

Five Steps for Profiling the Market for Your Invention

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Five Steps for Profiling the Market for Your Invention

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Foreword

A critical component of successful participation in the Schoofs Prize for Creativity involves making a convincing argument there is strong commercial appeal for your invention. In fact, the judging criterion for the competition ties 40% of your score to the commercial prospects of your idea. Unfortunately, while many inventors are bubbling with innate creativity and engineering talent, they do not naturally comprehend the way to determine whether a market really exists for their idea.

As an inventor/entrepreneur and former engineering student, Schoofs Prize participant and Schoofs Prize judge, I've written this document to help you better understand what it takes to determine whether a market truly exists for your product. I still consider myself a student of this process, so please view this document as a compilation of tips and techniques rather than something to be followed "to the letter."

Also, realize that entire courses are taught about marketing and market analysis, so this document represents an extraordinarily brief treatment of these topics from a practical, rather than academic, viewpoint. Please do not be intimidated by this process, as you will learn ten times as much by actually trying it as by reading about it. And, you will have a lot more fun.

Finally, I am interested in any feedback or questions you may have that could help improve this document. I can be reached at *myoungle@earthlink.net*.

Step 1 – Conduct First-Level Market Research

Step 1 involves becoming broadly familiar with the market for which you are developing your product. The primary question you are attempting to answer is phrased as follows:

“Out of all the people or businesses in the United States (or the entire world), how many of them might be interested in my product?”

At first glance, this probably seems like a daunting question. Remember, however, that in Step 1, you are only attempting to get a rough indication of the total potential market. The “heavy-lifting” will come in subsequent steps when you attempt to more precisely define your target customer.

Fortunately, many resources are available to help you acquire this type of broad market information. Some of them are publicly available on the Internet; others are available to you at the Wendt and Grainger libraries. An excellent starting point is the U.S. Census Bureau. This agency keeps tabs on virtually every general demographic statistic of the entire U.S. population. While the census information is not necessarily the most current (the census is taken every ten years), it is definitely a good place to start.

Example 1-1

Let’s assume you have developed a climate-control system for baby strollers. In particular, your product is capable of safely and efficiently heating the seat of a stroller such that its passenger will remain completely warm and comfortable when taken for a stroll in cold weather.

In this scenario, your potential market size might be defined as the total number of persons ages four years and younger living in a “colder” climate. According to year 2000 census information, there are 342,340 such persons in Wisconsin alone. Determining a more comprehensive figure would only require deciding which other states fit your criteria of being “colder”, running a similar query on each and totaling the results.

Census data works well if your product is geared toward individual consumers. But, what if your customer is more likely to be a business? The U.S. Census Bureau maintains statistics for business entities in the form of the North American Industry Classification System (NAICS). Searching the NAICS in conjunction with the U.S. Economic Census can help you determine broad marketing numbers for your product.

Example 1-2

Let's assume you have created a better beer tap. In particular, your tapping device is able to dispense the beverage at three times the speed of conventional taps, without excessive foaming.

Potential purchasers of such a product would include bars, taverns, night clubs and large sporting and festival venues. Additionally, liquor stores selling keg beer represent potential purchasers of a portable version of your device.

According to 1997 U.S. Economic Census information, potential customers for your product would break down as follows:

Venue	Establishments
Football Clubs	45
Baseball Clubs	194
Other Professional Sports Clubs	244
Race Tracks	807
Drinking Places (alcoholic beverages)	52,825
<u>Beer, wine and liquor stores</u>	<u>29,613</u>
<i>Total Potential Customers</i>	<i>83,728</i>

It is important to realize that the 83,728 figure represents a first-level estimate of the number of potential customers; each customer would likely purchase multiple units of your product. Additionally, these estimates only consider the U.S. market. Since your product has worldwide appeal, the potential market is probably two to three times larger!¹

While the two examples provided here use U.S. Census data as their base, many resources are available on-line and at the UW libraries for gathering first-level marketing information. Perform enough research that you are able to cite credible sources and feel comfortable with the numbers.

