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Wood-based Entrepreneurs Toolkit: New Product Development

Eric Hansen

Forest Research Laboratory
College of Forestry
Oregon State University
Corvallis, Oregon

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*This is a publication of the Oregon Wood Innovation Center (OWIC),
Department of Wood Science and Engineering, College of Forestry,
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Abstract

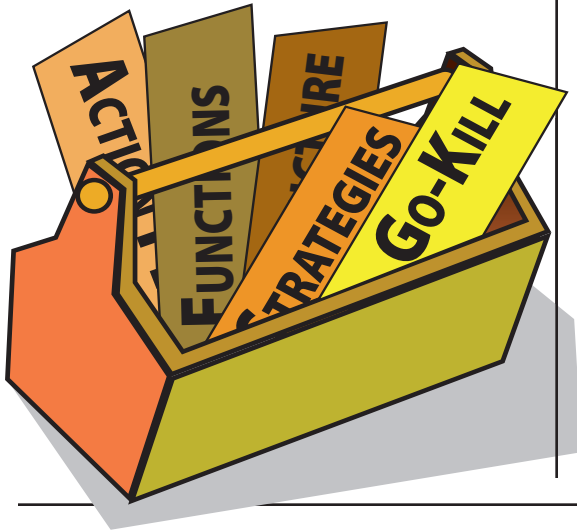
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Improving existing and developing completely new products is an important part of maintaining a healthy business. This document outlines key principles of new product development, illustrated through the activities of a small sawmilling company.

Keywords: New product development, total product concept, wood products manufacturers

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Many entrepreneurs get their start with a “new product”—meaning something that may be a small change from an existing product or something that isn’t currently offered in the local market—but not necessarily something revolutionary and new-to-the-world. Still, ongoing product development is an important ingredient to long-term success. I use “product development” here rather than “new product development” (NPD) to emphasize the issue that all products should be continuously developed AND that new products should be regularly added to your portfolio. Constant development includes minor improvements over time, based on customer feedback, evolving industry standards, and your own general knowledge and experience.

1 Introduction

When product development is mentioned, there is a tendency to think of high-tech or new-to-the-world products. However, as mentioned above, product development includes a range of activities designed to both create products that are new to your operation AND make constant improvements to your existing products. Your thinking around this should be based on customer needs and the concept of the total product (described in detail below). Remember, product is a key piece to your marketing strategy (see *CEO 3a: Strategic Marketing*¹). Basically, product development is a tool to help you to implement your marketing strategies.

1.1 Determine customer wants

The most important thing to remember when developing a new product is that you MUST first determine what the customer wants and then

produce it. This doesn’t mean all is lost if you already have a product in mind—it merely means you need to determine whether that product is something consumers will buy before you make a whole truckload. In fact, you should have broad product ideas, and sometimes a prototype, before you begin your investigation. Remember, your goal is to make a product that will practically sell itself. As a small-business person, you don’t have a lot of time to spend selling your product. If you do good marketing homework at the start, your job will be much easier.

Small businesses may lack the resources to continue with robust market inquiry and research once product development activities begin, so taking care of this before investing in product development is good practice. Finally, it is critical that the investigation identifies both the cost to manufacture the product you have in mind and the price that the target customer may willingly pay.

¹ *Wood-based Entrepreneurs Toolkit: Strategic Marketing*. Contributions in Education and Outreach No. 3a, Forest Research Laboratory, College of Forestry, Oregon State University, Corvallis, Oregon.

1.2 The total product

Many people view the term “product” as simply the physical object that is produced. In today’s highly competitive environment, however, you must have more than just a good physical product. You must also provide an array of services associated with it that combine to form the total product. To understand strategic product decisions (product differentiation), we can think of products as ranging from the core, or physical, product to the total product (Figure 1).

