MKT 680 – Marketing Analytics
Marketing Models Project

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INTRODUCTION

Pernalonga, a leading supermarket chain of over 400 stores in Lunitunia, sells over 10 thousand products in over 400 categories. Pernalonga regularly partners with suppliers to fund promotions and derives about 30% of its sales on promotions. Until recent experimentation with personalized promotions, most of Pernalonga's promotions are chain-wide promotions.

Mahou San Miguel, our client who sells beer products in Pernalonga stores, has hired us to verify the effectiveness of its promotions and marketing partnership with Pernalonga. We seek to identify promotion and marketing activities that drive significant incremental sales for continuation into 2018.

Our Marketing Model will consider weekly sales volume, for each San Miguel product, for the following components: Base, Shelf Price, Discount, Flyer, Store Display, Email, Web Search, Paid Search, and TV.

EXECUTION OVERVIEW

We compiled San Miguel data into a format acceptable for modeling. Additionally, we converted GRP to Reach, considered San Miguel's competitors in the Beer Product category, included the seasonality index, as well as the holiday index. We then ran linear models, with a few transformations, on the data to estimate weekly sales volume for the various components.

DATA UNDERSTANDING

There are two sets of Pernalonga data provided to conduct the project - product_table and transaction_table. The product table contains 10,767 rows and 7 columns of data. The tranaction_table contains 29,617,585 rows and 12 columns. Additionally, we are provided data from San Miguel. These datasets include supplements to the product and transaction tables, data regarding promotion and advertising activity records, the seasonality index for Beer products, and a list of national holidays celebrated in Lunitunia in 2016 and 2017.

We noticed that the data provided by San Miguel has transaction dates, but these dates are scattered, and in order to consider them as a whole, we needed to label them in such a way that we can easily interpret the timing of any event. Therefore, we began preparing the data by adding *week* labels to the data. For any given event in the supplementary tables, promotion/advertising table. seasonality table or national holiday table we labeled with week numbers from 1 (first

week in 2016) to 104 (last week in 2017), using only complete weeks. From here, we built out a table containing all relevant San Miguel data. We grouped by week and summed "tran_prod_paid_amt" from the transaction table supplement data to record sales for each of the 104 weeks across the two years. Next, we "binary coded" promotions, for each week, using "prod_assoc" for the Store Display and Flyer promotion vehicles; separating these vehicles into 3 columns each, depending on the last digit of prod_assoc (1, 2 or 3). We then binary coded Email promotion, as well. Finally, we followed a similar approach for TV, Radio, Paid Search and Web Display vehicles but used the value from "amount," as opposed to binary coding, to fill in weeks 1-104 in our table. Weeks where these promotion vehicles were not used were given a value of 0. A snippet of our San Miguel created table is shown below:

Week	Sales	Store_ prod1	Store_ prod2	Store_ prod3	Flyer_ prod1	Flyer_ prod2	Flyer_ prod3	Email	TV	Radio	Paid Search	Web Display
23	1537.91	0	1	1	1	1	1	0	500	200	34790	0
30	1671	0	0	0	0	1	0	0	0	0	28608	300000
40	1023.07	0	0	1	0	1	1	0	300	300	7044	0
80	1111.11	0	1	0	0	1	0	0	0	0	26341	0
104	842.13	0	0	0	0	1	0	1	0	0	15925	0

Table 1: Example snippet of our initial San Miguel created table

DATA PREPARATION

Before running the model, we were examining the "reasonableness" of the data. The first issue we found was, because "Store Display" and "Flyer" are both promotional media causal, they are conducted on different items during different periods. Instead of aggregating sales units of different items together, we decided to build three models for the three products.

After deep consideration, we decided to use weekly sales quantity as the dependent variable, instead of weekly sales revenue. The reason behind this is that sales quantity completely reflects the fluctuation of sales across weeks, while sales revenue is implicitly the function of sales price, which will undermine the validity of our result.

Both “TV” and “Radio” are measured in Gross Rating Point (GRP), which is a general measurement of advertisement impact. To be better fitted into the model, we need to convert GRP to percentage of customer reach (%Reach), which measures the actual effect of ads. First, we converted GRP to ad-stocked GRP, with a given half-life time, to explain the lagged effect of advertisement across the weeks. Then we can convert ad-stocked GRP to %Reach using the equation:

$$Reach = 0.95\left(1 - e^{-0.020\ GRP}\right) \quad Reach = 0.90\left(1 - e^{-0.025\ GRP}\right)$$

And the converted %Reach is plotted like:

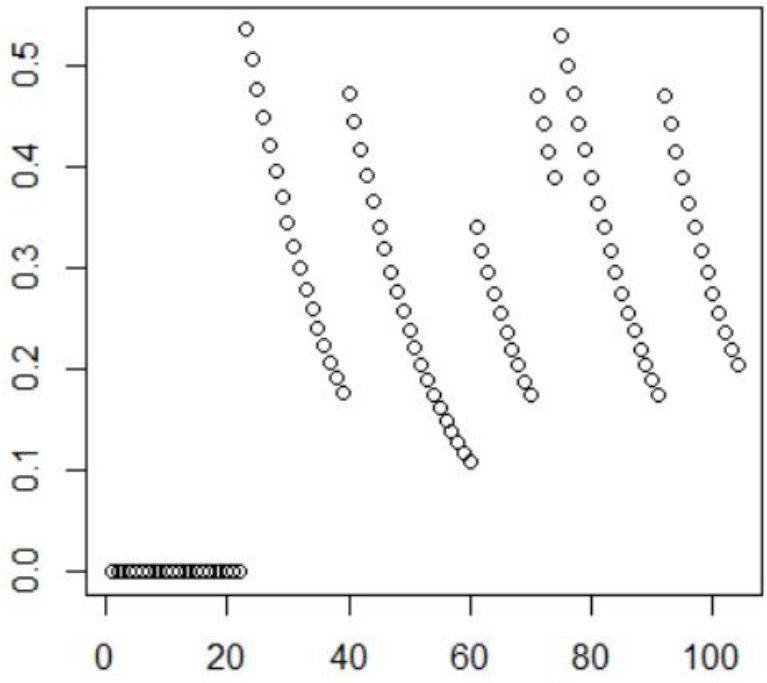

Fig 1: Converted %Reach by week

Similarly, “Paid Search” and “Web Display” are measured in “impressions”, which should also be converted to %Reach. But due to the lack of information, we decided to keep the terms unchanged.

Next, we took competitor factors into consideration. We looked at the whole transaction table and found that nine products are in the same sub_category as the San Miguel beer. When we we found ourselves unsure of which products are the main competitors, their sales price revealed a clue. In our three items, item 3 (id: 138936953) is sold at very high price around $15. Other than two products from *HEINEKEN* and *CARLSBERG,* which are also very expensive, all the other items are much cheaper, and fall in the price range from $0.80 to $2.50, which is close to the prices of items 1 and 2.

Last but not least, we were discussing whether to use binary attributes or numeric ones on some promotional vehicles. On our final table, “Email”, “Paid Search” and “Web Display” use numeric measure which can best explain the variable without losing any information. In addition, we also modeled the average unit price and discount of the items as well as the seasonality and holiday index.

MODEL BUILDING

Additive Model

As mentioned by the client, three different San Miguel Beer Products are sold in Pernalonga’s stores. We analyzed these products using an additive model as a way of estimating weekly sales volume for the various components.

We began by running a simple linear regression model, without interaction terms, for each of the three San Miguel Beer Products. This was done to ensure that none of the terms had an impact on any others -- avoiding the problem of multicollinearity. In order to do this, we first generated all possible two-term interaction terms and included these into the additive model. Then, we used Variance Inflation Factor (VIF), which quantifies multicollinearity, as both a check and a filter for multicollinearity. Using VIF, we filtered each of the high collinearity terms until every VIF fell below 40. Once we got VIF below 40 for each term, we were then able to run the aforementioned simple linear regressions. The regressions without interaction terms were used as the lower layer for the stepwise function. Meanwhile the regressions with interaction terms, after filtering terms with VIF over 40, were used as the upper layer for the stepwise function.

```
> vif(out)
                flyer                email           paid_search            web_search
            10.011075             1.321827              4.531369              9.579891
                   tv                radio              holiday           seasonality
            10.736665            12.065367             10.068096              3.436497
                price             discount                 store             sub_price
             3.375286             4.133771              1.727180              1.222603
             sub_sale       holiday:sub_sale paid_search:holiday      flyer:paid_search
             8.357712             4.417201              5.638308              9.256516
paid_search:sub_sale paid_search:web_search
            10.566756             9.431446
```

Fig 2: VIF output for each term in an Additive Model

Next, we ran the stepwise model using the regressions without interaction terms and the regressions with filtered interaction terms. From the stepwise output we found the best result for our additive model.

