

## CHAPTER

## 1

# Irresistible Electronics, Turbulent Times

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Consumer electronics (CE) are irresistible. There is nothing quite so fascinating as seeing someone else use a new gadget for the first time. We can't help but wonder how that gadget could improve our own lives. Whether it's music or sports on the go, uninterrupted access to friends and family, or more life-like entertainment in the home, new consumer technology sparks the imagination like nothing else.

It is no surprise then that Consumer Electronics revenue is soaring. The CEA estimates that CE will top \$130 billion in the U.S. in 2006 and grow more than 2 times the current rate of GDP growth in the U.S. over the next four years.<sup>1</sup> CE companies continue to raise the bar of consumer expectations by driving out new innovations at an increasingly perilous pace. Perilous to profits that is. Despite the rapid revenue expansion,

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1. Consumer Electronics Association, [members.ce.org/MarketResearch/cefuture.aspx](http://members.ce.org/MarketResearch/cefuture.aspx), CE Future Forecast Database: [members.ce.org/MarketResearch/Default.aspx](http://members.ce.org/MarketResearch/Default.aspx), Market Research, CE Future.

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CE companies still have not captured the margins of a hot growth industry. Further, the revenue is still spurred by those “technology hungry customers”<sup>2</sup> and not by the service-sensitive, smart shopper who is emerging and expected to dominate the future market. That bigger cake is also being eaten by more players—players from outside of the traditional realm of consumer electronics, such as Apple, Dell, and Microsoft®. A closer look at today’s financial picture supports the case for change. “We don’t make money, but we have fun!”<sup>3</sup> What Larry Mondry, CEO of CompUSA, cynically says about the PC business is sadly quite true for the CE industry.

Even with a continuing stream of innovations, the average price has remained quite stable (about US \$184 per unit).<sup>4</sup> Average earnings margins (EBIT) in 2004 ranged between 0.4 percent for photographic equipment and 3.1 percent for white goods.<sup>5</sup> Compare that to medical device manufacturers that enjoyed a margin of more than 12 percent in 2004.<sup>6</sup>

Consumers are adopting new technologies—from music players to digital cameras and electronic healthcare devices—at astounding rates. Industry revenue is hitting all-time highs. For an industry exploding with demand, much of the enthusiasm is tempered by the lack of profits. It’s a conundrum that is difficult to explain. How can we be experiencing a renaissance period of growth and rapid adoption of innovative technology but still lack real profits?

Clearly, such turbulent times indicate the need for a paradigm shift, as traditional business models are not providing adequate returns. CE companies need to think differently—and about things they haven’t focused on in the past. For instance, today’s

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2. Ibid.

3. Smith, Steve. “CompUSA’s Mondry’s Goals and Opinions on CE Market.” *TWICE*, June 29, 2005.

4. IBM analysis of “Electronic Equipment Factory Production Data by Application Market: Q2 2005 WW AMFT - Consumption Forecast.” iSuppli Corporation, [www.isuppli.com/marketwatch/default.asp?id=160](http://www.isuppli.com/marketwatch/default.asp?id=160).

5. IBM analysis of public company data, 2003 and 2004.

6. Ibid.

CE environment requires companies to be more responsive to the consumer. Fixed cost structures need to become variable to adapt to rapid growth. Innovation that matters must drive market leadership. We must focus on a new set of strategies to succeed.

Industry insiders have long been predicting fantastic, futuristic images of cars communicating with toasters and digital music flying around the home. But, as Thoreau said of the early buzz surrounding the Maine-Texas electromagnetic telegraph in the 1840's, "Maine and Texas, it may be, have nothing important to communicate."<sup>7</sup> While it might be easy to dismiss that notion today, it is quite possible that there were no profits to be made with the telegraph in 1845. Today, while cars may not have anything important to communicate to toasters, what keeps music from floating freely about our homes is not a lack of profits, but rather the players' traditional business models.

Across the globe, the IBM consumer electronics industry team is working with leading CE companies to develop the new business models that will excel in today's industry landscape. We call such a company an "On Demand Business." Soon, we believe the industry will be calling these innovators "the winners."