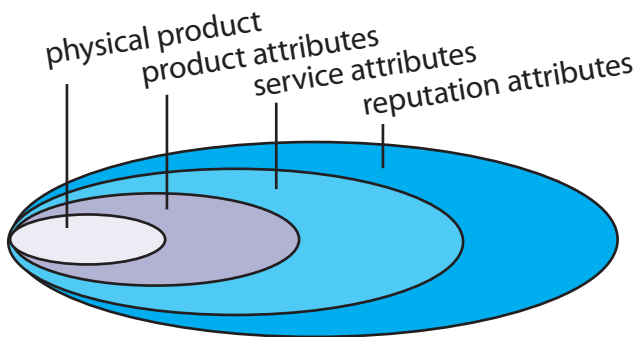


Figure 1. The Total Product.

The concept in Figure 1 is a way of looking at the product that emphasizes that it is more than just the physical piece resulting from the production process. In other words, we can consider a product to be a bundle of benefits satisfying customer needs. At the most basic level, the core product is the unimproved physical product. Through additions of either physical improvements or services and information, the product can move toward being a total product. The total product concept implies that a product is not ready until it is at the disposal of the customer accompanied by necessary information and service and at a price they will pay.

Product development is clearly a tool to implement strategies and to reach a new strategic position. If you are producing a commodity and wish to move it up the value chain, it means you will need to develop your product and increase the sophistication of your marketing. An emphasis on custom-made and special products should include

continuous and systematic product development. Product development should begin by considering customer needs and then evaluating how these fit with your current strategies.

Forest industry companies applying a commodity product strategy² regard raw material issues as the most important starting point for product development. Historically, they have tended to start product development based on a changing (or new) resource base.

2 Wood-based Entrepreneurs Toolkit: Strategic Marketing. Contributions in Education and Outreach No. 3a, Forest Research Laboratory, College of Forestry, Oregon State University, Corvallis, Oregon.

Example: Caveman Lumber

Caveman Lumber produces a commodity softwood lumber line for a regional market.

Company owner Niko was recently introduced to the total product concept. He pulled his small company team together to brainstorm about their total product. This exercise resulted in the “picture” of the company’s total product. The team created a short list of what they estimate to be the most important attributes of their total product.

There are tangible and intangible attributes as pictured to the right on page 3. The team saw intangible attributes as key aspects of their total product, especially being viewed as a trusted partner and a market expert.



2 Making Product Development Systematic

Some large companies have formally structured NPD systems, often designed around the Stage-Gate® approach developed by Robert Cooper (Figure 2). A basic idea of a structured system is

and more successfully implement deserving ideas. In between the steps is a time to carefully evaluate whether to continue developing the concept or kill it (GO- KILL). With this in mind, the sidebar

