The Energetics of Business

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Summary

This brief report is a discussion of the essential points of the author's lectures in the Management of Technology program as they relate to entrepreneurship. There three main themes: a) a thesis as a source of ideas for a business and as the general research for a product concept, b) concepts of Energy as they apply to resources in a business or project, and c) general overview and resources in preparing a Business Plan using the thesis and the discussion about Energy to provide guidelines. Preparing a Business Plan and an Exit strategy, for both success and failure, will increase the odds for success and limit the pain of failure. Simple examples are given as ways to remember the concepts presented. Entrepreneurship is greatly encouraged, but should be pursued well prepared.

Introduction

For five years I had the pleasure of teaching Management of Technology courses and am happy to participate in this new journal for the Rikkyo Business Creator program. You, the reader, are here because of your interest in business creation, and perhaps, in starting your own. A teacher learns much from students, so not all ideas are mine. I wish to share some of the things we studied together, but advise you that the opinions are mine, only. Use them at your own risk, but I hope they are useful.

Theses and Business Plans in an MBA Program

The main "products" by the students are their THESIS and participation in the creation of a BUSINESS PLAN. Simple examples are used to demonstrate the principles without compromising the principles. These provide easy to remember, lifelong hints for projects in real business. For example: How to Cook Spicy Chicken Curry, requires all of the principles in planning and conducting a research project (or writing a thesis). How to Plan a Wedding Party has all of the aspects of planning a new business.

A major skill that is supposed to be a part of the business education is: How to Write a Business Plan, not specifically to start a company, but to also set up any kind of business program in a big company, government, etc. This is seen as the major sector of the MoT program and of the Business School itself. It includes all of the traditional business related courses and puts them into one framework. The second skill that is desired is: How to Write a Thesis. While this may be an academic requirement, it is also a universally useful skill. In this case, the similarity in setting up a research program or laboratory experiment is compared with the problem of writing a thesis. The concept of the Scientific Method is the theme that unites all of the study procedures. A key output is the understanding that new business ideas can result from research and the writing of a thesis.

This ties the Business Plan and thesis aspects of the Business School and MoT programs.

Often, there are business plan competitions, with rather large awards, such as in the Moot Corp competition. A study of some of the winning plans at http://www.mootcorp.org/ and other web sites is beneficial. Looking at the Rikkyo curriculum, it might even be concluded that each course deals with a section of a business plan and that the competition is the final exam to put together all of the pieces.

Thinking about what is that I taught, it is an odd collection of things for a Business School:

1. Ethics: How good people make tough choices.
2. Mathematics: trigonometry functions to make an S-curve and bell-curve
3. Biology: Population and limits to growth
4. Astronomy: expansion and contraction, decentralization and centralization
5. Physics: The Second Law of Thermodynamics and Energy
6. Science: The Scientific Method
7. Chemistry: How to Make Spicy Chicken Curry
8. How to start planning when you don't know where you are.
9. How to select a wristwatch.
10. How doctors practice triage to treat the sick or not so sick.

And when I did get to talk about business, what did I say?

11. Business is a simple process: I buy, you sell; all else is detail.
12. Efficiency? You can't improve on maximum performance for a particular design or system, but only reduce inefficiency for less than best performance. If you want better performance, you need a new paradigm.

What was this crazy man thinking? This is a Business School. You want to know about brand imaging, distribution, management, accounting, Business Plans—real stuff, not mathematics and chemistry and physics and biology. Mumbusho is correct. You can't have madmen running around for more than five years. But I hope I am not entirely nuts in thinking that if the simple ideas and models don't show some truth (accuracy) then adding complexity and details (precision) doesn't help. First you have to know where you are going (writing a thesis), and then there can be research and planning. And that was the essence of Management of Technology.

This report has two sections: a) some practical comments, which supplement what you will find in most books and articles about starting a business; and b) a discussion of scientific principles and methods which are really quite practical in the business world. They form a kind of checklist to ensure that you don't try to break the Laws of Nature. Rather, that you use them as guides in a constructive fashion. A human judge may be lenient, but Mother Nature isn't.

