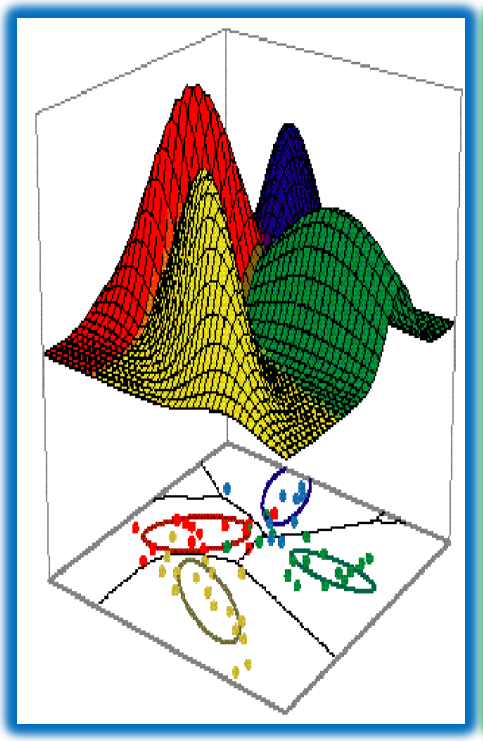
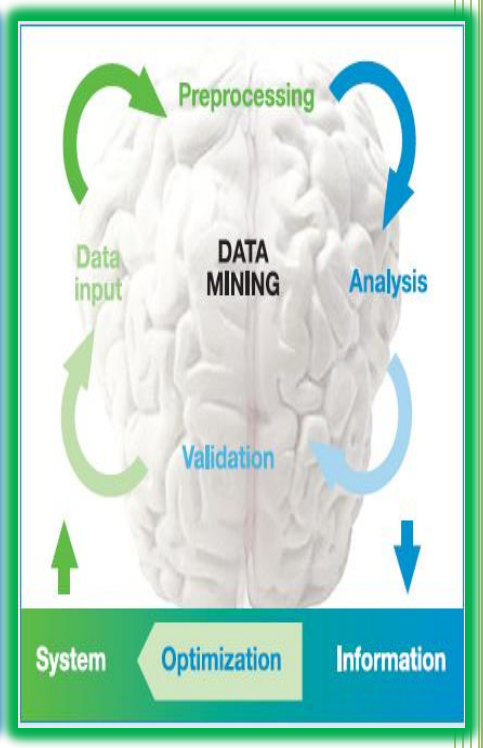
2020

Classification of Smart Partyware members





University of Southern California

Case1: Classification of Smart Partyware members

(This case is adapted from the "Applichem (A) (Abridge)" HBS Case 9-694-030)

New Thinking

In January 2009, Richard Ellison, Chairman of the Applichem Board of Directors, joined the board of WiseCoupon, a startup company in the now red-hot "Daily Deal" market at the request of his friend Ravi Khosla, a Venture Capitalist. Richard's first board meeting at WiseCoupon was full of surprises. He was pleasantly surprised to learn how new markets and new channels to reach customers and sell products are being created by these small and agile startups.

Opportunity

Ellison remembered the recent acrimonious board meeting about the $50 million in excess cash beyond the normal requirement at Applichem and the stake holders' vociferous request to distribute the cash as dividends or invest in new business. Richard thought it would be wonderful if Applichem could invest in a company that would use Applichem's Release Ease product and be in the Internet-based direct-to-consumer business. Richard immediately placed a phone call to his friend Ravi Khosla and asked for his suggestion. Ravi asked him to visit the Smart Partyware Company (SPW) and told him that they were in the niche party ware business, currently with a fixed customer base, and that they sold innovative plastic party ware to their members. Since they sell a plastic product, they may be a good vertical acquisition target. John Runner had reached out to Ravi Khosla for second-round funding for SPW, and Ravi was impressed by John's vision, depth of understanding of the direct-marketing business, and the innovation in moving from traditional book selling to selling party ware products to upscale customers.

