

## **Forecasting:**

### **Where Are the Next Five Years Taking Us?**

**Kevin Hillstrom**

**President, MineThatData**

**May 23, 2017**

<http://blog.minethatdata.com>

[kevinh@minethatdata.com](mailto:kevinh@minethatdata.com)

[@minethatdata](#)

I have spent nearly thirty years analyzing products, brands, and customers. In this time, I have not witnessed a period where forecasting future business performance has been of such interest. This spring alone, nearly twenty companies have partnered with me to measure the five-year trajectory of their products, brands, and channels. It is clear that “something has changed”, and business leaders need to understand what the future holds, and then do something to pre-empt negative outcomes. In more than ten years of consulting work including project work for more than two-hundred brands, my forecasting work has never been more popular.

### **A General Framework**

Forecasting projects do not have to be complicated to produce actionable insights. The secret is to create unique customer segments, segments that behave differently enough in the future to provide interesting outcomes.

I use a Principal Components Analysis to segment customers based on annual customer behavior. If a customer purchased in each of the past five years, then I enter five customer records into the analysis, one summarizing each year of purchase activity. I sum annual spend, then take the square root of annual spend. In addition, I calculate percentage of annual spend in each marketing channel and in each product category. The variables are entered into the Principal Components Analysis.

The Principal Components Analysis yields two “dimensions”. I segment each of the two “dimensions” into seven segments. Then I segment customers based on  $7 \times 7 = 49$  combinations. The 49 combinations yield customers with sufficiently different behavior to create interesting future forecasting permutations.

### **Probability of Future Behavior**

For each customer, I identify the  $7 \times 7 = 49$  segment combination the customer belongs to. Let's pretend that there are 1,000 customers in a segment. Then, I measure the percentage of customers in the segment (last year) that repurchase this year. Once I identify the percentage (pretend it is 35%), I measure the percentage of customers that migrate to each of the  $7 \times 7 = 49$  segment combinations next year.

Let's pretend that there are just 5 segment combinations, and let's pretend that the customer has a 35% chance of buying again next year. I then calculate future migration into next year's segments.

- 20% move to Segment 1.
- 40% move to Segment 2.
- 10% move to Segment 3.
- 20% move to Segment 4.
- 10% move to Segment 5.

I apply the 35% chance of repurchase by the segment-level repurchase rates, yielding the following:

- $(1 - 0.35) = 65\%$  do not repurchase, and move into a 13-24 month segment combination.
- $0.35 * 0.20 = 7\%$  move to Segment 1.
- $0.35 * 0.40 = 14\%$  move to Segment 2.
- $0.35 * 0.10 = 3.5\%$  move to Segment 3.
- $0.35 * 0.20 = 7\%$  move to Segment 4.
- $0.35 * 0.10 = 3.5\%$  move to Segment 5.

This is the procedure for five segments.

I apply the same methodology to all  $7 \times 7 = 49$  segment combinations.

If a customer repurchases, I measure how much a customer spends next year ... in total, and by marketing channel, and by product category.

Combine all of these elements together, and we can forecast how customers are likely to evolve over time – over the next five years in my case. The methodology allows me to see how a business is likely to evolve and change.

Let's look at a brief example. This business is forecast to remain flat or decline slightly over time.

