

Dissertation Proposal
New Technologies' Impact on Firm-Consumer Relationships

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Technology developments have the potential to dramatically change the way firms and consumers interact. In recent years technological jumps have occurred faster than ever before and companies have less time to adapt to the current changing world. In my thesis I explore some technological innovations, understand how consumers adjust, and discuss the managerial implications.

In the first chapter I talk about Mobile banking. The proportion of US bank customers using Mobile banking has grown from 29% in 2012 to 39% in 2014. This channel of interaction is likely to keep growing due to a further increase in the adoption of smart phones, improvement in quality of Mobile banking apps and channel awareness. As a consequence some banks have reported that they may reduce their number branches by half over the next decade. The adoption of mobile banking displaces many banking functions performed through other channels like: automated teller machines (ATM), telephone banking, and online banking. Using geo-coded transaction data from a large consumer bank, a dynamic structural model to represent consumers' preferences is developed for online and physical channels. This model takes into account changes in banking behavior due to variation in the branch network structure as well as the introduction of the mobile channel. This model is used to predict the timing and type of transactions across channels. The knowledge gained with the demand model is then used to design an optimal branch network in terms of capacities, amenities, location, and number of branches. Counterfactuals allow to evaluate different levels of channel adoption, and considers its effect on banking transactions, and more important, the impact on customer loyalty. The model shows all channels remain relevant and, moreover, we found a strong complementarity between physical and digital worlds. Therefore instead of reducing the number of physical branches, banks should aim to adjust current branch capacities, specializing on transactions that cannot be served with digital channels. We predict that digital channels will diminish but never replace physical channels and they will be redesigned correspondingly.

Internet shopping made possible interactive displays. In the second chapter I discuss how the arranging products on a display or retail shelf can directly influence consumer purchases by facilitating or obstructing product search. Product proximity also influences competition and the set of products that a consumer considers. We show that when products are placed closer together competition between the products increases. Thus product display can encourage consumers to purchase products that would not have previously been purchased. The motivation for the result is that consumer search is costly and consumers focus their search on local neighborhoods that are influenced by shelf position. Since search is costly, consumers may not exhaust all possibilities, which means that position could be an important determinant of consideration. To formally model this behavior I used two approaches, first with a behavioral study and second, creating a sequential consideration model. To begin the search consumers are influenced by colors, favorite brand or the closest shelf edge, where few products can be consider. Then consumers shift their focus to neighboring products, in a sequential fashion, increasing the set of products considered, to finally making the purchase decision. By doing this, the display generates spatially induced consideration sets. Using this approach we find that demand is greatly impacted by shelf position and retailers can create plan-o-grams that can shift demand from one product to another. Our focus on using shelf design to stimulate competition contrasts with past research on shelf design that has focused mainly on cost minimization. Using shelf-experiments from Dominick's retail stores shows that re-arranging the products on the shelf can increase profits by up to 15%.

In the third chapter I discuss an extension on the work with Mobile banking. Using the knowledge gained with the demand model an optimization tool is developed to compute optimal decisions for the banks. With this exercise we expect to generate managerial insights that shed lights on actions to implement when the mobile channels is introduced in the banking industry around the world and other industries that are facing the same challenge.