SCMA 669

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New Product Forecasting: Smart Sticky Note Printer

Introduction

The Smart Sticky Note Printer is a small thermal printer that helps you easily take notes or make lists using your voice with an Amazon Alexa device. Each printer comes with one roll of paper and additional rolls of paper may be purchased separately. The printer is $90 and does not require any ink or toner refills. It is only compatible with an Echo Device (Amazon Alexa) excluding Echo (1st Gen), Echo Dot (1st Gen), Echo Plus (1st Gen), Echo Dot Kids Edition, and Amazon Tap. The Alexa device is sold separately.

Amazon is expected to release the product in 2021. Due to the COVID-19 pandemic, approximately 70% of the United States' workforce is working from home. This has led to increased printer sales in 2020 and has caused printer manufacturers to shift focus from commercial printers to personal printer development and production. The future state of the workforce is an interesting variable when forecasting this new product. Many experts believe that people will continue working from home at least part time even after the pandemic is over. This assumption increases the target market for personal printer products.

The Sticky Note Printer is a type of product that most customers will not repurchase unless it is for family and friends. After completing our market research and competitor analysis, we have decided to pursue a 3 year forecast horizon. Forecasting out 3 years will allow us in the short term to correctly evaluate key performance indicators such as cash flows, inventory balances, production costs, and return on investment. This horizon will help mitigate any miscalculations and the negative impacts that would occur from an inaccurate forecast.

Delphi Method

The Delphi method requires a group of experts to construct consensus forecasts in a structured iterative manner. The key assumption for the Delphi method is that forecasts from a group of people are more reliable than one individual. For the forecast of the revenue of the Smart Sticky Note Printer, we conducted two rounds of forecasting with five participating experts.

Exhibit 1 includes the first round of forecasts of each expert. These forecasts were based on different assumptions and reasoning leading to a large range in projections. Each expert was shown all of the round one forecasts. Exhibit 2 shows the experts' revised forecasts. Based on the experts' revised forecasts, revenue in the first year is likely to be between $180,000 to $205,000; second year revenue is likely to be between $315,000 to $338,000; and third year revenue is likely to be between $425,000 to $450,000. Even after two rounds of forecasting, the forecasts still varied between each expert. To ensure that the forecast assumptions were based on market information, we pursued the Assumptions Based Model.

Assumptions Based Model

Using a top-down thinking approach, multiple assumptions were "chained" together to produce an estimated penetrated target market. Starting large, over 81.3 Million people have smart speakers and Amazon Alexa holds a worldwide digital assistant market share of about 70% or 56.6M Alexa users. The Smart Sticky Note Printer only operates with people with an Amazon account that have an Alexa (all Alexa users must have an account).

Since the printer links to Amazon Alexa (which is a consumer product) we assumed that this printer would be purchased for personal use. Due to the COVID-19 pandemic, about 70% of the United States' workforce is working from home. More than 50 billion Post-it Notes are produced by 3M every year however many of these purchases are made from repeat buyers

who routinely use the product. For the purposes of this model, we estimated that 15% of Alexa users also use sticky notes. This leads us to our Qualified Available Market.

Of those that have a smart speaker, Amazon Alexa, and are frequent sticky note users, we project 0.05% of people will purchase the Smart Sticky Note Printer leading to 2,975 possible penetrated target market buyers with a revenue of $267,750.00. These assumptions are illustrated in Exhibit 3. The Assumptions Based Model does not account for trial and repeat purchases of new products, so next we pursued the ATAR Model.

ATAR Model

Due to the fact this product is supported and enabled by Amazon Alexa; this forecast is derived from Amazon Alexa's worldwide users of 56.6M. Market research shows that amazon prime members are growing at a 5% YoY rate. Taking this information into consideration, we projected a conservative 2.5% YoY growth rate for Alexa users.

This product is being developed due to Amazon's new initiative "Day 1:Editions". It allows non-Amazon employees to pitch new products to the organization. If products are accepted and meet the minimum number of pre-orders; Amazon will manufacture the product and continue to sell it on the marketplace. This unique scenario means that marketing around the product is minimum. Due to this, product awareness is low and will remain low. Furthermore, the trial rates will be low and start at 1% but increase slightly YoY.

Products that are accepted for Amazon "Day 1:Editions" will only be sold on Amazon Marketplace and nowhere else. This means that availability for this product is relatively low when taking into consideration online competitors like Walmart, Best Buy, and Target. Availability for this product is set at 10% across all forecasting years.

This product is a unique one-time type of purchase for customers. Typically, it will not have repeat buys unless a previous customer is buying it for friends or family. The repeat buyer

rate for this model is set at 5% and will continue to decrease YoY. Complete calculations are included in Exhibit 4.