49 Segment Forecasting Algorithm - Merchandise + Channels								
		Year -1	Today	After Yr 1	After Yr 2	After Yr 3	After Yr 4	After Yr 5
12 Month Buyers		123,042	119,530	116,203	114,174	112,715	111,752	111,060
Existing Buyers			36,538	35,891	34,900	34,286	33,838	33,539
Reactivated Buyers			28,524	25,844	24,807	23,961	23,446	23,053
New Buyers			54,468	54,468	54,468	54,468	54,468	54,468
Total Demand (000s)			18,412.6	17,936.5	17,631.8	17,414.3	17,266.9	17,160.5
Total Orders (000s)			160.6	156.2	153.3	151.2	149.9	148.9
Total Items (000s)			631.1	614.2	603.0	594.9	589.4	585.4
Retention Index				1.000	1.000	1.000	1.000	1.000
New Buyer Index				1.000	1.000	1.000	1.000	1.000
12 Month Buyer Change				-2.8%	-1.7%	-1.3%	-0.9%	-0.6%
12 Month Demand Change				-2.6%	-1.7%	-1.2%	-0.8%	-0.6%
12 Month Orders Change				-2.8%	-1.8%	-1.3%	-0.9%	-0.7%
12 Month Items Change				-2.7%	-1.8%	-1.4%	-0.9%	-0.7%
Average Order Value			\$114.62	\$114.87	\$115.03	\$115.15	\$115.23	\$115.27
Items per Order			3.93	3.93	3.93	3.93	3.93	3.93
Price per Item Purchased			\$29.18	\$29.20	\$29.24	\$29.27	\$29.30	\$29.31
Orders per Buyer			1.34	1.34	1.34	1.34	1.34	1.34
Demand per Buyer			\$154.04	\$154.36	\$154.43	\$154.50	\$154.51	\$154.52

The methodology allows me to see what happens if customer loyalty is improved. If merchandise productivity can be demonstrated to increase by 5% (based on other analytics), then I can plug the figures into the retention index and see what might happen (the figures are plugged into new customer counts as well).

49 Segment Forecasting Algorithm - Merchandise + Channels								
		Year -1	Today	After Yr 1	After Yr 2	After Yr 3	After Yr 4	After Yr 5
12 Month Buyers		123,042	119,530	122,013	121,277	120,654	120,339	120,210
Existing Buyers			36,538	37,686	38,477	38,269	38,078	37,979
Reactivated Buyers			28,524	27,136	25,608	25,194	25,070	25,040
New Buyers			54,468	57,191	57,191	57,191	57,191	57,191
Total Demand (000s)			18,412.6	18,833.3	18,773.6	18,694.7	18,648.6	18,627.6
Total Orders (000s)			160.6	164.0	163.3	162.5	162.0	161.8
Total Items (000s)			631.1	644.9	642.9	639.9	638.2	637.3
Retention Index				1.050	1.050	1.050	1.050	1.050
New Buyer Index				1.050	1.050	1.050	1.050	1.050
12 Month Buyer Change				2.1%	-0.6%	-0.5%	-0.3%	-0.1%
12 Month Demand Change				2.3%	-0.3%	-0.4%	-0.2%	-0.1%
12 Month Orders Change				2.1%	-0.4%	-0.5%	-0.3%	-0.1%
12 Month Items Change				2.2%	-0.3%	-0.5%	-0.3%	-0.1%
Average Order Value			\$114.62	\$114.87	\$114.99	\$115.08	\$115.12	\$115.13
Items per Order			3.93	3.93	3.94	3.94	3.94	3.94
Price per Item Purchased			\$29.18	\$29.20	\$29.20	\$29.22	\$29.22	\$29.23
Orders per Buyer			1.34	1.34	1.35	1.35	1.35	1.35
Demand per Buyer			\$154.04	\$154.36	\$154.80	\$154.94	\$154.97	\$154.96

Notice that the business does not become healthy – growth is still tepid.

Let's remove the 5% increase in merchandise productivity, and instead see what happens when new customer counts increase by 10% per year, every single year going forward.

