Chapter 6

A Strategic Marketing Plan for Portable Timber Bridges
(ABSTRACT)

Logging is the backbone of the forest industry. Approximately 16 billion cubic feet of timber are removed from U.S. forests annually. Average timber harvest levels have risen each decade since the 1950’s and this trend is expected to continue in the near future. At the same time, the industry is being asked to maintain forests for multiple uses; such as recreation, wildlife, clean water, and fresh air. Logging operations are being placed under increased scrutiny for their effects on water quality. To address these concerns and meet new regulations, logging operations must use and develop stream crossing methods to minimize or eliminate their impact on waterways.

Improved stream or river crossings are needed to reduce the environmental impacts of logging operations. One practical solution for forestry operations on low-volume forest roads, would be portable timber bridges. They can be easily transported, installed, and removed for reuse at different sites (if properly designed and constructed). The ability to be reused makes portable timber bridges more economically feasible than other stream crossing types and their use may reduce potential water quality problems.

However, new technology products are more likely to fail than to succeed. Only by having a thorough understanding of market and customer needs, and development of appropriate marketing strategies can assist new products to be successfully introduced. Based on a study by Virginia Tech and the USDA Forest Service, this strategic marketing plan provides the needed information regarding the market and consumers, identified marketing opportunities for portable timber bridges, identified
target markets and product positioning, and recommended marketing mix strategies.

The strategic marketing plan is important for manufacturers and promoters of portable timber bridges to better understand the potential market and to facilitate the adoption of their products.
Strategic Analysis

Market and Product Trends

Logging is the backbone of the forest industry. Approximately 16 billion cubic feet of timber are removed from U.S. forests annually and over 50 percent of the removals were from Southern forests. Average timber harvest levels have risen each decade since the 1950’s and this trend is expected to continue in the near future (USDA 1995). The demand for wood products continues to increase along with population increases. At the same time, the industry is being asked to maintain forests for multiple uses; such as recreation, wildlife, clean water, and fresh air. Therefore, as the world struggles to meet its growing demand for wood products, it also has to do it in an environmental-friendly manner (USDA 1997).

Logging operations are being placed under increased scrutiny for their effects on water quality. To address these concerns and meet new regulations, logging operations must use and develop stream crossing methods to minimize or eliminate their impact on waterways. Research has been conducted to document the impacts of harvesting activities, roads and road construction, and site preparation on forest stream water quality. Researchers have found that roads and road construction create more pollution in the form of sediment, than from harvesting activities, and that road crossings at streams are the most frequent source of sediment and erosion (Russell 1997). Swift (1985) reported the cumulative amount of soil placed in a stream, at road-stream crossings during construction, was over ten times greater than sedimentation during logging operations.
In recent years, Best Management Practices (BMP) have been developed and implemented by most states to comply with the Environmental Protection Agency’s (EPA) guidelines for preventing or reducing pollution generated by non-point sources in forestry activities. Originally, compliance with BMP was voluntary. However, in many states BMP implementation has become mandatory.

Improved stream or river crossings are needed to reduce the environmental impacts of logging operations. Currently there are two types of crossings for low-volume forest roads: temporary or permanent. Common temporary crossings are log stringers, fords, and culverts. Log stringers, if not installed or removed properly, can have an impact upon the watershed. In recent years, the use of log stringers has declined considerably due to material availability and for liability reasons (Taylor et al. 1995). Fords are gravel crossings which may be used to allow vehicles to transverse the water on the river bed. However, this method can introduce sediment into the streams as vehicles drive across. Concrete or corrugated metal culverts have been common stream crossing structures for years. However, sediment can be introduced into the stream during excavation and fill work that accompanies culvert installation. Permanent bridges are designed to last 40 to 50 years. For limited and low-volume use of forest roads, it is not economically feasible to build permanent bridges that require expensive initial cost and expensive maintenance for continued service (Taylor et al. 1995).