Practical Comments

Business is really simple: I sell, you buy, you give me money. The rest is detail. If, before you use up your risk capital, you aren't making a profit, you aren't in business, you are managing a hobby. There are only two reasons to start a business: because you MUST and because you must. The first "MUST" is when you cannot find a job, this is a "push" situation. Most businesses are started during periods of poor economy, when there are layoffs, when companies are not hiring and when there is major change. The post-Meiji Reformation entrepreneurial surge was due to the country

undergoing industrialization. The post WW II surge was due to a lack of jobs and the need to create one's own. Inflated stock prices encouraged the DOT.com boom of the 1990's to early 2000's.

The second "must" is when you love something very much and feel you can do it better than anyone. This is why many restaurants are started by cooks; why many artists expand their "hobby" into a business; why a dress designer opens a shop; why a collector opens an antique shop; why a software engineer offers freeware on the Internet; why a retiree follows a dream, that was given up to work for a large company in order to support a family. These are "pull" situations. But once a business is started, along come all of the bothersome questions; such as: what are you selling? Why should someone buy some? How will I raise capital? Am I having fun, or should I get a "real" job?

1. If you don't know where you are going, don't get in the car.
2. If you don't know who your first customer will be, don't start a business.
3. If the business will be easy to start, it will also be easy to fail.
4. Do what you know, and love.
5. Venture capitalists want to see at least three founders. A one person company often ends up being a one person hobby (no profit, only expense).
6. The worst reason to start a business is because you don't want to work for someone else. You may have to explain your reason to a future boss.
7. The best reason to start a business is because you feel you have to; a musician must make music; a hungry person must find food. Not everyone should start a business (they become professors, instead).
8. Make a roadmap, but be prepared to change direction, or even stop.
9. Have an Exit Plan. A profitable one is best, but a graceful exit is not bad.
10. Business is a bit like a poker game, knowing when to bet and knowing when to fold. The big difference is that you can play many hands of poker so you can average out wins/losses, but in business, you only get a few tries.

Preparing for an Exit, especially if you are not successful

The US Small Business Administration reports that one third of new businesses fail within two years. It has also been reported that years with the most number of start-ups are those with the worst economic situation and highest unemployed. People often start a business becasue they cannot find work. Closing a business could be because of retirement or other factors besides losses that are too great, but failure is the norm and business books and business schools should spend more time on "how to fail gracefully" so that you will have the courage and support to try again. A "good" failure in the US may get a technical entrepreneur even more venture capital for the next start up, or a high paying position. The entrepreneur now has experience and becomes more valuable. In other countries, the situation may not be so easy.

Note: A few years ago, I visited the Korean AIST. They were beginning a new program to encourage technical staff to start new businesses using research developed at national laboratories. I don't recall the exact numbers, but the first year the researcher could get about $750,000. In the second year this could go to about $2 million, and in the third, even more. I was awed by the generosity, but asked what happens if the business fails. In the US, even

for high tech companies, there is a significant failure rate.

The KAIST manager thought for a long time, hung his head, and in a soft voice said, “I guess he has to kill himself. He will never be able to repay the money to the government. His old laboratory won’t want him, and his family will be disgraced.” I told him that in the US, business plans have an Exit Strategy (always written on the first page of the Venture funding agreement) for the two cases of a profitable sellout and of failure. (In Japan, the Exit is usually as an afterthought on the last page.) I said that the KAIST Exit Strategy was rather harsh and was not suprised that few people were considering taking the offer. I suggested that the startup “borrow” the researcher for two years, after which he could choose to remain with the chance for a big bonus, or return to his old laboratory. I made the same suggestion in Japan to AIST.

Exit Planning

It may seem odd to discuss exiting a business before discussing how to start one. In the US, initial understanding between a venture capitalist and an entrepreneur is the Term Sheet which has the general terms of a future agreement. On the first page, there is always a listing of who will own what if the company is sold or dissolved. In a plan in Japan, this is usually an afterthought at the very end.

Perhaps I have been involved with hi tech businesses and ventures for too long, and don’t fully understand the startup and running problems of less technical service and distribution businesses. In the US, the tendency is to think of the great successes of Microsoft and Dell, and not of the more numerous small businesses serving niche markets, especially through distribution of brand products.