<b>49 Segment Forecasting Algorithm - Merchandise + Channels</b>								
		Year -1	Today	After Yr 1	After Yr 2	After Yr 3	After Yr 4	After Yr 5
12 Month Buyers		123,042	119,530	121,649	126,621	133,238	141,171	150,027
Existing Buyers			36,538	35,891	36,453	37,880	39,810	42,148
Reactivated Buyers			28,524	25,844	24,807	24,549	25,106	26,178
New Buyers			54,468	59,915	65,362	70,808	76,255	81,702
Total Demand (000s)			18,412.6	18,731.2	19,497.2	20,524.5	21,750.0	23,116.2
Total Orders (000s)			160.6	162.7	168.9	177.5	187.8	199.5
Total Items (000s)			631.1	638.7	662.2	695.1	735.4	780.9
Retention Index				1.000	1.000	1.000	1.000	1.000
New Buyer Index				1.100	1.200	1.300	1.400	1.500
12 Month Buyer Change				1.8%	4.1%	5.2%	6.0%	6.3%
12 Month Demand Change				1.7%	4.1%	5.3%	6.0%	6.3%
12 Month Orders Change				1.3%	3.8%	5.1%	5.9%	6.2%
12 Month Items Change				1.2%	3.7%	5.0%	5.8%	6.2%
Average Order Value			\$114.62	\$115.10	\$115.43	\$115.66	\$115.79	\$115.85
Items per Order			3.93	3.92	3.92	3.92	3.91	3.91
Price per Item Purchased			\$29.18	\$29.33	\$29.44	\$29.53	\$29.58	\$29.60
Orders per Buyer			1.34	1.34	1.33	1.33	1.33	1.33
Demand per Buyer			\$154.04	\$153.98	\$153.98	\$154.04	\$154.07	\$154.08

The business begins growing at a healthy rate, whew!

We can also see what happens to each channel and product category.

Merchandise Reporting							Channel Reporting						
MerchCat	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Channel	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5
0	\$0	\$0	\$0	\$0	\$0	\$0	0	\$0	\$0	\$0	\$0	\$0	\$0
1	\$13,846	\$14,093	\$14,660	\$15,421	\$16,335	\$17,356	1	\$324	\$324	\$334	\$350	\$370	\$393
2	\$2,211	\$2,264	\$2,374	\$2,513	\$2,671	\$2,844	2	\$4,603	\$4,671	\$4,836	\$5,061	\$5,343	\$5,662
3	\$767	\$775	\$806	\$850	\$901	\$958	3	\$7,786	\$7,909	\$8,243	\$8,697	\$9,231	\$9,823
4	\$274	\$276	\$287	\$301	\$319	\$339	4	\$3,099	\$3,130	\$3,239	\$3,395	\$3,587	\$3,806
5	\$339	\$340	\$352	\$369	\$391	\$415	5	\$2,601	\$2,697	\$2,845	\$3,021	\$3,219	\$3,432
6	\$302	\$305	\$315	\$331	\$350	\$372	6	\$0	\$0	\$0	\$0	\$0	\$0
7	\$337	\$338	\$351	\$368	\$390	\$414	7	\$0	\$0	\$0	\$0	\$0	\$0
8	\$59	\$61	\$64	\$68	\$73	\$78	8	\$0	\$0	\$0	\$0	\$0	\$0
9	\$164	\$166	\$171	\$180	\$190	\$201	9	\$0	\$0	\$0	\$0	\$0	\$0
10	\$85	\$84	\$87	\$91	\$96	\$101	10	\$0	\$0	\$0	\$0	\$0	\$0
11	\$0	\$0	\$0	\$0	\$0	\$0	11	\$0	\$0	\$0	\$0	\$0	\$0
12	\$5	\$6	\$6	\$6	\$7	\$7	12	\$0	\$0	\$0	\$0	\$0	\$0
13	\$9	\$10	\$10	\$11	\$12	\$13	13	\$0	\$0	\$0	\$0	\$0	\$0
14	\$14	\$14	\$14	\$15	\$16	\$17	14	\$0	\$0	\$0	\$0	\$0	\$0
15	\$0	\$0	\$0	\$0	\$0	\$0	15	\$0	\$0	\$0	\$0	\$0	\$0
16	\$0	\$0	\$0	\$0	\$0	\$0	16	\$0	\$0	\$0	\$0	\$0	\$0
17	\$0	\$0	\$0	\$0	\$0	\$0	17	\$0	\$0	\$0	\$0	\$0	\$0
18	\$0	\$0	\$0	\$0	\$0	\$0	18	\$0	\$0	\$0	\$0	\$0	\$0
19	\$0	\$0	\$0	\$0	\$0	\$0	19	\$0	\$0	\$0	\$0	\$0	\$0
20	\$0	\$0	\$0	\$0	\$0	\$0	20	\$0	\$0	\$0	\$0	\$0	\$0
21	\$0	\$0	\$0	\$0	\$0	\$0	21	\$0	\$0	\$0	\$0	\$0	\$0
22	\$0	\$0	\$0	\$0	\$0	\$0	22	\$0	\$0	\$0	\$0	\$0	\$0
23	\$0	\$0	\$0	\$0	\$0	\$0	23	\$0	\$0	\$0	\$0	\$0	\$0
24	\$0	\$0	\$0	\$0	\$0	\$0	24	\$0	\$0	\$0	\$0	\$0	\$0
25	\$0	\$0	\$0	\$0	\$0	\$0	25	\$0	\$0	\$0	\$0	\$0	\$0
26	\$0	\$0	\$0	\$0	\$0	\$0	26	\$0	\$0	\$0	\$0	\$0	\$0
27	\$0	\$0	\$0	\$0	\$0	\$0	27	\$0	\$0	\$0	\$0	\$0	\$0
28	\$0	\$0	\$0	\$0	\$0	\$0	28	\$0	\$0	\$0	\$0	\$0	\$0
29	\$0	\$0	\$0	\$0	\$0	\$0	29	\$0	\$0	\$0	\$0	\$0	\$0