One practical solution for forestry operations on low-volume forest roads, would be using portable timber bridges. They can be easily transported, installed, and removed for reuse at different sites (if properly designed and constructed). The ability to be reused makes portable timber bridges more economically feasible than other
stream crossing types and their use may reduce potential water quality problems. Taylor et al. (1995) made cost comparisons between culverts and portable timber bridges. The cost of one culvert installation was $2,700, which was approximately the cost of a portable timber bridge, which can be reused many times.

In this study (Taylor et al. 1995) the cost of installation and removal of the portable timber bridge was $2,500. This cost included the initial cost of the bridge, cost of bridge transportation to and from the site, equipment operations, and labor costs distributed over 10 installations. Taylor and Murphy (1992) reported that glulam or stress-laminated portable timber bridges cost an average of $41/sq.ft., while portable steel bridges were $43/sq.ft. The advantages of portable timber bridges are that they can use locally available materials, labor, have a long service life, have a relatively light weight, easy to fabricate and transport, and can be handled by most logging equipment. The most promising designs, for spans up to 40 feet, consist of longitudinal glulam or stress-laminated decks that are placed across the stream (Taylor et al. 1995).

When compared to using culverts and logging mats, portable timber bridges are more quickly installed and environmentally friendly. Culverts require that soil be backfilled over and against them. Sedimentation, stream turbidity, and erosion can occur at installation and during stream crossing, resulting in erosion and stream turbidity during use. Also oil, grease, and logging debris potentially can enter the stream with the use of mats (Alderman 1996).
Most material used to construct portable timber bridges is available locally and can provide an economic stimulus to the area. Timber is a renewable resource and bridge fabricators can use their own lumber to significantly reduce bridge costs. It is economically and environmentally feasible to manufacture and use portable timber bridges for temporary stream crossings. Proper installation and use of portable timber bridges allows full compliance with BMP (Alderman 1996).

**Consumer Analysis**

The major users of portable timber bridges are loggers. This research found that loggers learned about portable timber bridges by word-of-mouth (logger to logger), field demonstrations, or from companies that they logged for. There is also a high degree of consumer awareness regarding the benefits of utilizing portable timber bridges, and nearly 43 percent of the loggers indicated they utilized portable timber bridges in their operations. Respondents indicated that initial cost, availability of product information, and promotional efforts are the major factors influencing the adoption for portable timber bridges in logging operations.

This research revealed that the most consumers (loggers) are in the steps between the evaluation and trial of the product. The major factors for using portable timber bridges are ease of operation, environmental considerations, and regulations. Responding loggers spent under $3,500 for portable timber bridges (Table 6.1), and most loggers reported the most frequently used portable bridge types in their operations were skidder and do-it-yourself bridges (Table 6.2). Consumers in different demographic regions have different preferred sources for receiving new
technology information (Table 6.3). Overall, the most preferred source was word-of-mouth with other loggers, followed by personal contact with industry foresters, logger education or training programs, trade shows, and trade magazine articles. This research also found that loggers preferred receiving new technology information from the following channels: companies producing the new technology, industry foresters, and trade associations (Figure 6.1).

Competitive Analysis

Although this research revealed that consumers rated timber as the best material for a portable bridge, a variety of temporary or portable bridge designs have been constructed with materials other than timber (e.g., steel or concrete) and have been utilized by some loggers. Portable steel bridge designs for low-volume roads include hinged steel bridges, modular steel girder bridges, pipe fascine system, and steel truss panels. The spans for these bridges range from 15 to 250 feet (ft), and the most frequently used steel bridges are modular girder and hinged steel bridges (Taylor et al. 1995). Examples of portable modular steel girder bridges utilized in low-volume roads and logging operations are the EZ Bridge manufactured by Hamilton Construction in Oregon and those manufactured by Big R Company in Colorado. These bridges come in two modular sections (constructed of steel I-beams), which run longitudinally under a transverse steel beam and are bolted together when installed (Taylor et al. 1995). Another portable steel bridge design is constructed with steel stringers and a timber deck, which are manufactured by ADM Welding and Fabrication Company of Pennsylvania. The bridge can be folded in half for easy
transportation and can be constructed to support either skidders or trucks. Typical designs are about 11 feet wide and 25 feet long and can span up to 55 feet. These bridges can be prefabricated for easy installation and designed to meet loads specified by The American Association of State Highway and Transportation Officials (AASHTO), (Taylor et al. 1995).