Sensitivity Analysis

The Delphi Method provided robust conversation among the decision makers associated with this product, but ultimately the range in the forecasts were too high for comfort. Forecasting is critical for new product development because it drives production. If too many sales are forecasted the company will have to store extra inventory, which can lead to cash flow problems. On the other hand, if too few sales are forecasted the company may run out of inventory and lose out on potential first time buyers while the product is out of stock.

The Assumptions Based Model gave product decision makers more confidence because it was based on assumptions that were supported by market research. In the end, a sensitivity analysis was performed on the ATAR Model because it was based on the same assumptions as the assumption-based model but also takes into account trial and repeat purchases.

A complete sensitivity analysis is included in Exhibit 5. The sensitivity analysis revealed that product awareness and availability will have the biggest impact on the forecast. As previously mentioned, Amazon will not invest significantly in marketing this product. Depending on the initial popularity and Amazon's internal algorithms, the product awareness may be higher if the product is listed as a recommendation to Amazon shoppers or may be lower if the product does not have any visibility on the Amazon page at all. Availability is also a significant variable. This product will only be available through Amazon's website. Since the product is compatible with Amazon Alexa, it should be safe to assume that the target market will tend to shop through Amazon, but the product's exclusivity may have a negative impact on trial purchases.

Recommendation

Taking all of these variables into consideration, the project team is presenting the ATAR model as the recommended forecast for this new product. Full details of the ATAR model forecast are included in Exhibit 4.

Exhibit 1

Delphi Method - Round 1

		Units	Revenue	
	Year	Round 1		Reasoning
Expert 1	1	3,000	$ 270,000	Roughly 70% of the "smart speaker" user are Amazon Alexa users, and 5% of them would like the smart stick notes, and the market steady increase as product gains popularity
	2	5,000	$ 450,000	
	3	6,000	$ 540,000	
Expert 2	1	5,000	$ 450,000	Among the Amazon Alexa users, 71% works from home, and 23% of them have home printers. Low market awareness, and the demand will decrease as people goes back to the office
	2	8,000	$ 720,000	
	3	7,500	$ 675,000	
Expert 3	1	2,834	255,060	68.2% of the smart speaker users are Amazon Alexa users and 10% of them use sticky notes. Assume 0.05% would buy the Smart Sticky Note Printer. 10% increase after year 1 and 20% after year 2.
	2	3,117	280,530	
	3	3,740	336,600	
Expert 4	1	1,350	121,500	56.6M Alexa user worldwide with an estimated 2.5% growth rate. Awareness is low due to it being a new product and minimum marketing. Low trial rate is driven by market competition and use of smartphones. Availability is also low because the product is only selling on Amazon.com. Repeat customers is low and decreasing due to customers not buying more than one. Only time a customer will purchase a second sticky note printer is for family/friends.
	2	10,425	$ 938,250	
	3	22,907	$ 2,061,630	
Expert 5	1	11,700	$ 1,053,000	Among the active Amazon Prime members, half of them use sticky notes and 0.03% of those will buy the "smart printer". As more people start to know it the sale will increase, but the market will reach its full capacity, increase will slow down
	2	15,000	$ 1,350,000	
	3	17,500	$ 1,575,000	

Round 1 Statistics			
	Year 1	Year 2	Year 3
Max	$1,053,000	$1,350,000	$2,061,630

Min	$121,500	$280,530	$336,600
Mean	$429,912	$747,756	$1,037,646
Median	$270,000	$720,000	$675,000