Unless you have experience with venture capital already, one of the worst things you can do is to take venture capital as a start up. The one exception might be if you are famous and need $50 million to start, otherwise, you will end up working for the vc. Personal emotional risk is often a problem. A startup is a cranky baby who demands all of your time. Your family may not appreciate this and it sometimes leads to divorce (in the US) even if it becomes a success. On the other side, closing a business due to failure and loss of capital, often leads to divorce (in the US). One of my students wanted to write her thesis about what happened to founders who failed. At first she had good support from some vc’s, but then was turned down when they found how many divorces and other issues had resulted.

Now that I have said all of these depressing things, let me say that, fortunately, the lessons learned in business school are useful throughout life and in every occupation, whether your own business or work for a big firm. Further, if you do prepare and truly love the idea of the business you want to start, and have already had some experience in the field, I say, “Go For It!!” but be realistic and don’t throw good money after bad (if you find you cannot make the venture succeed), AND HAVE A BACKUP PLAN.

I cannot understand the large number of “How to” books which start with: so you want to start a business, and then proceed to: how to find an opportunity. This seems great for early retirees who have a pension, but rather backward for someone who is younger. In that case, it should always be: DO WHAT YOU KNOW AND LOVE. Get some experience in the business as

an apprentice working for someone else, before you try it alone. That's how you become a sushi chef.

How to Make Curry or Write a Thesis:

		Thesis	Table of Content	Schedule			
			Notes	1	2	3	4
	1	**Subject**	define it clearly This is a study of …..	X	X	X	
			which shows the relation between ……..				
	2	**Abstract**	What, Why, How, Results		X		
			100-200 word "Dream Scenario"				
	3	**Introduction**	Expand Abstract and add Summary of History, Literature, and Model		X		
	4	**Data**					
	4a	**Background**	Why the particular project was done	X	X		
Endogenous	**4b**	**History**	include some charts and graphic trends	X			X
	4c	**Literature**	current work and summaries (or in Appendix)		X	X	X
Exogenous	**4d**	**External factors**	politics, world issues, etc.			X	
	4e	**Research results**	interviews, questionnaires, etc.				X
Model	**5**	**Model**	use of trends, comparisons, history, software		X	X	X
	6	**Method**	how work was done and data combined			X	
	6a	**Data**	how data was selected and collected • . .			X	
	6b	**Questionnaire**	survey sample and interview follow-up				X
Analysis	**6c**	**Analysis**	how analysis was done			X	X
	7	**Results**	results of combining Data, Model, Method include charts and graphs			X	X
	8	**Conclusions**					X
Forecast	**9**	**Forecasts**					X
Recommend	**10**	**Recommendations**					
	11	**Future Work**	for next researcher				X
	12	**Appendices**	abstracts: Internet references may disappear			X	
			references			X	
			sample questionnaire		X		

A thesis can be a source of a business idea. That certainly is the case in hi tech.

Step 1: Prepare a general Table of Contents spreadsheet

Step 2: Write a 200-word "Dream Abstract", as if the thesis were finished.

Step 3: Put the Abstract on a spreadsheet, 10-words wide x 20 rows

Step 4: For each row of the Abstract, ask yourself why and how you will get the information to put in the results of the research

Step 5: On the spreadsheet, list where in the Table of Contents you will put the answers to your questions

Step 6: Plan the Work Schedule on the same spreadsheet. Work is not done top to bottom, but may skip around. While waiting for

questionnaire responses, do other work.

Step 7: Organize your data and analyses. See what is still missing.

Step 8: Prepare a first draft

Step 9: Re-write the Abstract using the results of the research

Step 10: Re-write the thesis

DREAM SCENARIO 1st ABSTRACT	**Questions**	**Where to find Answers**	**Answers located in Table of Contents**
This is a study of how to prepare			
Spicy Chicken Curry.			
A study of a new spicy chicken curry			
leads to the creation of other specialty curries.			
My mother's recipe and others were studied.			
Curries differ by the tastes of the diner,			
ingredients, cost of materials. This curry is			
new because it is designed for diabetics.			
The curry was prepared by...and rated as very			
good by a panel of diabetics and others.			
It is recommended that different amounts of			
spices be tested in the future. On the bais of			
the results, it is recommended that a business			
plan be prepared for opening a restaurant			
specifically for diabetics, but where they and			
non-diabetic friends can both enjoy dinner.			
		Cooking Plan	**Table of Contents**
		Spicy Chicken Curry	**MA Thesis**
	A.	Subject	Subject
	B.	Plan	Abstract
	C.	Introduction	Introduction
	D.	Shop	Data
	E.	Prepare	Model
	F.	Cook	Method
	G.	Serve	Results
	H.	Taste	Conclusion
	I.	Recommendations	Recommendations
	J.	References	Appendices