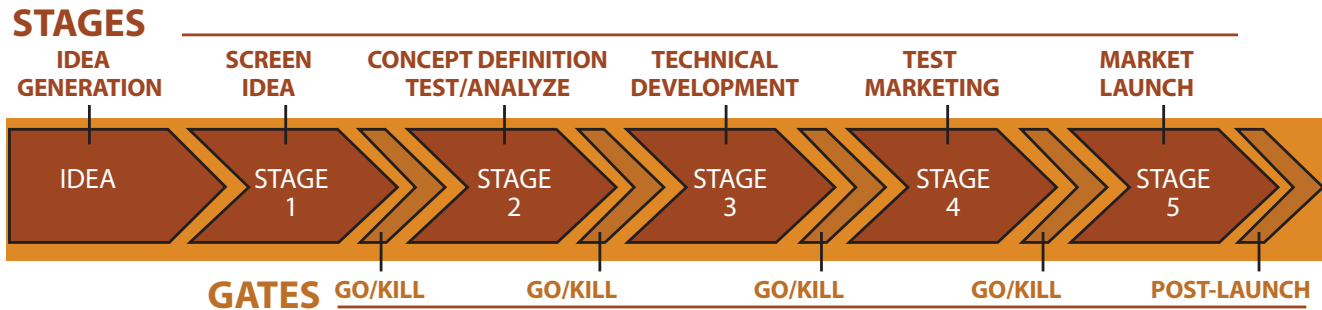
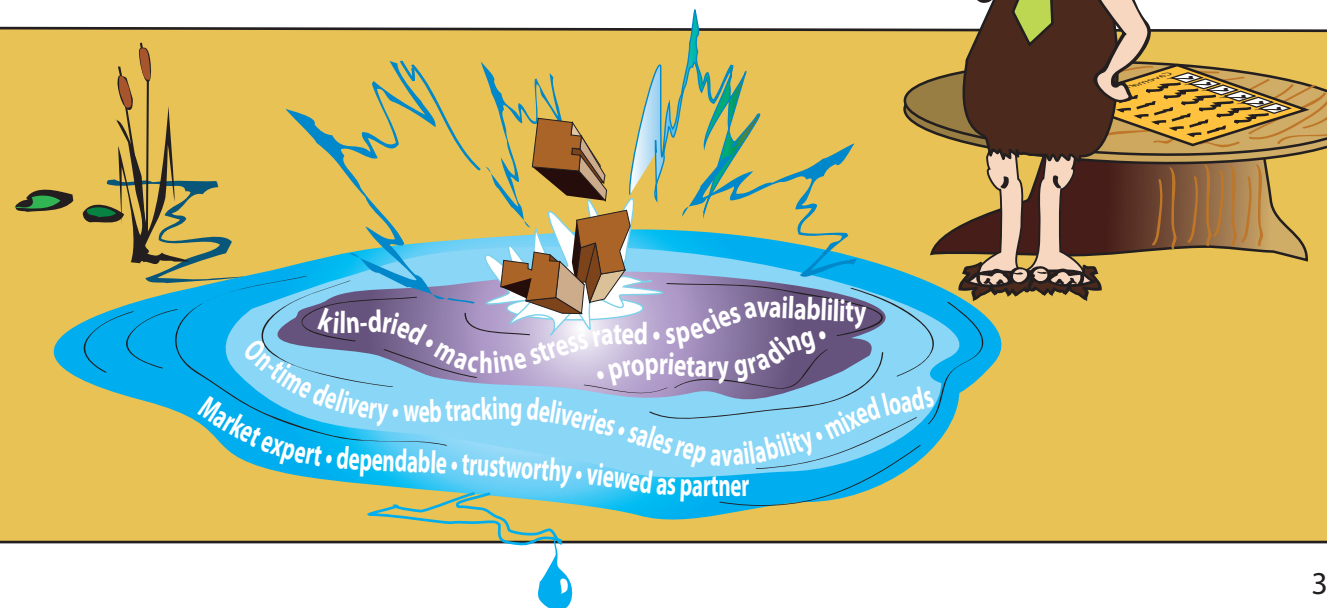
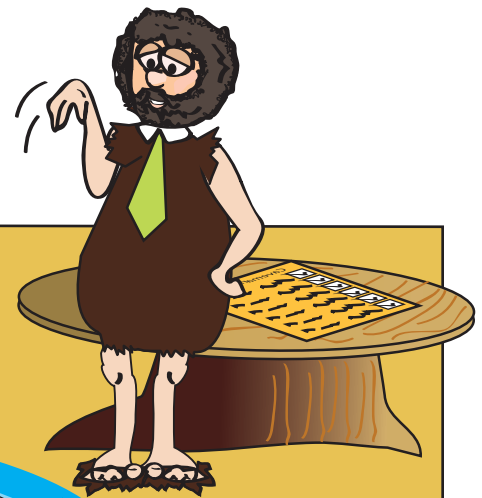


Figure 2. Adaptation of Cooper Stage-Gate Approach.

to create decision points or logical steps where ideas are either “killed” or pursued based on accumulated evidence.

As a small operation, you don’t likely have the resources to adopt a structured system. However, you should carefully incorporate logical steps into your process to assure that you are considering all of the issues and asking key questions along the way, as will be seen in the examples. There are tangible and intangible attributes as shown in the picture below. Doing logical steps may help you to kill ideas that don’t deserve further development

on page 4 outlines basic product development process steps. In the following sections, you will find a discussion of those steps, including examples of key questions you may want to ask, and some activities that should take place at each step, along with examples drawn from the experience of Caveman Lumber.



Product Development Process Steps

Idea generation

The starting point must be a need that could be satisfied by a new product or a product improvement (cost reduction, better satisfaction of customer needs, etc.). The aim is to find alternative ideas from which a product can be developed. Both internal and external sources of ideas should be considered.