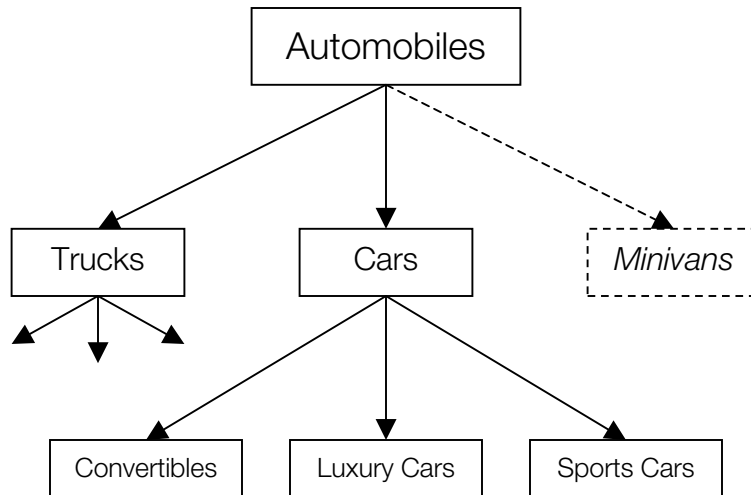
Step 2 – Find Addressable Market Segments

While it is always tempting to assume you'll be able to sell your invention to everyone you have identified in Step 1, this line of thinking is often overly optimistic. Instead, your product will likely fit into one or more segments of the overall market. In certain instances, usually involving a breakthrough technology, your product may be able to create an entirely new market segment.

¹ One potential drawback of participation in the Schoofs Competition is that it constitutes "public disclosure" of your invention. Public disclosure has several ramifications from a patenting standpoint. Under the rules of the U.S. patent system, you have a grace period of one year to file for patent protection from the date you first publicly disclose your invention. Outside the U.S., however, you generally forfeit your patent rights if you publicly disclose your invention before filing for patent protection. The bottom line: if you think you have a truly outstanding product that will have broad appeal in global markets, you may want to at least consult a patent attorney prior to participating in the competition so you fully understand your rights.

Consider the entire market for automobiles. Originally, this market could be divided into cars and trucks. The “car” market segment was then further divided into segments like sports cars, luxury cars and compact cars. In the 1980’s Chrysler released the first mini-van into the marketplace. The “Caravan” was extraordinarily successful, and a new market segment was formed (see Figure 2-1).

Figure 2-1



As part of your market analysis, it may be useful to map the market segments (like Figure 2-1, above) to help ascertain where your product fits. Bear in mind that your product may be able to serve multiple market segments. Once you’ve identified the segments your product targets, you’ll want to attempt to quantify the size of each segment.

Example 2-1

Let’s continue building on Example 1-1 involving your climate-controlled baby stroller. You have now spent some time reading stroller reviews in parenting journals, browsing through stroller catalogs and performing online searches. From your closer examination of the market, you are able to divide the stroller market into five major segments: bicycle trailers, jogging strollers, lightweight/ultra-compact strollers, traditional carriages, and twin strollers.

Since your device adds a certain amount of weight and bulk to a stroller, it probably cannot address the lightweight stroller segment. You also decide that it would be too difficult to retrofit your product onto many traditional carriages, removing that segment from consideration. Lastly, the twin (triplet, etc.) stroller segment is not one you intend to enter initially because your invention would require additional design work to accommodate multiple climate control zones.

Through this process of elimination, you are left with two market segments that your product can address: bicycle trailers and jogging strollers. You decide to

focus your ongoing product design efforts on better adapting your device to accommodate these two market segments.

Lastly, you want to estimate the percentage of the overall market that these two segments represent.

Estimating the size of market segments can sometimes be a tricky task. For example, while the U.S. Economic Census indicates that the game, toy and children's vehicle (i.e. stroller) industry generates \$4.5 billion in annual sales, it does not provide a breakdown of these numbers. So here is where you'll need to be persistent and tap as many resources as you can.

One place to look is in the annual reports of publicly traded companies. If the market your product addresses is large, there will probably be one or more companies available to research. Their annual reports and filings often contain information about market size, segments and trends.

Investment banks and brokerages also produce reports on many industries as a service to help their customers make informed investment decisions. Once you have found a publicly traded company that serves your target market, determine which analysts follow the stock. Then, look for industry and sector reports from these analysts.

Example 2-2

The following link² leads to this type of report and profiles Lerado, a Chinese stroller manufacturer that commands a sizeable share of the U.S. market:

<http://www.irasia.com/listco/hk/lerado/analystrep/ar990903.pdf>

In other instances, very little market information may be available, so you'll have to get creative. Let's continue with the example.

Example 2-3

You have previously identified the five main stroller market segments and decided to focus on two: bicycle trailers and jogging strollers. You've searched online, combed through trade publications and consulted with the research personnel at Wendt and Grainger libraries. Despite your efforts, you still have not had any success in better quantifying the U.S. stroller market. It is now time to perform some field market research.