One thing to note is that we attempted multiple different log transformations to the independent variables but none of these attempts improved our model.

Multiplicative Model

Much like our additive model, we also attempted a multiplicative model as a way of estimating weekly sales volume for the various components. The process of developing the multiplicative model was essentially the same as that of the additive model.

Just like with our additive model, we first generated all possible two-term interaction terms and included these into the multiplicative model. We then used VIF as both a check and a filter for multicollinearity. Using VIF, we filtered each of the high collinearity terms until every VIF fell below 40. Once we got VIF below 40 for each term, we were then able to run simple linear regressions for each of the three products. The regressions without interaction terms were, again, used as the lower layer for a stepwise function and the regressions with interaction terms, after filtering terms with VIF over 40, were used as the upper layer.

```
> vif(out)
                 flyer                  email            paid_search             web_search
              9.386091               1.298699               1.505346               1.495052
                    tv                  radio                holiday            seasonality
             10.412555              11.776013               7.857236               3.165615
                 price               discount                  store              sub_price
              3.290368               3.998917               1.627680               1.206017
paid_search:holiday    flyer:paid_search
              5.317906               8.504404
```

Fig 3: VIF output for each term in a Multiplicative Model

From here, we ran a stepwise model using both the regressions without interaction terms and those with filtered interaction terms, and found the best results from the output for our multiplicative model.

Here, we attempted log transformations on the independent variables, as well, but these did not improve the model result. However, we do apply a log transformation to the dependent variable, marking the difference between multiplicative and additive models.

Modeling Results

Product 138936951

The evaluated diagnostics of each model is shown in table 2. The additive model with interaction terms is the best model for product 138936951, with a RMSE of 26.99039 and MAPE value of

0.09892532. The Durbin-Watson test of the best model is 2.2311, indicating that there is no autocorrelation in the model.

	Additive model	**Multiplicative model**	**Additive model with interactions**	**Multiplicative model with interactions**
RMSE	28.22731	28.46888	26.99039	26.89486
MAPE	0.1072526	0.1072157	0.09892532	0.1018229

Table 2: Evaluated Diagnostic result of all four models

The following equation shows the glm model formula of our best model for product 1:

sales ~ flyer + email + paid_search + web_search + tv + radio + holiday + seasonality + price + discount + price12 + radio:discount + email:paid_search

Also, the coefficient table indicates that the regression model predicts the dependent variable, sales significantly well, with a R^2 value of 0.5005735. Among all the independent variables, term discount contributes statistically to the sales, with a significance level of 0.000. Term email, term seasonality, term competition price, as well as the interaction term of radio and discount contribute, statistically significantly, to the sales, with a significance value of 0.01.

Product 138936952

The evaluated diagnostics of each model is shown in table 3. The additive model with interaction terms is the best model for product 138936952, with a RMSE of 15.45297 and MAPE value of 0.1186129. The Durbin-Watson test of the best model is 1.9001, indicating that there is no autocorrelation in the model.

Product 2

	Additive model	**Multiplicative model**	**Additive model with interactions**	**Multiplicative model with interactions**
RMSE	17.3329	17.3174	15.45297	15.75185
MAPE	0.1318087	0.1285695	0.1186129	0.1160463

Table 3: Evaluated Diagnostic result of all four models

The following equation shows the glm model formula of our best model for product 2:

sales ~ flyer + email + paid_search + web_search + tv + radio + holiday + seasonality + price + discount + store + sub_price + sub_sale + paid_search:seasonality + paid_search:holiday + flyer:paid_search + tv:radio + discount:store + flyer:discount
sales ~ flyer + email + paid_search + web_search + tv + radio + holiday + seasonality + price + discount + store + sub_price + sub_sale + paid_search:seasonality + paid_search:holiday + flyer:paid_search + tv:radio + discount:store + flyer:discount

Also, the coefficient table indicates that the regression model predicts the dependent variable, sales significantly well, with a R^2 value of 0.7263. Among all the independent variables, seasonality, price, discount, and the interaction of flyer and paid search contribute statistically to the sales, with a significance level of 0.000. The term flyer and term radio contribute statistically significantly to the sales, with a significance value of 0.001. The term store, interaction of paid search and seasonality, the interaction of tv and radio, and the interaction of discount and stores contribute statistically significant to the sales, with a significance value of 0.01. Finally, the term paid search, term web search, term holiday, interaction of paid search and holiday and interaction of flyer and discount contribute, statistically significantly, to the sales, with a significance value of 0.1.

Product 138936953

The evaluated diagnostics of each model is shown in table 4. The additive model with interaction terms is the best model for product 138936953, with a RMSE of 5.510381 and MAE value of 4.120232. Since the MAPE in this case is uninterpretable, we used MAE instead. The Durbin-Watson test of the best model is 1.5571, with a corresponding p-value of 0.002578, indicating that there is no autocorrelation in the model.

	Additive model	**Multiplicative model**	**Additive model with interactions**	**Multiplicative model with interactions**
RMSE	7.792062	8.110972	5.510381	6.3875
MAE	5.739204	5.311971	4.120232	4.384059
MAPE	Inf	Inf	Inf	Inf

Table 4: Evaluated Diagnostic result of all four models

The following equation shows the glm model formula of our best model for product 3:

sales ~ flyer + email + paid_search + web_search + tv + radio + holiday + seasonality + price + discount + store + price3 + sub3 + flyer:email + web_search:sub3 + store:sub3 + flyer:sub3 + paid_search:store + web_search:radio + flyer:price3

Also, the coefficient table indicates that the regression model predicts the dependent variable, sales significantly well, with a R^2 value of 0.8485579. Among all the independent variables, term websearch, term tv, term radio, the interaction of web search and competition, the interaction of store and competition, the interaction of flyer and competition contribute statistically to the sales, with a significance level of 0.000. Term seasonality, the interaction term of paid search and store, as well as the interaction of web search and radio contributes statistically significantly to the sales, with a significance value of 0.001. Term discount, the interaction of flyer and email, as well as the interaction of flyer and price contributes, statistically significantly, to the sales, with a significance value of 0.01.

DueTo CALCULATION

After getting the best model for each product, we calculated the decomposition of weekly sales volume for each product into the following components: base (includes Seasonality and Holidays), shelf price, discount, flyer, store, display, email, web display, paid search, TV and the corresponding significant interactions in each best model. We prepared a table for each product, listed in the appendix below.

We visualized the DueTo graph for each product, as shown below:

