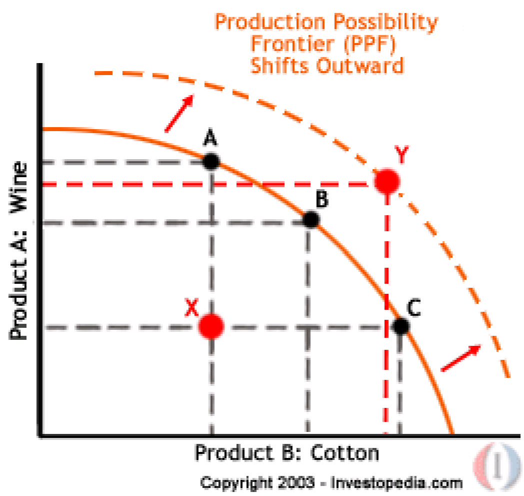
Exploring The Inefficient Frontier

Motivated to expand quickly, firms in growth industries are faced with a number of challenges as well as opportunities. The challenges are amplified for firms in emerging markets but the commensurate rewards are greater. This paper discusses one element that is fundamental to success: core strategy during initial ramp up. The driver for strategic focus is the economic principle of the production possibility frontier.

Production Possibility Frontier

There is a macroeconomic model that describes the tradeoffs that countries can make in producing different items called the Production Possibility Frontier (PPF). Based on the fact that there is finite capacity, the model assumes that with efficient production, there is a curve that portrays what can possibly be produced. Known colloquially as the "Guns and Butter" curve, it is used to determine production potential and balance output.



As an economy become more effective, the production possibility frontier can shift the outward, meaning that more can be produced using the same resource allocation. This increase in productivity can be applied to producing more of one item or balanced across multiple items. Note that the basic assumption is that production is already as efficient as possible.

In viewing the PPF graph, the efficient frontier at points A, B and C shows the theoretical maximum output of wine and cotton. The point X shows an inefficient utilization of resources. The point Y shows what could happen if effectiveness is raised and resources remain efficiently utilized. Shifts on the PPF curve are often enabled via the introduction of new technology or supply chain changes.

Microeconomic Model

The same model can be used at a microeconomic level if the basic assumptions are applied. An individual firm can balance production of different products based on the production possibility frontier. Naturally, this assumes that there is efficiency of production for the two products.

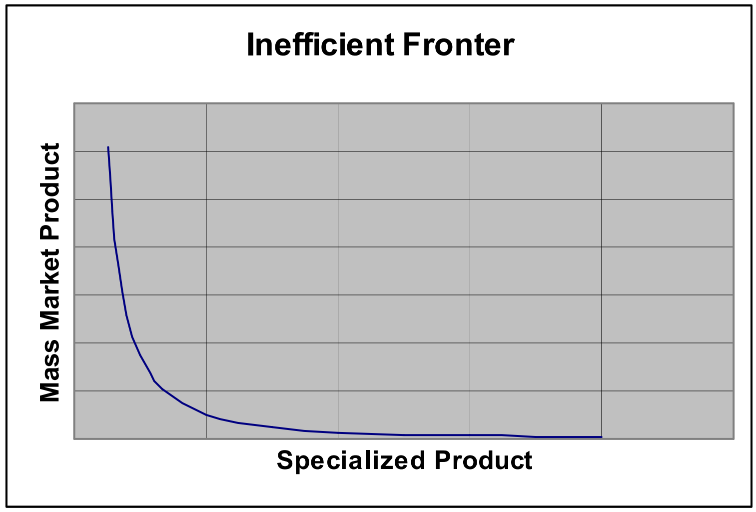
This model can also apply to the same product but with different market positioning. Luxury goods can differ significantly enough from mass market merchandise that they can be mapped against each other on a frontier graph. The model is particularly useful if the same facilities can be interchanged for production of either product.

Examples of these tradeoffs abound in modern industries. High definition television manufacturers balance a portfolio of related products based on technology (e.g., LCD vs. plasma) and product positioning (screen size and features, generally implying different price points). Software companies strive for efficiency between developing new software and enhancing legacy products. Consumer products companies are highly focused on optimizing product mixes across many dimensions such as flavors, sizes, distribution channels, promotional products (e.g., *Pirates of the Caribbean* labeled packages with special flavors), and a myriad of other factors.

