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Research Spotlights

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Competing Combinatorial Auctions (p. 1130)
Thomas Kittsteiner, Marion Ott, Richard Steinberg

Combinatorial auctions are auctions in which bids can be submitted on sets of items, rather than just on individual items. These auctions are generally beneficial to both auctioneers and bidders, as they allow bidders to express their synergies for sets of items. In recent years, we have seen the advent of combinatorial auctions as well as the emergence of online market platforms with competing auctioneers. However, combinatorial auctions have largely been absent from these platforms.

Our article provides an explanation for this absence by demonstrating that competition between auctioneers can reduce the attractiveness of offering combinatorial auctions. Specifically, we show that auctioneers can limit competitive pressure between themselves by allowing bids only on specific packages, where these packages differ between auctioneers. This results in market segmentation, which increases bidder competition, and consequently increases auctioneer revenues.

These findings have implications for market design. In particular they imply that, for an online market platform having multiple sellers offering auctions to the same set of buyers, it might not be advantageous to offer combinatorial auctions as a design option to the competing sellers.

Algorithmic Assortative Matching on a Digital Social Medium (p. 1138)
Kristian López Vargas, Julian Runge, Ruizhi Zhang

Online algorithms recommend "people we may know" and "content we may like." Inherent in these recommendations is a notion of positive assortativity in which the people and content being suggested to us match our own preferences and beliefs. In this paper, we focus on such tacit (i.e., behind the scenes) algorithmic facilitation of assortativity at work across digital platforms and social media. To investigate the effects that it has on human online relating and behavior, we conduct a large-scale field experiment in a mobile social game in which we switch algorithmic assortative matching between new users and existing communities on and off over the course of six weeks. With the help of model-based analysis, we find such assortative matching to increase firm profits (measured as user engagement and monetization) via increased sociality (measured as user messaging). Results further show that such behind-the-scenes algorithmic matching leads to a segregating path between engaged and marginal online communities, further marginalizing less engaged and connected users. Our findings, hence, pinpoint a conflict between profit-centered and societally equitable management of online platforms and are important toward more algorithmic transparency and fairness as online algorithms structure ever larger parts of human life.

Designing Core-Selecting Payment Rules: A Computational Search Approach (p. 1157)
Benedikt Bünz, Benjamin Lubin, Sven Seuken

Combinatorial auctions are regularly used to allocate resources worth billions of dollars. However, finding optimal payment rules for such auctions is still an open problem. To this end, we develop a new computational search framework for finding payment rules with desirable properties. We show that the rule most commonly used in practice, the quadratic rule, can be improved upon in terms of efficiency, incentives and revenue. Our best-performing rules are so-called large-style rules—that is, they provide better incentives to bidders with larger values. Ultimately, we identify two particularly well-performing rules and suggest that they be considered for practical implementation in place of the currently used rule.

Bidder Support in Multi-item Multi-unit Continuous Combinatorial Auctions: A Unifying Theoretical Framework (p. 1174)
Gediminas Adomavicius, Alok Gupta, Mochen Yang

Combinatorial auctions have seen limited applications in large-scale consumer-oriented marketplaces, partly due to the substantial complexity to keep track of auction status and formulate informed bidding strategies. We study the bidder support problem for the general multi-item multi-unit (MIMU) combinatorial auctions, where multiple heterogeneous items are being auctioned and multiple homogeneous units are available for each item. Under two prevalent bidding languages (OR bidding and XOR bidding), we derive theoretical results and design efficient algorithmic procedures to calculate important bidder support information, such as the winning bids of an auction and the minimum bidding value for a bid to win an auction either immediately

or potentially in the future. Our results unify the theoretical insights on bidder support problem for different bidding languages as well as different special cases of general MIMU auctions, namely the single-item multi-unit (SIMU) auctions and the multi-item single-unit (MISU) auctions. We also consider auctions with additional bidding constraints, including batch-based combinatorial auctions and hierarchical combinatorial auctions, as well as the combinatorial reverse auctions, all of which have relevant practical applications (e.g., industrial procurements). Our results can be readily extended to solve the bidder support problems in these auction mechanisms.

