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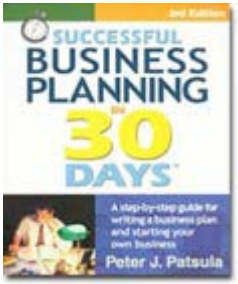

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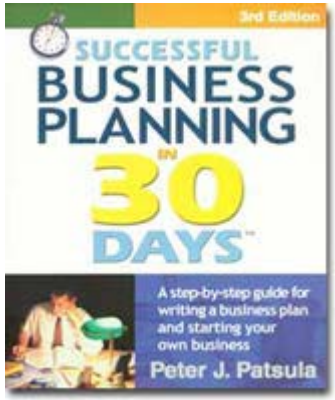

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STARTING & OPERATING A MANUFACTURING BUSINESS

IF your profits depend heavily on the price you pay for materials or merchandise, or on your ability to provide a consistent level of quality to your customers, your most profitable growth strategy may be to buy a farm or manufacturing plant and produce your own materials or products yourself.

However, expansion into the manufacturing industry is not something to be taken lightly. Careful planning is essential. More often than not, a new manufacturing enterprise will call for a heavy initial investment in land, buildings and machinery; require a number of specialized employees; and necessitate large expenditures for raw or semi-processed materials and supplies.

TYPES OF MANUFACTURING BUSINESSES

MANUFACTURING companies make or produce goods by hand or by machine. More specifically, they get involved in the conversion of raw materials into finished products, the assembling of prefabricated parts into a whole and the fabrication of machinery and equipment. Among the manufacturing enterprises most favored by small operators are printing establishments, sportswear and other apparel plants, machine shops and bakeries (see chart for more types of manufacturers).

✷

Types of Manufacturing Companies

Industry	Establishments (1982)	Establishments (1987)
apparel & other textile products	24,391	22,872
chemicals & allied products	11,901	12,109
electronics; other electric equip	N.A.	15,962
fabricated metal products	35,560	36,105
food & kindred products	22,130	20,624
furniture & fixtures	10,003	11,613
industrial machinery & equipment	52,912	52,135
instruments & related products	N.A.	10,326
leather & leather products	2,735	2,193
lumber & wood products	32,984	33,982
machinery, except electrical	52,912	52,912
paper & allied products	N.A.	6,342
petroleum & coal products	2,322	2,254
primary metal industries	7,061	6,771
printing & publishing	53,406	61,774
rubber & misc. plastics products	13,449	14,515
stone, clay & glass products	16,545	16,166
tobacco products	163	138
textile mill products	6,630	6,412
transportation equipment	9,443	10,500
misc. manufacturing industries	15,871	16,544

Source: "Statistical Abstract of the United States 1995, No. 1246"; 1987 Annual Survey of Manufacturers

STRATEGIES FOR EXPANDING INTO MANUFACTURING

USE THE following start-up and operating strategies to help you expand into manufacturing.

Manufacturing Start-up Strategies

1. **Amass considerable financial reserves.** Start-up costs alone can present a formidable obstacle to any company interested in expanding into manufacturing. But to say that this is its only shortcoming would be misleading. In addition to start-up costs, operating costs can quickly bury even the most ambitious entrepreneur. The fact is most manufacturing operations will not show a profit until their second or third year of operation. It is thus essential, in addition to accumulating a generous amount of start-up capital, to also sock away a large reserve fund to help finance your operating costs until whatever point in the future you become profitable.

Familiarize yourself with various manufacturing production methods in your area. There are many ways to make the same product. Know everyone of them.
SUPERTIP

2. **Develop a carefully laid out expansion plan.** When developing a plan for adding a manufacturing operation to your business, you will need to carefully consider all activities involved in turning raw materials into finished products. Specifically, this means you will need to answer the following five

questions:

- What basic *manufacturing operations* are needed to make your product?
- What *raw materials* or components are needed to make your product and where will you get them from?
- What *equipment* will be needed to perform the manufacturing operations needed to make your product?
- What *labor skills* will you need to run the equipment?
- How much *space* will you need to house the new equipment and employees, and store all the raw materials?