History of SPW

John Runner worked in the direct marketing industry; his expertise was selling books directly to consumers. He wanted to start his own company and started doing research in the book industry. He found that approximately 50,000 new titles, including new editions, are published each year in the U.S., giving rise to a $25 billion industry in 2001 according to the Association of American Publishers Industry Statistics, 2002.

Book retailing in the U.S. in the 1970s was characterized by the growth of bookstore chains located in shopping malls. The 1980s saw increased purchases in bookstores stimulated through the widespread practice of discounting. By the 1990s, the superstore concept of book retailing gained acceptance and contributed to double-digit growth of the book industry. Conveniently situated near large shopping centers, superstores maintain large inventories of 30,000 to 80,000 titles, and employ well-informed sales personnel. Superstores applied intense competitive pressure on book clubs and mail-order firms as well

as traditional book retailers. In response to these pressures, book clubs sought out alternative business models that were more responsive to their customers' individual preferences.

Historically, book clubs offered their readers different types of membership programs. Two common membership programs are "continuity" and "negative option" programs that were extended contractual relationships between the club and its members. Under a continuity program, a reader would sign up by accepting an offer of several books for just a few dollars (plus shipping and handling) and an agreement to receive a shipment of one or two books each month thereafter at more standard pricing. The continuity program was most common in the children's book market, where parents are willing to delegate the rights to the book club to make a selection, and much of the club's prestige depends on the quality of its selections. In a negative option program, readers get to select which and how many additional books they would like to receive. However, the club's selection of the month will be automatically delivered to them unless they specifically mark "no" by a deadline date on their order form. Negative option programs sometimes result in customer dissatisfaction and always give rise to significant mailing and processing costs.

In an attempt to combat these trends, some book clubs have begun to offer books on a “positive option” basis, but only to specific segments of their customer base that are likely to be receptive to specific offers. Rather than expanding the volume and coverage of mailings, some book clubs are beginning to use database-marketing techniques to more accurately target customers. Information contained in their databases is used to identify who is most likely to be interested in a specific offer. This information enables clubs to carefully design special programs tailored to meet their customer segments' varying needs.

John saw two new trends emerging: upscale customers were having more parties in their homes, and the number of people invited to the parties was increasing. Thus, these customers wanted their parties to have an elegant look and feel. John’s hypothesis was that the easy way to give the party an elegant look is to have theme-based party ware. Most of the parties have themes like spring fest, Super Bowl get-to-together, Christmas, etc. The cheap plastic items sold in supermarkets were not appreciated by upscale customers, and they wanted better theme-based party ware.

John, with some friends in the industry, started Smart Partyware in 2005 with venture funding and he has grown the company substantially based on traditional direct-marketing methods. He has his production facility in Mexico. The cost of production is low compared with marketing and delivery cost.

John, being the marketing guru, took the role of Chief Marketing Officer of Smart Partyware, and he has been pursuing several new initiatives in database marketing (DM) and customer relationship management (CRM). He has a substantial amount of stock and stock options in the company and wants to increase the valuation of the firm by increasing the sales through business analytics.

Visit to Smart Partyware

Richard visited the Smart Partyware Company and learned that their business model is direct-to-consumer marketing. Also, over the years they have gained dedicated upscale customers and currently have 500,000 members in their database. John Runner and Richard could see the synergy between the two companies: SPW could use Applichem’s REC, and SPW could get a fresh cash infusion to improve

the existing business and innovate. Richard and John wanted to move forward, and as part of due diligence they wanted SPW to show that they could increase the response rate through data-mining methods.