You spend an hour on a Saturday on State Street counting the numbers of the different types of strollers you see. You also spend an hour in West Towne Mall. After summing up the results, you now have a very rough estimate of the percentage of the overall market each segment accounts for. To confirm your

² Link active as of November 27, 2002.

estimate is on-target, you make a trip to Target and speak with the manager in charge of the stroller area. He explains the various models and tells you which are the most popular.

To complete your market segment analysis, you make the conservative assumption that one stroller is sold for every two births in the U.S. You now cross this assumption with your research from Example 1-1 and you have a workable picture of the market; it's certainly not perfect, but it's an acceptable starting point.

In summary, you'll often need to be very resourceful in order to gather the depth of marketing information that will really make a strong case for (or against) your new product, particularly if your product addresses a more obscure market. Don't be afraid to do some in-the-field research to gather information that cannot be found using conventional sources.

Step 3 – Profile Your Competition

Your invention will ALWAYS have competition. NEVER make a statement along the lines of “My invention is so unique that there really is no competition.” Such a statement is an easy way to spot a naïve inventor or an amateur entrepreneur. Your competition comes in two forms: direct competition and indirect competition.

Direct competition refers to any company selling a similar product or technology into your target market. Your market research from Step 2 will likely have uncovered several direct competitive threats. You can also compile a list of potential competitors during your patent searching. Pay attention to the “Assignee” of patents that relate to your product. These assignees will likely be competing in your space.

Once you have put together a list of possible competitors, spend some time profiling each one. Data is often presented in the form of a “competitive matrix”. Some of the items you may wish to track include:

Basic Corporate Data

- Company size (number of employees)
- Years in business

Competing Product Data

- Product name
- Selling price
- Major advantages over your invention
- Major disadvantages over your invention

Sales and Market Data

- Annual product sales
- Market share
- Sales channels (e.g. direct, via wholesalers, web-only)
- Sales method (e.g. telemarketing, direct sales force, manufacturer's reps)

Use the web and business databases like Dun & Bradstreet to help complete your competitive profiles. Many of the "juiciest" bits of competitive information will likely not be publicly available. You will need to contact the competition directly.

You can learn a lot about your competition by phoning them. Being a college student puts you at a tremendous advantage in performing this type of research, since you will not be viewed as a competitive threat.

Example 3-1

In your market research for your fast beer tap invention, you have identified Perlick Corporation as an important industry player. Perlick happens to be a privately held company, however, so your research efforts thus far have not been able to uncover much useful information about the company. You decide to call Perlick directly.

Receptionist: Good afternoon, Perlick, how may I help you?

You: Hello, my name is Terry Smith. Who would be the best person to speak with at your firm regarding new product development?

Receptionist: That would be Pat Miller. Let me transfer you.

Pat Miller: Pat speaking.

You: Hello. My name is Terry Smith. I'm hoping you could help me out. I'm a third-year engineering student at the University of Wisconsin - Madison. I'm involved with a project that relates to your firm's line of work. Do you think you could spare a few minutes to answer a few questions for me?

Pat Miller: Well, I'm headed to a meeting in fifteen minutes, but go right ahead.

You: No problem. I'll be brief. Just let me know when you need to go. My project is a fluid dynamics project that deals with pouring beer. From the background research I've conducted thus far, Perlick appears to be one of the leading companies in the beverage dispensing equipment industry. Are you the largest company in this space?

Pat Miller: Actually, no, but our area of specialty is...

You continue talking with Pat and get the bulk of your questions answered.

By establishing yourself as a student who needs help, you open the door to learn a lot of insider industry information. Since the people you will speak with have probably been in your shoes before, you will usually be surprised at how helpful they will be. Occasionally you may encounter someone who is too busy to help or not open to your line of questioning. When this happens, ask him/her if there is someone else he/she might recommend having you speak with, thank him/her and move on. Lastly, regardless of with whom you are speaking, always be truthful and courteous. These “competitors” could turn out to be licensees of your product or technology; you may end up working closely with them!

Surprisingly, the strongest form of competition you will probably encounter is the indirect variety, generally in the guise of the status quo. The status quo represents the amount of market inertia you will need to overcome in convincing customers to use your product to replace their current method of accomplishing the task at hand. Many new products fail, not because of direct competition, but because the new product does not represent a significant enough improvement over the status quo; the existing products are “good enough” to satisfy the market demand.