  

MerchCat	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Channel	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5
0							0						
1		1.8%	4.0%	5.2%	5.9%	6.3%	1		0.2%	3.0%	4.8%	5.8%	6.2%
2		2.4%	4.9%	5.9%	6.3%	6.5%	2		1.5%	3.5%	4.7%	5.6%	6.0%
3		1.0%	4.0%	5.4%	6.1%	6.4%	3		1.6%	4.2%	5.5%	6.1%	6.4%
4		0.9%	3.8%	5.1%	5.9%	6.3%	4		1.0%	3.5%	4.8%	5.6%	6.1%
5		0.4%	3.4%	4.9%	5.8%	6.2%	5		3.7%	5.5%	6.2%	6.6%	6.6%
6		0.7%	3.4%	5.0%	5.8%	6.2%	6						
7		0.3%	3.8%	5.1%	5.9%	6.2%	7						
8		4.0%	5.3%	6.2%	6.6%	6.6%	8						
9		0.9%	3.3%	4.8%	5.7%	6.1%	9						
10		-1.0%	3.2%	4.2%	5.4%	5.9%	10						
11							11						
12		2.7%	4.9%	5.5%	6.1%	6.4%	12						
13		9.9%	9.0%	8.3%	7.7%	7.1%	13						
14		0.3%	2.5%	4.1%	5.3%	5.9%	14						

In this case I use numbers to protect the originator of the data – in actual projects, I list the product category and the channel.

I also forecast what segment counts are going to look like in the future. This table shows us where each segment “was” and what the counts will look like in the future.