Writing a 100 to 200 word Abstract or Dream Scenario is not so difficult, but very important. It forces you to decide what you are trying to show with the thesis. It helps you to decide what data you need and to check for missing parts in the research. Think of it as cooking. Making "spicy curry chicken" is a way to remember the procedure for research.

Mother Nature Rules: The Energetics of Business

While you have to satisfy all of the laws in starting and running a business, there are many who can help you, including lawyers, bankers, tax specialists, accountants, friends, business associates, etc. but you have to also answer to a lawmaker who is very tough and unforgiving: Mother Nature. Rather than trying to fight the life cycle of birth, growth, decline, and death; and the natural limits of growth use them.

Laws of Nature

1. You can't get something from nothing.
2. There is a limit to reducing inefficiency for any system.
3. After you have cut all of the waste, but the efficiency you want is still not enough, a new system must be invented.
4. Power and energy are not the same. Energy is power times Time.
5. A laser and a small light bulb may use the same energy in an hour, but the laser will use it up in a small fraction of a second and burn a hole in steel.
6. There are always limits. When you run out of food, you die. When you run out of energy, your machines die. When you run out of money, your business dies.

Energy, Work, Power, and Waste

What do these words have to do with me? I'm studying about Business. If you bear with me for a minute, I will show you that a simple understanding can provide useful tools in analyzing all business situations. We often say things like, "he's a powerful man" or "she has lots of energy" or "that car has a lot of horsepower, but isn't efficient." We come across expressions about centralization and decentralization; mainframe computers and networks of pc's and work stations; acceleration and cruising. It all comes together in a simple concept: **Energy = Useful Work + Waste**
The following table summarizes the relationship between energy, power, work, and loss. It may seem obvious, but if we expand the equation for energy into two terms, we can get some useful insight into the issues facing management. Specifically, useful work has two parts: high power over a short time, and continuous application of constant energy.

Energy = Useful and Meaningful Work + Irrecoverable

Resources	**= Useful Work**		**+ Waste**	
Gross Income	**= Profit**		**+ Costs**	
Management Energy	**= Useful Work**		**+ Inefficiency**	
Energy	**= Useful Work**		**+ Entropy**	
Incandescent Light	**= no pulses**	**+ steady energy**	**+ lost heat**	
Industrial Laser	**= Power x time**	**+ no steady energy**	**+ lost heat**	
Energy	**= Power x time**	**+ Steady work**	**+ Entropy**	
Management Energy	**= Power x time**	**+ Steady work**	**+ Inefficiency**	
Gross Income	**= Spot profit**	**+ Steady profit**	**+ Costs**	**+ Wasteful Costs**
Resources	**= Spot Work**	**+ Steady work**	**+ Waste**	**+ Lost opportunity**

(Work is defined here as using the maximum possible energy conversion efficiency for a particular design or system. For a fundamentally higher efficiency, a different system must be designed. This is called a paradigm shift.)

The Racer's Dilemma

An ideal racer accelerates as fast as possible to the top speed that can be maintained until the finish line, and uses up all of the stored energy at that point. That is, he drops dead. You need high power to accelerate. A great deal of energy is used inefficiently during this stage. When the desired speed is reached, constant energy and less power is needed, so as to last the full distance.

The body uses sugars and fats differently to provide the energy. The acceleration depends on muscle strength which is built up with "anaerobic" strength and weight training. The stored sugar is consumed without oxygen. During "aerobic" exercise, the remaining sugar is burned with oxygen and when this is used up, stored fat is used, but at a slower rate causing a decline in performance. The switchover is called "hitting the wall" by marathon runners. Any unburned stored fat and sugar is left unused and "wasted".