Alt (1991) discussed one example of a concrete bridge utilized in Florida by a forest products company in logging operations. The bridge was built with three reinforced concrete slabs, it was 15 inches deep, 4 feet wide, and 35 feet long. However, the bridge weighed about 78,000 pounds. Although construction cost was relatively low, its excessive weight made it impossible to qualify as a portable bridge (Taylor et al. 1995).

Many loggers utilized do-it-yourself (DIY) portable bridges in their operations. DIY bridges could be log stringers, timber mats, or culverts; however, most are not engineered products and do not meet AASHTO bridge standards. Also, the latter two bridges can introduce sediment into the streams as vehicles drive across.

**Marketing Opportunities**

Because of overall environmental considerations for the logging and forestry activities, there is a definite marketing opportunity for portable timber bridges. The opportunities can be characterized as follows: 1) the utilization of portable timber bridges to minimize or eliminate impacts on waterways during logging operations, 2) the utilization of portable timber bridges to increase the efficiency of logging practices, 3) opportunity for the utilization of portable timber bridges to increase the
safety of forest operations, 4) the utilization of portable timber bridges to comply with BMP regulations, and 5) major forest products companies adopting portable timber bridge technology.

Strategic Recommendations

Target Markets and Positioning Strategy

The target markets for portable timber bridges are 1) independent loggers and 2) forest products firm’s contract or company loggers. The designs for engineered portable timber bridges could be two different types. First, budget (inexpensive) bridges (under $3,500 in cost) which target DIY portable bridge users. These types of bridges must meet minimum AASHTO standard requirements, which also can prevent or minimize stream sedimentation. The trend towards improving the design and quality of existing DIY bridges indicates that “budget bridges” are being designed to appeal to and attract a wide range of consumers (a larger market). Second, advanced engineered bridges (over $7,500), which would be targeted towards forest products companies. Also, the design and installation of these bridges must fully comply with BMP regulations. Marketing mix strategies must correspond to each product’s target market.
Marketing Mix Strategy for Budget Bridges

Product Strategy

Budget bridges can utilize low-grade lumber or treated softwood as basic construction materials. The product may be shipped unassembled and final assembly may be performed by loggers. In contrast with currently used DIY bridges, budget bridges will have better design characteristics that are fully compliant with AASHTO standards and BMP regulations. Manufacturers or designers should provide detailed instructions for assembly. Manufacturers or designers should also provide sales or technical support to loggers by educating them about manufacturing process, construction materials, assembly, maintenance, and product quality. Manufacturers need to publish a catalog showing the various bridge pieces with installation illustrations and illustrations depicting the versatility of bridge usage. However, some loggers may not want to pay for the construction materials and necessary hardware that manufacturers provide. In this case, manufacturers can provide customers only with design specifications and assembly instructions. Field fabrication and adjustments (after several installations and removals) may be needed for budget bridges. Therefore, manufacturers or designers should provide detailed instructions or some type of service agreements (with certain fees) for loggers.

Price Strategy

The price of budget portable bridges falls between DIY portable and advanced portable bridges. For example, a bridge designed by Alderman (1996), 16 ft x 32 ft, with treated softwood lumber, had an estimated cost of $3,300 (excluding labor and
installation cost). This bridge could be targeted to price-sensitive buyers (e.g., certain independent loggers). As previously mentioned, some loggers may want to utilize their own materials, loggers in this case will pay only for the cost of designs and assembly instructions. This strategy could attract price-sensitive buyers.

**Distribution Strategy**

In today’s competitive environment, it is rare that any one marketer has a unique product monopoly without someone else bringing the product to consumers. A differentiating factor is often the channel method, or effectiveness of distribution. Many times products in a competitive environment gain a differential advantage because the products are available through convenient channels (Hiebing and Cooper 1997). It is also true that in public organizations, with limited financial and human resources, portable timber bridge promoters in the WIT Program must utilize effective channels to distribute their design information.