Evolution of the Customer File by Segment										
Segment	Year -4	Year -3	Year -2	Year -1	Today	Year +1	Year +2	Year +3	Year +4	Year +5
11	5,356	5,630	5,052	4,372	3,638	3,723	3,898	4,115	4,369	4,653
12	0	0	0	0	0	0	0	0	0	0
13	308	206	158	144	138	136	140	146	154	164
14	9,768	6,878	5,474	5,948	5,440	5,526	5,741	6,042	6,401	6,802
15	9,376	6,936	6,178	6,672	7,880	7,995	8,272	8,654	9,125	9,669
16	746	712	556	422	446	449	459	481	507	537
17	0	0	0	0	0	0	0	0	0	0
21	9,036	8,500	8,644	7,766	6,482	6,605	6,885	7,257	7,699	8,193
22	1,298	1,124	1,002	968	746	757	787	826	875	931
23	676	376	370	364	316	315	326	343	363	386
24	4,792	3,828	3,788	3,854	3,702	3,812	4,002	4,235	4,501	4,794
25	2,494	2,052	1,568	1,648	1,608	1,620	1,676	1,756	1,854	1,966
26	4,660	4,442	4,184	3,930	3,514	3,528	3,627	3,786	3,988	4,223
27	0	0	0	0	0	0	0	0	0	0
31	1,482	1,276	1,012	1,058	1,104	1,131	1,179	1,243	1,320	1,404
32	5,914	7,068	8,168	6,748	7,504	7,627	7,939	8,341	8,837	9,394
33	826	724	606	594	646	647	669	701	740	785
34	1,726	1,478	1,212	1,178	1,182	1,188	1,230	1,287	1,359	1,442
35	3,106	2,916	3,194	2,908	3,244	3,362	3,528	3,732	3,967	4,223
36	5,430	4,678	3,924	3,902	3,828	3,843	3,948	4,113	4,334	4,587
37	2,260	1,836	1,842	1,808	1,730	1,729	1,766	1,830	1,919	2,025
41	814	520	466	370	264	263	270	281	296	314
42	4,088	5,050	5,210	4,784	4,392	4,472	4,656	4,899	5,194	5,523
43	3,150	3,634	3,604	3,446	3,138	3,156	3,274	3,436	3,634	3,860
44	2,184	1,804	1,624	1,464	1,498	1,501	1,548	1,623	1,718	1,825
45	2,698	2,672	2,696	2,514	2,546	2,642	2,785	2,952	3,140	3,345
46	2,240	1,982	1,396	1,396	1,396	1,407	1,453	1,521	1,605	1,702
47	5,138	5,088	5,168	4,764	5,186	5,214	5,351	5,563	5,848	6,180
51	2,428	1,550	1,262	1,142	848	860	900	948	1,007	1,073
52	1,842	1,802	2,046	1,740	1,834	1,856	1,932	2,033	2,159	2,296
53	4,746	5,414	5,908	5,096	4,584	4,657	4,854	5,120	5,434	5,783
54	4,004	2,868	2,342	2,156	1,888	1,898	1,970	2,069	2,191	2,328
55	2,052	1,456	1,652	1,368	1,208	1,223	1,273	1,340	1,421	1,511
56	3,246	2,560	2,376	2,336	2,192	2,260	2,363	2,495	2,650	2,819
57	4,638	4,526	4,806	3,988	3,828	3,845	3,944	4,102	4,313	4,560
61	5,954	3,714	3,090	2,250	1,954	2,028	2,142	2,284	2,439	2,603
62	3,508	2,246	2,314	2,006	1,986	2,003	2,090	2,208	2,344	2,496
63	3,934	3,436	3,546	3,390	3,148	3,206	3,350	3,546	3,769	4,013
64	3,400	1,970	1,816	1,716	1,898	1,948	2,044	2,165	2,304	2,454
65	2,628	1,494	1,354	1,306	1,218	1,246	1,310	1,385	1,473	1,568
66	4,950	3,558	2,854	2,488	2,512	2,561	2,672	2,822	2,998	3,189
67	4,430	3,074	3,322	2,726	2,890	2,922	3,027	3,167	3,345	3,544
71	290	272	238	190	126	130	136	145	155	165
72	4,292	3,018	2,224	1,768	1,352	1,391	1,466	1,559	1,663	1,774
73	8,332	6,336	5,684	5,792	5,274	5,467	5,757	6,118	6,520	6,954
74	1,794	958	806	802	912	928	965	1,019	1,082	1,152
75	2,482	1,472	1,140	1,156	1,114	1,158	1,222	1,299	1,386	1,479
76	4,284	2,766	2,544	2,636	2,994	3,123	3,315	3,531	3,766	4,017
77	8,266	4,642	3,950	3,968	4,202	4,292	4,483	4,722	5,007	5,319
1X	17,714	17,904	18,376	16,416	17,194	17,828	18,510	19,438	20,556	21,826
2X	18,484	18,140	18,116	16,388	17,508	16,638	17,302	18,202	19,281	20,493
3X	20,744	19,976	19,958	18,196	19,238	19,528	20,258	21,247	22,476	23,862
4X	20,076	19,220	19,412	17,508	18,398	18,655	19,336	20,275	21,435	22,748
5X	18,250	17,202	16,454	15,544	15,286	16,597	17,236	18,107	19,176	20,371
6X	20,574	20,112	19,452	18,396	17,778	15,915	16,635	17,576	18,670	19,869
7X	21,032	20,438	19,864	18,682	18,094	16,488	17,344	18,393	19,578	20,859
X1	20,624	20,194	19,366	18,288	17,396	14,740	15,410	16,272	17,285	18,406
X2	17,434	17,498	16,838	15,782	14,964	18,106	18,869	19,866	21,072	22,414
X3	20,312	20,750	20,164	18,738	18,420	17,585	18,369	19,410	20,615	21,946
X4	21,926	21,780	20,960	19,510	19,004	16,801	17,499	18,439	19,556	20,797
X5	19,680	18,532	17,796	16,466	16,446	19,245	20,066	21,118	22,365	23,762
X6	21,276	20,312	20,100	18,116	17,892	17,169	17,837	18,749	19,847	21,074
X7	23,096	21,376	20,818	18,808	18,282	18,003	18,570	19,385	20,431	21,628
Totals	171,066	140,542	132,370	123,042	119,530	121,649	126,621	133,238	141,171	150,027

