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Research Design

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Introduction

Online pharmacies went viral this year after Capsule ads swarm into NYC subway stations and Pillpack was acquired by Amazon. This new business model has the potential disrupting power in healthcare industry, especially after Amazon made a gesture to enter this 3 trillion market by acquiring Pillpack and having other big moves such as establishing Amazon-Berkshire-JPMorgan Health Venture.

My research will dive deep into this emerging business and I will use Pillpack as my primary organization. Pillpack is a growing full-service online pharmacy that provides personalized and convenient drug distribution and management service for customers. Their unique selling point is that they sort patients' daily medication in exact daily dose to simplify the drug management problem for patients who are frustrated by the painful process of juggling multiple prescriptions. Recently acquired by Amazon, Pillpack now has a strong parent company and is ready to expand its consumer base.

Problem Statement

Management Dilemma

Although Pillpack and the other online pharmacies have customer-centric philosophy aiming to break the convoluted drug supply chain in the traditional pharmaceutical world and simplify the medication management process for customers, patients still need time to adjust to

this new business model and Pillpack has to compete with multiple competitors, both online and traditional pharmacies, to acquire new customers from other platforms. How to convince consumers to change their drug buying habits and to make a transition from offline to online becomes a key challenge.

Management Question and Significance

For this research, my objective is to answer the management question: How can Pillpack stand out from its competitors and become the market leader in online pharmacies? More specifically, how can Pillpack expand its user base to improve profitability and brand presence?

This research will help Pillpack identify opportunities in current drug distribution industry so that they can better shape their competitive advantages and stand out in this competitive emerging market. This study will also help them better understand customers' needs and wants along different steps of the drug buying process so that they can make informed decision on strategies better targeting customers pain points.

Exploratory Phase and Research Questions

I plan to answer the following exploratory questions regarding pharmaceutical market from secondary data sources such as industry insights report from Mintel and CB Insights:

- What's the current drug buying and medication management process like for both prescription users?
- How's the price level of Pillpack's drugs vary among its competitors?
- Who are Pillpack's competitors? What's their strength and weakness?

After having a basic understanding of the industry overview and general trends, I will conduct explanatory studies to figure out what could drive potential consumers to switch from offline to online and below are my **research questions**:

- **What are some customer pain points throughout the drug buying process?**
- **What are consumer's priorities when it comes to choosing their primary pharmacy?**
(There are lots of priorities to consider, such as time efficiency, convenience, and trustworthiness. Here I will take convenience as an example.

H_0 : Convenience is not an important factor when consumers are choosing their primary pharmacy.

H_a : Convenience is an important factor when consumers are choosing their primary pharmacy.

In this specific context, convenience is defined as the state of being able to order prescriptions and receive drugs in a relatively short time with little effort or difficulties. In my survey, I will measure convenience based on average time spent on the drug buying process. I will a drug buying process as convenient if the average time spent on drug buying is no more than 45 minutes.

- **Are consumers satisfied with their current pharmacy and medicine management service (both online and offline)?**

H_0 : Consumers are satisfied with service of their current pharmacy and the overall medication management process.

H_a : Consumers are not satisfied with service of their current pharmacy and medication management process.

Satisfaction is defined as how happy consumers are about the drug buying process. I will measure satisfaction on a scale of five (-2: very unsatisfied, -1: unsatisfied, 0: neutral, 1: satisfied, 2: very satisfied) and I will count score 1 and 2 as satisfaction.

- How do consumers and competitors respond to Amazon's acquisition of Pillpack? What kind of positive/negative impact it will have on the business? **Does Amazon's ownership of Pillpack gain trust for Pillpack?**

H_0 : Amazon's acquisition of Pillpack has not impact on building public trust for Pillpack.

H_a : Amazon's acquisition of Pillpack help Pillpack gain trust from the public.

In this study, I will define trust as positive perception of Pillpack and sense of security of using Pillpack as their prescription distributor and medication management service. In my survey I will briefly explain the relationship between Amazon and Pillpack and the resources Pillpack can get from its parent company, and then ask about participants' perception about Pillpack:

1. I think Pillpack is a trustworthy company because it is acquired by Amazon;
 2. 2: I think Pillpack is trustworthy because of its business model, regardless of who owns it.
- 1: I doubt the trustworthiness of Pillpack although it is acquired by Amazon.
 -2: I doubt the trustworthiness of Pillpack because I don't believe in its business model.)