Screen ideas/Preliminary assessment

Inappropriate or impossible ideas should be eliminated and the best ones chosen for further consideration. Screening should be conducted early enough to avoid unnecessary investments in ideas which are not feasible. A key screening criterion is whether the idea is compatible with your resources and strategies. Evaluation here may require some initial investment of time and resources. Go/Kill

Concept definition, testing and analysis

Your best idea that survives idea screening is developed into a product concept. This requires both technical and marketing expertise. Concept testing is conducted with appropriate customer groups using visual and/or verbal description along with, if possible, a physical prototype. Initial cost/revenue estimates should be made. Please note that in order to estimate revenues you must know something about what customers will pay for the product. Go/Kill

Technical development and marketing planning

Results of concept testing are used to develop a physical product. Formal marketing planning is initiated early in this stage, estimating appropriate strategies. Go/Kill

Test marketing

In this stage, the real demand and the functionality of your product and planned marketing are tested. Go/Kill

Market launch

At this stage, full-scale production and marketing begins. The timing and successful use of your marketing efforts are critical for product success. Of course, the approach may differ depending on the structure of the market.

3 Idea Generation

A prerequisite for effective product development is an in-depth awareness of important marketplace trends. As of 2013, important trends that might be useful to wood products entrepreneurs include such things as demand for green, natural aesthetics, carbon-neutral, and “local” products. With this awareness one can dive into the process of identifying product ideas.

As a small company, or perhaps as an individual, the task of investigating the marketplace to determine what customers want and need can seem like an unmanageable task. The following information can eliminate some of those fears. Outlined below are simple actions you can take to obtain useful information on your own without extensive research or a consultant. There are tremendous amounts of information available by merely investing your time and a little money for travel. A variety of information sources can help you bring together “market intelligence” that can help you successfully develop and sell your own products.

Here are some of the many idea-generation tools you can use:

- The Web provides an endless source of inspiration. You can sit in your home or shop and find products related to your concept from around the world. You can explore similarities, differences, and potential gaps in the market.
- Brainstorming is a classic approach. You might brainstorm with a group of customers or possibly with an advisory group if you have one for your company. Even friends and family can help.
- Visit retail outlets with products similar to your ideas. Look at what products are offered and look at the quality of those products. Are there products that you think are missing from their line? Look for labels or ask who produces the products. In a similar way, examine products complementary to yours. Take notes about the products, how they are packaged, and what they cost.

- Although less important these days, mail order catalogs that carry items similar to what you are considering can be a good resource. Again, determine if there are items that seem to be missing. What kinds of prices do the different products carry? Find out who makes the products of interest to you.
- Get direct verbal feedback from trusted associates or people with expertise in the market you are targeting. Use non-disclosure agreements as appropriate.
- Visit a Saturday market such as those in Eugene or Portland and see what other people are making, and talk with them about their success. Visit craft shows and county fairs and do the same.

Idea Generation

Because the team at Caveman Lumber understands the holistic concept of their product offering, they are much better placed to contribute ideas for product development

The total product thinking from the brainstorming session planted a seed in Niko’s mind. Later that week he

was visiting a customer that buys low-grade lumber for packaging. They started talking about the furniture this company was making and it occurred to Niko that with the right kiln schedule and a bit of ingenuity by his team, he could produce “furniture blanks.” Based on this preliminary information and a good gut feel for the situation, he decided to investigate further.



4 Screen Ideas/Preliminary Assessment

As you begin to assess your ideas it is important that you recognize your abilities and flexibilities. For example, are you locked into a particular raw material or product, or are you willing to try to produce something entirely different? Do you have the necessary equipment or knowledge to product the new product? That is not to say these can't be acquired, but the issue should be incorporated into your thinking.


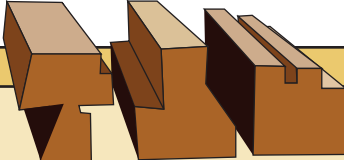
Ultimately, you will want to sit down with potential customers and visit with them about your product and potential products. However, before you do, you will want to first get information from other helpful sources.