The data shows me that Segment “35” is growing faster than most segments. I looked at the composition of Segment “35”.

- Spent \$96.97 last year.
- 1.13 Orders last year.
- More than 90% of spend in Merchandise Category 01.
- More than 70% of spend in Marketing Channel 05 (which was Search).

I then looked at counts for new + reactivated buyers in Segment “35”.

- 2,080 last year.
- 2,458 this year.

I can tell that marketing increased the search budget, resulting in more customers in Merchandise Category 01 via Search.

I can then look at where these customers migrate to in the next year.

- 80% of future dollars in Merchandise Category 01.
- 50% of future dollars online without email/search.
- 25% of future dollars online via search.
- Customers distribute to > 20 different segments in the future (they behave in a diverse manner).

So the customer remains mostly loyal to online, to Merchandise Category 01, and is not generally loyal to search going forward but will buy from many channels and will spend varying amounts of money.

Recall our base forecast.

49 Segment Forecasting Algorithm - Merchandise + Channels								
	Year -1	Today	After Yr 1	After Yr 2	After Yr 3	After Yr 4	After Yr 5	
12 Month Buyers	123,042	119,530	116,203	114,174	112,715	111,752	111,060	
Existing Buyers		36,538	35,891	34,900	34,286	33,838	33,539	
Reactivated Buyers		28,524	25,844	24,807	23,961	23,446	23,053	
New Buyers		54,468	54,468	54,468	54,468	54,468	54,468	
Total Demand (000s)		18,412.6	17,936.5	17,631.8	17,414.3	17,266.9	17,160.5	
Total Orders (000s)		160.6	156.2	153.3	151.2	149.9	148.9	
Total Items (000s)		631.1	614.2	603.0	594.9	589.4	585.4	
Retention Index			1.000	1.000	1.000	1.000	1.000	
New Buyer Index			1.000	1.000	1.000	1.000	1.000	
12 Month Buyer Change			-2.8%	-1.7%	-1.3%	-0.9%	-0.6%	
12 Month Demand Change			-2.6%	-1.7%	-1.2%	-0.8%	-0.6%	
12 Month Orders Change			-2.8%	-1.8%	-1.3%	-0.9%	-0.7%	
12 Month Items Change			-2.7%	-1.8%	-1.4%	-0.9%	-0.7%	
Average Order Value		\$114.62	\$114.87	\$115.03	\$115.15	\$115.23	\$115.27	
Items per Order		3.93	3.93	3.93	3.93	3.93	3.93	
Price per Item Purchased		\$29.18	\$29.20	\$29.24	\$29.27	\$29.30	\$29.31	
Orders per Buyer		1.34	1.34	1.34	1.34	1.34	1.34	
Demand per Buyer		\$154.04	\$154.36	\$154.43	\$154.50	\$154.51	\$154.52	

We can adjust the number of customers that are new + reactivated, based on historical trends, and see if this impacts the trajectory of the business.

