High Performance Market Opportunity Development

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Abstract

Despite the continuing expansion of technology and innovation, developing a successful venture, or even just determining which opportunities to pursue, is a daunting task. This is particularly the case in today's risk-averse, recessionary economy where funding is scarce and the penalty for failure is high. Intuition (the default process in the majority of business decisions,) can help, but lacks the structure needed to enable disciplined decision making and, often therefore, to justify funding. Market data also is often imperfect; and companies are reluctant to do market research because of the expense, further increasing the risk of failure. And although business plans often contain elaborate models and forecasts, the underlying market justification rarely stands up to scrutiny. The Market Opportunity Development approach described below, however, provides virtually any business with a means of analyzing market opportunities with a minimum of time, expense and risk. Most importantly, it helps increase the probability of success in the market, while also providing a structure for capitalizing on those opportunities and quantifying risk.

Author's note: This paper was originally published in 1985 based on an analytic technique that I developed at Western Electric and Bell Laboratories. The approach provided the basis for the funding, development and successful introduction of a variety of new technologies including Local Area Networks, fiber optics, ISDN, broadband, and on-demand video. The challenges of the current economic environment on everyone from entrepreneurs to Fortune 500 companies has increased risk aversion, and highlighted the need to re-issue this structured approach to market opportunity development.

Overview: The Structure of a Market Opportunity

In looking at, or for, new market opportunities, whether as a product developer or inventor, a marketing or sales professional, a business owner, or an investor, there are three foundations – legs of the stool, if you will – on which any market opportunity is based. Whether you're considering a technological innovation, repositioning an old product, or developing a new promotional initiative, every market opportunity is based on three key elements: the Product Concept, the underlying Need, and the prospective Customer Distribution.

As shown below in Figure 1 below, these three elements are related in three very specific, albeit frequently misunderstood, ways: Market Segmentation, Target Marketing, and Application.

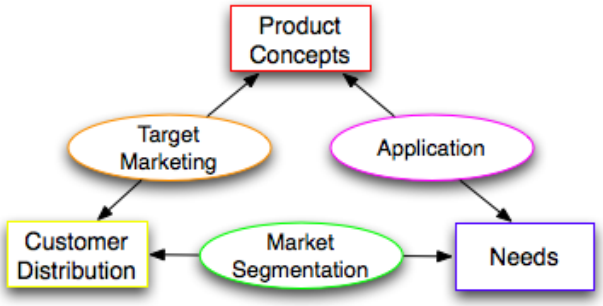

Figure 1 - Structure of a Market Opportunity

In the present method, Target Marketing describes which customers buy what products, Market Segmentation describes which customers have what needs, and Application analysis describes which products satisfy those needs.

Using this framework, as you'll see, while it may not necessarily be easy to come up with a good idea, it becomes very easy to analyze any potential market opportunity rationally, and make sound business decisions about funding it. Conveniently, under this framework the analysis can be done using traditional group-oriented brainstorming techniques, mathematical modeling, rigorous risk analysis, formal market research and product development, or simply on the back of an envelope. It is rigorous enough to provide usable conclusions regardless of the level of detail or the analytical tools available.

The market opportunity development process allows you to articulate and frame new ideas quickly and coherently. It can be used to identify what research needs to be done; and to design and conduct research efficiently, whether as a thought experiment, through market research, via modeling, or with market testing. It can enable you to test and quantify demand, to develop and prioritize features and benefits, to set pricing, and to design and implement an effective promotional program, as well. And although

the ultimate success of any initiative can, and often will, be influenced by how well one executes the process and implement its results, this process contains all of the steps needed to develop a successful market opportunity in a structured, replicable and – most importantly – defensible fashion.

This is an issue because, all too often, decision makers focus primarily (and justifiably,) on the business plan or revenue projection when evaluating an opportunity. And, of course, it's very easy to develop a forecast (especially a bad one,) because of the wide availability of tools like Excel. The problem, however, is that the underlying assumptions and logic for arriving at the revenue forecast are often fatally flawed – something that isn't realized until it's too late. The present method, however, enables the business to avoid these pitfalls.