Data-Mining Business Models

After learning that Applichem might be interested in Smart Partyware, John Runner got excited, and he wanted to use this opportunity to tell his CEO about the data-mining initiative he wanted to take to improve the response rate of members. In the direct-marketing industry, the response rate is measured as a percentage of customers who buy the directly mailed product. Smart Partyware's historical response rate for direct mail to selected members is approximately 10%—far above the industry average. The industry's historical response rate for direct mail to prospect lists is 2.3% because most of the direct marketers do not have dedicated members and often mail to prospect lists bought from data brokers. John runner was convinced that there were opportunities to increase the effectiveness of direct marketing through test marketing and using data mining in identifying which subset of the full member list to target. He had just hired Vijay Kumar, Ph.D., from the Chicago Business School, who completed his research in data mining and business analytics.

Old RFM Business Model

Vijay Kumar's first task was to identify the current database marketing method used at the SPW Company; he learned that SPW was using RFM (Recency-Frequency-Monetary) analysis to target customers. The fundamental premise underlying RFM analysis is that customers who have purchased recently, have made more purchases, and have made larger purchases are more likely to respond to an offering than other customers who have purchased less recently, less often, and in smaller amounts. RFM analysis can also be used to target special offers to "welcome" new customers, encourage small purchasers to spend more, reactivate lapsed customers, or encourage other marketing initiatives. John Runner had had great success with the RFM business model in the past, but recently SPW had been unable to increase the response rate beyond 10%.

SPW Database

Vijay Kumar's next task was to analyze the database at SPW and find out the amount of information that was collected by SPW. Vijay was happy to learn that SPW was meticulous in collecting the data and had a substantial amount of information in their database, and that the information collected was relevant information for building a data-mining model.

The following information is stored in the local database:

Exhibit 1: Variables

Exhibit 1: Partial List of Variables in SPW Database

Variable Name	**Description**
Seq#	Sequence number in the partition
ID#	Identification number in the full (partitioned) market test data set
Gender	O = Male 1 = Female
M	Monetary—total money spent on Partyware
R	Recency—months since last purchase
F	Frequency—total number of purchases
FirstPurch	Months since first purchase
Sports Party	Number of purchases from the category: Sports Party
Pool Party	Number of purchases from the category: Pool Party
Barbeque Party	Number of purchases from the category: Pool Party
Birthday Party	Number of purchases from the category: Birthday Party
End-of-School-Term Party	Number of purchases from the category: End-of-School-Year Party
Art Party	Number of purchases from the category: Art Party
Block Party	Number of purchases from the category: Block Party
Cooking Party	Number of purchases of the category: Cooking Party
Get Together	Number of purchases of the category: Get Together
Movie Night	Number of purchases of the category: Movie night
Success	=1 “Celebrating American Arts" was bought, = 0 if not

SPW designs new party ware for every campaign, gives a new name to its party ware, and broadly classifies the party ware under one of its many party themes. Most of the designs cut across many themes but are classified into a particular category based on the main design theme in the party ware. The recent product to be marketed is Celebrating American Arts. It has famous American art works printed in the party ware, and even though it falls under the “Art Party” theme the party ware can be used as well for pool or barbeque or one of the other parties. For analysis purposes, if the member bought the American Arts package, the value of the Art Party variable increases by one.

Vijay’s first impression was that there was relevant amount of information in the database and that a good data-mining model built on the trial marketing data would help SPW to identify other potential members with high propensity to buy.

Potential Profits

Vijay’s next task was to establish the range of profits that could be achieved by each marketing campaign. After discussion with John Runner, he learned that every year SPW runs 12 marketing campaigns. Each marketing campaign starts with a trial marketing of 2,000 members: the newly designed party ware is sent to 2,000 randomly selected members from the database, and they have one week to respond. The packages come with paid return postage; if the member likes it, he or she can keep it; otherwise they have to return it within one week. After two weeks, SPW has all the data it needs to go for mass marketing. The current company policy is not to send packages to more than 100,000 members so that the members do not become tired of repeated marketing campaigns. The members always have the opportunity to visit the SPW Website