Exhibit 2

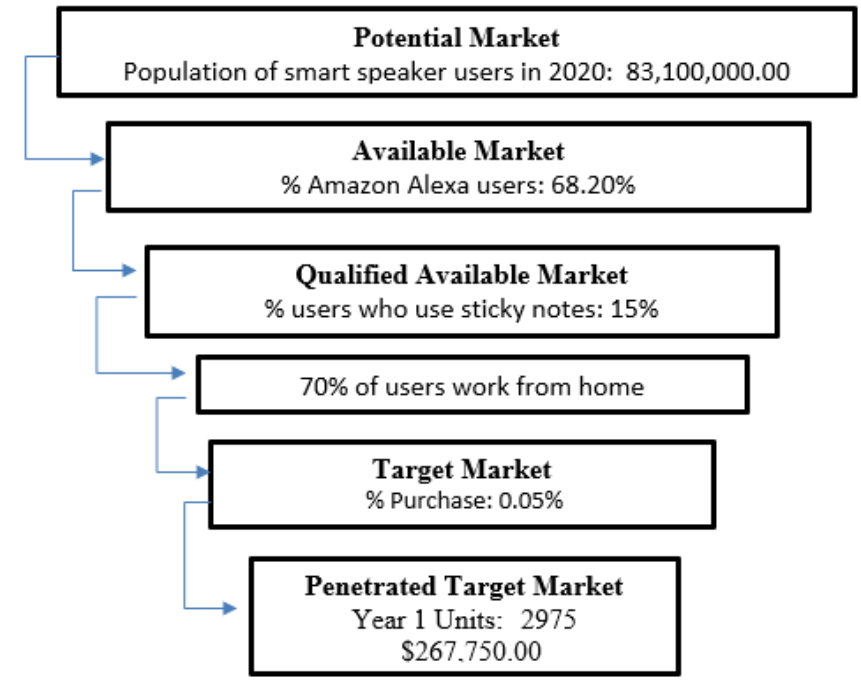
Delphi Method - Round 2

		Units	Revenue	
	Year	**Round 2**		**Reasoning**
Expert 1	1	2,000	$180,000	After looking at other experts' forecasts, I decided to decrease the number of units sold each year
	2	4,000	$360,000	
	3	5,000	$450,000	
Expert 2	1	1,491	$134,190	Among the 42 million Alexa users, 71% are working home, and 10% of them use sticky notes. Then adding in 0.05% of the product awareness. the annual growth rate is assumed to be 10%.
	2	1,640	$147,600	
	3	1,804	$162,360	
Expert 3	1	4,251	$382,590	68.2% of the smart speaker users are Amazon Alexa users and 15% of them use sticky notes. Assume 0.05% would buy the Smart Sticky Note Printer. 20% increase after year 1 and 30% after year 2.
	2	5,101	$459,090	
	3	6,631	$596,790	
Expert 4	1	1,350	$121,460	In Round 2 the trial rate was reduced further due to overoptimistic assumptions. This decrease is driven by product uniqueness, market competition and use of smartphones.
	2	3,753	$337,795	
	3	6,872	$618,511	
Expert 5	1	2,318	$208,620	I am overly optimistic in my round 1 forecast, so I reduced the percent of people who're willing to buy and also factored in that not all the prime members use Alexa.
	2	3,014	$271,260	
	3	3,315	$298,350	

Round 2 Statistics			
	Year 1	Year 2	Year 3
Max	$382,590	$459,090	$618,511
Min	$121,460	$147,600	$162,360
Mean	$205,372	$315,149	$425,202
Median	$180,000	$337,795	$450,000

Exhibit 3

Assumptions Based Model



20% Growth in Year Two
Units: 3,570
$321,300.00

30% Growth in Year Three
Units: 4,641
$417,690.00

Exhibit 4

ATAR Model

New Product	Yr 0	Yr 1	Yr 2	Yr 3
Target Market		56,674,200	58,091,055	59,543,331
Annual Growth Rate		2.5%	2.5%	
ATAR VARIABLES				
Awareness		1.0%	1.5%	2.0%
Trial rate		2.5%	4.5%	6.0%
Availability		10.0%	10.0%	10.0%
Repeat		5.0%	4.5%	4.0%
SALES + CUSTOMERS				
Trial Customers		1,417	3,921	7,145
New 'Repeat' Customers		71	176	286
Loyalty rate			5%	5%
Total 'Repeat' Customers		71	180	295
Brand Penetration (% of market)		0.00%	0.00%	0.00%
Sales to 'one-off' customers		1,346	3,745	6,859
Sales to repeat customers		4	8	12
TOTAL SALES - units		**1,350**	**3,753**	**6,871**
Sales		**$ 121,460**	**$ 337,751**	**$ 618,407**

Exhibit 5

	Market Size	Awareness	Trial	Availability	1st Year Penetration	Potential	Revenue (Price = $90 each)
Best Case	56,674,200	3.00%	3.50%	25%	25%	3719	$334,731.99
Likely Case	56,674,200	1%	2.50%	10%	15%	213	$19,127.54
Worst Case	56,674,200	0.50%	1%	5%	10%	14	$1,275.17

	Worst	Likely	Best	Range	$ Below	$ Above
Awareness	$ 9,563.77	$19,127.54	$ 57,382.63	$ 47,818.86	$9,563.77	$ 38,255.09
Trial	$ 7,651.02	$19,127.54	$ 26,778.56	$ 19,127.54	$11,476.53	$ 7,651.02
Availability	$ 9,563.77	$19,127.54	$ 47,818.86	$ 38,255.09	$9,563.77	$ 28,691.31
1st Year Penetration	$ 12,751.70	$19,127.54	$ 31,879.24	$ 19,127.54	$6,375.85	$ 12,751.70

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