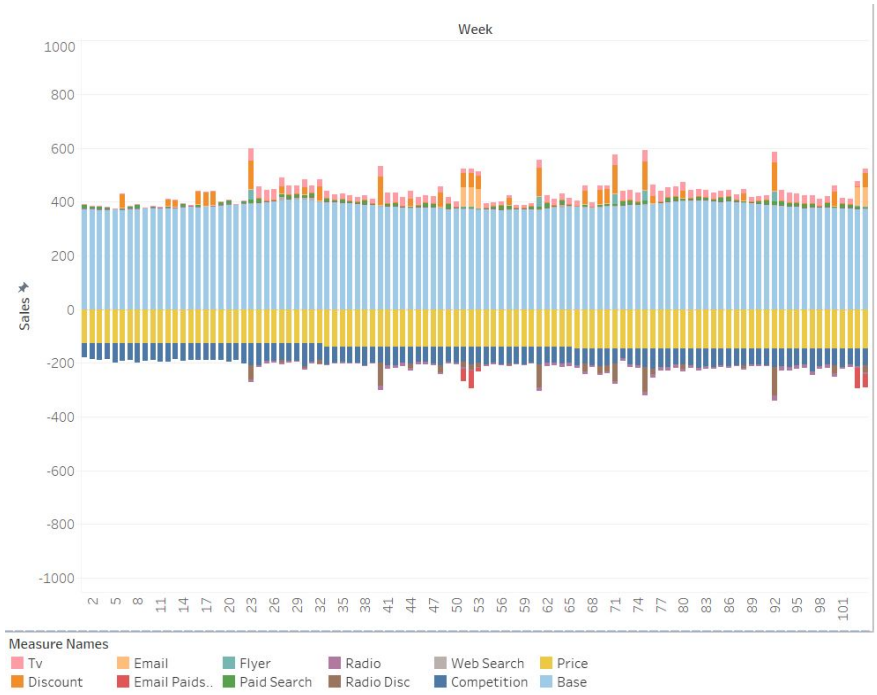

Figure 4: DueTo Decomposition of Historical Price for Product 138936951

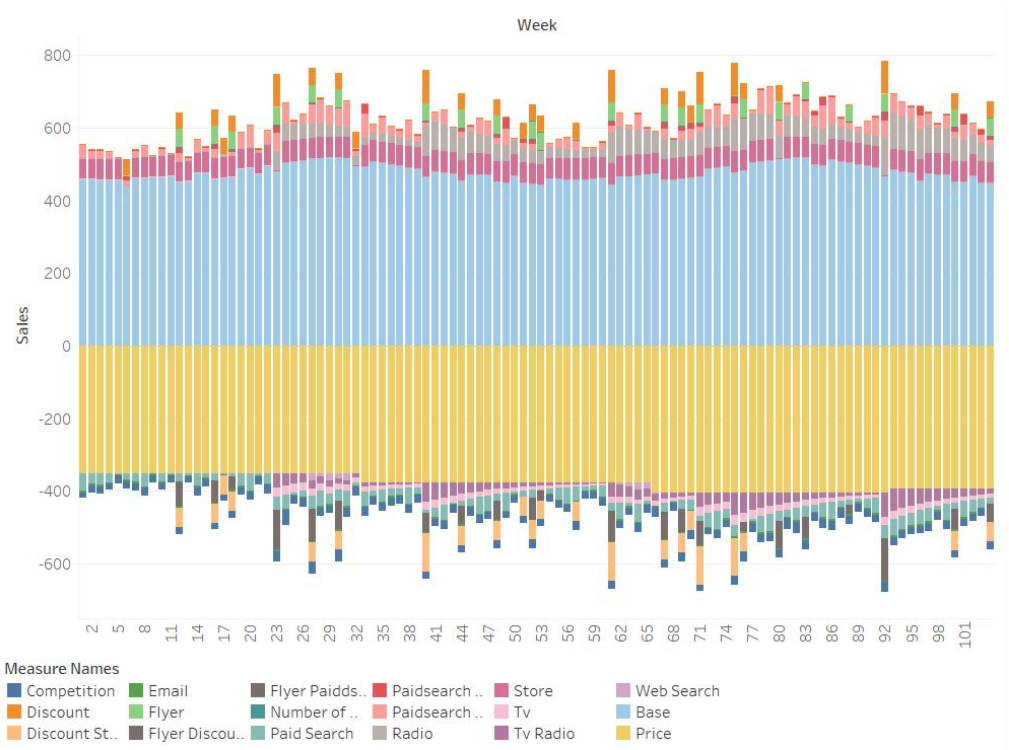

Figure 5: DueTo Decomposition of Historical Price for Product 138936952

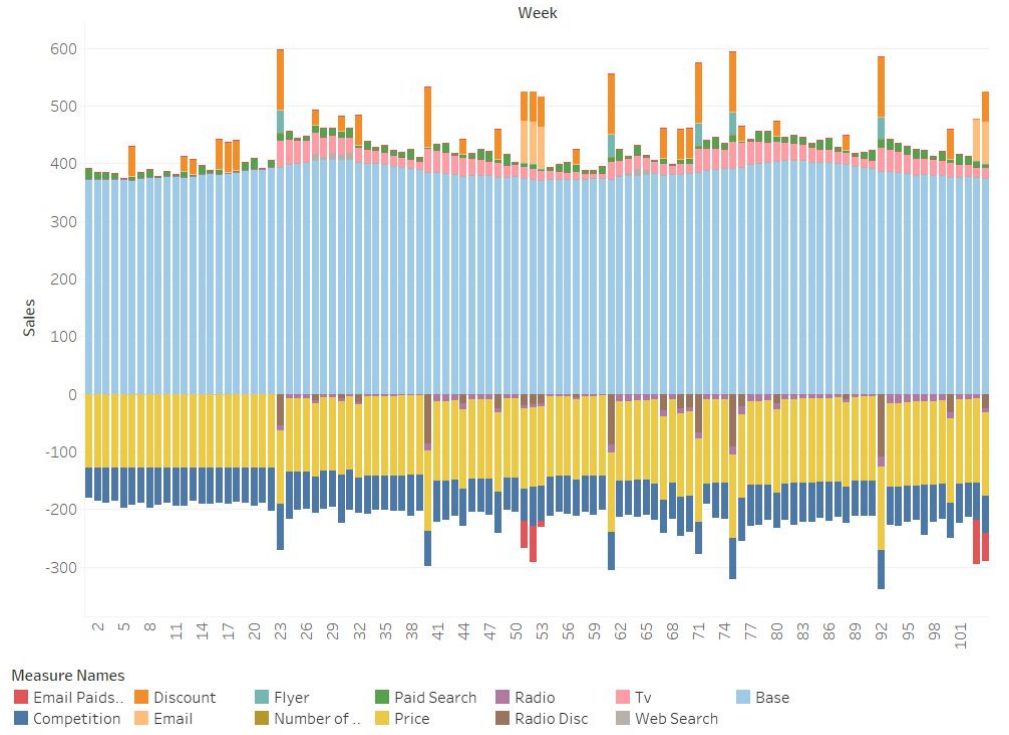

Figure 6: DueTo Decomposition of Historical Price for Product 138936953

Appendix

	base	flyer	email	paid_search	web_search	tv	radio	price	discount	competition	radio_disc	email_paidsearch
1	373.5349	0	0	17.98207	0	0	0	-127.167	0	-52.8963	0	0
2	373.0236	0	0	11.05378	0	0	0	-127.167	0	-57.8546	0	0
3	372.6497	0	0	11.81664	0	0	0	-127.167	0	-61.0437	0	0
4	372.5973	0	0	9.286197	0	0	0	-127.167	0	-57.5008	0	0
5	372.9839	0	0	1.238662	0	0	0	-127.167	0	-70.368	0	0
6	371.1468	0	0	6.595272	0	0	0	-127.167	52.28481	-65.9071	0	0
7	374.824	0	0	8.863892	0	0	0	-127.167	0	-61.8343	0	0
8	375.7514	0	0	13.77145	0	0	0	-127.167	0	-70.1051	0	0
9	376.5186	0	0	0.625359	0	0	0	-127.167	0	-65.3804	0	0
10	377.5054	0	0	8.499225	0	0	0	-127.167	0	-61.4632	0	0
11	378.6312	0	0	1.419865	0	0	0	-127.167	0	-67.0328	0	0
12	376.8865	0	0	8.723752	0	0	0	-127.167	26.1424	-67.5825	0	0
13	378.0956	0	0	1.850458	0	0	0	-127.167	26.1424	-58.7527	0	0
14	382.4719	0	0	13.10051	0	0	0	-127.167	0	-63.9559	0	0
15	383.5803	0	0	4.612584	0	0	0	-127.167	0	-63.1285	0	0
16	382.1565	0	0	7.558174	0	0	0	-127.167	52.28481	-61.7388	0	0
17	383.4609	0	0	1.204004	0	0	0	-127.167	52.28481	-62.7595	0	0
18	384.8949	0	0	3.348682	0	0	0	-127.167	52.28481	-60.3675	0	0
19	389.3288	0	0	12.90725	0	0	0	-127.167	0	-62.2609	0	0
20	390.8408	0	0	17.55261	0	0	0	-127.167	0	-67.2502	0	0
21	389.5402	0	0	2.092314	0	0	0	-127.167	0	-61.2074	0	0
22	394.4797	0	0	10.6925	0	0	0	-127.167	0	-74.9475	0	0
23	393.9578	40.01451	0	13.10616	0	45.59185	-8.84098	-127.167	104.5696	-80.4767	-55.1958	0
24	398.9919	0	0	14.14666	0	43.07782	-8.21369	-127.167	0	-81.0245	0	0
25	400.8831	0	0	2.08817	0	40.61517	-7.62306	-127.167	0	-66.1743	0	0
26	402.6692	0	0	6.209132	0	38.21603	-7.06818	-127.167	0	-65.4168	0	0
27	404.6025	0	0	12.77615	12.06693	35.89046	-6.54793	-127.167	26.1424	-62.2129	-10.22	0
28	406.0318	0	0	15.42865	6.033466	33.64656	-6.06105	-127.167	0	-65.5885	0	0
29	406.6259	0	0	11.00367	12.06693	31.49058	-5.60616	-127.167	0	-63.8878	0	0
30	406.4609	0	0	10.77726	9.050199	29.42709	-5.18182	-127.167	26.1424	-84.1053	-8.08774	0
31	405.8894	0	0	15.62718	12.06693	27.45912	-4.78653	-127.167	0	-68.9845	0	0
32	402.0039	0	0	3.083093	0	25.58835	-4.4188	-127.167	52.28481	-61.4673	-13.7937	0
33	400.579	0	0	14.66466	0	23.81528	-4.07711	-138.225	0	-65.6236	0	0
34	401.2103	0	0	5.240203	0	22.13941	-3.75996	-138.225	0	-59.7911	0	0
35	398.7578	0	0	12.13083	0	20.55938	-3.46589	-138.225	0	-58.9082	0	0
36	396.4028	0	0	7.116655	0	19.07313	-3.19346	-138.225	0	-60.9178	0	0
37	394.1296	0	0	6.62541	0	17.67806	-2.9413	-138.225	0	-61.4616	0	0
38	391.8212	0	0	16.08113	0	16.37109	-2.70808	-138.225	0	-70.9391	0	0
39	389.7252	0	0	6.10704	0	15.14884	-2.49253	-138.225	0	-61.4892	0	0
40	384.6659	0	0	2.65363	0	40.22445	-13.6692	-138.225	104.5696	-62.169	-85.339	0
41	385.4848	0	0	9.639563	0	37.83652	-12.809	-138.225	0	-71.539	0	0
42	383.7912	0	0	14.76939	0	35.52359	-11.9834	-138.225	0	-68.9674	0	0
43	382.1687	0	0	0.995676	0	33.29347	-11.1939	-138.225	0	-62.1635	0	0
44	378.154	0	0	5.637645	0	31.15211	-10.4417	-138.225	26.1424	-64.8703	-16.2973	0
45	380.388	0	0	6.983296	0	29.10383	-9.72711	-138.225	0	-57.3307	0	0
46	380.079	0	0	16.99544	0	27.15142	-9.05036	-138.225	0	-58.0542	0	0
47	379.6695	0	0	15.57896	0	25.29637	-8.41113	-138.225	0	-62.8482	0	0
48	376.4627	0	0	6.294271	0	23.53901	-7.80881	-138.225	52.28481	-71.6351	-24.3759	0
49	376.1302	0	0	18.11656	0	21.87867	-7.24257	-138.225	0	-56.5798	0	0
50	378.5257	0	0	2.204577	0	20.31389	-6.71133	-138.225	0	-59.7907	0	0
51	374.8615	0	72.69068	5.848232	0	18.84251	-6.21387	-138.225	52.28481	-56.7543	-19.3971	-46.9415
52	373.1833	0	72.69068	7.849756	0	17.46183	-5.74886	-138.225	52.28481	-67.8371	-17.9456	-63.007