Example 3-2

You decide to profile the competition related to your climate-controlled stroller product. While you are certain there are no other climate-controlled strollers on the market, you realize the absence of direct competition does not mean your product will be a runaway success. Parents have been taking their children for strolls in cold weather for hundreds of years. How have they been doing it up to this point? Blankets, snowsuits, hats, and mittens currently keep the tykes warm when out and about. Additionally, your market research has uncovered two stroller manufacturers that produce fleece liner accessories for insulating stroller passengers from the elements.

Despite the presence of this low-tech, indirect competition, you still feel the advantages of your product will be substantial enough to overcome the status-quo inertia. But how can you know for sure? You will need to talk with some customers.

Step 4 – Get Feedback from Outsiders

A tendency among engineers is to bury themselves in the lab, diligently inventing new products and new features. While time in the lab is certainly important, of equal (or even greater) importance is time spent in the field learning firsthand what matters to customers. Feedback from industry experts can also prove invaluable in the product development process.

Before you contact potential customers, compile a list of pertinent issues to discuss with them. Ideally, the people you contact will be familiar with competing (either directly or indirectly) products. When you are talking to potential customers, try to remain neutral and unbiased. The tendency of many inventors is to guide the line of questioning to prove their product is the idea of the century. Instead, you want to listen intently to determine the customers' wants and needs. Some customers may have a need for your product, others may not. You can learn a wealth of information from each set.

Example 4-1

So far, you have somewhat assumed that certain stroller owners would be interested in a more advanced, climate-controlled product. For starters, you know that busy parents spend a good deal of time bundling their children up before taking them for a stroll in cold weather. Your product could be a big time-saver. Additionally, your product will keep the inside of the stroller at a constant temperature; currently, parents have no way to really know if they are bundling up their children correctly for conditions. And, even then, weather conditions can quickly change. You think you have a winning concept, but you know you won't know for certain until you talk with potential customers.

You decide to prepare a list of questions to ask stroller users:

- What is the current type of stroller you are using?
- Of all the stroller models on the market, why did you decide to purchase the one you are using now?
- What is the most important feature about the stroller you are using? Why?
- Have you purchased any accessories for your stroller? What are they?
- Do you take your child(ren) for a stroll during the winter months? How often?
- How much time do you spend bundling up your child(ren) before going out?
- How much time does it require for you to “unbundle” your child(ren) once you return?
- Do you ever worry that your child is too hot or too cold when you are out for a stroll?
- How many strollers do you own? How frequently do you replace them?

Armed with these questions, you stake out State Street on a cool Saturday afternoon. Approaching a stroller owner, you say: “Hi, my name is Terry Smith. I couldn't help but notice the stroller you are using. I'm a UW student involved in an engineering project related to strollers. You could really help me out if you would be willing to answer a few quick questions...”

In addition to interviewing potential customers, it may prove helpful to speak with industry experts about their wants, needs and experiences related to your product. Your approach is the same as above and in Example 3-1.

Many inventors hesitate to speak with customers and industry experts out of fear their idea will be stolen. You certainly want to protect your work, however, you risk far greater dangers by not getting real market feedback. For starters, talking with customers, experts and competitors may reveal a similar product already exists. Without a dialog with the market, you could end up wasting many hours “reinventing the wheel”. Additionally, if customers do not appear accepting of your new product, you may want to take a different approach before creating something that will have little interest in the marketplace. You absolutely must get your head out of the lab and talk with people.

So, how can you be sure your idea will not be stolen when talking with outsiders? The simple answer is that you do not explicitly reveal your idea to anyone when speaking with him/her.³ Rather, you explain that you are “working on a project related to beer dispensing” or “involved with a project dealing with stroller accessories”, and leave it at that. If your interviewee presses you for more information, just let him/her know that you can’t really divulge any more information at the current time, and continue on.

Step 5 – Gather Costing and Distribution Data

A question certain to arise during the Schoofs Competition is “What will your product cost?” You should be prepared to answer this question. Note, as well, that this is really two questions in one. It could mean “What price will your product sell for?” or “What will it cost to manufacture one unit of your product?” The former refers to the product “price”, while the latter refers to the product “cost”. You should establish an estimate for each.

Obtaining an estimate for product costing is a straightforward process. First determine your fixed costs. Fixed costs are the one-time expenditures you will incur regardless of the number of units produced. Next, determine your variable costs. Variable costs increase with each item produced. Finally, determine how many products you will be building and do the math.