Managing Congestion in a Matching Market via Demand Information Disclosure (p. 1196)
Ni Huang, Gordon Burtch, Yumei He, Yili Hong

In online dating platforms, users tend to focus their attention on a subset of popular peers, leading to congestion. We consider the potential efficacy of an informational intervention, namely, the disclosure of peers' recent demand. We evaluate our treatment's efficacy in mitigating congestion and improving matching efficiency, conducting a randomized field experiment at a large mobile dating platform. Our results show that the intervention is particularly effective at improving matching efficiency when presented in tandem with a textual message-framing cue that highlights the capacity implications of the peer demand information. Heterogeneity analyses further indicate that these effects are driven primarily by those users who most contend with congestion in the form of competition, namely, male users and those who rely more heavily upon outbound messages for matches.

Mitigating Risk Selection in Healthcare Entitlement Programs: A Beneficiary-Level Competitive Bidding Approach (p. 1221)
Daniel Montanera, Abhay Nath Mishra, T. S. Raghu

Many developed countries rely, to varying degrees, on competition among private health plans to obtain affordable and high-quality health insurance for their residents. Incorporating beneficiary-level competitive bidding into these healthcare systems can better align the incentives of these health plans, increase their willingness to enroll, and serve the sickest and most vulnerable patients while keeping costs manageable. We identify two digitally enabled program designs that allow private insurance plans to competitively bid to enroll individual beneficiaries. Compared with those used in existing entitlement programs, these designs always make a larger share of the beneficiary population profitable to enroll, thereby increasing willingness of the plans to enroll the most costly beneficiaries and improving access to care. On simulating the conditions of existing real-word healthcare entitlement programs, we found that these new designs actually tend to lower the tax burden in up to 83% of simulations. The research findings suggest that these new designs hold great promise in achieving the dual aim of improved access and lower costs. We believe that findings from this research can guide policymakers implement policies that will enroll more beneficiaries and cost the taxpayers less.

The Secret to Finding a Match: A Field Experiment on Choice Capacity Design in an Online Dating Platform (p. 1248)
Jaehwuen Jung, Hyungsoo Lim, Dongwon Lee, Chul Kim

Online matching platforms require new approaches to market design because firms can now control many aspects of the search and interaction process through various IT-enabled features. Although *choice capacity*—the number of candidates a user can view and select—is a key design feature of online matching platforms, its effect on engagement and matching outcomes remains unclear. We examine the effect of different choice capacities on market performance by conducting a randomized field experiment in collaboration with an online dating platform. Specifically, we design four treatment groups with different choice capacities in which users can only interact with other users in the same group and randomly assign the users to the treatment groups. We find that providing more choice capacity to male and female users has different effects on choice behaviors and matching outcomes. Although increasing the choice capacity of male users yields the highest engagement, increasing the choice capacity of female users is the most effective method to increase matching outcomes. We empirically demonstrate four mechanisms underlying the effectiveness of different choice capacity designs and generalize our findings by discussing how choice capacity can be designed to increase engagement and matching outcomes.

Analyzing the Impact of Public Buyer–Seller Engagement During Online Auctions (p. 1264)
Arvind K. Tripathi, Young-Jin Lee, Amit Basu

Information asymmetry between sellers and buyers is inherent in online markets where transactions often occur between strangers. Trust-building mechanisms such as seller feedback ratings have reduced these problems because a seller's feedback ratings build buyers' trust in the seller before they engage in a transaction. However, these ratings are retrospective, that is, they generate information about a transaction after it is completed, rather than during the transaction itself. Additionally, they are based on other users' experiences, possibly in different contexts, not based on any direct interaction between the prospective buyer and the seller. To address this problem, we study public buyer–seller

engagement via question and answer during online auctions and find that seller engagement (responding to buyers' questions) can affect buyer behavior, including those who do not ask any questions. Our analysis shows that the impact of the seller's engagement on buyer behavior varies with product type and seller reputation (feedback ratings). A key insight is that sellers with higher reputation reap greater benefits from this engagement than other sellers. We also find that the cost of an additional negative feedback rating outweighs the benefit of a positive one.