and buy current and old packages. Most of the old packages are returned packages from marketing campaigns and are sold at discounted values. After analyzing the recent “Celebrating American Arts" trial marketing data, Vijay found that 11.2% of the members are willing to buy the new package. The selling price for the package is $60, the mailing cost is $4.50, and the return mail cost is the same. The total cost of producing the package is $10. If the package is returned, it can be sold at discounted rate or destroyed—historically the expected salvage value has been $15. Based on these assumptions, Vijay calculated that if the package is mailed to 100,000 randomly selected members then the profit from the marketing campaign will be $154,000 and if they can mine the data perfectly and send only to the members interested in the package they will make $2,548,000. The range is extremely wide—currently, SPW is making an average profit of $500,000 per marketing campaign and a yearly profit of $6.0 million. Even if the data-mining methods increase the current profit by 50%, it will increase the yearly profit to $9.0 million. The maximum potential is more than $30 million. Vijay shared this range-of-profit analysis with John Runner, and they both become very excited to jump into data-mining methods to increase profit.

Plan of action

Vijay and John Runner decided to use the recent “Celebrating American Arts" trial marketing data to prove they can do a better job than RFM analysis. Rather than building black-box data-mining models like neural networks, which would be difficult to explain to other executive members of SPW, they decided to use logistic regression, the oldest and most highly regarded methodology of statisticians, and the popular Decision Tree data-mining method. Vijay could hardly wait to start his data-mining analysis and show to SPW C-Level management and Richard Ellison of Applichem the power of data mining and business analytics. He had already started dreaming about his six-figure bonus check. Vijay and John Runner have to do the following to support their analysis,

Thought Process for the case

1. **Know thy Business (Direct Marketing – do some research on the conversion rate for Banner Ads, Search Engine Marketing, Cold Call and Direct Marketing)**
2. **Know thy Company (Smart Partyware – What is their Overall Business Model)**
3. **Know thy Customer (Who buys their product – Business Insights – Who buys Personalized Party Products?)**
4. **Know thy Company Policy (Why do they have these policies – Why these limitations placed – What could be the reasons)**
5. **Know the steps for Marketing (What are they doing and Why?)**
6. **Know the current Marketing Method (RFM Marketing)**
7. **Know the New Marketing Method (Decision Tree Based Marketing)**

Key points

a. Random Marketing
b. God Marketing
c. Data Driven Direct Marketing
d. Decision Tree Method
e. Tribal Knowledge

f. Improving the computer built best Model

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Case1: Total 100 points

Note: For Every Case you will write a one page Executive Summary and fill-in the Case Report provided to you

The questions given below will help you to answer the Case Report.

1. Provide calculations to show that the Maximum profit based on the training data is $2.548 Million
2. Provide calculations to show that the profit based on the training data is $0.154 Million, if 100,000 packages are mailed randomly to members.
3. Build the Decision tree Model using JMP (**Go option**) on the following conditions,
   Y = Success
   X = All predictors
   Cutoff Probability for mailing = 0.15

   These Questions are for your reference.

   a. Interpret the decision tree?
   b. Interpret R^2 and how many splits did you have in the model?
   c. Explain important parts of JMP printout
   d. Examine each of the split variables to explain whether they make business sense?
   e. Create the confusion matrix for the training and testing data set. (cutoff Prob. = 0.15)
   f. What is the expected profit based on the confusion matrix for training and testing data sets (use the given profit calculator Excel Sheet).

4. Build the Best Decision tree Model using JMP on the following conditional (Optional)
   Y = Success
   X = Any subset of predictors (you can enrich your predictors using transformation or summation or other meaningful methods)
   Cutoff Probability for mailing = any value between 0.12 to 0.25

   These Questions are for your reference.

   a. Interpret the decision tree?
   b. Interpret R^2 and how many splits did you have in the model?
   c. Explain important parts of JMP printout
   d. Examine each of the split variables to explain whether they make business sense?
   e. Create the confusion matrix for the testing data set. (cutoff Prob. = 0.15)
   f. What is the expected profit based on the confusion matrix for training and testing data sets (use the given profit calculator Excel Sheet).

5. Provide your business insight about your best model.

Sample Party Ware items