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## THE THREE M'S

The critical elements contributing to growth and innovation in this emerging turbulent world are categorized by the three M's: Meta-value, Models, and Markets. *Meta-value* is the idea that the convergence and integration of technologies, devices, services, and content go beyond synergy. Just as important as the new technologies that are enabling meta-value, are new *models* for doing business. And finally, growth and innovation is being fueled by new geographic *markets*, especially the BRIC countries (Brazil, Russia, India, and China).

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7. Thoreau, Henry David. *Walden*. Researched in [www.online-literature.com/thoreau/walden/](http://www.online-literature.com/thoreau/walden/).

## META-VALUE: GAINING FAR MORE THAN A SUM OF PARTS

Synergy is the dated concept that  $1 + 1 = 3$ , implying that the combination of two things provides more than additive value. By contrast, meta-value is the notion that by combining two things, you can get completely different, emergent properties. For instance, combining two hydrogen atoms with an oxygen atom doesn't create three atoms, it creates wetness. In CE, new technologies are enabling meta-value, where new combinations of products, content, and services are creating emergent properties for the end consumer. Meta-value is being enhanced particularly in the areas of telehealthcare, gaming, and Smart Homes and supported by innovative technologies such as the Cell processor™ and Linux®.

## TELEHEALTHCARE: BEYOND MERGING HOMES WITH HOSPITALS

Medical devices—where the high margins reside—and CE *are* converging at the home: *Telehealthcare* brings sophisticated medical treatment to the patient's house with the chance to drive down healthcare system costs and improve well-being at the same time. With telehealthcare, for instance, people with congestive heart failure may leave the hospital earlier because the doctors can monitor their status remotely. They may live longer, as a deterioration of health can ideally be noticed before a state of emergency occurs (see Chapter 5, "Telehealthcare: The Key to the Living Room," for more details). It will be hard to resist such a value proposition, especially if prescribed by a medical doctor.

Not only is technology converging, but whole worlds are merging. The world of medical care now reaches the home not only through nurses, but through a TV, a mobile phone, or an Internet browser. This is all happening in a sensitive area under strict control, but it is finally happening. The focus is primarily on elderly people, who tend to suffer most from chronic diseases.

## GAMING: WHEN PLAY SEEMS VERY REAL

If the purpose is fun, the other end of the age spectrum gets interested. In fact, online gaming is displacing many of the traditional

things people do in their spare time, like watching TV (see Chapter 6, “Online Gaming Environments: People, Technology, Money, and Social Networks,” for more details). This has led to a market whose size is expected to exceed some US \$30 billion for computer and videogames in 2007.<sup>8</sup>

The tagline for a 1983 movie, “Is it a game or is it real?”<sup>9</sup> could describe today’s daily entertainment. Just as vital parameters are captured from a patient’s body to feed a medical system, real-time telematics from a Formula 1 race can be added to a racing game, or actual flight control data can be combined with the environment of a flight simulator.

In gaming, the fight for the CE market becomes very apparent: Microsoft against Sony—the Xbox against the PlayStation. Will the winner be the software company that uses its full power to first capture the young and then overtake more of the CE market? Or can the incumbent regain its strength by leveraging its brand and the content it owns?

## SMART HOMES: SETTING UP GREATER CONVENIENCE, INNOVATION

While archaic CE business models have been slow to unlock *technology convergence* into the *Smart Home*, maybe we have been searching in the wrong place for the key. Maybe the “key to the home is through the heart,” said George Pohle, Vice President of the IBM Institute for Business Value, the IBM think tank for Business Consulting Services. The way these medical and gaming services are defined, for example, can also determine how subsequent Smart Home services will be offered.

## TECHNOLOGIES THAT UNDERPIN META-VALUE CREATION

Once a platform has found its way into the living room, the base technology is there to provide more services, whether for health-care, security, convenience, or fun. So CE companies from all

8. “Video Game Industry,” RocResearch, 2004-05.

9. “War Games,” movie by John Badham, 1983.

areas are readjusting their business models or developing completely new ones to define, offer, and deliver those life-enhancing services.

#### CELL PROCESSOR: PUMPING UP THE POWER

Driving the incredibly real animations of a modern game on small and cheap consoles is computing power unlike any seen before. The ten-fold increase the Cell processor brings to game consoles is also attractive for a wealth of new CE applications (see Chapter 7, “The Soul of the Next Generation of Consumer Electronics Products,” for more detail). As new ecosystems are formed around them, these applications will push the limits of emerging business models. The trick is discerning which will be the profitable ones.

