Impact of the Mobile Channel on Sales Concentration

Shopping by way of a mobile device (i.e., m-commerce) is a rapidly accelerating trend. Not only is online shopping overall growing at 25% per year—and predicted to reach $480 billion (US) in 2019—but also the m-commerce share of that total is increasing. In 2014, m-commerce accounted for 11.6% of the $303 billion in US e-commerce; this share is estimated to reach 45%, and to generate $284 billion, by 2020. By 2015, nearly half of those shopping online at the top 10 retailers did so via mobile only. This growing importance of mobile devices to modern retailers has attracted the attention of scholars and also of managers, all of whom seek to understand how the mobile shopping environment affects key customer responses. In this study we focus on one such response: sales concentration, or how customers using the mobile channel choose between popular and niche products. Understanding sales concentration has substantial commercial implications for business decision makers across disciplines. Marketing managers must understand sales concentration to make effective advertising and promotion decisions. Operations managers must accurately forecast the sales of popular and niche products in order to make optimal decisions concerning product assortment, safety inventory, and risk pooling. Strategists must be aware of sales concentration when making long-term decisions that pertain to intellectual property and competition.

Over the last decade, the evolution of sales concentration in online markets has been shaped primarily by two factors: (i) the demand side, as reflected for instance by continual improvements in Internet-based search technology; and (ii) the supply side, as with the emergence of business models based on low supply costs. The combination of new online technology and expanded product variety should help customers find products that completely satisfy their respective preferences and thereby increase the demand for niche products (i.e., reduce sales concentration); this prediction is referred to as the Long Tail effect. Previous empirical research has shown that the online channel indeed reduces sales concentration as compared with the traditional brick-and-mortar channel. In the past, customers primarily used Web browsers installed on their personal computers and laptops (“PC devices” hereafter) to access online markets. The future, however, belongs to the
mobile channel. In this study, we investigate whether the mobile channel increases, maintains, or reverses the PC channel’s tendency to expand niche markets.

An online retailer can include the mobile channel in its strategy portfolio without changing its supply-side business model. However, there are pros and cons to the mobile channel’s search features. On the one hand, mobile phones are portable and so allow customers to shop anywhere and anytime; hence they have more available time to search the breadth of a retailer’s offered assortment. On the other hand, mobile devices have smaller screen sizes and less tab flexibility than do PC devices; these factors complicate the evaluation of multiple products and thus inflate search costs. These considerations spark off a debate about the impact of mobile channel on sales concentration, compared to that of the PC channel.

We collaborated with a large online apparel retailer in India to obtain data for this study. We received detailed, transaction-level data for a period of eight months (from January 2015 through September 2015). During this period, the retailer primarily operated on two online channels: through a mobile-based application (“the mobile channel”) and through Web browsers installed on PC devices (“the PC channel”). The two channels offered the same product assortment and used the same order fulfillment process; in other words, they shared the same supply-side business model. We can therefore use this setting to evaluate the net effect of the mobile channel’s search features on sales concentration—that is, without worrying about the confounding supply-side effects that could arise if the business models differed.

In an omnichannel setting, one major challenge in identifying a channel’s causal effect is that customers may “self-select” into different channels for unobservable reasons. For example, customers who choose the mobile channel may be fundamentally different from those shopping on the PC channel. In addition, omnichannel customers may endogenously choose a shopping channel as a function of the product being purchased. These sources of endogeneity towards channel selection decision could bias estimates of a channel’s causal effect. To address this potential selection bias, we use granular, customer-level panel data on mobile and PC channel purchases and then exploit an exogenous shock to customers’ channel usage. Namely: in the middle of our study period,
the retailer shut down its PC channel and shifted all purchase transactions to its mobile channel. We leverage this quasi-experimental setup and perform a customer-level difference-in-differences (DD) estimation to identify the causal impact of the mobile channel’s search environment on sales concentration.

We find that sales concentration is significantly higher in the mobile channel purchases than in the PC channel purchases: the mobile channel increases the popular product share of all purchases by approximately 5% as compared with the PC channel. This empirical result suggests that, with respect to sales concentration, the effect of inflated search cost dominates (on average) the effect of increased availability of search time. Further confirming this role of the search cost, we find that the mobile channel increases the sales of products displayed higher on a page. Hence these customers, who are constrained by a higher search cost, do not search on the mobile channel as thoroughly as they would on the PC channel. We find this focal insight—mobile channel causes higher sales concentration—to be robust to a wide variety of alternate analyses, including using alternate outcome variables, aggregation levels, placebo tests, and an alternative identification strategy of regression discontinuity design.

Our study makes two important contributions. First, it presents rigorous empirical evidence that the fast-growing mobile channel increases sales concentration over the levels attained by the currently dominant PC channel. The mobile channel’s particular search features—more time to search but higher cost to search—occasions ambiguity about its impact on sales concentration. To resolve this ambiguity, we leverage a quasi-experimental setting to compare the causal effect of two channels. Second, our empirical finding answers the call for a careful understanding of differential impact of alternate channels on customer responses. This paper underscores that managers should not assume that Internet-based information technology will continue to lower search costs and diversify sales distribution across all types of online channels. We find that the constraints due to the mobile channel’s embedded characteristics may inhibit sales diversification to niche markets. Therefore, when a firm is making decisions linked to sales concentration, it should not treat the mobile channel the same as the PC channel.