What Is a "Market Opportunity"

It is helpful to start with a definition of a market opportunity so we can understand the goal of the analysis. In this regard, there are several definitions of a market opportunity that are frequently referenced. For example:

- Wikipedia defines it as a "product or a service, based on either one technology or several, [that] fulfills the needs of a (preferably increasing) market better than the competition and better than substitution-technologies within the given environmental frame (e.g. society, politics, legislation, etc.)"
- BusinessDictionary.com defines it as a "Newly identified need, want, or demand trend that a firm can exploit because it is not being addressed by the competitors."

For our purposes, these definitions help, but each falls short in its own, albeit important, ways. The first unfortunately uses the word "market" in the definition, while the second presumes that the need must be new and/or currently unexploited, neither of which is required. Further, the first definition defines a market opportunity as a "product," while the other defines it as a "need." (Which is it? A product or a need?) And both ignore the fundamental driver behind the initiative: the achievement of profit or, at least, a specific organizational mission. Instead, we prefer a more pragmatic definition. If you are talking about a business:

> A market opportunity is a defined need (or set of needs,) held by a defined group of proposed or existing customers, that can be satisfied by a defined product or service offering at a profit.

As you can see, this definition doesn't assume that the product meets the need better than the competition – which is helpful because we know that inferior products are often quite successful. Nor does it require that the need is new, which is also helpful. It only requires, in fact, that you can project a profit. From this definition, though, you can anticipate that the process will directly feed into a business model – the most meaningful output of the analysis that is neglected by traditional definitions. But going further, it will also define the strategy for achieving that profit, which should be the goal of the business.

This definition, by the way, applies equally to government services and not-for-profit organizations, as the metrics used to assess performance in these environments are similarly often evaluated in a business model. The market opportunity development process described here therefore can enable any organization to project the impact of a new initiative, regardless of its bottom line metric.

The Foundation of a Market Opportunity

As shown in Figure 1, there are three key elements, or dimensions, that define a market opportunity:

- The product or service (either in conceptual or physical form)
- The underlying needs (either latent or current) that the product or service satisfies, and
- The potential customers for the offering

When characterizing a market opportunity, each of these dimensions should be specified at a detailed level with a list of sub-elements (e.g. features for products, problems for needs, and customer groups for customers,) that describes each dimension more finely, which ultimately enables you to optimize the offering, as you'll see later. But at a high level, you need three elements to begin to define your market opportunity: the product, the needs, and the customers.

Step 1: Creating the Initial Dimensions

As shown in the left (red) list in Table 1, for the Product dimension, the list of sub-elements consists of a set of current or proposed features. For the Needs element (in blue, in the center), the list of sub-elements consists of a set of pain points, problems or unmet goals. And for the Customer element (in yellow,) the sub-list list consists of a list of groups or types of end users for the offering.

Product Concept	Needs	Customers
Feature 1	Need 1	Customer 1
Feature 2	Need 2	Customer 2
…	…	…
Feature *n*	Need *n*	Customer *n*

Table 1 - The Basic Elements of a Market Opportunity

The first step in the process, therefore, is to create these lists for each of the elements. For the Product Concept, this involves defining features that might be included in the offering. For the Needs list, it means identifying needs that one wants (or might want) to address, or that its users have. And for the Customer list, one would add customer groups (as identified by their demographics, for example,) that you want to target.

Putting these lists into a spreadsheet or database, which is recommended, allows you to create hierarchies within each dimension, as shown in Table 2. This is often necessary, in fact, in order to adequately portray and analyze complex concepts. For example, a major feature might have sub-features, and sub-sub features. Likewise, a broad need may have many subordinate problems and issues. And a potential customer group may have one or more sub-groups within it. Fleshing out this detail is an important (and easy) next step of the process that can significantly improve the quality of the result.

Product Concepts	Needs	Customers
Feature 1	Need 1	Group 1
Sub-feature 1a	Sub-need 1a	Sub-group 1a
Sub-feature 1b	Sub-need 1b	Sub-group 1b
…	…	…
Feature *n*	Need *n*	Group *n*

Table 2 - Detailing the Elements

Once you've created the detailed lists, it is helpful to attach other attributes to further define and characterize these dimensions, as shown in Table 3, Table 4 and Table 5. Again, this can easily be done in a spreadsheet, or with a database application. For example, one can easily attach the incremental development cost to a feature, as well as the expected development time, and the projected advantages it offers, as shown below.