Usain Bolt seems to keep breaking his own world track records, which (as of now) is 9.58 seconds for 100 meters. Noah Ngeny holds the 1000 meter record of 2:11:96 (13.2 seconds per 100 meters). We can compare the runners by considering their different power and constant energy needs. They require different training and different "engines". But both runners are able to continue, at a slower rate after finishing. This means they still have not used up all of their stored energy, and we can expect new records as they improve the different kinds of muscles and energy burning processes. We can immediately see the analogy with a high performance car with a hybrid. But it also suggests that Nature's three power source system would be highly efficient.

Just to make sure there is understanding of the difference, think of another example. In a millionth of a second, a small atomic bomb may produce the same amount energy that a 100 megawatt power plant produces in about 11 days (a million seconds). The bomb may create the same energy but is a trillion times more powerful.

Reduction in Inefficiency

In the previous discussions I have defined efficient as the best possible performance of a system of a particular design. If you want an intrinsically more efficient system, you must change the design, often drastically. This is called a paradigm shift. With this definition of efficiency, any unused energy or resources are Overhead or waste, and are not recoverable. They are the inefficiency of the real world. Companies often say they are trying to increase efficiency using the existing system, but really mean they are trying to reduce the waste, the inefficiency. If they want higher efficiency, they will have to change their products and ways of doing things. Often, trying to reduce inefficiency to its smallest amount may take too much energy, and may even affect the basic system. Thus, if JAL reduces staff in the name of reducing inefficiency (they call it improving efficiency), they may fire needed maintenance staff resulting in disasters.

Second Law and Management

The analyses of power and steady energy needs can lead to a better understanding of the stages of growth of a business, the financial and manpower needs, and management. Business needs both investment capital (rapid infusion of cash) and running capital. Management

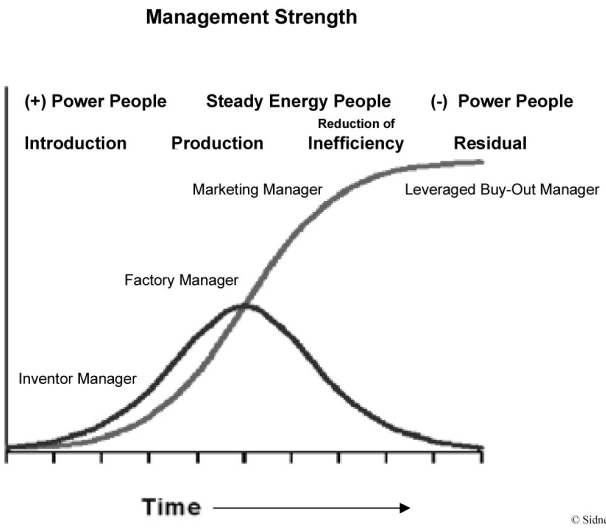
needs a powerful president during crises and a competent manager during regular operations. Thus, we can quickly decide what kind of staff to hire and when we need "power" people and when we need "energy" people.

The power term in our equation can be characterized as concentrated or "centralized", and the constant energy term as networked or "decentralized" where each element in the network controls its local area. When a company is young and under stress to grow, or when there is a crisis, the CEO must use his power quickly. When markets are steady and growing, the factory manager has the control. When markets decline, the CEO's role expands and includes reducing costs and inefficiency. A company's annual report that proclaims there will be greater efficiency next year, tells you that the company is in trouble. It should be boasting of new products and not of reducing its inefficiency.

Natural growth and limits

Growth of a system would continue forever with unlimited resources. Without a limit, the 1900 world population of 1.6 billion, which grew to 6.4 billion in 2000, would grow to 26.4 billion in 2200 and 105.6 billion in the year 2300. Clearly, growth will be limited by either human choice or through starvation. In the case of algae on a pond, as an example, the growth is exponential, initially, but then slows and finally stops as the nutrients and space are used up. The result is the well-known S-shaped curve which shows the rate of growth, which stops at the top.