³ Never divulge any specific information about your invention (plans, drawings, descriptions, etc.) to anyone unless they are under specific instructions that what you are revealing to them is confidential information and that they cannot disclose the information to anyone else. Lawyers formalize such commitments in the form of a “nondisclosure agreement” or “NDA”. If you find you absolutely must disclose confidential information, consider having an attorney prepare an NDA for you. Why is this important? Public disclosure of your invention has many consequences related to obtaining patent protection, however, confidential disclosure generally does not.

Example 5-1

After talking with a professor who has experience in the costs associated with metal casting, you feel you are ready to estimate the cost of producing your improved beer tap. You anticipate an initial manufacturing run of 15,000 units.

Fixed costs

Tooling and mold construction	\$85,0000
<u>Packaging design</u>	<u>\$7,500</u>
Subtotal fixed costs	\$92,500

Variable costs (for each unit produced)

Casting Costs (including casting material)	\$4
Machining	\$3
Assembly	\$2
<u>Packaging</u>	<u>\$1</u>
Subtotal variable costs	\$10 per unit

$$\text{Per Unit Cost} = (\$92,500 \div 15,000) + \$10 = \$16.17 \text{ each}$$

For help with product costing, particularly if building your product will require the use of complex manufacturing processes, consider meeting with a professor or talking with a tool and die maker.

While product costing is a relatively straightforward process, entire courses at some universities are dedicated to product pricing. Ultimately, your goal is to sell your product at a price that maximizes profits. If you price your product too high, no one will buy it. If you set your price too low, your profits will suffer. So where to begin? As a starting point, consider two items: channels of distribution and the competition.

Channels of distribution refer to the way a product moves from the factory to the end user. In some cases, companies take a direct approach to product distribution. Dell Computer is a popular example. Dell builds PCs and ships them directly to consumers and businesses.

More often, though, a product passes through one or more "middle men" on its way to the end user. Certain types of computer networking hardware would be an example. Hardware manufacturers sell to Ingram Micro, a large computer wholesaler. Ingram, in turn, sells products to resellers who sell to businesses. At each step in the process, the price of the product gets marked up so that everyone can profit from the transaction.

Your task is to determine the type of sales channels that are typically used in your product's industry. From the competitive research you performed earlier, you should also know what your competition charges for its products. A general rule of thumb is that the price of the product will need to be upped 50-100% at each step in the distribution ladder. After all mark-ups, the price of your product still needs to remain in the range the market will bear.

Example 5-2

Your research of the beer dispensing equipment industry has determined that the equipment manufacturers typically sell their products to restaurant supply companies who sell to bar owners. Combining this information with your product costing estimate, you can attempt a bottom-up estimate of the selling price of your product.

Manufacturer Level (You)

Product cost - \$16.17 (what the product costs you to manufacture)

Selling price - \$32.00 (~100% mark-up)

Your gross profit - \$15.83

Wholesaler Level (Restaurant Supply Company)

Wholesale cost - \$32.00 (what the wholesaler pays for the product)

Selling price - \$64.00 (100% mark-up)

Wholesaler gross profit - \$32.00

Retail Level

Retail price - \$64.00 (what the bar owner pays for the product)

Since other premium beer taps sell for at least this amount, you feel comfortable that you will be able to sell your product at a price that everyone can afford with plenty of room for everyone in the channel to make a profit, including you!

You should always consider using this mark-up rule of thumb as a reality check. You are wasting time if you are designing a product that will need to be priced well beyond what the market will be willing to bear. Be sure to think about how your product will be distributed, and run the numbers to be sure that your product will generate profits for everyone when it is sold.

Conclusion

Preparing even a simple marketing case for your product is not easy work. Every step of the process, though, is extremely valuable. Until you really understand your market, your competition and your customers, you really cannot know whether your product will succeed.

This process is also unique in your educational experience. No course on the UW campus will require you to use as wide a variety of skills. Creativity, leadership, analytical ability, resourcefulness, communication skills and street smarts all play a role. Put forth your best effort, and the returns will be incredible.

Author's short list of additional recommended reading:

22 Immutable Laws of Marketing by Al Ries and Jack Trout

A highly-entertaining read about market segments and categories from two controversial authors. A marketing classic.

On Competition by Michael Porter

Everything you ever wanted to know about profiling your competitors from the Harvard Business School guru on strategy.

How to License Your Million Dollar Idea by Harvey Reese

A fun, quick read with practical advice on cold-calling potential licensees.

The Evolution of Useful Things by Henry Petroski

A fascinating look at how inventions we now take for granted broke through the inertia of the status quo to become pervasive in today's society.