What It Takes to Grow a Winning Engineering Firm

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How do you build and sustain a winning engineering firm?
Key Characteristics of a Successful Entrepreneur

1. Firm grasp of three main elements of business
   - Operations (the value-add the customers are buying)
   - Sales (getting customers)
   - Finance (managing cashflow)

2. Vision – you won’t succeed by imitating someone else

3. Perseverance – It is almost always much harder than you can imagine
• Started as a service based business in our house.
• First projects were product development (Bill’s background), and manufacturing consulting (Tom’s background) related.
• After first year, we had enough business to hire 2 employees, and move to a small office building.
• All of our sales leads were generated from three similar economic development organizations that referred consultants to clients.
Lesson #1 – Diversify Your Lead Generation Sources

Crisis:
Our sales leads were controlled primarily by a single source, which went out of business.

Solution:
• In order to survive, everyone became a sales person.
• Built our own database of potential customers.
• Started a direct mail campaign.
• Enlisted the help of reps.
Crisis:
Many companies either start or evolve to a situation where 50% or more of their sales are from a single customer.

Examples:
• About half of our competitors have gone out of business because of this issue.
• Advent strives to keep every customer at 30% of total sales or less.
• The solution is to grow the rest of the business. We never turn a customer down.
• Wal-mart has made this a crisis for manufacturers.
Crisis:

As we interacted with potential customers, most wanted a complete solution, not just the engineering package.

Solution:

• Broaden the number of opportunities by offering a complete package.

• In Advent’s case, we decided to include building custom machines to our offerings. This increased the number of opportunities about tenfold.

• This required relocating to industrial space to build our first machine.

Lesson #3 – Sell What Customers Want, Not Just What You Want To Do
Crisis:
As we began to build machines, we needed to buy materials and pay for them before the job was complete.

Solution:
- We canvassed many banks to borrow money.
- Need a three year track record.
- Need collateral. This is usually your accounts receivable.
- Need demonstrated cashflow to pay interest.
- Need financial statements that represent your financial situation favorably to banks.
Lesson #5 – Be Mentally Prepared to Live Without Income for a Year

Crisis:
Since we could not borrow money when we needed it, we could not pay ourselves for about 9 months.

Solution:
• My partner had saved about a year’s salary before we started, although he loaned much of that to Advent.
• We personally were able to borrow about 30K on credit cards.
Crisis:
As we started to hire employees, we could not “afford” experienced engineers.

Inexperienced employees require mentoring and oversight that my partner and I could not provide.

Solution:
• We started to hire experienced engineers that could manage their own activities, and represent Advent to the customer.
• Building capable, experienced teams to move along the operations allows the entrepreneur to build the business.

Lesson #6 – You Never Have Enough Time To Manage Employees
Lesson #7 – “Problem” Employees Can Kill Morale

Crisis:
As the number of employees grew, many were excited about building a new company, while others were there to “get” (not necessarily earn) a paycheck.

Solution:
• Our first “problem” employee worked for Advent for 6 years before we decided that despite a reasonable work output he was hurting the company and had to go.
• You have to assume that 20-30% of the employees you hire will not work out. The longer they stay, the more your time is diverted dealing with “issues”.
• You will be shocked at how taking action improves your stock with the employees who matter.
Lesson #8 – Make Every Customer a Fan

Crisis:
Completing projects for customers has many pitfalls, most of which you need to absorb (i.e. many engagements will be money losers).

Solution:
• Don’t “nickel & dime” a customer. Plan on contingencies in the budget.
• If a project is losing money, finish it like any other. Consider this part of your “marketing budget”.
• Read “Raving Fans” by Ken Blanchard.
• Customers who are “Raving Fans” will always come back for more. Then you have more margin control in pricing.
Key Characteristics of a Successful Entrepreneur

1. Firm grasp of three main elements of business
   - Operations (the value-add the customers are buying)
     - Lesson #6 – You never have enough time to manage employees
     - Lesson #7 – Problem employees can kill morale
   - Sales (getting and retaining customers)
     - Lesson #1&2 – Diversify your lead generation and customer base
     - Lesson #3 – Sell what customers want
     - Lesson #8 – Turn your customers into raving fans
   - Finance (managing cash flow)
     - Lesson #4 – It is hard to borrow money when you need it.
     - Corollary to Lesson #4 – Borrow when you do not need the money.
     - Lesson #5 – Be prepared to live without an income

2. Perseverance – It is almost always much harder than you can imagine
   - If anyone were to have told us how hard it would be we would not have believed him. Often takes 20 years to become an “overnight” success.
Advent Design Corporation
Advent Design assists manufacturers in becoming more competitive in a global economy by reducing manufacturing costs through the Innovation & Implementation of World Class Manufacturing Principles and Advanced Technologies.
Company Vision

Advent Design Corporation will be the best known engineering and manufacturing company in the Mid-Atlantic.
Advent Design Bullets

- Founded in 1984
- ISO 9001 Certified
- Certified UL Panel Shop
- Philly 100 winner nine times
- K.A.P.E. Award Candidate for 2006
  *(Keystone Alliance for Performance Excellence)*
- Steady, growth for over 20 years
Advent Design Corporation

Planning
Productivity
Implementation

guided by *Innovation* leads to…

A Lean operation with a strong
Bottom Line!
How do we apply our Innovative process?

Advent Designs’ objective, to understand through qualification & information our Customers, Needs – Wants - Desires

Planning, Productivity, Implementation Group
• Plant Engineering
• Lean Manufacturing
• Quality Systems
• Value Stream Mapping

Manufacturing Automation
• Packaging
• Vision
• Process Development
• Integration
• Product Development

Contract Packaging & Manufacturing
• Turnkey Manufacturing
• Automated Packaging
• Machine or Product Design & Manufacturing

Advent Design Corporation
“Lean Manufacturing from Start to finish”

- Inventory & Logistics Planning
- Facility Planning for Productivity
- Manufacturing Evaluations on Waste, Defects
- Process Review and Evaluation
- ISO 9000 Set-up and Certification
- Information Systems Specification
- Work Flow / Motion Analysis
- Equipment Specifications & Cost Studies
- Project Management
Clearly Defined Project Management
Manufacturing Automation

Automated Pot Handling System
Automated Assembly

Vision Based QA System
Product Design & Development
Contract Manufacturing

Ridge Vent Processing

Surgical Instruments

Confocal Microscope
Design & Manufacturing

Glycerin Suppository Manufacturing and Packaging Line
Custom Automated Packaging

Sputtering Target Bagging Machine
Contract Packaging

Toy Packaging
What Makes Advent Design Different?

• The Right **Planning**…
  • An effective Combination of Services…
  • Talented & Dedicated, **People**…

combined with, **Innovation & Implementation**

Produces…………………………

Results!
Advent Design Corporation

Thank you from all of us at Advent Design!
Product Based Business

Pros

1. Best chance for a “home run”.
2. Business will have significant value over and above your own efforts.

Cons

1. Difficult to start because the development of the product has to be funded before the firm earns any revenue.
2. Requires additional funds to develop sales and distribution channel, and manufacturing capability (unless you outsource manufacturing).
3. Since 80-90% of products fail in the marketplace, you are taking a big risk. This makes it even harder to get funding.
4. Product based startups are almost always under-funded.
Product or Service?

Service Based Business

Pros
1. Easy to start. Can start in your home, with little to no overhead.
2. Requires relatively little capital, but lots of free time.

Cons
1. Difficult to grow beyond your own efforts.
2. Difficult to manage the sales cycle when you are busy doing the work.
3. Low barriers to entry, so there is a lot of competition.