Product Concepts	Dev. Cost	Timing	Advantages
Feature 1	$100	2 months	Advantage 1
Sub-feature 1a	$50	2 months	Advantage 1a
Sub-feature 1b	$20	6 months	Advantage 1b
…	…	…	…
Feature *n*	$*n*	*n* months	Advantage *n*

Table 3 - Adding Attributes to the Product Concept

For the needs list, with a little thought most people can also easily quantify and attach the cost of a problem (to the user) of the need. And, of course, you should describe the need in detail, as well as its intensity.

Needs	Cost	Intensity	Description
Need 1	$100/mo	10	Descr 1
Sub-need 1a	$50/yr	4	Descr 1a
Sub-need 1b	$200	3	Descr 1b
…	…	…	…
Need *n*	$*n*	*n*	*Descr n*

Table 4 - Adding Attributes to the Needs Element

Likewise, you can attach market sizes (or even whole databases,) to the customer list, as well as available budgets, or any other demographics that might be useful for quantifying demand later.

Customers	Seg. Size	Avg Spend	Address
Group 1	1,000	[$620]	Location
Sub-group 1a	600	$500	Location
Sub-group 1b	400	$800	Location
…	…	…	…
Group *n*	*n*	*$n*	*Locations n*

Table 5 - Adding Attributes to the Customer Element

Adding attributes like these can contribute significantly to the quality of the forecast; but for now these tables provide a convenient place to hold this valuable information.

Filling out these tables, though, immediately raises the question of optimization, which is one of the chief advantages offered by the technique. That is, when filling out the feature list, it quickly becomes obvious that you can *include* and *exclude* features from the offering. Likewise, you can propose to satisfy, or not satisfy, particular needs. And you can choose to target, or not target, particular customers or groups of customers. As the inclusion or exclusion of any sub-element almost always has a cost and a benefit, (which can easily be quantified and attached to the list,) including or excluding sub-elements is a critical device for developing an optimized, profitable strategy, which you can do directly from your spreadsheets. (One of the easiest ways to do

this is with a binary switch that includes or excludes the item, and cascades its effect through to the business model.)

Step 2: Creating the Analysis Tables

But rather than expanding or culling the lists arbitrarily (as is all too often done,) the next step in the process enables you add or delete sub-elements in a significantly more meaningful way (as alluded to in the Wikipedia definition regarding context, but done more effectively here,) enabling you to reflect its impact on the overall market opportunity and your ultimate business model.

That is, the question: "How many customers do we lose if we don't include this feature?" can't be answered just by looking at the features list; you have to look at its impact on the customer list. Likewise, the question "What would it cost, and gain, us if we addressed this need?" can't be answered just by looking at the needs; you have to calculate its cost in product development (which is found on the product list,) and it's impact on addressable market size (which is on the customer list,) too. And answering a question like "What do we have to do in order to acquire these customers?" requires that you understand their needs (which are on the needs list,) and the features that fulfill those needs (which are on the products list.) Creating the analysis tables will enable you to answer all these questions, and more.

Not coincidentally, this next step, creating the analysis tables, directly aligns with some traditional market analysis techniques. (In fact, it defines them.) And it is *the* critical step in developing a successful market opportunity.

To do this, once the three lists are initially populated they should then be cross-tabbed with each other, enabling them to be analyzed with well-understood market analysis techniques: Application Analysis, Market Segmentation, and Target Marketing. And although there are some differences in what is meant by each of these terms today, as you'll see, this process imposes a very specific and helpful discipline. That is, in this process (referring to Figure 1):