53	371.5818	0	72.69068	1.466955	0	16.16874	-5.31486	-138.225	52.28481	-59.7747	-16.5908	-11.7747
54	373.5349	0	0	4.831836	0	14.95979	-4.91041	-138.225	0	-68.633	0	0
55	373.0236	0	0	11.84678	0	13.83133	-4.534	-138.225	0	-61.2647	0	0
56	372.6497	0	0	16.49816	0	12.77955	-4.18411	-138.225	0	-65.8133	0	0
57	372.5973	0	0	14.04005	0	11.80056	-3.85924	-138.225	26.1424	-64.3014	-6.02347	0
58	372.9839	0	0	3.977431	0	10.89045	-3.55791	-138.225	0	-63.1807	0	0
59	373.9521	0	0	4.015103	0	10.04533	-3.27868	-138.225	0	-67.773	0	0
60	374.824	0	0	11.1634	0	9.261387	-3.02016	-138.225	0	-60.3637	0	0
61	372.9461	40.01451	0	8.161682	0	28.96291	-13.9655	-138.225	104.5696	-65.9041	-87.189	0
62	376.5186	0	0	17.06099	3.016733	27.01733	-13.0942	-138.225	0	-61.4095	0	0
63	377.5054	0	0	3.810166	6.033466	25.16918	-12.2568	-138.225	0	-59.358	0	0
64	378.6312	0	0	17.94478	12.06693	23.41869	-11.455	-138.225	0	-64.5422	0	0
65	379.6918	0	0	3.060866	9.050199	21.76516	-10.6902	-138.225	0	-61.8747	0	0
66	380.9009	0	0	0.445662	3.016733	20.20704	-9.96292	-145.597	0	-63.3749	0	0
67	379.6666	0	0	10.008	0	18.74215	-9.27348	-145.597	52.28481	-56.7476	-28.948	0
68	380.775	0	0	0.576385	0	17.36776	-8.6217	-145.597	0	-62.4496	0	0
69	382.1565	0	0	8.335728	0	16.08072	-8.00707	-145.597	52.28481	-67.6423	-24.9948	0
70	383.4609	0	0	10.56366	0	14.87758	-7.42882	-145.597	52.28481	-63.107	-23.1897	0
71	384.8949	40.01451	0	5.189722	0	40.07066	-10.6193	-145.597	104.5696	-55.9113	-66.2981	0
72	389.3288	0	0	13.64374	0	37.68723	-9.89564	-145.597	0	-35.967	0	0
73	390.8408	0	0	18.09433	0	35.37936	-9.2098	-145.597	0	-60.4435	0	0
74	392.3455	0	0	9.401474	0	33.15471	-8.56158	-145.597	0	-62.8461	0	0
75	391.6744	40.01451	0	12.09579	0	45.09535	-14.5454	-145.597	104.5696	-70.8617	-90.8096	0
76	393.9578	0	0	0.972319	0	42.59035	-13.6535	-145.597	26.1424	-75.3383	-21.3103	0
77	398.9919	0	0	2.58921	0	40.13927	-12.794	-145.597	0	-70.3512	0	0
78	400.8831	0	0	16.55279	0	37.75382	-11.969	-145.597	0	-69.5186	0	0
79	402.6692	0	0	18.29852	0	35.44369	-11.1802	-145.597	0	-61.0464	0	0
80	404.6025	0	0	9.923234	0	33.2166	-10.4286	-145.597	26.1424	-60.5937	-16.2768	0
81	406.0318	0	0	7.686636	0	31.07845	-9.71469	-145.597	0	-63.5876	0	0
82	406.6259	0	0	13.03081	0	29.0335	-9.03861	-145.597	0	-73.0234	0	0
83	406.4609	0	0	10.90987	0	27.0845	-8.40005	-145.597	0	-67.9809	0	0
84	403.0841	0	0	7.009666	0	25.23289	-7.79839	-145.597	0	-69.3353	0	0
85	402.0039	0	0	14.43825	0	23.47895	-7.23278	-145.597	0	-63.042	0	0
86	403.3844	0	0	17.7146	0	21.82201	-6.70215	-145.597	0	-67.9111	0	0
87	401.2103	0	0	5.931865	0	20.26055	-6.20528	-145.597	0	-61.7795	0	0
88	398.7578	0	0	4.72221	0	18.79241	-5.74084	-145.597	26.1424	-63.8156	-8.96026	0
89	396.4028	0	0	3.10871	0	17.41487	-5.30739	-145.597	0	-60.1091	0	0
90	394.1296	0	0	9.579664	0	16.1248	-4.90345	-145.597	0	-60.8194	0	0
91	391.8212	0	0	15.70592	0	14.91875	-4.52752	-145.597	0	-61.951	0	0
92	386.9199	40.01451	0	13.86299	0	40.094	-17.3353	-145.597	104.5696	-68.1798	-108.227	0
93	387.4712	0	0	17.12164	0	37.70988	-16.3679	-145.597	0	-66.0284	0	0
94	385.4848	0	0	13.60682	0	35.40124	-15.422	-145.597	0	-68.3554	0	0
95	383.7912	0	0	12.7268	0	33.17576	-14.502	-145.597	0	-62.9271	0	0
96	379.3633	0	0	14.15947	0	31.03933	-13.6116	-145.597	0	-60.1387	0	0
97	380.9593	0	0	13.25082	0	28.99615	-12.7537	-145.597	0	-85.8863	0	0
98	380.388	0	0	4.24189	0	27.04896	-11.9304	-145.597	0	-65.3786	0	0
99	380.079	0	0	15.99072	0	25.19918	-11.1434	-145.597	0	-60.8245	0	0
100	376.8641	0	0	6.734283	0	23.44707	-10.3935	-145.597	52.28481	-61.7538	-32.4443	0
101	376.4627	0	0	16.39381	0	21.79193	-9.68147	-145.597	0	-68.1107	0	0
102	378.9355	0	0	12.64919	0	20.23224	-9.0072	-145.597	0	-59.4074	0	0
103	375.7204	0	72.69068	9.491511	0	18.76582	-8.37042	-145.597	0	-65.4812	0	-76.1847
104	374.8615	0	72.69068	5.999298	0	17.38994	-7.7705	-145.597	52.28481	-63.697	-24.2563	-48.1541