The need for reducing inefficiency may be low in a start-up, but becomes more and more important as a business and product reach middle and old age. The S-shaped curve shows the total of all resources used with time. When none are used, the curve stops increasing and is flat (at the top). Another way of presenting the information is with a "bell-shaped" curve which shows the growth or decline for each period, as resources are used up. These curves are used as simple models in business. The curves shown are an ideal. Failure is often fast, so that the right side of the bell is usually much steeper. There is often little time to think of a good exit strategy. That is why it must be considered from early on.



There are times when high power for a short time is needed, and others when steady energy are needed, and still other times when reduction of inefficiency is the prominent factor. There is no one best management style, rather, success rests with recognizing the changing needs with changing circustances. By looking at the bell and S-shaped curves and considering what the key management roles are at each stage, it may be possible to come up with practical guidelines. The question then arises as to whether or not there were some fundamental considerations. To answer this question the best place to start is at the very beginning.

I might add that we believe that the universe goes through periods of expansion and contraction. In management terms, this is centralization and decentralization. An extension is that during tough times there is centralization and when times are freer, (more profitable) there is decentralization. The same seems to go for governments, autos vs. rail usage, mainframes vs pc's, big business vs hi tech startups, restaurants vs home cooking, and so forth.

Thermodynamic Laws and Mankind

In the mid-1850's, studies of the practical problems relating to heat and work in regard to the steam engine, resulted in several strong observations or laws. These "laws", or rather axioms, can be considered in simple terms: The first law states that energy can never be created or destroyed, but it can be converted from one form into another. An automobile engine can convert gasoline into useful work used to move the car, generate electricity to recharge the battery, run the radio and air conditioner, and produce heat in the exhaust products.

The second law says that when energy is transformed from one state to another, there is a penalty. Some of the energy cannot be recovered for useful work in the future. This is called "entropy". Now that wasn't so hard. I could have called the above Laws of Thermodynamics, but that might have scared you away. Engineers have to live with these conditions. It's all a matter of energy, work, and power.

It is startling to learn, however, that some of the fundamental rules of science and engineering are intimately tied to human beings. We may describe laws concerning motion of heavenly bodies and of sub-atomic particles in mathematical and dispassionate terms, but those related to WORK, are entirely based on the use of energy for the benefit of MANKIND. Energy or stored energy in matter, according to the Laws, eventually is degraded and dissipates in the universe as radiated heat. It is WORK, which is MAN's use of the energy and resources to produce things and actions which are useful and meaningful to MANKIND, which is the process before this dismal state. The goal then, is to obtain as much benefit to MANKIND from the stored energy and resources before the final degradation. It is concluded that everything depends upon ENERGY and the productive conversion of it into work. Indeed, wealth can be considered as the benefit of "useful work".

Whether or not we believe that we will run out of oil soon or if there is global warming or even a trend to unsustainable overpopulation, we must still agree that use of non-renewable energy and resources can only decrease and not increase. It is only prudent to conclude that intelligent use of these can provide more benefits to HUMANKIND over a longer period than inefficient and wasteful use. A simple conclusion is that it is better to make useful

plastic products from oil and then to burn them as fuel after several recycle steps, than to just burn oil for heat. We should seek as much "added value" as we can get.

But wait!!! What about culture, human values, or brand imaging? Where do they fit into the Energy equation? This brings up the issue of whether human life is a "means" only for labor, or an "end" in itself and of value. Thus, education, arts, and culture may be thought of as Non-productive, but they are the essence of humanity. We must allow for the "inefficiency" in supporting these activities. This is what distinguishes between using slave labor and seeking a better life for all.

The fundamental principles described are guides and boundaries for creating new businesses. The Laws of Thermodynamics can provide comfort in that they are profound and include the concept of WORK as beneficial to MANKIND. Physical laws may put boundaries as to what we can do. They are unbending and unforgiving, and must be obeyed by all, even by competitors, but within their conditions, there is tremendous room to do what is useful and meaningful.

The key point is that everything depends upon ENERGY and the productive conversion of it into work. From this we could go on with a discussion of international politics and oil, but the goal here is more limited.

The Energy Equation as a Source of Business Ideas

The Energy equation gives us a big hint. It says, that you can reduce the inefficiency only so much for any given system. It also implies that as you reduce the inefficiency, you will be spending more and more time to achieve smaller improvements. If you want to do better, you have to choose a new system which has a fundamentally different possible efficiency. This is called "a paradigm shift". Let's Consider Amazon.com, for example.