- An **application** is the use of a technology (or service,) to solve a particular problem or need.
  - Application Analysis therefore is the process of matching solutions to the needs and problems that they satisfy and solve.
  - Application analysis answers the following two questions:
    - Given a set of features and capabilities, what needs can they satisfy?
    - Given a set of needs or problems, what features are required to solve them?
  - On iteration, application analysis answers the following additional questions:
    - If I add features, what other needs can I satisfy? If I remove features, what needs will I fail to satisfy?
    - If I want to address additional needs, what features do I need to add? If I choose to not address particular needs, what features can I remove?
  - Among other things, application analysis enables you to calculate willingness-to-pay, and calculate your value-added so that you can set your prices appropriately. You can also use it to develop user guides and support systems, as well as case histories and usage examples.
- A **market segment** is a group of customers (or prospects) who have a common set of needs.
  - Market Segmentation Analysis therefore is the process of analyzing groups of customers (or potential customers,) who have a common set of needs.
  - Market segmentation answers the following two questions:
    - Given a set of needs or problems, who has them?
    - Given a group of (current or potential) customers, what needs do they have that you can potentially solve?
  - On iteration, market segmentation answers the following additional questions:
    - If I consider satisfying additional needs, what additional customers can I pick up? If I don't address certain needs, what customers will I lose?
    - If I want to acquire additional customers, what additional needs must I address? If I am willing to cede customers, what needs may I not address?
  - Market segmentation analysis enables you to develop effective (e.g. personalized,) promotional material and sales approaches, develop an effective market positioning, and build your value proposition.
- **Target markets** are groups of customers (or potential customers,) for a particular product or service offering.
  - Target Marketing is the process of identifying groups of customers or prospects who buy, or are expected to buy, a particular product or offering.
  - Target marketing answers the following two questions:
    - Given a group of products and capabilities, who buys it, or would buy it?

- Given a group of customers and prospects, what do/would they buy?
- On iteration, target marketing answers the following additional questions:
  - If I add features, who else might buy? Or if I remove features, who will I lose?
  - If I want to target additional customers, what features do I need to add? If I am willing to cede customers, what features can I remove?
- Target marketing enables you to quantify demand, develop a media plan, and even set up and deploy your sales force.

As implied by Figure 1, and shown below in Table 6, creating a matrix with the list of product concepts on one axis, and the various needs on the other axis, provides a convenient and easy way to identify and analyze applications – i.e. uses of the product (or service,) to solve specific problems.

		Product Concepts			
		Feature 1	Feature 2	…	Feature *n*
Needs	Need 1	appl			
	Need 2	appl	appl		appl
	…				
	Need *n*				appl

Table 6 - Application Matrix

Using this approach, you can populate the cells simply with markers to indicate the match between features and the needs they satisfy (as shown,) which can help you define offering packages. This process can also help you develop feature sets, because it shows where it takes multiple features to satisfy a need. Or you can analyze each of the cells (i.e. each application,) with a detailed cost-benefit analysis (e.g. subtracting the cost of the solution from the cost to the customer of the need in order to calculate the value-add,) to optimize the ROI of your offerings. But you should be able to see how this would help with pricing.

The same type of table can be created from the customers and needs lists, creating a Market Segmentation Matrix, shown in Table 7.

		Customers			
		Group 1	Group 2	…	Group *n*
Needs	Need 1		Market Segment		
	Need 2	Market Segment	Market Segment		
	…				
	Need *n*				Market Segment

Table 7 - Market Segmentation Matrix

Again, using this approach, you can populate the cells with markers to simply identify which groups have which needs. This helps you construct meaningful messages, for example, because you can tailor your messaging to the needs of the segment. Or you can analyze the demographics of each group against the needs to determine, for example, which needs are most worth fulfilling based on the size (or willingness-to-pay) of the group that has them. And you can easily identify overlapping market segments, which can help avoid double-counting of demand.

And finally, you can cross-match customer groups and products to create a Target Marketing table, shown in Table 8, below.

		Customers			
		Group 1	Group 2	…	Group *n*
Product	Feature 1	Target market	Target market		
	Feature 2		Target market		
	…				
	Feature *n*				Target market

Table 8 - Target Marketing Matrix

Again, using this approach you can populate the cells with markers to simply identify which features will be bought by (or targeted to) which group. You can analyze demand at a detailed level for each type of sale, for example, by estimating the number of units that each group will buy based on the number of customers in the group and the expected usage level. You can consolidate overlapping target markets to avoid redundant development. And as you can guess, if you attach prices to the products, you can easily forecast revenue and profitability.

