Competitive Life Cycle Analysis

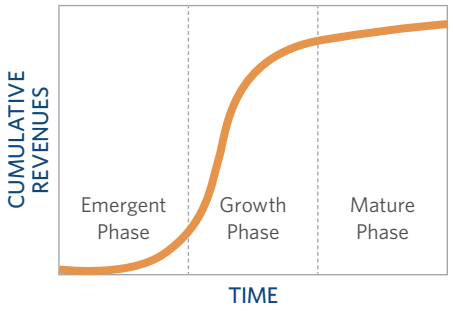
What is it?

Competitive life cycle (CLC) analysis is the assessment of competition within dynamic market environments.

When do we use it?

CLC analysis is used to evaluate the nature of competition as a market evolves. It can be used to help determine strategy in dynamic environments providing insights into the timing and positioning of new product introductions and other competitive options.

Why do we use it?

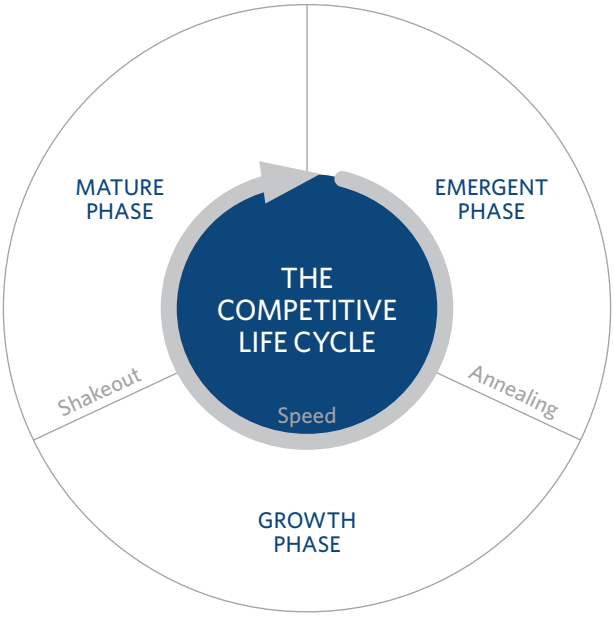


Scholars have long observed that technologies and product markets tend to progress along well-defined sigmoid, or "S", curves. Early in the history of a new technology or product concept, businesses experiment with new designs. Performance on various attributes of interest to customers such as quality or speed may be lacking. Adoption by consumers may be slow at first as some pioneering customers buy but others wait to see how the technology or product concept develops. Over time, performance improves. Growth in demand accelerates. New firms enter the market in an attempt to grab a piece of the action. A dominant design may emerge, resulting in most businesses providing similar offerings and features. Eventually, markets become saturated. Growth slows, and a shakeout among competitors occurs. The wait begins for the emergence of the next new thing that will replace the old technology jumpstarting a new S-curve and the process begins all over again.

This interplay of overlapping S-curves characterizes the CLC (see **Figure 4**). It is a natural aging process that cannot be reversed or avoided. An organization can only endeavor to create a portfolio of new initiatives that might produce a new product or service, to jump to a new S-curve, to replace the income lost upon the decline of existing products or services. One of the key roles of executives

is to allocate resources in a manner that continuously produces new S-curves to replace declining ones keeping an organizational viable for a longer time. Growth results from scaling new products and services up the S-curve and also occurs from the continuous creation of new S-curves. So in one sense, the purpose of strategy is to create new S-curves. We know that not all growth forays or initiatives create new S-curves. This result can occur, for example, when new products do not meet customer needs or if customers do not perceive a good value or the competition can produce a similar product faster and cheaper.

Figure 4. The Competitive Life Cycle.



The CLC is split into three phases consistent with the S-curve: an emergent phase, a growth phase, and a mature phase. Imagine the CLC is a racetrack. Each lap around the track represents a single S-curve. While some firms may be in the mature phase of a technology or product concept, others may have moved to the next "lap" by introducing new technologies or products. The "race" continues as new generations of technologies and products compete over subsequent laps.