49 Segment Forecasting Algorithm - Merchandise + Channels								
	Year -1	Today	After Yr 1	After Yr 2	After Yr 3	After Yr 4	After Yr 5	
12 Month Buyers	123,042	119,530	116,203	114,808	113,838	113,247	112,829	
Existing Buyers		36,538	35,891	35,533	35,177	34,916	34,756	
Reactivated Buyers		28,524	25,844	24,807	24,193	23,863	23,605	
New Buyers		54,468	54,468	54,468	54,468	54,468	54,468	
Total Demand (000s)		18,412.6	17,929.0	17,716.2	17,574.8	17,486.5	17,423.3	
Total Orders (000s)		160.6	156.3	154.5	153.1	152.3	151.7	
Total Items (000s)		631.1	624.5	617.8	613.0	609.8	607.6	
Retention Index			1.000	1.000	1.000	1.000	1.000	
New Buyer Index			1.000	1.000	1.000	1.000	1.000	
12 Month Buyer Change			-2.8%	-1.2%	-0.8%	-0.5%	-0.4%	
12 Month Demand Change			-2.6%	-1.2%	-0.8%	-0.5%	-0.4%	
12 Month Orders Change			-2.7%	-1.2%	-0.9%	-0.5%	-0.4%	
12 Month Items Change			-1.0%	-1.1%	-0.8%	-0.5%	-0.4%	
Average Order Value		\$114.62	\$114.68	\$114.70	\$114.77	\$114.82	\$114.85	
Items per Order		3.93	3.99	4.00	4.00	4.00	4.01	
Price per Item Purchased		\$29.18	\$28.71	\$28.68	\$28.67	\$28.67	\$28.67	
Orders per Buyer		1.34	1.35	1.35	1.35	1.34	1.34	
Demand per Buyer		\$154.04	\$154.29	\$154.31	\$154.38	\$154.41	\$154.42	

Trend data shows us that this company is generally acquiring new customers that are even less valuable than the customers that were acquired historically. The business is evolving.

The base forecast for changes in demand by Merchandise Category and Marketing Channel looks like this:

MerchCat	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Channel	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5
0							0						
1		-2.5%	-1.7%	-1.3%	-0.9%	-0.6%	1		-3.0%	-2.1%	-1.4%	-0.9%	-0.7%
2		-2.8%	-1.5%	-0.9%	-0.7%	-0.5%	2		-2.2%	-1.7%	-1.4%	-0.9%	-0.7%
3		-3.2%	-1.8%	-1.2%	-0.8%	-0.6%	3		-3.1%	-1.9%	-1.2%	-0.8%	-0.6%
4		-3.2%	-1.9%	-1.4%	-0.9%	-0.6%	4		-2.4%	-1.6%	-1.3%	-1.0%	-0.7%
5		-3.1%	-2.0%	-1.5%	-1.0%	-0.7%	5		-2.1%	-1.3%	-1.0%	-0.6%	-0.4%
6		-3.2%	-2.1%	-1.3%	-0.9%	-0.7%	6						
7		-3.5%	-1.6%	-1.2%	-0.9%	-0.7%	7						
8		-2.1%	-1.6%	-0.9%	-0.5%	-0.4%	8						
9		-2.8%	-2.1%	-1.4%	-1.0%	-0.7%	9						
10		-3.2%	-1.2%	-1.4%	-1.0%	-0.8%	10						
11							11						
12		-2.5%	-1.4%	-1.2%	-0.8%	-0.5%	12						
13		-0.1%	0.0%	0.0%	0.0%	0.0%	13						
14		-2.1%	-2.0%	-1.6%	-1.1%	-0.8%	14						

If customer acquisition trends continue to accelerate quickly, the forecast changes.