- **Are consumers who are informed with the existence of online pharmacies willing to change to their drug buying habit from offline to online?**

H_0 : Consumers are not willing to change their drug buying habit given that they have basic knowledge of the existence of online pharmacies.

H_a : Consumer are willing to change their habits and switch to online pharmacy.

At the end of the survey, after making sure all participants are aware of basic information about Pillpack and its business model, I will ask participants about their willingness to switch their current prescription distributor to Pillpack. I will design this question as a simple yes-or-no question.

Research Design and Methods

Methodology

My research combines both descriptive and explanatory studies, aiming to first figure out consumer behaviors, drug buying process, and medicine management, and then to discover why people are using different drug distribution systems: for instance, why people are using brick-and-mortar pharmacy instead of mail-order or online pharmacy? I chose a combination of these two studies because descriptive study is a good fit to describe multiple phenomenon in drug buying process such as customer pain points and average time consumers spent on prescription ordering and buying, and explanatory study is good to explore consumers' attitude and satisfaction level towards their current drug buying method and if they have intention to switch from offline to online pharmacies.

The study is also a mixed-methods research process that combines quantitative and qualitative studies. I will conduct observational studies and focus group as qualitative research to explore customer's preference in choosing pharmacies, and then I will use a web-based survey to quantify customer's estimated popularity of different pharmacies, level of satisfaction, willingness to switch pharmacies, etc.

First of all, I plan to conduct an observational research at local pharmacies to observe people's behavior and their 'pain points' during their interaction with pharmacy staff. By observing people's behavior in a natural setting, this qualitative study enables researcher gather large amount of behavioral data in a less intrusive way than direct questioning. I will use indirect observation, which is recording the interior of different pharmacies by electronic recording devices. Although indirect observation is less flexible than sending researcher in the exact setting to conduct direct observation, it is less biased and we can keep the recording for reanalyzing in the

future. Additionally, participant awareness of observers is usually a concern related with direct observation, so I chose indirect observation to minimize the effect.

One downside of indirect observation is that it cannot provide insights into people's attitudes and motivations behind such behaviors and the presence of observer might make people act differently. In order to understand people's attitude towards different drug distribution channels and their preferences, the next qualitative study I choose is an in-depth interview with about 15 participants. Researcher will ask questions about their buying habits, pain points during the process, and their perception (questions and concerns) on different pharmacies types. Ideally, I'd like the interview to be semi-structured, where interviewer will loosely follow a predetermined list of questions and at the same time develop impromptu follow-up questions based on different interviewees' response. The benefit of in-depth interview is that it is useful for exploratory purpose, and is more flexible and participant-centric than quantitative research. Moreover, it usually generates much richer data than quantitative survey, and it lays a foundation to develop questions to ask in future surveys, since researcher can get a better idea of people's attitude and concerns from the interview to better inform their survey design in the next step.

To better quantify some trends that are difficult to find online (current consumer base of Pillpack, market share of different channels) and customer preferences and attitudes on different pharmacies, I will design a web-based survey that asks prospective customers about their perception on online pharmacies, their priorities and concerns when choosing pharmacy, and the potential key motivator for them to switch pharmacy from offline to online. I choose web survey due to its time and cost efficiency and the broad geographic coverage. A quantitative study is also helpful to provide some numbers and trends that are not available with a qualitative study.

Population and Sampling

My population is people who are currently using prescription medication in United States, and I am going to conduct a stratified random sampling in my research. I am going to partner with insurance companies that provide similar pharmacy benefits since it is a key control variable. I will then divide consumers into subgroups based on their current pharmacy choice: in-store pharmacies, mail order, or online pharmacies, and randomly select 500 people from each group to conduct the web-based survey. I construct the subgroups in this way so that I can reach an audience who are covering all pharmacies, both online and offline.