This research identified that loggers and technology developers preferred companies producing the new technology, industry foresters, and trade associations as channels for dissemination of new technology information. Portable timber bridge promoters must develop strategic partnerships or alliance with private companies that produce portable timber bridges and utilize their marketing expertise to promote the final product(s). Portable timber bridge promoters must also develop a close working relationship with industry foresters and trade associations. Most industry foresters are in contact with loggers on a daily basis and they can distribute new technology information at a very convenient position. Trade associations often sponsor trade shows, logger education seminars or training programs, and also publish trade
journals. These activities were identified as the most effective sources for loggers to receive new technology information, therefore, trade associations can play a strategic role in providing new technology information to loggers.

However, this research found that intermediaries in different professional groups have different preferences in marketing portable timber bridge technology. For example, industry foresters and officers in trade associations emphasized safety and environmental issues, but companies (marketing managers) focused on meeting market demands far more important as compared to other factors. Promoters of portable timber bridge technology need to notice differing preferences when designing marketing materials for intermediaries.

**Promotion Strategy**

As previously stated, most consumers (loggers) are in the steps between evaluation and trial of portable timber bridges. How to successfully “push” them to fully adopt this technology requires an effective marketing communication (promotion) strategy.

**Direct Marketing - Personal Selling**

When a product is first introduced, communication from marketers to users is meant to create awareness of the innovation and provide needed information. Once awareness is created, users depend on friends or families to assist them in the evaluation of new products. It can be concluded that the most influence on consumer decisions to accept or reject new products come from friends and relatives. This research identified that loggers preferred the word-of-mouth (logger to logger)
method as the best way to transfer new technology to the logging industry. These findings suggest that promoters of portable timber bridges should develop strategic relationships with early adopters in order to stimulate favorable word-of-mouth communication and to encourage other loggers to adopt the new product. Early adopters are more likely to be opinion leaders and they have more interest in and knowledge about the product category. Therefore, portable timber bridge promoters should develop strategic alliances with early adopters, provide them with technology information, and train them with techniques and skills to become “seed loggers” who can engage in word-of-mouth communication as innovative communicators. When seed logger(s) attract the interest of a certain number of loggers, field demonstrations will be needed to further demonstrate the benefits of portable timber bridge utilization in logging operations.

Indirect Marketing - Advertising and Channel Promotion

Another method to reach loggers is by the indirect method. This method can utilize mass media advertising or loggers preferred intermediaries can be used to communicate the message(s). In mass media, advertising may not necessarily use traditional advertisements, it could use the “informerical method”, which utilizes several articles or case studies (which successfully show the adoption of portable timber bridge technology) in trade journals (e.g., The Logger and Lumberman, Southern Lumberman, Forest Products Equipment, or The Northern Logger) or extension newsletters. Other public media, such as newspapers or television programs can be utilized to communicate the positive image(s) of portable timber bridges in logging operations. Conversely, promoters also need to develop a Website
for portable timber bridges, which will allow loggers or the general public easy access to the information.

In loggers’ preferred intermediaries, portable timber technology promoters need to develop a package of promotional material, which includes available portable timber bridge designs and success stories and testimonials. In addition, it will include methods for potential users to contact the promoters and for intermediaries to distribute information to loggers.

This research found that loggers in different demographic regions have different preferred sources and channels for receiving new technology information. For example, trade magazine articles were preferred sources for receiving new technology information by loggers in the Mid-Atlantic, Mid-West, and Southern regions of the US. However, loggers in the Eastern region of the US preferred to read extension publications or newsletters rather than trade magazine articles.

Loggers in the Mid-Atlantic and Mid-West regions preferred trade associations or trade shows as effective channels for receiving information. However, loggers in the Eastern and Southern regions preferred industry foresters. In order to maximize promotion efforts, utilizing different sources and channels for different regions are essential to the marketing communication strategy.
Marketing Mix Strategy for Advanced Engineered Bridges

Product Strategy

Advanced engineered bridges can utilize glued-laminated lumber or other engineered wood products (e.g., laminated veneer lumber, LVL) as basic construction materials. Taylor et al. (1995) suggested that these bridges can carry highway truck traffic loads, which include logging trucks and meet AASHTO standards, such as HS20-44 (HS20). These types of bridges should be sufficient in most cases. The product may be shipped fully assembled. In contrast to budget bridges, advanced engineered portable bridges should have a longer life expectancy than budget bridges, minimum of field fabrication and maintenance, and be relatively light-weight. The manufacturers must also provide some type of repair or warranty services.