Table 5: DueTo table for product 138936951

	base	flyer	email	paid_search	web_search	tv	radio	price	discount	store	competition	paidsearch_seasonality	paidsearch_holiday	flyer_paiddsearch	tv_radio	discount_store	flyer_discount
1	459.8117	0	-3.82051	-48.8488	0	0	0	-351.107	0	57.45415	-15.0917	37.61931	0	0	0	0	0
2	458.9065	0	-3.82051	-30.0279	0	0	0	-351.107	0	57.45415	-18.9774	22.70048	0	0	0	0	0
3	458.2446	0	-3.82051	-32.1002	0	0	0	-351.107	0	57.45415	-19.8191	23.93528	0	0	0	0	0
4	458.1519	0	-3.82051	-25.2262	0	0	0	-351.107	0	57.45415	-16.411	18.77321	0	0	0	0	0
5	458.8361	0	-3.82051	-3.36486	0	0	0	-351.107	0	57.45415	-22.6384	2.540069	0	0	0	0	0
6	441.454	0	-3.82051	-17.9162	0	0	0	-351.107	44.85228	0	-20.1036	14.00428	11.52087	0	0	0	0
7	462.0937	0	-3.82051	-24.079	0	0	0	-351.107	0	57.45415	-19.7404	19.40189	0	0	0	0	0
8	463.7355	0	-3.82051	-37.4105	0	0	0	-351.107	0	57.45415	-21.3101	31.10318	0	0	0	0	0
9	465.0936	0	-3.82051	-1.6988	0	0	0	-351.107	0	57.45415	-19.4043	1.448422	0	0	0	0	0
10	466.8405	0	-3.82051	-23.0884	0	0	0	-351.107	0	57.45415	-19.2332	20.31538	0	0	0	0	0
11	468.8335	0	-3.82051	-3.8571	0	0	0	-351.107	0	57.45415	-19.4156	3.513914	0	0	0	0	0
12	451.6149	49.1169	-3.82051	-23.6983	0	0	0	-351.107	44.85228	57.45415	-21.1001	22.28472	15.23898	-48.469	0	-52.4403	-18.8775
13	453.7553	0	-3.82051	-5.02682	0	0	0	-351.107	0	57.45415	-16.8432	4.895021	3.232451	0	0	0	0
14	475.6327	0	-3.82051	-35.5879	0	0	0	-351.107	0	57.45415	-21.8182	36.20061	0	0	0	0	0
15	477.5949	0	-3.82051	-12.5302	0	0	0	-351.107	0	57.45415	-20.0779	13.12995	0	0	0	0	0
16	460.9443	49.1169	-3.82051	-20.532	0	0	0	-351.107	44.85228	57.45415	-17.9052	22.29898	13.2029	-41.9931	0	-52.4403	-18.8775
17	463.2533	0	-3.82051	-3.27071	0	0	0	-351.107	44.85228	57.45415	-17.6137	3.670143	2.103199	0	0	-52.4403	0
18	465.792	49.1169	-3.82051	-9.09679	0	0	0	-351.107	44.85228	57.45415	-19.6103	10.56842	5.849604	-18.6052	0	-52.4403	-18.8775
19	487.7713	0	-3.82051	-35.0629	0	0	0	-351.107	0	57.45415	-20.3481	42.31401	0	0	0	0	0
20	490.448	0	-3.82051	-47.6822	0	0	0	-351.107	0	57.45415	-21.3697	59.53635	0	0	0	0	0
21	474.0155	0	-3.82051	-5.68383	0	0	0	-351.107	0	57.45415	-21.2476	7.333344	3.654933	0	0	0	0
22	496.8899	0	-3.82051	-29.0465	0	0	0	-351.107	0	57.45415	-23.5464	39.1901	0	0	0	0	0
23	481.8359	49.1169	-3.82051	-35.6033	0	-26.6429	53.16499	-351.107	89.70455	0	-28.7182	50.28439	22.89433	-72.8176	-38.6389	0	-37.7551
24	504.8776	0	-3.82051	-38.4298	0	-25.1737	49.39277	-351.107	0	57.45415	-40.9354	56.64465	0	0	-33.9179	0	0
25	508.2256	0	-3.82051	-5.67257	0	-23.7346	45.84107	-351.107	0	57.45415	-21.3267	8.657857	0	0	-29.6794	0	0
26	511.3877	0	-3.82051	-16.8673	0	-22.3326	42.50432	-351.107	0	57.45415	-22.7339	26.57698	0	0	-25.8935	0	0
27	514.8101	49.1169	-3.82051	-34.7068	-19.9623	-20.9736	39.37581	-351.107	44.85228	57.45415	-32.5916	56.54102	0	-70.9841	-22.5279	-52.4403	-18.8775
28	517.3403	0	-3.82051	-41.9124	-9.98113	-19.6623	36.44793	-351.107	0	57.45415	-23.0369	69.93594	0	0	-19.549	0	0
29	518.3921	0	-3.82051	-29.8918	-19.9623	-18.4024	33.71246	-351.107	0	57.45415	-20.6715	50.36919	0	0	-16.9232	0	0
30	518.0999	49.1169	-3.82051	-29.2767	-14.9717	-17.1966	31.16069	-351.107	44.85228	57.45415	-32.1288	49.19921	0	-59.8783	-14.6173	-52.4403	-18.8775
31	517.0883	0	-3.82051	-42.4517	-19.9623	-16.0465	28.78369	-351.107	0	57.45415	-25.5744	70.66878	0	0	-12.5992	0	0
32	496.0797	0	-3.82051	-8.37531	0	-14.9533	26.57235	-351.107	44.85228	0	-25.4904	13.69212	5.385663	0	-10.8389	0	0
33	493.5573	0	-3.82051	-39.837	0	-13.9171	24.51759	-377.506	0	57.45415	-23.4722	63.55687	25.61678	0	-9.30775	0	0
34	508.8049	0	-3.82051	-14.2352	0	-12.9378	22.61041	-377.506	0	57.45415	-21.6636	21.85545	0	0	-7.97969	0	0
35	504.4634	0	-3.82051	-32.9537	0	-12.0145	20.842	-377.506	0	57.45415	-22.7594	48.35981	0	0	-6.83063	0	0
36	500.2943	0	-3.82051	-19.3326	0	-11.1459	19.20377	-377.506	0	57.45415	-22.3164	27.11188	0	0	-5.83875	0	0
37	496.27	0	-3.82051	-17.9981	0	-10.3307	17.6874	-377.506	0	57.45415	-19.7435	24.10917	0	0	-4.98437	0	0
38	492.1835	0	-3.82051	-43.6849	0	-9.56691	16.28494	-377.506	0	57.45415	-20.9029	55.72938	0	0	-4.24986	0	0
39	488.473	0	-3.82051	-16.5899	0	-8.85266	14.98873	-377.506	0	57.45415	-21.0491	20.20262	0	0	-3.61956	0	0
40	465.3866	49.1169	-3.82051	-7.20866	0	-23.5063	82.19919	-377.506	89.70455	57.45415	-19.4076	8.329195	4.635461	-14.7435	-52.7071	-104.881	-37.7551
41	480.9664	0	-3.82051	-26.1861	0	-22.1108	77.02665	-377.506	0	57.45415	-21.197	28.81838	0	0	-46.4583	0	0
42	477.9682	0	-3.82051	-40.1215	0	-20.7592	72.06184	-377.506	0	57.45415	-22.1863	42.2757	0	0	-40.8069	0	0
43	475.0959	0	-3.82051	-2.70478	0	-19.456	67.31444	-377.506	0	57.45415	-22.449	2.728672	0	0	-35.7255	0	0
44	453.8587	49.1169	-3.82051	-15.3148	0	-18.2046	62.79067	-377.506	44.85228	57.45415	-20.497	14.938	9.848051	-31.3227	-31.1813	-52.4403	-18.8775
45	471.9436	0	-3.82051	-18.9703	0	-17.0076	58.4937	-377.506	0	57.45415	-24.1945	18.2039	0	0	-27.1375	0	0
46	471.3966	0	-3.82051	-46.1686	0	-15.8667	54.42406	-377.506	0	57.45415	-20.9479	43.90889	0	0	-23.5556	0	0
47	470.6716	0	-3.82051	-42.3207	0	-14.7827	50.58006	-377.506	0	57.45415	-18.6384	39.77009	0	0	-20.3962	0	0
48	450.8647	49.1169	-3.82051	-17.0986	0	-13.7557	46.95807	-377.506	44.85228	57.45415	-22.3301	15.8783	10.99507	-34.9709	-17.6202	-52.4403	-18.8775
49	450.276	0	-3.82051	-49.2142	0	-12.7854	43.55297	-377.506	0	57.45415	-17.1131	45.24941	31.64669	0	-15.1897	0	0
50	468.6468	0	-3.82051	-5.9888	0	-11.871	40.35836	-377.506	0	57.45415	-19.9398	5.438472	0	0	-13.0689	0	0
51	448.03	0	0	-15.8869	0	-11.0112	37.36692	-377.506	44.85228	57.45415	-19.1831	14.04972	10.21591	0	-11.2237	-52.4403	0
52	445.0592	49.1169	0	-21.3241	0	-10.2043	34.57058	-377.506	44.85228	57.45415	-26.1713	17.86873	13.71225	-43.6131	-9.62294	-52.4403	-18.8775
53	442.2241	49.1169	0	-3.98503	0	-9.44866	31.96078	-377.506	44.85228	57.45415	-17.1478	3.162838	2.562533	-8.15038	-8.23768	-52.4403	-18.8775