In the old traditional way of getting a book from author to reader, you would go through many steps, including: author handwrites the book, editor edits, publisher and printer print it, a wholesaler distributes it to a bookstore, where the reader purchases it and the contents are "heard" in the brain. We can immediately suggest several things to reduce time and costs: use a word processor for writing and editing and for large bookstores, ship books directly from the printing plant.

Along comes Amazon.com which eliminates the wholesaler completely and makes purchasing the printed book simple and rapid for the reader.

Some authors then think, why not just put the book for sale on the Internet and let the reader download it and print it at home? This does away with the big printer, but still needs lots of paper.

Then some smart people think, why not provide a simple storage and reader device so that the reader can download the e-book and have it easily available with many other books. No paper is needed, and no wholesale delivery of printed books. The change in business models reduce inefficiency, and in some cases, present fundamentally new way to get from author to reader. Perhaps the ultimate process is when a parent tells a child story at bedtime. The author then speaks directly to the listener, no reading.

When creating a new business we can consider the invention of new technology (I can prepare

better food than anyone and at lower cost, so I should open a restaurant.) Or, we can think of ways of reducing costs and "giving added value" which are part of the "Waste and Irrecoverable" parts of the Energy equation. We can add to the general culture and human satisfaction by providing the image of quality and value. We may be adding value to the culutre, but I maintain we are not adding wealth. A society which obtains most of its income from "service" is completely dependent on someone who has wealth and is willing to spend it on the services.

I conclude that energy consumption is necessary to produce wealth. No energy used, no useful work done, hence no wealth !!! If banks merely transfer funds, they have done no useful work. It is only when the funds are expended, that work can be done. Money itself is a form of potential energy. It can be devalued so much, as was the World War I German Mark that the paper was used for fuel. The potential energy is lost. And, since resources always decline (except maybe solar energy) businesses which help reduce inefficiency and improve better use of resources can only be for the good of mankind.

http://www.das-deutsche-notgeld.de/pm3/finger.jpg (Oct. 1923 two hundred billion Mark bill, enough to buy dinner for two.)

Business Plan

Now that you have written a thesis and found a good business idea, and have checked it out with Mother Nature, it is time to write the business plan. What is such a plan? It is a guide with two sections: a) information that is useful to anyone who may want to invest or enter a business; b) a plan specific to your business

The Business Plan

A **Business Plan** has a balanced discussion of:

a. Product
b. People
c. Finance

It has a consulting report portion which includes:

i. the product (thesis),
ii. its market and,
iii. competitive Who's Who;

and adds an implementation portion which describes:

iv. who is going to do
v. what,
vi. how, and
vii. how money is involved

By looking for what is missing and for what the balance is, you can make a quick judgment about the completeness of a plan or proposed project. You will find that the marketing manager believes that marketing is most important and should have the highest weighting, while the technical manager will claim that without a product there is no buisness. Management's job is to find the compromise so that everyone understands and agrees to the balance at each stage in the life of a project.

which considers available skills and finance. (a) is a consulting report. (b) is the first example of what you will actually do. DO NOT CONFUSE THE TWO. Unless you are in the business of consulting and preparing consulting reports, or are professional investor, a consulting report will not make a profit for you. If you are trying to start a business, it will help set the conditions about customers, market, competitive products and services, financial needs, etc. The "real" business plan is how you will operate within these conditions and the Laws of Nature.

People issues include the project or business creators, the stakeholders, the customers and suppliers, government, etc. Financial issues include investment, supply and production costs, sales, market and competition, etc. Product issues include the facility, product, competitive products, future developments, etc. A Business Plan is a living document. It is a tool that facilitates communication.

A Business Plan is a roadmap. The basic assumption is that you have a goal in mind and that the products and services of the project or business are well defined. Specific approaches can be brought in to gather the needed data to set budgets to buy equipment, hire staff, etc. But a Business Plan with a clear product concept is only one kind of situation in planning. Planning can have four starting points:

1. you don't know where you are and don't know where to go
2. you don't know where you are, but know where you want to go
3. you know where you are, but don't know where to go
4. you know where you are and where to go and need to choose a route

Technological forecasting methods are of value in all four cases. If you are a genius or very rich, maybe you don't need a business plan, just a "back of the cuff" estimate of what you need to buy oil tankers, like Mr. Onassis. But for the rest of us, a business plan is an exercise in discipline and in asking ourselves the questions we really don't want to face.