Step 3: Optimization

Most users will start with a static portrayal of the market opportunity, in which case the model can serve as a

simple way to describe it. But one of the major advantages of this approach is to enable you to *optimize* the opportunity (e.g. maximizing ROI,) by letting you ask questions like the following:

- If I add (or remove) features, what additional customers might I pick up (or lose)?
  - What other features do users want?
- If I want to increase the addressable market, who else can/should I target?
  - Who should I target first if I have to limit my roll-out?
- If I want to increase my value (and therefore my prices,) what other needs should I address?
  - How can I best prioritize my development efforts?
- Etc.

In other words, iterating the process – and including or excluding features, customer groups and needs – is the key to optimizing an opportunity, and finding where you can get the greatest return on your investment. Depending on how you set up your model (i.e. your spreadsheet or database,) you can easily have it add customers as you add features, or calculate the cost of addressing a need, or estimate the opportunity cost of not addressing it, and so on.

To be sure, optimizing does not necessarily mean only adding features, customers or needs. Quite the contrary, some opportunities are optimized (i.e. their ROI is maximized,) by leaving things out. (Think of an Apple computer, or a Movado watch.) How you optimize depends on your objectives, your constraints (e.g. financial and competitive), the margins you need, the markets you want to go after, and the choices you want to make.

It should be noted, by the way, that the ultimate output of the analysis is not the matrices *per se*, but the revised set of features, needs and customers that result from the analyses of the matrices, as well as the marketing mix elements, development priorities and business plan that they drive. Market segmentation, target marketing and application analysis are tools that you can use to figure out what makes the most sense for your business. But ultimately it has to reflect back in a product plan, a business plan, and a marketing program (including pricing, distribution, promotion, support, a prospect list, etc.,) all of which are supported by this approach.

The output of this part of the process, though, helps you set key strategic elements of your marketing program, which arise by comparing the three analyses. For example:

- Application analysis gives you the ability to evaluate the value of the offering, assuming that you've quantified the cost to the customer of the need. This helps you establish a value-based pricing model.
- Target market analysis helps you quantify willingness-to-pay by providing a structure, for example, to compare what customers currently pay for competitive or substitute offerings.
- Combining these two models enables you to develop an approach to pricing that balances your added value against the willingness-to-pay of the market.

- Market segmentation analysis is invaluable in developing your messaging because it tells you who has what need, and therefore your messaging can be personalized.
- Target marketing can tell you what media your customers read or use so you can reach them efficiently and effectively.
- Combining these elements enables you to custom tailor your promotional program, and minimize waste.

- Market segmentation tells you who has what need, and who you miss if you don't address a particular need
- Application analysis tells you what people are going to use (or buy) which features.
- Combining these analyses gives you a powerful tool for developing a competitive strategy that maximizes wins (and minimizes losses,) at the lowest possible cost.

There are many other uses of these matrices and combinations thereof, some of which will be shown by example later. But the basic framework provides a structured and efficient way to accomplish almost all of the tasks of market opportunity development.

Step 4: Developing the Business Plan

Once you've settled on the feature set(s), the target set(s) of customers, and the needs you want to address (in one or more packages,) the business plan simply adds up the demand, and the costs, ideally with time factored in, to come up with an ROI. (A convenient market sizing technique is to differentiate between the "addressable market" and your expected market share under differing pricing and competitive assumptions.) But if you have multiple options, you can easily compare them on an "apples to apples" basis, since the process is internally consistent.

This process also helps you build your product development plan, your marketing and sales plans, and, if you included the appropriate information, your support

plan, your financing plan, your media plan, channel plan, and more.

In regard to the channel plan, by the way, there are two ways to approach it. You can treat your channel as another set of customers on your Customer list. Or you can treat it as another feature of your offering (i.e. if you're just looking at the end user). Which you use will depend on your relationship and its structure, and you can certainly do both. But such a discussion is beyond the scope of this paper for now.

Packaging

The final step in the process is the packaging process. This is where the various product offerings are set, the target markets are fixed, and the marketing strategy is distilled. In a sense, it is simply the output of the optimization process, but with a caveat.