54	459.8117	0	-3.82051	-13.1258	0	-8.74218	29.52863	-377.506	0	57.45415	-19.6677	10.10842	0	0	-7.04174	0	0
55	458.9065	0	-3.82051	-32.1821	0	-8.08273	27.26508	-377.506	0	57.45415	-19.8165	24.32902	0	0	-6.01149	0	0
56	458.2446	0	-3.82051	-44.8177	0	-7.46809	25.16102	-377.506	0	57.45415	-19.5243	33.41797	0	0	-5.12572	0	0
57	458.1519	0	-3.82051	-38.1402	0	-6.89599	23.20741	-377.506	44.85228	57.45415	-24.7866	28.38373	0	0	-4.36557	-52.4403	0
58	458.8361	0	-3.82051	-10.8048	0	-6.36414	21.39538	-377.506	0	57.45415	-20.2839	8.15634	0	0	-3.7143	0	0
59	460.5502	0	-3.82051	-10.9071	0	-5.87027	19.71625	-377.506	0	57.45415	-20.323	8.525594	0	0	-3.15719	0	0
60	462.0937	0	-3.82051	-30.3257	0	-5.41215	18.16163	-377.506	0	57.45415	-20.0561	24.43522	0	0	-2.68128	0	0
61	444.6393	49.1169	-3.82051	-22.1714	0	-16.9253	83.98109	-377.506	89.70455	57.45415	-23.7415	18.43337	14.25713	-45.3462	-38.7735	-104.881	-37.7551
62	465.0936	0	-3.82051	-46.3467	-4.99057	-15.7883	78.7416	-377.506	0	57.45415	-21.176	39.51574	0	0	-33.9124	0	0
63	466.8405	0	-3.82051	-10.3504	-9.98113	-14.7083	73.70575	-377.506	0	57.45415	-21.5222	9.107297	0	0	-29.5721	0	0
64	468.8335	0	-3.82051	-48.7475	-19.9623	-13.6854	68.88446	-377.506	0	57.45415	-24.215	44.41013	0	0	-25.7155	0	0
65	470.7112	0	-3.82051	-8.31493	-14.9717	-12.7191	64.28507	-377.506	0	57.45415	-21.7305	7.818948	0	0	-22.304	0	0
66	472.8516	0	-3.82051	-1.21065	-4.99057	-11.8086	59.91173	-403.905	0	57.45415	-27.5727	1.178911	0	0	-19.2986	0	0
67	456.5364	49.1169	-3.82051	-27.187	0	-10.9525	55.76582	-403.905	44.85228	57.45415	-20.9261	27.65508	17.48235	-55.6043	-16.6609	-52.4403	-18.8775
68	458.4986	0	-3.82051	-1.56577	0	-10.1493	51.84634	-403.905	0	57.45415	-21.4218	1.640708	1.006851	0	-14.354	0	0
69	460.9443	49.1169	-3.82051	-22.6442	0	-9.39723	48.15028	-403.905	44.85228	57.45415	-25.1597	24.59301	14.56116	-46.3132	-12.3429	-52.4403	-18.8775
70	463.2533	0	-3.82051	-28.6965	0	-8.69413	44.67298	-403.905	44.85228	57.45415	-25.2003	32.20103	18.453	0	-10.5947	-52.4403	0
71	465.792	49.1169	-3.82051	-14.098	0	-23.4164	63.85883	-403.905	89.70455	57.45415	-19.3962	16.37873	9.065603	-28.834	-40.7905	-104.881	-37.7551
72	487.7713	0	-3.82051	-37.0636	0	-22.0236	59.50713	-403.905	0	57.45415	-17.8669	44.72847	0	0	-35.7499	0	0
73	490.448	0	-3.82051	-49.1538	0	-20.6749	55.38286	-403.905	0	57.45415	-21.8232	61.37382	0	0	-31.2347	0	0
74	493.1117	0	-3.82051	-25.5394	0	-19.3749	51.48481	-403.905	0	57.45415	-19.7017	32.9512	0	0	-27.2105	0	0
75	477.7936	0	-3.82051	-32.8586	0	-26.3527	87.46848	-403.905	89.70455	57.45415	-24.0095	44.33343	21.12938	0	-62.8774	-104.881	0
76	481.8359	49.1169	-3.82051	-2.64133	0	-24.8889	82.10506	-403.905	44.85228	57.45415	-27.5063	3.730498	1.698484	-5.40219	-55.7433	-52.4403	-18.8775
77	504.8776	0	-3.82051	-7.03366	0	-23.4565	76.93612	-403.905	0	57.45415	-26.6556	10.36746	0	0	-49.2279	0	0
78	508.2256	0	-3.82051	-44.9661	0	-22.0625	71.97512	-403.905	0	57.45415	-23.0413	68.63027	0	0	-43.3166	0	0
79	511.3877	0	-3.82051	-49.7084	0	-20.7125	67.23167	-403.905	0	57.45415	-22.2031	78.32324	0	0	-37.9861	0	0
80	514.8101	49.1169	-3.82051	-26.9567	0	-19.4111	62.71193	-403.905	44.85228	0	-21.3967	43.9154	0	-55.1333	-33.206	0	-18.8775
81	517.3403	0	-3.82051	-20.881	0	-18.1616	58.41902	-403.905	0	57.45415	-28.8659	34.84246	0	0	-28.9418	0	0
82	518.3921	0	-3.82051	-35.3986	0	-16.9665	54.35344	-403.905	0	57.45415	-30.4819	59.6484	0	0	-25.1558	0	0
83	518.0999	49.1169	-3.82051	-29.637	0	-15.8276	50.51343	-403.905	0	57.45415	-26.7219	49.80456	0	-60.6151	-21.8092	0	0
84	497.992	0	-3.82051	-19.042	0	-14.7456	46.89537	-403.905	0	57.45415	-22.3308	31.69891	12.24475	0	-18.8629	0	0
85	496.0797	0	-3.82051	-39.2219	0	-13.7206	43.49409	-403.905	0	57.45415	-26.2037	64.12077	25.22128	0	-16.2787	0	0
86	512.6536	0	-3.82051	-48.1222	0	-12.7523	40.30318	-403.905	0	57.45415	-25.2555	76.77537	0	0	-14.0199	0	0
87	508.8049	0	-3.82051	-16.1141	0	-11.8398	37.31529	-403.905	0	57.45415	-27.9602	24.74018	0	0	-12.0517	0	0
88	504.4634	49.1169	-3.82051	-12.828	0	-10.9819	34.52236	-403.905	0	57.45415	-23.4816	18.8252	0	-26.2365	-10.3418	0	0
89	500.2943	0	-3.82051	-8.4449	0	-10.1769	31.91581	-403.905	0	57.45415	-22.9008	11.84306	0	0	-8.86008	0	0
90	496.27	0	-3.82051	-26.0234	0	-9.42298	29.48675	-403.905	0	57.45415	-20.1399	34.85939	0	0	-7.57936	0	0
91	492.1835	0	-3.82051	-42.6656	0	-8.71819	27.22613	-403.905	0	57.45415	-20.2622	54.42907	0	0	-6.47485	0	0
92	469.3768	49.1169	-3.82051	-37.6592	0	-23.4301	104.2452	-403.905	89.70455	0	-27.692	45.85997	24.2164	-77.0226	-66.6265	0	-37.7551
93	484.4829	0	-3.82051	-46.5114	0	-22.0368	98.42795	-395.106	0	57.45415	-23.2014	53.74128	0	0	-59.1677	0	0
94	480.9664	0	-3.82051	-36.9633	0	-20.6877	92.73985	-395.106	0	57.45415	-22.506	40.67888	0	0	-52.3355	0	0
95	477.9682	0	-3.82051	-34.5727	0	-19.3872	87.20759	-395.106	0	57.45415	-20.7456	36.42903	0	0	-46.1197	0	0
96	455.9996	0	-3.82051	-38.4646	0	-18.1387	81.85311	-395.106	0	57.45415	-19.4831	38.80434	24.7343	0	-40.5004	0	0
97	472.955	0	-3.82051	-35.9962	0	-16.9447	76.69386	-395.106	0	57.45415	-24.494	35.11055	0	0	-35.4497	0	0
98	471.9436	0	-3.82051	-11.5232	0	-15.8068	71.74308	-395.106	0	57.45415	-22.1914	11.05767	0	0	-30.9344	0	0
99	471.3966	0	-3.82051	-43.4392	0	-14.7259	67.01022	-395.106	0	57.45415	-21.1627	41.31313	0	0	-26.9178	0	0
100	451.5753	49.1169	-3.82051	-18.2939	0	-13.702	62.50128	-395.106	44.85228	57.45415	-21.0374	17.19133	11.7637	-37.4156	-23.3609	-52.4403	-18.8775
101	450.8647	0	-3.82051	-44.5343	0	-12.7347	58.21926	-395.106	0	57.45415	-19.8208	41.35598	28.63733	0	-20.2243	0	0
102	469.3723	0	-3.82051	-34.3619	0	-11.8233	54.16454	-395.106	0	57.45415	-21.238	31.59366	0	0	-17.4691	0	0
103	449.5505	0	0	-25.784	0	-10.9663	50.33525	-395.106	0	57.45415	-20.9218	23.41461	16.58013	0	-15.0574	0	0
104	448.03	49.1169	0	-16.2973	0	-10.1623	46.72769	-395.106	44.85228	57.45415	-23.1295	14.41264	10.4798	-33.332	-12.9534	-52.4403	-18.8775

