Managing Intelligence: Skilled Experts and AI in Markets for Complex Products*
PRELIMINARY AND INCOMPLETE

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Abstract

In numerous high stakes markets skilled experts play a key role in facilitating consumer choice of complex products (e.g. doctors in health care or financial planners in choosing investment products). Accordingly, management and incentives facing those experts has implications for overall market function and is a key market design question. As artificial intelligence (AI) can perform complex tasks, traditionally reserved for human experts, an additional consideration faces managers and market designers. We explore three policy choices available in such markets: i) product offerings, ii) incentives for skilled experts and iii) algorithms/recommendation systems. Each interact to determine equilibrium outcomes. E.g limiting product offerings can mitigate suboptimal choices but also reduces product matches with heterogenous consumers. Sufficiently skilled experts or precise algorithms relax this constraint; marketplaces can offer more products tailored to specific customers with less welfare loss due to suboptimal matches. Holding product offerings fixed, recommender systems and skilled experts can either be substitutes of complements. We study these key trades offs in a specific market where consumers choices are widely known to be suboptimal and where experts play a prominent role: health insurance. We leverage unique, granular data on insurance agent effort and recommendations, enrollee health and preferences in the largest private Medicare marketplace in the U.S. Using data on the underlying structure of the algorithm and the mandated use of the tool in the middle of our sample we are able to comprehensively study the impact of AI on effort, recommendation quality and productivity, both on average and across the underlying skill distribution. We find evidence that skilled experts in this market make large mistakes on average in their recommendations costing the average customer 9% (of an expected total cost of $4,155) annually in the

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Medicare Advantage market and there is widespread heterogeneity in skill. Introducing a recommendation system improves average recommendations and reduces heterogeneity. However, reducing the danger of the choice set available has approximately two times larger impact on choice quality improvement. We break expert choice errors into forecast error - the inability to predict a given customers spending - and match errors - the inability to assess risk and physician network preferences. Finally, we explore the role that User eXperience (UX) plays in experts use of recommendations. We find an important role for the way the information is provided, even amongst skilled agents. This result underscores the finding that skilled agents are subject to heuristic decisions and other choice errors and also provides market designers with an additional tool in managing market function and incentivizing agents.