Demarking each of the three phases associated with a single S-curve are transitory inflection points: disruption, annealing, and shakeout. The emergent phase begins with a *disruption*—the introduction of a new technology or product concept. Classic examples would be the introduction of horseless carriages (i.e., automobiles) into the vehicle market, the word processor into the typewriter market, and big-box store concepts in the retail sector. More recent examples include the advent of digital media players pioneered by Rio and others (and later Apple with the iPod) in the market for personal transportable music. These disruptions can vary quite dramatically in how disruptive they are to the competitive status quo. Some seemingly benign innovations can be quite radical to existing businesses. For example, the introduction of quartz watch technology in the 1960s led to

a quick and devastating competitive reordering with older Swiss watch makers who specialized in mechanical (wind-up) watches being shoved aside by Japanese quartz watch manufacturers. Other disruptions may preserve and reinforce the dominance of existing businesses. Famously, or infamously, Microsoft was able to leverage its position in the operating system market and its expertise in software to capture the emerging market for browsers from the likes of Netscape.

After a disruption occurs, the new S-curve begins and we enter the *emergent* phase. This period is often characterized by what others have referred to as the "era of ferment" as businesses experiment with various designs. In the early days of the automobile, in addition to gasoline-powered internal-combustion engines, there were steam-powered cars, electric vehicles, and automobiles powered by kerosene. During this phase, we typically observe widespread entry by both diversifying incumbent firms and new ventures. In some industries, the emergent phase can be shockingly brief. The evolution of social networking software occurred very quickly with Facebook setting the standard and quickly overtaking rivals such as MySpace. In others, the emergent phase can last for decades. For example, hydrogen fuel cells have been around for decades, yet there is still no consensus on exactly what technological approach or design will work best. In part, what drives the length of this phase is the amount of effort put into advancing the technology or product. If businesses put more effort into a particular technology trajectory (e.g., spending more resources on R&D), they may shorten the emergent phase.

The emergent phase ends as customer adoption accelerates and the product concept solidifies around a core set of design features. In many cases, what emerges is a "dominant design"—an often surprising similarity between product offerings. We refer to this process as *annealing*—a reduction in variance in product offerings. Witness the unfolding market for smartphones. The introduction of the iPhone by Apple seems to have accelerated the annealing process, leading Google and Microsoft to offer smartphones with similar product features and "look and feel." Not all technologies or product concepts reach this transition. Some fail outright or linger in development for perpetuity. LaserDiscs, an early predecessor to the DVD, never gained traction in the media storage market.

Annealing typically gives way to the *growth* phase. As uncertainty in the technology or design is reduced, more customers are willing to purchase, leading to significant growth in demand. Business focus typically shifts from development to scaling. This is not to say that products and technologies do not continue to evolve and advance, but greater emphasis is placed on replication and expanding to meet growing demand. Firms continue to enter the market, many trying to catch the new wave of demand. Witness the flood of imitators to Starbucks once they pioneered the coffee-house chain concept in the United States and began to expand. This phase is often characterized by increasing head-to-head competition, in many cases putting downward pressure on prices. "Complementary" capabilities in manufacturing, sales, and service begin to grow in importance relative to innovation and design.

As the growth phase winds down, when marginal growth rates begin declining, a competitive *shakeout* often ensues. Marginally competitive firms exit the market and a handful of dominant players emerge. Shakeouts can vary in intensity. In the early U.S. automotive market, there were hundreds of competitors that through a series of bankruptcies and acquisitions was reduced to the "Big 3": General Motors, Ford, and Chrysler. After prohibition, hundreds of new breweries entered

the U.S. beer market only to face consolidation and dominance by Anheuser Busch, Miller, and Coors by the 1980s. The early digital music player market saw entry by the likes of Rio, Dell, HP, Microsoft, and Sony before becoming dominated by Apple. In some industries, dozens of large competitors may continue to compete after the shakeout. In others, the industry may be dominated by one or two players. In the extreme are winner-take-all markets that favor a single dominant player. See, for example, Microsoft's dominance of the PC operating system market or Google's dominance in online search technology.

After the shakeout, industries enter the *mature* phase. Growth is still possible, but it is likely to be less pronounced and often comes from stealing market share from competitors. When the market continues to support a number of rivals, competition can be particularly fierce with strong downward price pressure. Companies that thrive in the mature phase often focus on incremental innovation and cost savings. Total quality management and Six Sigma programs are common. We still may see entry of new firms in the mature phase, but new entrants tend to be small players capturing unexploited niches in the market. Some of these new entrants may even experience significant growth by, for example, pioneering low-cost approaches. In the PC industry, Acer has emerged as significant player, grabbing market share from the likes of Dell and HP. The mature phase can last decades or can be frustratingly short (at least to dominant players). The automotive industry has been relatively stable for decades with relative consistency in both the core technology and the set of competitors (with the exception of entry by some Asian producers). Now the automotive industry faces a potentially significant disruption with the introduction of hybrids and electric vehicles. The market for computer operating systems has been dominated by Microsoft, a relatively young firm, but that position is already threatened by the rise of mobile computing and smartphones.