Specifically, the optimization process allows you to analyze three variables, two at a time. But it is certainly possible that such an analysis can cause conflicting results, or show (or even create,) gaps in the strategy. For example, the application set may neglect an important market segment. Or a target market may contain conflicting market segments. Or there might not be a product solution for an important set of customers. Most of these issues are very easy to solve (particularly once they are made visible by the process,) but some may create problems.

In the packaging process, the goal is to come up with the most profitable strategy. Often, this is done by offering the lowest cost product to the largest target market. But there are many other ways to go. Ultimately, making decisions is all about understanding the risks and benefits of a particular strategy, and this process enables you to identify both very clearly, for any strategy.

Theoretically, the alignment between market segments, target markets and applications will be perfect. That is, there is one application for each target market, and everyone in that target market has the same needs. Therefore, of course, there will be no waste in the marketing or development programs. But such a situation rarely happens. The goal of the packaging process should be, though, to get as close to that situation as possible: one application - one target market – one market segment.

Backing away from that ideal, of course, is what makes marketing interesting.

An Example – Single Mode Fiber Optics

The development and introduction of single mode fiber optics was one of the earliest, and most profitable, uses of this technique.

Background

I originally created this approach to market opportunity development in the early 1980s while working for the Western Electric Company as a marketing analyst. As the manufacturing arm of the Bell System, Western Electric was a 50% owner of Bell Laboratories, along with AT&T; and approximately half of Bell Labs' budget (primarily for product development, as opposed to research,) came from Western Electric. As part of my job in strategic planning and marketing was the responsibility for analyzing the market for needs and new product opportunities, and then recommending favorable ones for funding and development.

One of the first cases where I used this method was with single mode fiber optics. Previously, multimode fiber (which had been simultaneously developed by Bell Labs and Corning,) was seen as a substitute for long-haul L- and N-carrier trunk (i.e. interoffice,) systems and certain microwave routes that had become congested. By 1981, we were selling approximately $5M in fiber per year to AT&T Long Lines as they were forced to upgrade their trunk routes. In the development pipeline, however, was a new type of fiber – single mode – that had a significantly greater carrying capacity, a longer range, and which operated using a digital signal. The problem was that the long haul market wasn't big enough to justify the cost of development – which was in excess of $20M, particularly because competition (Siecor,) kept our margins low. So I was tasked with finding more demand that would justify the development of single mode fiber or, at least, come up with a reason why Long Lines should only buy our fiber, as opposed to our competition's.

To solve the problem I needed to develop a framework that enabled me to store all the information that I had, answer all the questions I could anticipate being asked by management, and come up with a persuasive strategy (one way or another) regarding the development and marketing of single mode fiber. Given my low level in the organization and the politics of decision making, my opinion was going to be irrelevant; the only thing that mattered were facts and logic.

The Initial Dimensions

I started by building a set of simple tables, one to show the various product options (Table 9,) and one to list our potential customers (Table 10)[1].

Products	Features	Dev. Cost
Multimode	Analog Etc.	$0
Single mode	Digital Longer range Electronics Etc.	$20M

Table 9 - Fiber Optics Product Concepts

The actual product table listed all of the features, specifications and benefits for each product, omitted here for the sake of simplicity and clarity.

Customers	Demand
AT&T Long Lines	Inter-office routes Approx 2,000 miles/year upgraded

Table 10 – Fiber Optic Customer List

Likewise, the customer tables listed all the routes that were candidates for replacement, along with their termini; but they are omitted from this version to enable us to focus on the process more than the details of the case. (To be sure, though, you will not know what is important when you start your analysis, so it is vital to show everything you have. Each step of the process allows you to add or eliminate factors, though, so you'll eventually end up with a simple story. Just don't force simplicity in the beginning, but rather put all the data you have into your tables, if you can.)

As a captive supplier of the Bell System at the time, WECo actually had only 21 customers: AT&T Long Lines, and the 20 Bell Operating Companies. Since AT&T Long Lines was the only company that seemed to need to replace long haul trunks in any volume, they were the only ones on the initial list.

But trying to convince Long Lines to switch to single mode fiber (which initially was going to cost twice as much as multi-mode fiber,) because it was digital, or could reach longer distances, seemed like a stretch. At the time, there were no digital services, and the economics weren't going to prove in until long after their entire network had been "fiberized" with multimode.