Price Strategy

According to Taylor et al. (1995), the average cost for a glued-laminated portable timber bridge is $32 per square foot (16 feet x 30 feet) and some designs may go up to $41 per square foot, which places the total cost for a glued-laminated portable timber bridge over $15,000. Amortizing the cost over ten installations, the bridge costs around $2,500 per installation, which is competitive with the cost of building a permanent bridge and is also cost competitive with other available portable bridges (e.g., steel or concrete).
Distribution Strategy

Manufacturers or promoters of advanced engineered portable timber bridges can utilize a direct channel strategy, selling directly to forest products companies. Since the number of customers are limited in this market, manufacturers can fully control product distribution and provide customer service without the cost of utilizing middlemen. In addition, there are several advantages to such approach, for example, direct contact with customers provides manufacturers and promoters of portable timber bridge technology with a better understanding of customers wants and needs. Also direct contact with customers provides quicker responses to problems associated with products and changes in the marketplace.

Promotion Strategy

Direct Marketing - Personal Selling

Personal selling involves direct, face-to-face contact between the seller and customer. In general, goods that are new or expensive require more personal selling and interaction. Manufacturers or promoters of advanced engineered timber bridges should make personal contact with decision makers in forest products firms; provide them with hands on materials about the quality of the product, benefits of utilizing the technology; and follow-up field demonstrations to further demonstrate ease of installation and handling of advanced engineered portable timber bridges. A package of promotional material (direct mailing), which includes available bridge designs, and success stories and testimonials should also be developed. Additionally, methods to contact manufacturers or the WIT Program is to increase the awareness level of advanced engineered portable timber bridges for use by forest products companies.
Indirect Marketing - Advertising

Advertising may not necessarily use traditional advertising techniques, it could use the “informercial method”, which utilizes articles or case studies of successful adoption of portable timber bridges in trade journals (e.g., The Logger and Lumberman, Southern Lumberman, Forest Products Equipment, or The Northern Logger). Other public media, such as newspapers or television programs can be utilized to communicate the positive image(s) of portable timber bridges in logging operations. On the other hand, promoters also need to develop a Website for portable timber bridges, which will allow forest products firms or the general public easy access to the information.

Conclusion

There are tremendous marketing opportunities for the utilization of portable timber bridge, to minimize or eliminate impacts on waterways during logging operations, to increase the efficiency of logging practices, to increase the safety of forest operations, and to comply with BMP regulations. Two designs of portable timber bridges targeting two market segments, budget bridges for price-sensitive independent loggers and advanced bridges for forest products firms.

Promoters of portable timber bridges must utilize effective channels (e.g., industry foresters or trade associations) to distribute their design information. Development of strategic partnerships with these important intermediaries is essential to the success of distribution strategy. Direct marketing promotion strategy must focus on “push” consumers from evaluation stage to fully adopt the portable timber
bridge technology. Effective methods include word-of-mouth promotion by technology early adopters (seed loggers) and channel promotion by loggers preferred intermediaries. The indirect promotion strategy should utilize mass media advertising (e.g., newspapers, television programs, or trade journals) to increase the positive image(s) of utilization of portable timber bridges in the logging industry. In order to maximize promotion efforts, utilizing the different sources and channels for different demographic regions are important to the success of promotion strategy.

Two-way interactive communication channel(s), such as the Website or a toll-free phone number, need to be developed for loggers and intermediaries to access information and provide feedback of their opinions regarding the utilization of portable timber bridges. Finally, a team to control and evaluate the marketing plan is needed for any organization, which adopted the plan. A follow-up study must be conducted to discern the long-term impacts of portable timber bridges in the logging industry.
Literature Cited