The advantage of this method is that I can increase the likelihood that this sample will represent the population, but the downside of this method is that my sample is not necessarily random so that there might be selection bias since how to subgrouping people can be an issue. Overlapping can be another issue. One way to reduce the bias is to better understand the population of interest, prescription users in the US before creating list of subgroups. I will also make sure that draw proportionate random sample from each stratum.

Limitation and Validation

Type I error occurs when we reject a null hypothesis that is actually true. In my case, this type of error will happen when people give incorrect or are unwilling to disclose their thought considering personal reasons. Additionally, if I set the choice in a scale format, different participants will have different understanding of their feeling towards a statement so that the answers that I collected might not be very accurate.

Type II error occurs when we fail to reject a null hypothesis that is actually false. In my case, this error will happen if people are aware of who we represent so that agree on our statement in a subconscious way even if they won't necessarily think about switching their pharmacy. In

order to reduce the two types of error, I plan to conduct my survey with a large sample size and reduce my significance level.

Another limitation with my quantitative research is that those who has never heard about online pharmacies or has little knowledge about this new model might get the idea of convenience from the survey itself. This is a tricky part since we don't want to get biased response by leading participants to the direction that we desire. As a result, we should pay special attention to how to phrase our questions in relatively objective and plain language.

One limitation with my qualitative research is that since in-depth interviews is very time-consuming and expensive, by only conducting with a limited group of people we cannot generalize results to larger population; instead, we can only get a basic idea of what this selected group of people think. However, when delivering the results to the management level, we should pay special attention to avoid letting them be easily influenced by a single respondent or even a single comment.

Analysis and Recommendations

For my hypothesis test applied in quantitative study, I will set an alpha of 0.1.

- **What are consumer's priorities when it comes to choosing their primary pharmacy?**

I will collect data on the number of people choosing each priority (including convenience, brand name, etc.)

- **Are consumers satisfied with their current pharmacy and medicine management service (both online and offline)?**

Since satisfaction is measured on a scale of five (-2: very unsatisfied, -1: unsatisfied, 0: neutral, 1: satisfied, 2: very satisfied) and I will count score 1 and 2 as satisfaction, I will calculate the mean and variance of satisfaction score and then conduct the hypothesis test.

- How do consumers and competitors respond to Amazon's acquisition of Pillpack? What kind of positive/negative impact it will have on the business? **Does Amazon's ownership of Pillpack gain trust for Pillpack?**

Since the answer to this question is also on a scale from -2 to 2 (mentioned earlier), I will also conduct a hypothesis test to see if Amazon's ownership of Pillpack gain trust for Pillpack or not.

Research Deliverable

After I finish this research, I will do a 15-minute PowerPoint presentation to present research findings to the management level. Since senior management are more into results and insights rather than technical jargon and process, I will pay attention to my storytelling techniques to deliver the findings in an understandable and effective way. I will also create some infographics and graphs to assist my presentation.

My presentation will follow the flow starting from management dilemma, management question and research questions. I will use infographics to briefly explain the process of my three study: observation, in-depth interview, and surveys, and I will highlight the sample criteria that I used and some insights from the studies. I will make sure the way I phrase the findings is relatively objective, and I will also emphasize the scope of this research and its strengths and weaknesses so that the management team won't rely too much on this research.

Based on the results, I will make the following recommendation:

- In order to stand out from its competitors, Pillpack should target each customer pain point and build its competitive advantage as a problem solver for customers using traditional pharmacies and who are suffering from medication management.

- The in-depth interviews might reveal plenty of attitudes and motivation factors affecting consumers' choice of pharmacies. If the research indicates that consumers' main concern about online pharmacies is its safety issue, then I will suggest Pillpack to integrate the element of trustworthiness and safety into its marketing campaign to convince consumers the legitimacy of online pharmacies. If consumers express positive attitude or confidence towards Amazon's ownership, Pillpack should also mention its potential partnership with Amazon and how it can benefit from its parent company in its marketing strategies.
- If the survey and interviews indicate that lots of people are not aware of online pharmacies, then Pillpack should make educating potential consumers about its business model as its primary task and figure out different channels of education or opportunities to partner with insurance companies.

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