Start with friends, relatives and acquaintances. They are all potential customers of your product. Because these people have the potential to be biased and tell you what you want to hear, make sure you ask them specific questions about what they like or dislike about your product or idea. Ask if the product is something they would buy and find out why they would or would not purchase the product. What sort of price would they consider to be reasonable for the product?

Find other people who make products similar to what you are considering. Some of these people might see you as competition and hesitate to talk to you, but many will be more than willing to share information and experiences with you. Call them, explain what you are considering, and ask if they have any advice.

As part of your concept development you probably have already determined if your new product will be commodity, specialty, or custom-made as well as what sort of customer base you are targeting. However, it is critical that the questions you ask affirm these choices. In addition, you need to learn details of where and how your customer wants to buy, including what services must be associated with the product to

be successful. Finding examples of products that share themes associated with your product (e.g., target market and production parameters), and studying the delivery, successes and failures of these parallel products can be very valuable.



Screening Ideas Preliminary Assessment

In this case there were no ideas to screen, but Niko began investigating the possibilities. He talked to the same customer again to get additional insights and learned a bit of the specifics about furniture blanks. He learned about common sizes and moisture content and quality requirements. He called and talked to industry experts at the International Wood Products Association and the Wood Components Manufacturers Association. He found some reports online from universities and the USDA Forest Service on the furniture industry and the use of furniture blanks. All of the accumulated information suggested this could be a good option for Caveman Lumber. So he assembled his team, presented what he had learned so far, and together they decided to investigate further.

5 Concept Definition, Testing and Analysis

Once you have exhausted all of these sources, it is time to develop a prototype of your product and begin approaching potential customers. Decide on several locations where your product might sell. Call the buyers at each of these places and ask them for an appointment to discuss your product. One tactic would be to explain that you are considering a product and their input would be invaluable. Most people are willing to help.

If you don't have a prototype, prepare a legible, detailed drawing of what you are considering. Compile a list of questions you will ask the buyer regarding your product, as well as other potential products.

There are a variety of places where you could interview potential customers. A local restaurant or grocery store might serve your purpose—make sure you get permission from the manager. You might ask customers at the locations where you interview buyers as well. It is important that you interview the right groups of people. For example, if your product would typically be purchased by tourists, make sure you interview tourists rather than “locals.”

There is no magical “right” number of interviews you should undertake. The number needed is partially dependent upon the consistency of the feedback you get from the people you interview. If they consistently say they would never buy your product then it is back to the drawing board.

On the other hand, if you are receiving positive feedback on a consistent basis then it may be time to further develop the concept.

Before you arrive for the interview you need to stop and do a quick psychological check on yourself. It is critical that you aren't too emotionally attached to the product. This product may be your “baby” and you may have a lot of blood, sweat, and tears invested; however, if you don't step back and gather information with an unbiased viewpoint it will hurt your chances of success. It is entirely possible that the buyer will tell you that your idea stinks. While

that may or may not be true, it is important that your skin is thick enough to take that opinion and glean what you can about why that person doesn't like the product. Remember your mission is to determine what the potential customer thinks of the product—what you think is of little consequence. That said, if the product is novel enough, part of one's marketing strategy will include a more involved consumer education piece. Customers may be intrigued and, at the same time, feel unable to form a clear opinion. If their questions are not addressed concisely and pre-emptively you may lose them in a long, drawn-out explanation or because they simply will never ask the questions that you should know are likely swimming around in their minds.

Before you approach retail buyers with a new product, realize that their efficient operation may be contingent upon minimizing the number of product sources they buy from. So, if you don't have a product line that they can use to fill shelves and reduce complication they may not, by policy, consider buying a single product from a single source. Offering a variety of products that they can carry or teaming up with another manufacturer to distribute your product in tandem with others can help make buying your product more palatable for some retailers/wholesalers.



Here are a series of questions that you might want to ask the buyer with regard to your product and similar products they currently carry. Remember, these are examples rather than a comprehensive list and it is important for you to make your own list after carefully considering what it is you need to know to successfully market your product!

- What is your first impression of this product?
- How do you think the product would be received by your customers?
- Can you think of changes that would make the product better?
- How would you recommend packaging the product?