3. **Develop a carefully thought out expansion budget.** An expansion plan without a budget is next to useless. The ramifications of available capital, cash flow, and perhaps more realistically the lack of capital and cash flow must be seriously considered before any manufacturing plans can have real meaning. Essentially, your manufacturing budget must answer the all important question:

- How much will all the activities outlined in the expansion plan *cost* and how will you *finance* it?

It is as essential to the soul to create as it is for the body to breathe.
POWERPOINT

NOTE Budgeting techniques for a manufacturing operation are covered in more detail at the end of this Guidebook.

4. **Keep start-up and operating costs within your budget.** Below are four ways for you to reduce your initial start-up and operating costs:

- *Assemble pre-fabricated parts.* Instead of manufacturing every part of your product from scratch, buy the parts separately.

- *Farm out as much work as you can.* Use the talents, brains and facilities of your suppliers and other manufacturers. For example, contract out the production of your new shampoo line to a manufacturer who already has the necessary mixing, bottling and packaging equipment. If you can't get access to a manufacturer, perhaps some of your suppliers can. Set them up so they can give you a completed project and even ship it for you to the required destination. This limits your need for inventory and hiring extra people.

A new product is developed and marketed. What is the probability that it will fail in the marketplace? 4 in 5.
A. JAMES FIX
The Odds Almanac

NOTE If you decide to contract out your manufacturing to others keep in mind that you are at the mercy of their schedule. At any moment, they could decide to delay your order in preference of another or hold out for more money if they figure they have you over the barrel. This could result in you losing an expensive contract. Thus as your company matures you should strive to put yourself in a position to control as much as possible all aspects of production.

- *Have your product made overseas.* When a product is labor intensive, consider going to a part of the world where the labor force does not get paid as much as where you are.

In this type of situation, nine times out of ten, lower labor costs mean lower products costs despite increased shipping costs. It all boils down to pure economics. However, although you can save money overseas, you will also more likely encounter problems with quality, language, timing, labor trouble, shipping strikes, political upheaval, and all sorts of other unpredictable circumstances.

Only go to the Orient to produce products when, in fact, your product is labor intensive.
RON POPEIL

- *Work on a royalty basis.* If you've just invented a revolutionary new product and don't want to get into the production or merchandising of your product whatsoever, consider turning production over to an established company on a royalty basis. The royalty rate for a new product is usually a small percentage of the net sales and is paid to you once every three months. This strategy is especially useful to independent inventors, consultants or service providers who have no interest in the business side of innovation.

5. **Obtain a competent evaluation for any new product or innovation before committing valuable resources to its production.** It is normal for inventors and manufacturers to like their own ideas. However, it is a mistake for them to become overly committed to their ideas in the early stages of the innovation process. Keep in mind that the cost of developing an idea into an invention, filing a patent with the proper authorities, and in turn moving into full scale produc-

tion, will increase logarithmically as you progress from one stage to the next.

NOTE NIST, the National Institute of Standards and Technology has a good technical evaluation program for new inventions or innovations (see Guidebook #88).

6. **Set up a management control system.** A management control system ensures the right things are being done from day to day and week to week at your factory. Its purpose is to give you and your key people current information in time to correct deviations from approved policies, procedures or practices. This system should give you accurate information on production, quality, sales, inventory in stock, collection of accounts receivables and disbursements. The simpler the system, the better.

Inventors are individuals who conceive a new product or process independent of an organizational framework or agency. Innovators are inventors and others who pursue inventions beyond development to commercialization.
POWERPOINT

7. **Set up a quality control system.**
A quality control system asks the following fundamental question:

"What needs to be done to see that the product is done right the first time?"

Poorly made products will cause you to lose customers in a hurry. In addition, when a product fails to perform adequately, orders are placed on

hold, inventory starts piling up and returns start pouring. All this results in serious cash flow problems.

8. **Set up a sales & marketing department.** Every manufacturing company needs a sales department in addition to their production department. In fact, think about starting your sales department before the first product rolls off the assembly line. Sales are the lifeline of all companies.

