

## SEARCHING LEVERAGE POINTS TO INCREASE SALES OF A VERTICALLY INTEGRATED BLACK TEA COMPANY

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### ABSTRACT

A periodical purchase system, which shops deliver their goods to their customers based on contracted schedules, is one of the popular ways to keep sales stable. Arahataen Inc., a tea company in Japan, is also operating this system. They successfully won customers in their early stage. However, a recent customer number is stagnated. Then, they employed system dynamics simulation to improve their situation. This paper shows the customer number simulations for searching leverage points to improve the situation and suggests strategic intervention based on Arahataen's case.

### 1 INTRODUCTION

The tea business in Japan consists of many and various companies. This often causes low productivities. Therefore, stakeholders are trying the integration of their businesses but not successful. One of the exceptions is Arahataen Inc. Arahataen Inc. is a vertically integrated tea company which operates all steps of tea related business from farming to distribution and sales. They succeeded not only in their original green tea business but also in the production of black tea (pu-erh tea) earlier than competitors in Japan. The black tea is popular because of the good effect on a diet with taking it continuously. Then, they started periodical purchase service to deliver the black tea to customers once a month. In the early stage, they achieved to win customers of periodical purchase, but the winning rate has been decreased. Arahataen needs to know the fundamental reasons for this stagnation and employed system dynamics simulation.

### 2 A SIMULATION MODEL OF CUSTOMER TRANSITION

The Arahataen recognized that total sales of pu-erh tea were consisted of "sales of a regular pack of tea" and "sales brought by periodical purchase contract customers." The main advertisements and sales channel are on the internet. Therefore, existing CRM tools can accumulate customers' behaviors. The CRM tools traced customer transition as figure 1.

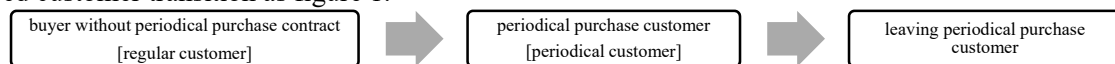


Figure 1: Customer transition

The structure of transience of buyers shown in figure 1 is similar to the online retailer case explained in Takahashi (2016). Modeling employed the procedure in Takahashi (2008) Arahataen was interested in the background of leaving customers, not getting new customer strategies. Therefore, the intervention to improve their situation should be to tighten the flow to "leaving periodical purchase customer" in figure 1.

Customer questionnaires indicate existing customers feel that product quality and service are preferable. However, a small number of customers say a little volume of tea leaves remain when they receive new delivery. Therefore, the simulation model includes customer-side tea leaf stock and has an assumption that more tea leaves remaining, more customers leaving. This customers' reaction is expressed in S-shape curve

against “customer-side surplus inventory.” In addition, customers adjust their consumption speed based on their inventory at home.

### 3 SIMULATION RESULTS

Giving actual data of customer won per month as an exogenous input and actual parameters, a simulation result (marked “1”) and real past data (marked “2”) of “total customers” of the black tea are shown in figure 2. Simulation started from March 2011, the month when Arahataen started their pu-erh tea business.

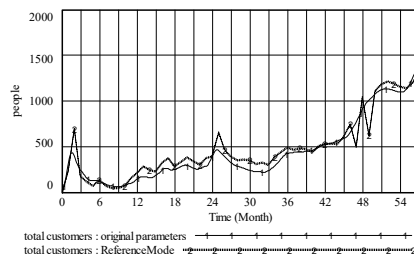


Figure 2: A base simulation

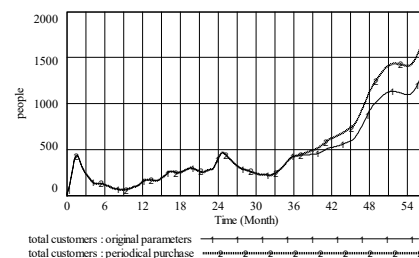


Figure 3: All customer contract scenario

One of the prospective interventions is customer composition change. Arahataen has many customers without “periodical purchase contract” who stop their purchase in shorter duration than others. One hypothetical scenario is that new customers are all “periodical purchase customers.” If they require all new customers to make a contract of the periodical purchase from month 37, the total customers are improved; at the end, the total customer reaches 1708 (marked “2,” whereas “1” is the base simulation in figure 3).

### 4 DISCUSSIONS AND CONCLUSION

The computer simulations bring stakeholders not only interventions’ consequences but also reasons for consequences. Indeed, Arahataen started to use the simulation model as a sandbox to test their new potential scenarios. Thus, a system dynamics simulations are not only measures to improve the quality of the model but also learning of clients (see Lane, 1992; Capelo and Dias, 2009). In addition, the company is assured what kind of information to be collected on the basis of simulation models and results. This realizes clear and confident strategic decision making.

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