Seller Organization and Percentage Fee Design in the Daily Deal Market (p. 1287)
Yao Tang, Xu Guan

The prosperity of the daily deal business has attracted more sellers to participate in daily deal campaigns with offering discounted deals via online platforms like Groupon and Juhuasuan. This gives rise to a new challenge for online platforms on how to efficiently organize a limited number of sellers to conduct daily deal campaigns. Our paper makes the first attempt to understand how different seller organization formats can influence the firms' equilibrium strategies and profits in the daily deal market. We focus on two prevalent seller organization formats. (1) The seller agglomeration strategy: the platform (e.g., Groupon) does not distinguish the sellers' type in each round of the campaign. (2) The seller segmentation strategy: the platform (e.g., Juhuasuan) organizes sellers of the same type in each round. Comparing to the agglomeration strategy, we show that the segmentation strategy can eliminate internal information asymmetry among competing sellers and thus can improve the sellers' pricing efficiency and facilitate the platform to charge a higher percentage fee. This uncovers the value of seller segmentation and theoretically explains why platforms should carefully segmentate sellers in daily deal campaigns, although considerable efforts are required to enroll sellers.

The Societal Impact of Sharing Economy Platform Self-Regulations—An Empirical Investigation (p. 1303)
Wencui Han, Xunyi Wang, Mehmet Eren Ahsen, Sunil Wattal

The rise of the sharing economy has disrupted traditional industries and has had many unforeseen societal impacts. This has sparked policy debates on whether and how the sharing economy should be regulated to promote the healthy growth of such markets. In this research, we examine the impact of platform self-regulations in the context of the home-sharing market. Using policy changes that reduce the number of Airbnb listings, we empirically test the impact of platform self-regulations on crime rates. Our results suggest that a reduction in Airbnb listings resulting from platform self-regulations leads to a reduction in crime. We further study the impact of these policy changes on different types of crime and find that these self-regulations lead to a reduction in incidents of crime such as assault, robbery, and burglary but an increase in theft incidents. In addition, we find that the impact of these policies varies based on the neighborhood's characteristics, such as income, housing price, and population. This research contributes to our understanding of the societal impacts of the sharing economy and the impact of platform self-regulation. Our findings also provide empirical evidence to inform policy making.

The Screening Role of Design Parameters for Service Procurement Auctions in Online Service Outsourcing Platforms (p. 1324)
Chen Liang, Yili Hong, Pei-Yu Chen, Benjamin B. M. Shao

This paper provides a novel theoretical angle and robust empirical evidence demonstrating that the auction duration and the item description length are two essential auction design parameters that can function as screening mechanisms for bidder quality on online service outsourcing platforms. These outsourcing platforms use buyer-determined reverse auctions to find service providers. Using data from a major online outsourcing platform, we examine the effects of the auction duration and the item description length on both bidder entry (i.e., the number of bids and bidder quality) and contract outcomes (i.e., whether a project is contracted and the buyer's expected utility from the winning bid) based upon the project- and bidder-level analyses. We find that auctions with longer durations and item descriptions attract more bids, but they also attract disproportionately more low-quality bidders, creating a double whammy of higher evaluation costs and adverse selection for buyers. This, in turn, leads to less successful contracting as well as lower buyer utility. Our research highlights the screening role of the auction duration and item description length for buyers on online service outsourcing platforms: by shortening auction durations and item descriptions, buyers can expect higher quality bidders, increase contracting probability, and enhance utility.