To consider expanding into manufacturing, you must have good answers to the following five questions: What product will I manufacture? How can it best be made? What will it cost me? Who will buy the product? How much profit can I make?

SUPERTIP

Manufacturing Operating Strategies

9. **Distinguish yourself from the competition.** One of your primary goals as a manufacturer is to create a unique identity for yourself in the marketplace. Customers must recognize that what your company makes is different and more beneficial to them than your competitor's products. Otherwise, they will never have a reason for buying from you.

10. **Endeavor to operate at maximum efficiency.** It has been estimated that at least eight out of ten small factories operate well below their

optimum capability. This is due chiefly to the fact that as long as the operation is profitable, the factory manager is usually quite content. This feeling of complacency is further augmented by managerial ignorance. Handicapped by the lack of a more sophisticated level of knowledge, many managers don't even realize things could be better, let alone how much better, or how they could go about making things better.

Learn to seek & respond to new customer needs quickly, decisively, courageously, and with the ability to see the "big picture."
SUPERTIP

It is thus essential for all manufacturing operators and managers to continually strive to increase operating efficiency and reduce overhead by developing a better more efficient deployment and use of all company resources including: capital, machinery, human resources, materials, and production methods.

It is also important to continually analyze other factors that contribute to manufacturing inefficiency such as: machine operators who aren't well trained, inadequately maintained or obsolete equipment, improper costing practices, lack of familiarity with budgeting techniques, and untidy purchasing practices.

11. **Improve customer feedback mechanisms.** Many manufacturers have been able to improve their products and consequently increase their market share by inviting feedback from their end users. This feedback is obtained using tech-

niques such as 800 telephone lines, e-mail support services and warranty surveys.

12. **Innovate or suffocate.** Can you look at a product and envision a new use for it? Can you look at an old production method and envision a way to improve it? Are you able to see new needs and consequently new products to meet those needs?

To excel in the manufacturing industry you must become a master at innovation. In fact, it has been estimated that as much as one-third to one-half of all manufacturer's profits are generated by products less than five year old. It has also been estimated that nearly half of all new jobs created in the last several decades have been the result of industrial innovation.

If you're going to sell your product to retail stores, and your product is powered by electricity, it needs to be approved by the Underwriters Laboratories. Retailers won't even consider your product unless they see "UL Listed," on the package. In Canada, it's "CSA."

SUPERTIP

13. **Join a flexible manufacturing network.** A flexible manufacturing network is a network of small firms that work together, pool their expertise, and, instead of competing, complement each other in order to compete in a larger global markets. Having created high employment and economic success, they have also proved that they reduce the weakness of a small business and build on their strengths.

To take networking several steps further, these shared-support associations also provide their members with numerous needed services – accounting, payroll, marketing, purchasing, transportation, daycare and even educational facilities in local technical schools. Alone, no member could afford the variety or the quality of these services.

Be not simply good; be good for something.
HENRY DAVID THOREAU

NOTE One American observer who visited a number of such networks in northern Italy stated, "I have seen the future, and it works."

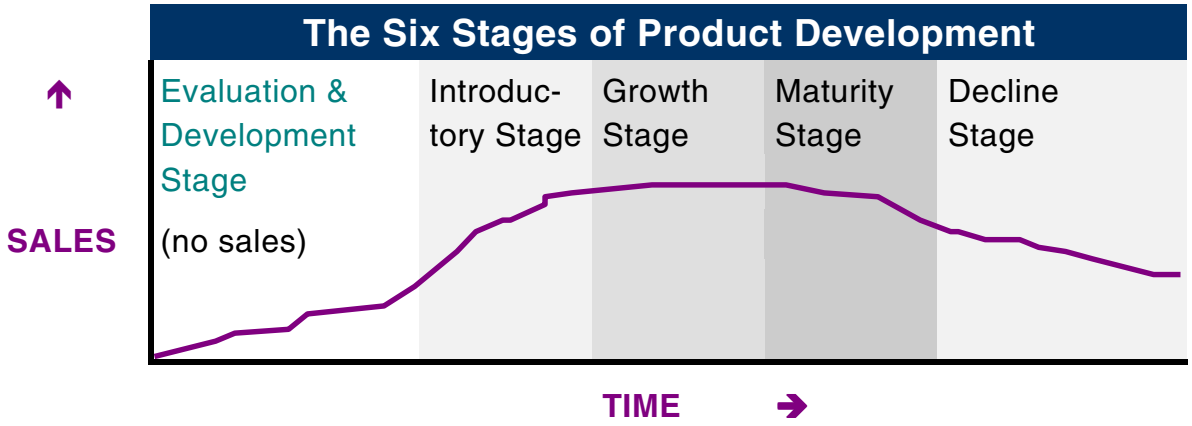
14. **Keep your product offerings specialized.** Small highly specialized manufacturing companies employ skilled workers, but pay them well above industry averages in return for higher productivity. They do not try to compete in the manufacturing of traditionally mass-produced items, but specialize in technical products that are more competition-proof. Their highly trained labor force can utilize advanced technologies. By concentrating on very narrow areas, these firms usually produce top quality parts and components, or finished products with top ratings in their category.