With such a weak economic argument, this wasn't going anywhere. So I thought I'd try to figure out why someone might want to switch to single mode fiber for some reason other than for the economics. To this end, I put together a table of "needs," shown in Table 11 below.

Needs
Connectivity
Distance
Reliability
Maintenance
Control
Growth
Compatibility
Future-Proofing
Network Integrity
Cheap POTS service

Table 11 - Needs

Admittedly, putting together tables like these was considered to be a bit trite. The engineers at Western Electric and Bell Labs knew this material in their sleep, and telling them what they already knew was going to be a problem. But being new to the company, I thought at least it would give me a chance to learn a little bit about the market[2]. So I wrote up in detail what was meant by each of these needs, and attached it to the table. At the very least, it was educational[3].

Analysis

The next thing I did was try to map the needs, product concepts and customers against each other – to see who had what needs, for example, and compare how well different product concepts met them. Again, the simplified versions of the tables are shown below, starting with the Market Segmentation matrix:

[1] Note that this example was chosen not only because it was one of the first uses of the technique, but because it is also extremely simple (we only had two product options, and we only had two customer groups), so it makes it easy to illustrate the technique. But it works equally well, if not better, for complex problems.

[2] Of course, beginners luck happens because beginners ask dumb questions that experienced people no longer bother to ask.

[3] You should notice, by the way, that while the captions for Table 9 and Table 10 refer to "fiber optics," the caption for Table 11 deliberately does not. This is because needs always exist separate and apart from your solution. You may not choose to address some of the needs, but it's always helpful to understand them. And, of course, your customers and your competition will always get a vote as to what needs get addressed.

Needs	Customers
	Long Lines
Connectivity	X
Distance	X
Reliability	X
Maintenance	X
Control	X
Growth	X
Compatibility	X
Future-Proofing	X
Network Integrity	X
Cheap POTS service	X

Table 12 - Market Segmentation Matrix

Obviously, this was disappointingly trivial. Since the needs list was created by evaluating Long Lines' needs, there was no real intelligence to be gained by looking for gaps or synergies. But creating the matrix did raise an interesting question; specifically, Who *else* had these needs? And while one can ask such a question without this framework, the framework gave me a good place to put the answer: The other Bell Operating Companies. And so now the matrix looked like this:

Needs	Customers	
	Long Lines	BOCs
Connectivity	X	X
Distance	X	?
Reliability	X	X
Maintenance	X	X
Control	X	X
Growth	X	X
Compatibility	X	X
Future-Proofing	X	X
Network Integrity	X	X
Cheap POTS service	X	X

Table 13 - Revised Market Segmentation Matrix

With the exception of the length of the trunk, the Bell Operating Companies all had the same needs as Long Lines. More importantly, up until that time the only question anyone had considered was how *long* a run fiber could support, not how *short* a run could be where fiber was economical. It was a question no one had previously asked, but it was a question we could answer.

Without going into the details of the model, you can imagine that the more fiber you make, the cheaper you can make it. And the cheaper you can make it and sell it, the more and shorter routes you can put it. Also, I knew that while the BOCs didn't have trunks as long as Long Lines had, they did have trunks; and some were quite sensitive to facility costs (either because of right-of-way issues, or because of the cost of maintenance.)

Doing a little research, I found out that for any given reduction in the price of fiber, there were literally hundreds of additional trunk runs that we could target as they were put in, replaced or maintained. Whether we could hit the cost target for any given level of demand remained to be seen, but I had a good Price-Demand curve to work with.

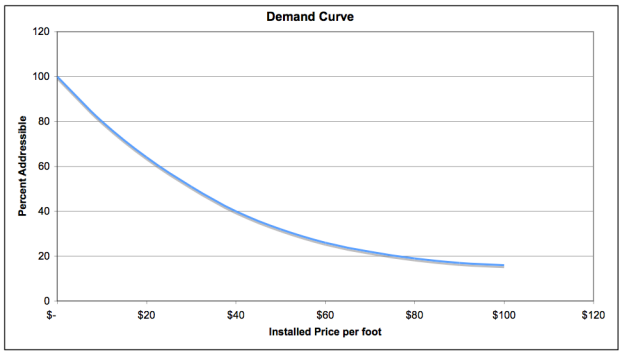

Figure 2 - Demand Curve

The next step was to look at market segments, since I suspected that not every Operating Company was going to want to go along with the idea. Some were quite a bit more conservative than others, which was usually the result of the policies of their Public Utility Commissions. There were also differences between more urbanized companies and the more rural companies. And there were cultural differences. So I did a little market research, and put together a Market Segmentation matrix, below, using a rating system to portray the relative importance of each factor.