MerchCat	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5		Channel	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5
0								0						
1		-1.2%	-1.0%	-0.7%	-0.5%	-0.3%		1		-1.7%	-1.6%	-1.1%	-0.7%	-0.4%
2		-7.6%	-1.7%	-0.9%	-0.6%	-0.4%		2		4.4%	0.8%	0.1%	0.1%	0.0%
3		-6.9%	-2.3%	-1.2%	-0.7%	-0.5%		3		-8.1%	-2.5%	-1.4%	-0.9%	-0.6%
4		-6.5%	-1.8%	-1.2%	-0.7%	-0.5%		4		2.3%	-0.7%	-0.6%	-0.5%	-0.5%
5		-5.4%	-2.1%	-1.3%	-0.8%	-0.5%		5		-4.6%	-1.9%	-1.1%	-0.7%	-0.4%
6		-6.4%	-2.0%	-1.1%	-0.7%	-0.5%		6						
7		-6.1%	-1.6%	-1.1%	-0.6%	-0.5%		7						
8		-8.8%	-1.7%	-0.9%	-0.4%	-0.2%		8						
9		-4.8%	-1.4%	-1.0%	-0.6%	-0.4%		9						
10		-4.4%	-0.4%	-0.6%	-0.4%	-0.5%		10						
11								11						
12		-3.3%	-1.4%	-0.9%	-0.6%	-0.2%		12						
13		4.7%	0.0%	0.0%	0.0%	0.0%		13						
14		-0.3%	-0.7%	-0.7%	-0.5%	-0.3%		14						

Here, we observe that customer acquisition trends are in Merchandise Category 01, and are in Marketing Channels 2/4 (which are print marketing and email marketing). The business is struggling to acquire customers online, via search, and within Merchandise Category 01.

Interestingly, the fastest growing segment was Segment "35" (low dollars, search, merchandise category 01). The customers being acquired are only buying small quantities, hence, the segment is growing. This is not a good trend.

### The Most Popular Project Request of 2017

Five-year forecasts are the most popular project request I am receiving this year, and for good reason. Modern analytics approaches tend to avoid forecasting what is likely to happen. And yet, the Executive Teams we work with have to understand where our businesses are headed, so that they can make good decisions going forward.

I am more than happy to continue to analyze these projects on an as-needed basis. Project costs tend to fall within my "Fix It" framework.

<b>MineThatData Project Pricing: 2017</b>			
<b><u>Annual Net Sales</u></b>	<b><u>Catalog Contact Strategy Optimization</u></b>	<b><u>Ad Hoc Projects</u></b>	<b><u>Hillstrom's "Fix It" Methodology</u></b>
\$1 to \$9,999,999	\$13,000	\$11,000	\$9,000
\$10,000,000 to \$29,999,999	\$23,000	\$19,000	\$15,000
\$30,000,000 to \$59,999,999	\$30,000	\$25,000	\$20,000
\$60,000,000 to \$99,999,999	\$40,000	\$34,000	\$28,000
\$100,000,000 to \$999,999,999	\$50,000	\$42,500	\$35,000
\$1,000,000,000 or Greater	\$60,000	\$50,000	\$40,000
<b>The MineThatData Elite Program (per run):</b>			\$2,500
<b>Catalog Seller or Private Equity Business Evaluation</b>			\$19,000
<b>One Day Test Analysis</b>			\$4,000
<b>Monthly Retainer (7 Days, Use it or Lose it)</b>			\$20,000
<b>Consulting Visit - Per Day (Client Pays Travel Expenses)</b>			\$4,000
<b>Consulting Visit - One Week (Client Pays Travel Expenses)</b>			\$13,000
<b>Speaking Fee (Client Pays Travel Expenses)</b>			\$4,000

That being said, there is no reason this methodology could not be operationalized and converted into software that enables ALL PROFESSIONALS to have access to forecasting outcomes. There is no reason why all digital analysts should be in the dark. Think about how much more effective we all could be if we knew what the future held?

This is why I am open to discussing the forecasting methodology with the service provider community. Think about how powerful the methodology might be within the framework of Google Analytics, for instance? Or within Adobe's solutions?

If you are interested in purchasing development of this solution, please contact me at [kevinh@minethatdata.com](mailto:kevinh@minethatdata.com) or at 206-853-8278.

Thanks,  
Kevin