15. **Make good purchasing decisions.** Purchasing equipment and raw materials for a small manufacturing firm, and converting them into finished goods, represents a large portion of its total operating expenses. In fact, the cost of goods sold for a small manufacturing firm may be in excess of 75 per-

cent of total sales. In light of this information, the important of intelligent purchasing should be clear to every small business owner.

NOTE *Get as many bids as possible when purchasing supplies and materials.* There can be a surprising difference in bids from one supplier to the next. This is due to the difference between each company's facilities and method of business. Use Kline's directory for hard to find suppliers.

16. **Start developing new products during the decline stage of a product's life cycle.** A product has a life cycle similar to the life cycle of a business. This life cycle can be broken down into the following six stages:



- *evaluation stage* – limit your investment
- *development stage* – invest in R&D
- *introduction stage* – invest in production
- *growth stage* – invest in marketing
- *maturity stage* – maximize profits
- *decline stage* – minimize losses

Name the greatest of all the inventors. Accident.
MARK TWAIN

17. At some point during a product's decline stage, it is necessary to decide whether to invest more money in the product (i.e., create a new and improved model requiring additional investment and generating a new life cycle) or discontinue it entirely.

BUDGETING IN A MANUFACTURING OPERATION

BUDGETING IS important for all kinds of businesses. However, its impact is felt more in a manufacturing business where numerous and a variety of costs can greatly complicate matters. In fact, the importance of keeping track of all these costs and organizing them in a manner more conducive to effective decision making, has led many manufacturers to adopt a budgeting technique known as "cost accounting."

"Cost Accounting" can help you identify the most profitable areas of your business and put you in a position to optimize your business performance.

Specifically, cost accounting allows owner-managers to better control business operations by informing them more fully about their specific costs, permitting an easier more in-depth analysis of these costs, and making it more obvious where corrective action may be required. In conjunction with sales revenue figures, it can also help you identify the most profitable areas of your business and put you in a position to optimize your business performance.

Understanding Cost Accounting

In cost accounting, costs are classified as being either *direct* or *indirect* and as being either *fixed* or *variable*. This is unlike general accounting, where costs are usually classified into well-established summary level accounts, such as selling expenses, administrative expenses or

costs of goods sold.

Direct Costs – Direct costs are those incurred in the fabrication of a product and can readily be identified with the product. Two examples of these costs include the raw materials used to make the product and the labor required to convert these raw materials into the finished product. In some situations, power, fuel, water and other significant costs can also be classified as direct costs.

Indirect Costs – Indirect costs are generally the costs of activities required to support the manufacturing operations. Such costs usually include plant administration, quality control, purchasing, insurance, depreciation, property taxes and other similar activities.

Classifying Manufacturing Costs

	Classification			
Cost Element	Direct	Indirect	Variable	Fixed
Raw materials	x		x	
Labor	x	x	x	x
Salaries	x	x		x
Supplies	x	x	x	x
Payroll taxes	x	x	x	x
Medical Insurance	x	x		x
Health, light, power	x	x	x	x
Telephone		x		x
Rent	x	x		x
Insur., property taxes		x		x
Depreciation		x		x

Variable Costs – Variable costs are those that vary directly with the quantity of products being produced. Naturally, raw material consumption will increase as more products are produced. As well, the labor spent in processing the raw materials may also be a variable cost if the amount of labor required is directly proportional to the quantity of goods produced.