Needs	Customers					
	Long Lines	SBT, IBT	PNB, SWB	Pac Bell	…	NJB, C&P
Connectivity	5	5	5	5	5	5
Distance	10	10	10	5	5	10
Reliability	5	5	5	5	5	5
Maintenance	5	5	5	5	5	5
Control	5	5	5	5	5	5
Growth	5	10	10	5	5	10
Compatibility	8	3	5	5	5	3
Future-Proofing	5	10	10	5	5	10
Network Integrity	10	5	5	5	5	5
Cheap POTS service	5	5	4	10	5	4

Table 14 - Market Segmentation Matrix

As you can see from the sample data there were, indeed, differences between Operating Companies. Some (like Pacific Bell,) were driven by the need to provide POTS service at the lowest price – almost regardless of the technology. Others (like Southern Bell, Illinois Bell and New Jersey Bell,) were having trouble keeping up with growth. And some had real issues with geography and topography (i.e. distance.) Clearly, there were different price points we'd have to hit with some of these companies. And there were very different pain points that they were sensitive to. But it was not, contrary to corporate lore, a homogeneous market; and about a third of the BOCs seemed to have needs that digital single mode fiber addressed better than analog multimode fiber, or traditional carrier. And so I had found a hook into the BOC market.

The final step (again, this is a bit simplified, but accurately illustrates how the technique was used,) was to create the application matrix, shown in Table 15, below. Looking at applications was important because it was going to take more than just an economic argument to make this work. I had to highlight the benefit of single mode fiber at shorter distances, not longer ones. That is, because of its digital nature and the future cost reductions available in the electronics (due to Moore's Law,) I knew that single mode fiber would eventually handle shorter distances better than multimode fiber.

Needs	Product Concepts	
	Multimode	Single Mode
Connectivity	5	5
Distance	5	10
Reliability	5	5
Maintenance	5	5
Control	5	5
Growth	5	10
Compatibility	5	5
Future-Proofing	5	10
Network Integrity	5	5
Cheap POTS service	5	5

Table 15 - Application Matrix

Using a simple rating scale, I was able to portray how well each technology met the needs. This created an application domain for single mode that, surprisingly, lined up extremely well with the clustering of needs on the Market Segmentation matrix - the ideal outcome of the process. That is, I could position single mode fiber as being able to future-proof your network (by being digital,) support far higher levels of growth, and be economical at shorter distances – which is what about a third of the BOCs wanted. This gave me the additional addressable market that justified the investment.

This further suggested that we put an offering together, with volume-based pricing, for some of the Operating Companies to see if they would be interested in an accelerated deployment of single mode fiber in their interoffice networks. And they all jumped at it, with single mode fiber quickly becoming the standard trunk medium.

Results

The result of the initiative was that the analysis was able to convince management to complete the development of single mode fiber, and scale up production quickly. And sales of fiber optics went from $5M to $110M in two years, with over 90% of it being single mode, selling to the BOCs.

Epilog

The analysis wasn't quite complete at that point, but it was driven to a level of detail that eventually resulted in a major push towards digital facilities throughout the Bell System. The technique was further used to justify the development and introduction of numerous other technologies such as ISDN, Local Area Networks, broadband, packet switching and, eventually, on demand video – which will be described in future articles.

In the meantime, the case of single mode fiber provides a simple, but clear, example of how High Performance Market Opportunity Development can work to develop high revenue, low risk, opportunities.

If you would like to learn how to apply High Performance Market Opportunity Development in your organization, if you would like reprints of this article, or if you have any questions, please contact JV/M at marketing@jvminc.com, or 856-638-0399 x101.