Naturally, a firm in the microeconomic model can more readily induce a shift on the production possibility frontier. One simple example would be the consolidation of operations with a competitor to gain both market share and capacity.

Inefficient Frontier

The fundamental premise of the production possibility frontier is efficiency of production. The frontier is the optimal combination of production of two products competing for scarce resources. However, high growth firms, especially in emerging markets, are very far from efficient. The implication is that their production will fall somewhere inside the efficient frontier.



With an inefficient frontier, increasing production of one product at the expense of another yields a smaller net gain. This is the inverse of an efficient frontier in which a unit reduction in the production on product will yield a greater increase in the other product. The effect of inefficiency is that trying to balance production across two products actually causes a net loss because the firm is not good at producing both items – it is inefficient. This graph of an inefficient frontier highlights this relationship. The degree to which the curve is concave reflects the level of inefficiency.

There are a number of reasons for inefficiency. While the factors below are far from comprehensive, they are representative of the many challenges facing the management of multiple products.

Insufficient management: If there is insufficient management ability and leadership is spread too thinly across initiatives, they will all suffer.

Process immaturity: If processes are ad-hoc or poorly defined, any attempt to scale up will cause a drag on production and likely involve more overhead as errors and costs are amplified.

Lack of governance: Lack of appropriate governance can make attempts to gain insight into two streams of work and understand the interplay a futile effort.

Manual process: Automation and other technologies can hamper product line diversification as containing growing costs is not possible and any specialized knowledge workers cannot move from their old jobs to new ones.

Different models: Different products or market segments often require different operating models. Overcoming two learning curves can lead to mediocrity or worse in both efforts.

Unsophisticated segmentation: Market segmentation while avoiding cannibalization requires more sophisticated brand management which may not have evolved in high growth environments.

Over time, organizations can grow more mature. As they do, not only will the curve shift outward, but it may also change in shape, growing less concave. As the organization becomes efficient it will experience increasing convexity of the curve.

Practical Application

With a foundation for understanding efficiency in production possibility frontiers, the impact on strategy can now be examined. This paper will not discuss strategy for efficient firms as there is excellent coverage on the topic is business literature.

Firms attempting to cope with evolution should begin with the fundamentals of business strategy.

Focus On The Core

It is critical that rapid growth firms maintain focus on core strategy. For emerging markets firms, the initial strategy is often to enter the market as a low cost provider. This is soon followed by a focus on quality while holding cost down. Firms that attempt to execute on multiple strategies usually dilute their ability to execute and are not successful. Conversely, firms that focus on the core, change the convexity of the production possibility frontier and then set the next generation of strategy.

The following are some examples of where strategic focus that evolves after efficiency is attained has proven very successful. Young, high growth firms and those in emerging markets should examine the pattern of success that others have employed and indeed adopted from others.

> **Low cost to luxury**: Asian automobile manufacturers penetrated markets as the low cost provider. While Toyota is the classic example, Honda, Hyundai and others followed suit as have manufacturers in other regions. Once experience in low cost manufacturing was achieved, quality was driven upwards. This enabled the auto makers to add luxury brands and broaden the product lines. This strategic shift would never have been possible if there were quality issues or if supply chains and manufacturing were not efficient.
>
> **Value chain moves**: Moving up the value chain enables firms to capture greater margins and create greater lock-in. Once these barriers to entry are raised, it become difficult to fight the entrenched players who leverage their cost advantage. The PC market is a perfect example where China began by producing the plastic cases and other parts and now produces nearly 90% of all notebook parts, excluding the CPU, in Suzhou[1].
>
> **In-house to external provider**: There are many firms who created such an efficient in-house operation that they turned a former cost center into a viable profit center. While the potential exists for enabling cannibalization by strengthening competitors, this has not stopped companies such as Amazon from taking their operational foundation as selling it as an external provider to other companies.
>
> **Smart individuals to full solutions**: Indian technology firms are now too numerous to name. While they initially thrived on provider excellent low cost talent, the market has matured into a solution provider model with full project lifecycles and process certification such as Software Engineering Institute's Capability Maturity Model (CMM).
>
> **Outsourcer to product company**: Boston's State Street has effectively marketed back office solutions that were turned into full fledged products for financial services firms. Indian outsourcer Tata Consultancy Services formed a dedicated business unit, TCS Financial Solutions, to focus on the $170 million portfolio of products in 2007[2].