Table 6: DueTo table for product 138936952

	base	flyer	email	paid_search	web_search	tv	radio	price	discount	store	competition	flyer_email	websearch_comp	store_comp	flyer_comp	paidsearch_store	websearch_radio
1	4.281088	0	0	-0.53903	0	0	0	1.613564	0	0	-0.13865	0	0	0	0	0	0
2	4.132525	0	0	-0.33135	0	0	0	1.613564	0	0	-0.11668	0	0	0	0	0	0
3	4.023891	0	0	-0.35421	0	0	0	1.613564	0	0	-0.07618	0	0	0	0	0	0
4	4.008682	0	0	-0.27836	0	0	0	1.613564	0	0	-0.06189	0	0	0	0	0	0
5	4.120978	0	0	-0.03713	0	0	0	1.613564	0	0	-0.09366	0	0	0	0	0	0
6	3.437548	0	0	-0.1977	0	0	0	1.613564	7.600642	0	-0.06189	0	0	0	0	0	0
7	4.655626	0	0	-0.2657	0	0	0	1.613564	0	0	0	0	0	0	0	0	0
8	4.925085	0	0	-0.41281	0	0	0	1.613564	0	0	0	0	0	0	0	0	0
9	5.147976	0	0	-0.01875	0	0	0	1.613564	0	0	-0.43936	0	0	0	0	0	0
10	5.434679	0	0	-0.25477	0	0	0	1.613564	0	0	-0.16778	0	0	0	0	0	0
11	5.761783	0	0	-0.04256	0	0	0	1.613564	0	0	-0.32501	0	0	0	0	0	0
12	5.1052	0	0	-0.2615	0	0	0	1.613564	3.800321	0	-0.18097	0	0	0	0	0	0
13	5.456492	0	0	-0.05547	0	0	0	1.613564	0	0	-0.14103	0	0	0	0	0	0
14	6.877693	0	0	-0.3927	0	0	0	1.613564	0	0	-0.13919	0	0	0	0	0	0
15	7.199737	0	0	-0.13827	0	0	0	1.613564	0	0	-0.13378	0	0	0	0	0	0
16	6.636368	-1.32364	0	-0.22656	0	0	0	1.613564	7.600642	0	-0.09206	0	0	0	9.013245	0	0
17	7.015342	0	0	-0.03609	0	0	0	1.613564	7.600642	0	-0.48271	0	0	0	0	0	0
18	7.431997	-1.32364	0	-0.10038	0	0	0	1.613564	7.600642	0	-0.284	0	0	0	19.23576	0	0
19	8.869926	0	0	-0.3869	0	0	0	1.613564	0	0	-0.17355	0	0	0	0	0	0
20	9.309235	0	0	-0.52615	0	0	0	1.613564	0	0	-0.0775	0	0	0	0	0	0
21	8.781661	0	0	-0.06272	0	0	0	1.613564	0	0	-0.0775	0	0	0	0	0	0
22	10.3665	0	0	-0.32052	0	0	0	1.613564	0	0	-0.16789	0	0	0	0	0	0
23	10.06517	-1.32364	0	-0.39287	0	22.55854	-15.5251	1.613564	19.0016	-7.09896	-0.1106	0	0	-2.92904	13.72456	28.71603	0
24	11.67748	0	0	-0.42406	0	21.31462	-14.4235	1.613564	0	0	-1.9402	0	0	0	0	0	0
25	12.22696	0	0	-0.06259	0	20.09612	-13.3864	1.613564	0	0	-0.33917	0	0	0	0	0	0
26	12.74593	0	0	-0.18612	0	18.90904	-12.412	1.613564	0	0	-0.13733	0	0	0	0	0	0
27	13.30763	0	0	-0.38297	36.34191	17.75836	-11.4984	1.613564	3.800321	0	-0.13919	0	2.789278	0	0	0	-24.8718
28	13.72289	0	0	-0.46249	18.17096	16.64809	-10.6434	1.613564	0	0	-0.14024	0	1.743298	0	0	0	-11.5112
29	13.89552	0	0	-0.32984	36.34191	15.58133	-9.84462	1.613564	0	0	-0.0918	0	2.091958	0	0	0	-21.2945
30	13.84757	0	0	-0.32306	27.25643	14.56033	-9.09946	1.613564	3.800321	0	-0.89733	0	29.8104	0	0	0	-14.762
31	13.68153	0	0	-0.46844	36.34191	13.58659	-8.40533	1.613564	0	0	-0.25354	0	8.367833	0	0	0	-18.1812
32	12.40292	-1.32364	0	-0.09242	0	12.66094	-7.75958	1.613564	7.600642	0	-1.15466	0	0	0	45.56159	0	0
33	11.98894	0	0	-0.43958	0	11.78364	-7.15956	1.721207	0	0	-0.4539	0	0	0	0	0	0
34	12.32204	0	0	-0.15708	0	10.95443	-6.60263	1.721207	0	0	-0.71168	0	0	0	0	0	0
35	11.60949	0	0	-0.36363	0	10.17264	-6.08622	1.721207	0	0	-0.23924	0	0	0	0	0	0
36	10.92524	0	0	-0.21333	0	9.437258	-5.60783	1.721207	0	0	-0.63981	0	0	0	0	0	0
37	10.26476	0	0	-0.1986	0	8.746984	-5.16503	1.721207	0	0	-0.40006	0	0	0	0	0	0
38	9.594069	0	0	-0.48204	0	8.100306	-4.75548	1.721207	0	0	-0.22679	0	0	0	0	0	0
39	8.985094	0	0	-0.18306	0	7.495547	-4.37697	1.721207	0	0	-0.58248	0	0	0	0	0	0
40	7.365464	-1.32364	0	-0.07954	0	19.90279	-24.0036	1.721207	19.0016	-7.09896	-0.21313	0	0	-16.1097	13.54434	5.814192	0
41	7.753074	0	0	-0.28895	0	18.72126	-22.4931	1.721207	0	0	-0.05527	0	0	0	0	0	0
42	7.260998	0	0	-0.44272	0	17.57684	-21.0433	1.721207	0	0	-0.35359	0	0	0	0	0	0
43	6.789586	0	0	-0.02985	0	16.47339	-19.657	1.721207	0	0	-0.17584	0	0	0	0	0	0
44	5.473463	0	0	-0.16899	0	15.41386	-18.336	1.721207	3.800321	0	-0.08385	0	0	0	0	0	0
45	6.272228	0	0	-0.20933	0	14.40038	-17.0812	0	0	0	-0.75434	0	0	0	0	0	0
46	6.182448	0	0	-0.50945	0	13.43434	-15.8928	1.721207	0	0	-0.13919	0	0	0	0	0	0
47	6.063452	0	0	-0.46699	0	12.51648	-14.7702	1.721207	0	0	0	0	0	0	0	0	0
48	4.982071	-1.32364	0	-0.18868	0	11.64694	-13.7126	1.721207	7.600642	0	0	0	0	0	0	0	0
49	4.885455	0	0	-0.54306	0	10.82542	-12.7182	1.721207	0	0	0	0	0	0	0	0	0
50	5.731137	0	0	-0.06608	0	10.05118	-11.7853	1.721207	0	0	-0.51126	0	0	0	0	0	0
51	4.516827	-1.32364	0.227511	-0.17531	0	9.323147	-10.9118	1.721207	7.600642	0	-0.14726	-14.6467	0	0	12.24747	0	0
52	4.029249	0	0.227511	-0.2353	0	8.639997	-10.0952	1.721207	7.600642	0	-0.11244	0	0	0	0	0	0
53	3.563944	-1.32364	0.227511	-0.04397	0	8.000183	-9.3331	1.721207	7.600642	0	-0.05527	-14.6467	0	0	6.857093	0	0