If the buyer appears to have genuine interest in the product you might ask more detailed questions regarding the specifics of selling the product to that person such as:

- Who do you prefer buying from? (for example some may buy only through brokers or wholesalers. If this is the case you would want to find out who this is and how to contact them.)
- How many might you buy?
- Do you have shelf space/product footprint constraints?
- How much would you have to make (margin) to be interested in the product?

Other potential questions include:

- Are the benefits of the product clear?
- Is the product clearly solving some problem or satisfying some need?
- Are some other products satisfying the same need (even better)?
- Is the price reasonable and would customers buy the product?
- Who would use the product and in what quantities?

Concept Definition and Testing

The moisture content and quality requirements were not something that his team was accustomed to producing, so their first testing and experimentation was to determine whether they could produce furniture blanks that would meet what they had learned so far that the market would require. While his team was perfecting the process, Niko spent more time talking to furniture manufacturers in his region to make sure he had a full understanding of their requirements. Once the team produced a product they thought would meet customer requirements, Niko went on the road to talk with potential customers. He carried prototypes of various qualities and sizes of blanks and asked potential customers some of the questions above. From these visits and interviews Niko learned that they still had some work to do in development of the product, but he determined that there was enough potential to continue to invest in the project.

6 Technical Development of the Product and Marketing Planning

If the feedback received during your interviews is positive and points to a potentially successful new product, it is time to go back to the drawing board to fully develop the technical aspects of the product and your marketing strategy. With this more fully developed concept you can begin to assess reactions from the ultimate consumer of your product. In addition, now is the time for a more structured analysis of profitability wherein you carefully consider both revenues and costs (production and marketing). A fully developed marketing plan is beyond the scope of this edition of the *Toolkit*, but consideration of a full marketing plan is necessary during this stage.

Technical Development and Marketing Planning

The primary challenge faced by Caveman Lumber was drying quality. Niko talked with some of his peers in other parts of the country that would not view him as competition and learned some of their tricks for quality drying. He also talked with a wood drying specialist at his local university. Meanwhile, he had another person on his team begin working on a marketing plan. Another member of his team did a careful assessment of the full cost of producing blanks. After some additional kiln runs the team felt they had the right recipe—it was time for a full test market.



7 Test Marketing

Answers to the previous questions, obtained from several different places, in addition to the information you get from the other sources mentioned above, will put you in a much better position to begin making a product that will be successful in the marketplace. The last step to the process is obtaining feedback from the final customer. This is the final test for your product and is a critical component of your market research process. You will want to ask these potential customers questions similar to the first set of questions you asked the buyer.

What is your first impression of this product?

- Can you think of changes that would make the product better?
- How would you like to see the product packaged?
- Where would you most likely buy this type of product?
- How much would you pay for this product?