Domestic to global provider: The majority of global brands started in domestic markets. Once they achieved domestic success and understood how to position and manage brands, they were able to compete in other markets after adjusting their strategies to suit the business landscape in the different regions and countries. Think about Ford, Coca Cola, McDonalds and other familiar brands in the U.S. market that are found in many countries but often with products catering to local markets.

An example that combines multiple factors is drawn from China's automobile manufacturers who are clearly growing rapidly. In 2007, China produced almost 8.9 million motor vehicles (nearly one-eighth of the world's total production) with a growth rate of 22% compared to U.S. shrinkage of 5% that year[3]. The domestic market in China is booming with a growth rate 24 percent in 2006 and 34 in sedans[4]. Most individual firms will follow policy set by the central government to build an export market and then move up market.

The goal initial for China "to lift the value of its vehicle and auto parts exports" is well underway with auto exports doubling in 2006.[5] Established Chinese manufacturer Chery has shipped luxury models in Indonesia[6] and is consistent with a growing mid-market and luxury segment. Reports that there is a "higher than expected demand for luxury cars comes as a direct result of China's stable economic growth, which has been growing at 10 percent annually over the part ten years"[7] is consistent with evolution from domestic, low cost provider to regional, low cost provider and then to luxury brand.

What should be noted about the examples of core strategy evolution is that not every strategy starts with being the low cost provider. While that can be a competitive advantage in emerging markets, it is far from the only option. Emerging markets create domestic growth opportunities that can provide leverage as the strategy evolves.

Manage Change

Once core strategy has yielded results and the next stage in growth is being planned, change management becomes critical. The approaches that led to successful execution of initial strategy may not be well suited to the next phase of growth. For example, doing anything for customers might give way to uniform production or service delivery. Conversely, rigidly defined and narrow product offerings might give way to a more customer intimate delivery scheme or greater value added service offering.

To enable the organization to adapt to the next generation strategy, leadership must effectively manage change. Change must be driven through front line leadership and through to individual contributors who understand their role in the new strategy. Key reasons for failure (24% of initiatives) is "lack of clearly defined or achievable milestones", "lack of commitment by senior management" and "poor communication" (both with 19 percent)[8]. This topic has filled volumes in business literature, mainly due to the importance in transition and effective execution.

Align Measures

To ensure ongoing alignment with strategy, it is important to focus on a small set of appropriate measures. These measures govern behavior and often shape culture. Examples include quality and customer satisfaction measures that become the focus of an entire institution.

The most basic measure to focus organizational attention is compensation. If pay and overall compensation are aligned to strategic objectives, the system becomes more self governing and requires less overhead to drive behavior. Asia faces this issue today with 33% of firms failing to achieve desired outcomes via compensation alignment due to lack of communication and 60% failing due to lack of budget[9].

Operating metrics serve to help leaders focus and maintain alignment. While not the subject for this paper, designing effective operating models with appropriate measures should be done with forethought. A small set of accurately reflective measures is far more effective than a slew of data that creates aberrations.

Conclusion

Strategy is the foundation for running any business. Strategy is not stagnant, but should evolve as the plateaus of growth are attained. By attaining focus on an initial core focus, organizations can realize efficiency and then effectively evolve strategy to take advantage of the proven concepts around an efficient production possibility frontier.

---

[1] Dedrick, Jason and Kraemer, Kenneth L. *Is Production Pulling Knowledge Work to China?,* IEEE Computer Society. July 2006

[2] PRNewswire. *Tata Consultancy Services Launches Strategic Business Unit for Financial Services Products*. 29 May 2007.

[3] International Organization of Motor Vehicle Manufacturers (OICA), *2007 Production Statistics*

[4] Xinhua, 1 March 2008

[5] Wei Jianguo, Vice-Minister of Commerce, China. *People's Daily Online*. 1 January 2007.

[6] Xinhua, 11 October 02006.

[7] Zheng Biano, GM of Bentley China. Xinhua. 28 September 2007.

[8] Economist Intelligence Unit. *Survey on Change Management*. 6 March 2008.

[9] Hewitt Associates. *Asia-Pacific Salary Increase Survey 2006-2007*. March 2007.