Buyers' Strategic Behavior in B2B Multichannel Auction Markets: When an Online Posted Price Channel Is Incorporated into a Dutch Auction System (p. 1344)
May Truong, Alok Gupta, Wolfgang Ketter, Eric van Heck

Firms are increasingly adopting different sales channels to reach new potential buyers. Yet, extant research has mainly focused on B2C online and offline posted price channels. B2B multichannel and, especially, systems with multiple pricing mechanisms are largely underexplored. This paper investigates the strategic behaviors of B2B buyers in a unique system where an online posted price channel is incorporated into a Dutch auction market. We follow buyers' purchasing paths and

examine conditions under which B2B buyers will use one or both channels. We incorporate learning and experience and demonstrate how buyers' behaviors evolve. Our results, using an extensive data set from the world's largest flower market, reveal that different from B2C buyers who purchase in small quantities with fewer strategic decisions involved, B2B buyers strategically choose and combine different price mechanisms based on not only their demand but also product portfolio diversity and experiences. Moreover, different from preoccupied concerns, the integration of an online posted price channel into a Dutch auction system can bring benefits to sellers without market disruptions.

Overcoming the Coordination Problem in New Marketplaces via Cryptographic Tokens (p. 1368)
Yannis Bakos, Hanna Halaburda

New platforms such as peer-to-peer marketplaces frequently face a "coordination problem" in attracting users, as potential users may be reluctant to join given the uncertainty of other users joining, and this could cause the new platform to fail. There are several mechanisms in the literature to help address this coordination problem, such as subsidies for early users and promises of refunds or buybacks if the platform fails; these mechanisms, however, are likely to favor incumbent and larger firms with established reputation and financial resources.
Platform-specific tradable cryptographic tokens allow a platform such as a marketplace to trade future revenue for present revenue, which then can be used to address the coordination problem. If the new platform is capital-constrained, as is often the case for new entrants and unproven technology applications, then tokens can offer an attractive alternative. As this benefit results from the tradability of the tokens, regulators and policy makers should facilitate or at least not unduly constrain the issuance of tradable utility tokens by new platforms. There is no corresponding benefit from user anonymity, and thus no corresponding drawback from identity regulations to establish accountability.

Juggling Information Technology (IT) Exploration and Exploitation: A Proportional Balance View of IT Ambidexterity (p. 1386)
Huigang Liang, Nianxin Wang, Yajiong Xue

Firms in the digital age often do not know whether they should focus on exploiting their existing information technology (IT) resources or focus on exploring novel IT resources. They are often told to maintain a perfect balance between IT exploitation and IT exploration. In this study, we show that firms do not need to have the same levels of IT exploitation and exploration simultaneously to improve organizational agility. IT ambidexterity can be achieved by proportional balance between IT exploitation and exploration without forcing the perfect balance between the two. With finite resources, the maximal agility is not associated the perfect balance between IT exploitation and exploration; instead, it is associated with the proportional balance between IT exploitation and exploration, and the optimal proportional balance could vary based on the firm's total resources allocated for IT ambidexterity. Our findings on proportional balance between IT exploitation and exploration could profoundly influence how firms make IT investment decisions. Rather than pursuing a perfect balance between IT exploitation and IT exploration, firms should consider both their organizational characteristics and environmental conditions to identify optimal levels of proportional balance between the two.

A Hashtag Is Worth a Thousand Words: An Empirical Investigation of Social Media Strategies in Trademarking Hashtags (p. 1403)
Naveen Kumar, Liangfei Qiu, Subodha Kumar

Firms of all sizes are "joining the conversation" on social media platforms and increasingly trademarking hashtags related to their products and brands. This added effort to protect intellectual property and its impact on social media engagement have not been investigated in the literature. In this study, we find that trademarking hashtags plays a pivotal role in increasing social media audience engagement and information dissemination. More importantly, this positive effect is stronger for firms with fewer Twitter followers. Digging deeper into the underlying mechanisms, we find that trademarking hashtags makes composing tweets with certain linguistic styles more critical: It can amplify the positive effects of trademarking hashtags on social media audience engagement. Our findings highlight important managerial implications of trademarking hashtags. First of all, we examine whether trademarking a hashtag helps or hurts a firm in terms of its social media audience engagement. Further, we show, to maximize the effectiveness of trademarking hashtags, how firms should develop the right social media engagement strategies by taking specific communication and linguistic styles into account. Our results provide useful insights to firms in understanding the key benefits of signaling through trademarking hashtags on social media engagement.