The mature phase ends with the introduction of a new disruptive technology or product concept starting the entire process anew. We refer to the *speed* of the industry to characterize how long it takes to complete a cycle (i.e., a single "lap"). Once again, industries can vary dramatically in their speed. Much has been written of how globalization and information technology may be increasing the speed of all industries. People speak of "hyperdynamic" competition and the innovation imperative. Clearly, some industries are facing very fast cycles. For decades, the microprocessor industry has adhered to Moore's law that there is a doubling in processing capacity approximately every 18 months. The game player console industry has seen eight generations or cycles in the past 30 years.

In some cases, it is important to recognize that competitive life cycles may be nested or "fractal." Fractal is a term borrowed from complexity theory that is used to characterize the property of systems that shows self-similarity when broken into smaller units. It may be useful to think of the competitive life cycle over long and short time periods. While the auto industry has been relatively stable and suggests a long life cycle, there have been individual component technologies (e.g., electronics, safety features) that it may be useful to think of as having their own life cycles.

How do we use it?

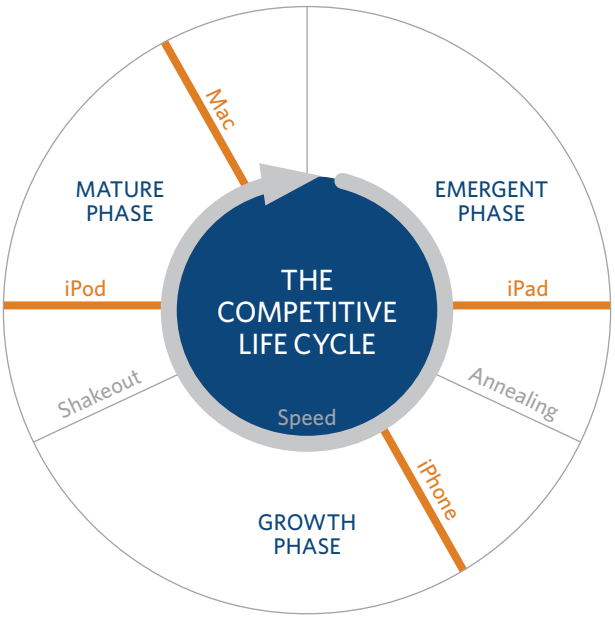
Step 1. Charting your positions on the CLC.

In order for a business to make appropriate strategic decisions, management must have a good picture of the timing and projected life of its existing products over the CLC. The first step in analyzing the CLC is to chart existing income streams delineating the position of each product. The positioning of your current products determines how much time you have left before you must replace that income. The amount of time will influence your investment strategy, especially the decision whether to develop new products or to buy new products that have been successfully developed and commercialized but not scaled by you or others. The positioning will also determine the allocation of investments among technology-enabled development, commercialization, scaling, and improvements; in essence, the composition of your growth portfolio.

Unfortunately, many firms find it difficult to explore new growth when they are intoxicated by scaling growth with existing products. This intoxication blurs the reality that at some point this too will pass and the star product's popularity will decline. If a product is a big generator of net profit upon its decline, then management often has to resort to a big investment in either a new product or an acquisition because it did not invest previously to generate a portfolio of initiatives that could produce new S-curves. Not all initiatives will produce new S-curves. In fact, most new initiatives do not produce new S-curves, which why management—in anticipation of the decline of current S-curves—must create a portfolio of initiatives to hedge its bets. Charting your positions should give you better information about the projected life cycle of your current revenue streams. This will allow you to chart your growth needs: the amount of revenue you have to replace plus the amount of revenue you need to add to maintain your growth and satisfy your stakeholders.

See **Figure 5** for a stylized map for Apple, circa June 2011. Let's start with Apple's Macintosh PC. Given current demand for PCs, this market appears to be well in the mature phase. Apple has a relatively small position (about 6% market share) in a highly competitive, fragmented market. The emergence of mobile computing (e.g., smartphones and tablets) may very well signal the end of this segment in the not too distant future. The iPad, and similar tablets, may in fact represent the next lap in this race. Tablets have been around for decades (starting with Apple's Newton in the early 1990s) but only now seem to be transitioning now to the growth phase. The market is characterized by significant number of entrants, though much of this is annealing around the iPad design. This looks to transition to the growth phase over the next few years (and Apple has already experienced significant penetration with the iPad). The iPhone has benefited from a similar position in the smartphone market—the market leader setting the dominant design—and is in the growth phase of this market. One would expect a shakeout to be coming in smartphones soon. Finally, the iPod and portable digital players arguably have entered the mature phase. Growth rates are declining. A number of prominent entrants have left the market. How long this mature phase is likely to last is an interesting and important question for Apple.

