to 100% in worst-case scenarios, but that they are small on average in larger markets.

Learning from Your Friends' Check-Ins: An Empirical Study of Location-Based Social Networks (p. 1044)

Liangfei Qiu, Zhan (Michael) Shi, Andrew Whinston

As technology evolves, the emerging location-based service allows users to share their location information, called check-ins, with friends through GPS-equipped mobile devices. People can seek friends' recommendation on location-based social networking applications for decision-making (e.g., Foursquare, Facebook Place, or Google+). Using location-based social networks, friends' check-ins are precisely recorded and "pushed" to users in real time. By knowing the identity and preference of the people who made the visits, users can potentially derive more value from the information. The check-in location reflects the user's behavior more closely to the real world compared with other online social networks: consumers have to be physically present for dining consumption. In the present study, the authors estimate a two-stage empirical model of location-based social networks in the restaurant industry: The first stage—awareness—means that friends' check-ins lead some of the uninformed consumers to discover a new restaurant, and the second stage—observational learning—refers to the fact that check-ins made by friends help users learn the quality of a restaurant. In particular, the authors identify causal observational learning from other non-informational mechanisms. The authors also find that the magnitude of observational learning is moderated by social ties as well as geographic locations.