Fixed Costs – Fixed costs do not vary with the quantity of production. These costs generally include all of the indirect costs associated with plant overhead such as insurance, administration and depreciation.

The marvels of modern technology include the development of a soda can which when discarded, will last forever, and a $7,000 car which, when properly cared for, will rust out in two or three years.
PAUL HARWITZ

NOTE See chart previous page to find out which categories typical manufacturing costs can be classified under.

Applying Cost Accounting to Manufacturing – When applying cost accounting to a manufacturing operation, costs are usually classified under the following three combinations:

- direct-variable costs
- direct-fixed costs
- indirect-fixed costs

The sample budget on **page 20** shows how these three types of costs are used in cost accounting.

NOTE In the *Allocation of Production Costs*, half of the utilities cost has been classified as being fixed while the other

half have been classified as being variable (dependent upon the amount of products produced).

Figuring Out Your Standard Cost per Unit – Manufacturing cost accounting can be particularly helpful when used to calculate a *standard cost per unit.* This unit cost is what you would expect each product to cost under normal operating conditions. This figure usually totals all the raw materials, labor and other costs incurred in producing the product plus an allocation of the support costs (see the bottom part of the budget on **page 20**).

Recent studies show that in spite of skyrocketing costs, increased risks and market complexity, independent inventors, technological entrepreneurs and small businesses still contribute somewhere between one-half to two-thirds of the major industrial innovations occurring in the United States.
FUNFACT

Annual Manufacturing Budget for XYZ Company

Production Requirements	
units per year	100,000
DIRECT COSTS	
Product Requirements (variable costs)	
Raw material cost per unit	$2.00
Labor (hours) per unit	1.0
Labor rate per hour	$14.00
Production Department Budget	
Labor (100,000 units x 1hr x $14)	1,400,000
Salaries (2 supervisors)	70,000
Rent	25,000
Utilities	40,000
Maintenance	35,000
Total	$1,570,000
Allocation of Production Costs	
Direct-variable cost	1,420,000
Direct-fixed cost	150,000
Total	$1,570,000

INDIRECT COSTS	
Administration Dept. Budget	
Salaries	80,000
Rent	10,000
Utilities	4,000
Depreciation	60,000
Total (indirect-fixed costs)	$154,000
TOTAL BUDGET	
Raw materials (100,000 x $2)	200,000
Production Department	1,570,000
Administration Department	154,000
Total	$1,924,000
STANDARD COST PER UNIT	
Raw materials (variable cost)	2.00
Direct-variable labor & expense	14.20
Direct-fixed	1.50
Indirect-fixed	1.54
Total	$19.24

Sample Financial Ratios* for Select Manufacturing Businesses

SIC Number	Type of Business	Cost of Sales	Gross Profit	Operating Expenses	Operating Profit
3993	Advertising displays & devices	58.4%	41.6%	36.6%	5.0%
2051	Bread & other bakery products	59.4	40.6	37.9	2.7
2751	Commercial printing (letterpress & screen)	59.6	40.4	35.6	4.7
3671,72-79	Electronic components & accessories	62.1	37.9	34.4	3.5
3949	Sporting & athletic goods	56.7	43.3	34.5	8.7

Source: Robert Morris Associates, **Annual Statement Studies**, 1987 (available at library).

Consult RMA for additional ratios for other manufacturing businesses such as: engraving services, industrial chemicals, jewelry & precious metals, machine shops, miscellaneous plastic products, women's dresses, and more.

*Based on statement studies of firms with fiscal year-ends April 1, 1991 through March 31, 1992. All statistics are expressed in terms of percentages of annual sales volume. Only data for firms with from $0 to $1,000,000 in assets have been shown since this would be characteristic of the beginning business.

NOTE RMA cautions that the studies be regarded only as general guidelines and not as absolute industry norms. This is due to limited samples within categories.