Figure 5. Sample CLC—Apple, circa 2011.



Step 2. Characterizing the CLCs for your businesses.

The next step in a CLC analysis is to characterize the specific competitive contexts where you compete. To aid in characterizing your businesses, consider the worksheet in **Table 1**. What is your forecast for the timing and severity of the transitory inflection points? Defining these will in turn specify the length and character of each phase of your S-curve (emergence, growth, and maturity). One can retrospectively identify these transitions by looking at market demand and entry and exit rates of firms. Looking at past epochs may give you a good sense of how future S-curves may play out. For example, graphing cumulative industry revenues for a product or technology class can produce an S-curve that can highlight transitions: Accelerated growth in revenues suggests transition to the growth phase, declining growth rates suggests a transition to the mature phase. Similar, looking at entry and exit rates can help identify phase transitions: Heavy exit with lower rates of entry suggests a shakeout is occurring and that the industry is transitioning to a mature phase. These indicators can help you understand how long each phase is likely to last and gauge is the overall speed of the industry.

Table 1. Competitive Life Cycle worksheet.

PHASE	TIMING	SEVERITY
Disruption	How long is mature phase?	Radical, incremental, or architectural?
Annealing	How long is emergent phase?	Dominant design or multiple designs?
Shakeout	How long is growth phase?	Winner-take-all, duopoly, contested?
Overall	Slow burn or hyperdynamic?	

One can graphically represent differences in timing on the Competitive Life Cycle by changing the relative size of one phase versus another. In some industries, emergence may be short relative to growth and maturity. Others may experience long periods of growth relative to the other two phases. Overall speed can simply be indicated as a scale on the map. For example, speed in the game player console industry is approximately four years. In microprocessors, speed equals 18 months. We can use this metric to characterize the overall industry. Is this a hyperdynamic environment or more of a slow burn? Is innovating new S-curves a matter of life and death or can we worry about this once we are well into the mature phase of the cycle?

Assessing severity is also important. Severity helps forecast how the competitive game is likely to play out. First, how severe are disruptions in the industry? Are they likely radical—fundamentally altering the underlying technology or business model rendering existing capabilities useless? Or are they more incremental—building on existing capabilities? Or are they perhaps, "architectural" in nature—preserving core technologies but disrupting the way components or services are integrated or organized? More radical and architectural disruptions open the door for new entrants to come in and dominant the market. Second, how severe is the annealing likely to be? Do we expect a single dominant design to emerge or will there be space for multiple, fairly divergent offerings in the marketplace? For example, is there reason to believe that the marketplace will force standardization? Standardization will likely lead to increased competition, while less severe annealing may allow for multiple, differentiated players. Third, how severe is the shakeout likely to be? How many firms are likely to be left standing at the end of this life cycle? Is this a winner-take-all market? Will the mature phase support entry by smaller niche players? A winner-take-all market suggests placing great effort in capturing the market early, while more contested competitive environments may suggest emphasizing manufacturing and quality to outcompete firms in the mature phase.

Step 3. Assessing your competitors' positions.

Charting your current products on the Competitive Life Cycle gives you a picture of your current reality. To put it in context of your competitive environment, you need to chart as best you can your main competitors as well—realizing that new unforeseen competitors may emerge. Who are the competitors in each market that you currently have positions in? What are their revenues and market shares? How long have they been in the market? Are they recent entrants or have they been competing in this segment for a while? Who is planning to enter this segment or is a likely entrant in the future?

Charting your competitors requires competitive research and an understanding of your competitors' investments and growth initiatives. Having a picture of your competitors' current product portfolios as well as the number and kind of investments being made to replace existing S-curves allows you to role-play and scenario-plan potential moves by each competitor. This type of analysis should help you evaluate which of your investment alternatives could produce a relative competitive advantage for a period of time versus these competitors.

FURTHER READING

Anita McGahan, "How Industries Change," *Harvard Business Review* (October 2004).