A Business Plan is just that, a PLAN. It is not a contract that cannot be broken. It is a guide so that you and any sponsor or customer can

Sample MOOT Corp competition Plan (ref: http://www.mootcorp.org/; http://www.businessplans. org/businessplans.html

2MBA

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understand where you are and where you are going. A quick search about business plans lists marketing plans, specific plans for specific industries, plans for presentation to raise venture capital, almost any kind of plan you can think of is included. What they do have in common is mention of things which confirm People, Finance, and Technology (the product). Different kinds of plans require different balances of these and even one plan will have a change in emphasis as a business progresses. This is described as management power during the life stages of any product.

Conclusion

Starting a business can be a very exhilarating and rewarding experience, but it should be approached with a clear head and preparation. Invariably, everything takes longer and costs more than expected. The product originally proposed must be quickly adapted to the customers' desires. Unless you have fallen in love with your business concept, you may be tempted to give up too soon. Or, you may have fallen blindly in love with it and end up spending "good money after bad". Prepare for disaster and have some funds which you will not touch. It is most important to have a mentor.

The concepts presented here are based on the idea that if you cannot make a simple model of your business, then a complex one with detail will not help. The examples of Energy in Nature and how to prepare spicy chicken curry are meant as simple to remember guides in evaluating both new businesses and new projects. It is expected that most readers will not start their own business, but should understand that the fundamentals are the same.

Some useful resources and data

A big part of a business school education is in preparing a business plan. Often, there are competitions, with rather large awards, such as in the Moot Corp competition. Looking at the curriculum, it might even be concluded that each course deals with a section of a business plan and that the competition is the final exam to put together all of the pieces.

http://www.businessplans.org/businessplans.html
look at 2MBA, Inc. as an example

http://www.bplans.com/
includes free sample plans or buy 500 plans for under 10,000 Yen

http://www.sba.gov/
the granddaddy of resources for Small Businesses

http://www.sba.gov/smallbusinessplanner/index.html

http://www.score.org/explore_score.html
get a mentor US entrepreneurs are fortunate to have a volunteer mentor service easily available. Setting up a similar program would be an excellent group program for Rikkyo. It is also a great way to use the skills of retired seniors.

http://www.score.org/small_biz_stats.html
Small Business statistics

There re about 27.2 million small businesses in the United States:

Employ about half of the country's private sector workforce

Hire 40 percent of high tech workers

Include 52 percent home-based businesses

Generate a majority of the US innovations coming from companies

Small Business Openings & Closings in 2007: New businesses: 637,100, business closures: 560,300 and 28,322 bankruptcies.

Two-thirds of new employer firms survive at least two years, 44 percent survive at least four years, and 31 percent survive at least seven years.

Source: U.S. SBA Office of Advocacy, September 2008 and other refs.

Source: USA Today, July 17, 2005)

Women in Business

Women represent more than 1/3 of all people involved in entrepreneurial activity. (Source: Global Entrepreneurship Monitor (GEM) 2005 Report on Women and Entrepreneurship) Women-owned firms accounted for 6.5 percent of total employment in U.S. firms in 2002 and 4.2 percent of total receipts. The growth of women-owned firms, now about 10 million, is twice the rate of all U.S. firms (23 percent vs. 9 percent). The greatest challenge for owners is access to capital, credit and equity, so that many are run from home to keep overhead low. (Source: SBA, Office of Advocacy and Business Times, April 2005)

Seniors in Business

Entrepreneurship among seniors is growing. In 2002, the rate of self-employment for the workforce was 10.2 percent (13.8 million workers), but the rate for workers aged 50 was 16.4 percent (5.6 million workers). Although those age 50 made up 25 percent of the workforce, they comprised 40 of the self-employed. (Source: AARP/Rand Corp. "Self-employment and the 50 Population")

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