54	4.281088	0	0	-0.14484	0	7.402005	-8.62287	1.721207	0	0	-0.1094	0	0	0	0	0	0
55	4.132525	0	0	-0.35512	0	6.843651	-7.96187	1.721207	0	0	-0.09815	0	0	0	0	0	0
56	4.023891	0	0	-0.49454	0	6.323236	-7.34745	0	0	0	-0.06956	0	0	0	0	0	0
57	4.008682	0	0	-0.42086	0	5.838837	-6.77696	1.721207	0	0	-0.11457	0	0	0	0	0	0
58	4.120978	0	0	-0.11923	0	5.388521	-6.24782	1.721207	0	0	-0.11739	0	0	0	0	0	0
59	4.402303	0	0	-0.12036	0	4.970363	-5.75749	1.721207	0	0	0	0	0	0	0	0	0
60	4.655626	0	0	-0.33463	0	4.582473	-5.30351	1.721207	0	0	0	0	0	0	0	0	0
61	3.96033	-1.32364	0	-0.24465	0	14.33065	-24.5239	1.721207	19.0016	-7.09896	0	0	0	0	0	17.88252	0
62	5.147976	0	0	-0.51142	9.085478	13.368	-22.9939	1.721207	0	0	-0.68644	0	7.321854	0	0	0	-12.4343
63	5.434679	0	0	-0.11421	18.17096	12.45354	-21.5233	1.721207	0	0	-0.28628	0	4.881236	0	0	0	-23.2782
64	5.761783	0	0	-0.53791	36.34191	11.58741	-20.1155	1.721207	0	0	-0.54355	0	22.31422	0	0	0	-43.5109
65	6.069955	0	0	-0.09175	27.25643	10.76925	-18.7723	1.721207	0	0	-0.39321	0	10.45979	0	0	0	-30.4543
66	6.421247	0	0	-0.01336	9.085478	9.998309	-17.4953	0	0	0	-0.55958	0	5.752885	0	0	0	-9.46083
67	5.912939	0	0	-0.3	0	9.273492	-16.2846	1.82885	7.600642	0	-0.29516	0	0	0	0	0	0
68	6.234982	0	0	-0.01728	0	8.593453	-15.14	1.82885	0	0	-0.79877	0	0	0	0	0	0
69	6.636368	0	0	-0.24987	0	7.956634	-14.0607	1.82885	7.600642	0	-0.60157	0	0	0	0	0	0
70	7.015342	0	0	-0.31665	0	7.361326	-13.0453	0	0	0	-0.71339	0	0	0	0	0	0
71	7.431997	-1.32364	0	-0.15557	0	19.8267	-18.6479	1.82885	19.0016	-7.09896	-0.36087	0	0	-29.2904	20.45033	11.37086	0
72	8.869926	0	0	-0.40898	0	18.64739	-17.3771	1.82885	0	0	-0.52761	0	0	0	0	0	0
73	9.309235	0	0	-0.54239	0	17.50547	-16.1727	1.82885	0	0	-0.67569	0	0	0	0	0	0
74	9.746416	0	0	-0.28182	0	16.40473	-15.0345	1.82885	0	0	-0.17726	0	0	0	0	0	0
75	9.401743	-1.32364	0	-0.36258	0	22.31288	-25.5423	1.82885	19.0016	-7.09896	-0.55909	0	0	-48.3292	28.04817	26.50228	0
76	10.06517	0	0	-0.02915	0	21.07342	-23.9761	1.82885	3.800321	0	-0.86451	0	0	0	0	0	0
77	11.67748	0	0	-0.07761	0	19.86064	-22.4667	1.82885	0	0	-1.27775	0	0	0	0	0	0
78	12.22696	0	0	-0.49618	0	18.68034	-21.018	1.82885	0	0	-0.66985	0	0	0	0	0	0
79	12.74593	0	0	-0.54851	0	17.5373	-19.6328	1.82885	0	0	-0.93711	0	0	0	0	0	0
80	13.30763	0	0	-0.29746	0	16.43535	-18.313	1.82885	3.800321	0	-0.52813	0	0	0	0	0	0
81	13.72289	0	0	-0.23041	0	15.37741	-17.0594	1.82885	0	0	-0.58677	0	0	0	0	0	0
82	13.89552	0	0	-0.39061	0	14.36558	-15.8721	1.82885	0	0	-0.35732	0	0	0	0	0	0
83	13.84757	0	0	-0.32703	0	13.40123	-14.7508	1.82885	0	0	-0.79086	0	0	0	0	0	0
84	12.71678	0	0	-0.21012	0	12.48506	-13.6943	1.82885	0	0	-0.38841	0	0	0	0	0	0
85	12.40292	0	0	-0.4328	0	11.61723	-12.701	1.82885	0	0	-0.96308	0	0	0	0	0	0
86	12.9537	0	0	-0.53101	0	10.79738	-11.7692	1.82885	0	0	-0.85192	0	0	0	0	0	0
87	12.32204	0	0	-0.17781	0	10.02479	-10.8967	1.82885	0	0	-0.66018	0	0	0	0	0	0
88	11.60949	0	0	-0.14155	0	9.29836	-10.0811	1.82885	3.800321	0	-0.41273	0	0	0	0	0	0
89	10.92524	0	0	-0.09319	0	8.616762	-9.31997	1.82885	0	0	-0.60615	0	0	0	0	0	0
90	10.26476	0	0	-0.28716	0	7.978442	-8.61064	1.82885	0	0	-0.43088	0	0	0	0	0	0
91	9.594069	0	0	-0.4708	0	7.381697	-7.9505	1.82885	0	0	-0.36558	0	0	0	0	0	0
92	8.020339	-1.32364	0	-0.41555	0	19.83824	-30.4414	1.82885	19.0016	-7.09896	-0.54849	0	0	-46.8647	28.19125	30.37428	0
93	8.330219	0	0	-0.51323	0	18.6586	-28.7427	1.775028	0	0	-0.65892	0	0	0	0	0	0
94	7.753074	0	0	-0.40787	0	17.5163	-27.0816	1.775028	0	0	-0.59725	0	0	0	0	0	0
95	7.260998	0	0	-0.3815	0	16.41514	-25.4661	1.775028	0	0	-0.51287	0	0	0	0	0	0
96	5.824831	0	0	-0.42444	0	15.35805	-23.9025	1.775028	0	0	-0.52664	0	0	0	0	0	0
97	6.438218	0	0	-0.3972	0	14.3471	-22.3959	1.775028	0	0	-0.15508	0	0	0	0	0	0
98	6.272228	0	0	-0.12715	0	13.38365	-20.9502	1.775028	0	0	-0.24679	0	0	0	0	0	0
99	6.182448	0	0	-0.47933	0	12.46839	-19.5681	1.775028	0	0	-0.37765	0	0	0	0	0	0
100	5.098697	-1.32364	0	-0.20187	0	11.60145	-18.2515	1.775028	7.600642	0	-0.31562	0	0	0	22.38592	0	0
101	4.982071	0	0	-0.49142	0	10.7825	-17.001	1.775028	0	0	-0.12827	0	0	0	0	0	0
102	5.85021	0	0	-0.37917	0	10.01078	-15.817	1.775028	0	0	-0.43546	0	0	0	0	0	0
103	4.766382	0	0.227511	-0.28452	0	9.285201	-14.6988	1.775028	0	0	-0.39372	0	0	0	0	0	0
104	4.516827	0	0.227511	-0.17983	0	8.604428	-13.6453	1.775028	7.600642	0	-0.3521	0	0	0	0	0	0

Table 7: DueTo table for product 138936953