Test Marketing

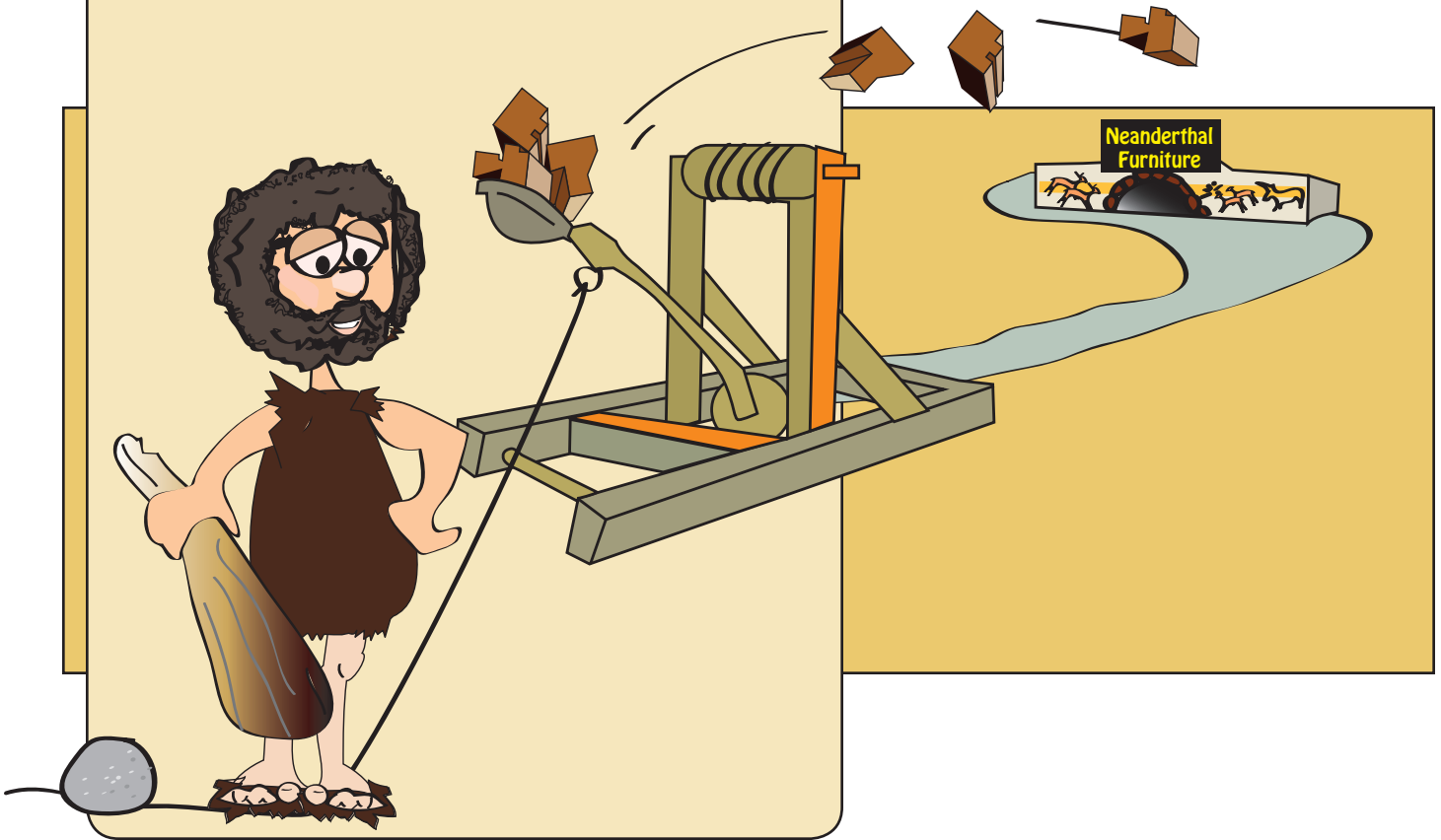
With a healthy set of product samples Niko took a whirlwind tour of furniture manufacturers in his region. The reaction from potential customers to the product samples was universally positive, though some of those he talked to had suggestions for further improvement. When he returned to the office he assembled his team. They went through the results of the test market, reviewed the marketing plan, and carefully considered all the costs involved versus the likely price they could receive. With all this information assembled at their fingertips, they decided to begin manufacturing furniture blanks.

8 Market Launch

To prepare for market launch, you will develop a marketing plan that will guide the launch. Finding the right balance is critical here. Too much demand can be as great of a problem as too little. Following your marketing plan and working closely with the customer base will help assure success as you introduce your new product to the market.

Market Launch

Despite the positive evaluation of the potential for blanks, Niko wanted to take a conservative approach. Therefore, he went to the original company that he was talking with when he got the idea. He convinced them to take a trial load of blanks. Only after he had established a track record with this customer did Caveman Lumber expand to other furniture companies in the region.



9 Summary

It is difficult to overemphasize the value of talking with other small producers of wood products. Their experience and advice can help you avoid and overcome many hazards along the way to success. Careful consideration of what the customer wants and needs is the single most important element of introducing a new product (but don't forget the cost/revenues). The more time, effort, and energy you invest in developing a clear picture of what the consumer wants, the more likely you will be successful when you actually begin production. Good luck!

Other sources of information

The Lemelson-MIT Program Handbook, a Web-based resource with insights on intellectual property and patent issues. Available from: <http://web.mit.edu/invent/h-main.html>

From Invention to Innovation, a publication from the US Department of Energy Inventions and Innovation Program. Available from: <http://www.nrel.gov/docs/fy00osti/26620.pdf>