Dealing with the Social Media Polycontextuality of Work (p. 1428)
Emmanuelle Vaast, Alain Pinsonneault

This article views social media for work not only as technologies that enable people to do certain things, but also as contexts with emerging norms and roles in which people participated. As they do so, people are confronted with opportunities and challenges that are inherent to social media polycontextuality, that is, with multiple social media–based contexts of relevance to

work. This study offers guidance for people on how their participation in multiple social media contexts affects their work positively and negatively and how they can manage the associated opportunities and challenges. It also reveals how people's engagement with social media polycontextuality may change as their employment status and work experiences evolve. Moreover, this study holds managerial implications by bringing awareness to how employees' participation in social media contexts bypasses the organization and, thus, their typical purview but is still associated with work rather than leisure. Managers can understand better their employees' situations and examine how social media contexts affect them within and beyond organizational boundaries and shape what they can or cannot do in their work. A better understanding of social media polycontextuality also brings managers new insights to communicate with employees.

Generalizing the Information Systems Artifact (p. 1452)
Manoj A. Thomas, Yan Li, Allen S. Lee

Suppose that a successful information systems (IS) artifact is created by a scholar for use in a research study or by a practitioner for use in an organization; how may the IS artifact be replicated in, or generalized to, another setting? The overall utility of the IS artifact depends on a way to generalize it. To provide such a way, we engage in three things. First, we distinguish an information systems artifact from its better-known sibling, the information technology artifact, by noting that the former includes three mutually supportive subsystems: the technology artifact, the social artifact, and the information artifact, where all three need to be designed and developed for the generalized IS artifact to be successful. Second, we devise a procedure to generalize the IS artifact based on a thorough examination of, and analogy to, generalizing scientific theory. Third, we provide a real-world illustration, involving the generalization of an IS artifact from one setting (the "computer on a stick" for educational purposes in Haiti) to another setting (the "continuing medical education on a stick" in Nepal). The generalization procedure can facilitate the production of working design science artifacts in more than just the original setting.

How Network Embeddedness Affects Real-Time Performance Feedback: An Empirical Investigation (p. 1467)
Mariia Petryk, Michael Rivera, Siddharth Bhattacharya, Liangfei Qiu, Subodha Kumar

Firms and organizations are increasingly using real-time performance feedback mechanisms to evaluate employees, where any employee (rather than just the supervisor) can rate other employees. Hence, a need arises to better understand how network positions of employees in such a system impact their performance. Analyzing nearly 4,000 feedback instances from employees at five major organizations that utilize such a real-time performance feedback application called DevelapMe, we explore the effects of network embeddedness—or the nature of relationships among employees—on performance rating scores according to two dimensions of embeddedness: (i) positional, the position of an individual in the emerging network of performance ratings, and (ii) structural, the extent to which a person is entrenched in a network of relationships. We visualize rating networks within organizations: Employees are nodes, and connections between nodes exist if an evaluation between the pair occurs. We find that specific aspects of network embeddedness affect performance rating scores differently. Our findings have important implications for the design of performance management systems using network analysis.

Intellectual Diversity in IS Research: Discipline-Based Conceptualization and an Illustration from *Information Systems Research* (p. 1490)
Monideepa Tarafdar, Guohou Shan, Jason Bennett Thatcher, Alok Gupta

This paper advances the understanding of the information systems (IS) discipline by developing a multidimensional conceptualization of the discipline's intellectual diversity and applying it to information systems research (ISR). It provides an empirical analysis of the intellectual diversity exhibited by the full set of ISR articles published in over the last 10 years. We categorize IS intellectual diversity into four intellectual dimensions of IS research—namely, domain topic, level of phenomenon, type of contribution, and method—and highlight differences along these dimensions. We use our framework to describe the ebb and flow of the topics, methods, and contributions of IS scholarship that appears in ISR during 2012–2021. Our analysis shows a preponderance of econometric and modeling studies. It also shows that there is a substantial variety of topics, research questions, and methods. Based on these conceptual and empirical insights, we identify implications for intellectual diversity and inclusion in the broader IS discipline.