#### LINUX EVERYWHERE: THE POSSIBILITIES OF OPEN SOURCE

One of the predictions made a couple of years ago was that open source software, especially in its manifestation as Linux, would revamp the industry. In a heterogeneous computing environment, CE companies not running some of their servers with Linux can expect to be questioned at length. Choosing open source software for mission-critical business applications might elicit prolonged discussions in corporate IT departments, but for the youth-fueled start-ups of today, the decision is a “no-brainer.” Just as Aaron Levie, CEO of Box.net, “assesses the attitude of his fellow 20-something entrepreneurs: ‘My extended network is all in the younger crowd. I don’t know anyone who’s not developing on Linux.’”<sup>10</sup>

This same technology is now moving to the device level (see Chapter 9, “Embedded Linux: For Embedded Systems Today and Into the Future,” for more detail). Linux enters the stage to become the operating system of choice for mobile phones, PDAs, home gateways, or wristwatches. It is robust, it is secure, it is

10. Hellweg, Eric. “The Tech Boom 2.0,” *Technology Review.com*, August 12, 2005.

fast—and it is free! If you are following the fierce battle between Symbian, BlackBerry, Palm OS, and Windows® CE, you can sit back and relax. Without much fuss, CE Linux is expected to sneak in and take over a growing share of the market. Facing razor-thin margins, finding a way to cut out costs can push more CE companies toward Linux.

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## MODELS: OPTIMIZING THE CE BUSINESS MODEL

The traditional business model, observed in the overwhelming majority of our clients, has two notable flaws: It is siloed by nature, and it lacks focus on differentiating, core activities. Siloed business units with individual profit-and-loss measurements, as opposed to a company-wide view, are preventing the kind of solution-oriented focus that leads to breakthrough innovations that matter to the consumer. In the traditional model, CE companies streamline functions under each product line chief. Chiefs of different product-aligned divisions are so focused on their own responsibilities that they frequently are unaware of what other product divisions are doing.

The second flaw in the traditional business model is the lack of focus on what really matters. We would not suggest that the industry centralize or outsource all components of its diverse businesses. Rather, by viewing an enterprise as a collection of interlocking business components, industry players will be able to focus on their core competencies, and then form teams across divisions on specific business components to drive costs out of the business. This is the key concept behind IBM Component Business Modelling (CBM), and it is already beginning to take shape across the industry.

The new paradigm in business models is focused and responsive. Companies such as Apple and Samsung are eschewing traditional business models and leaving them in the dust. Over the last four years, Apple's stock price has climbed more than 300 percent and Samsung's more than 150 percent, while traditional CE powerhouses have lost 10 to 50 percent of their stock prices in the same

period.<sup>11</sup> The CE companies experiencing gains have fueled growth and innovation by focusing on what matters and excelling in those core capabilities, like product design, branding, and maintaining consumer relationships.

In the last several years, we have seen many players in the CE market undertake a major transformation initiative. And each has recognized the lack of integration and innovative teaming across product lines and divisions. Still many struggle to overcome the internal politics that reinforce the powerful barriers of entrenched business models. Tomorrow's winners will find ways to break down the barriers to change and will team—both internally and externally—to drive to the consumer innovative solutions that matter.

## CUSTOMER RELATIONSHIP MANAGEMENT: CONSUMERS AND CE

As the big retailers grow larger, they catch more and more of the consumer relationship. And the consumer knows every product and price and comments about it from the Internet. Only the CE company now knows increasingly less about its customers. This seriously impacts the optimal strategy regarding sales channels, partnering approaches, branding, and so forth because strategy has to depend on what the customers want (see Chapter 12, “Consumer Relationships: A Tale of Channels and Brands” for more detail). The CE companies must find ways to engage the end customer directly and capture data about its customers. This is one way to build institutional knowledge about the customer.

The data to help build that knowledge may already exist—and may already be inside the company, from loyalty cards, RFID tags, and consumer complaints. But it takes systems, people, and processes, to make sense of that plain data and transform it into information that then forms the basis for those strategic decisions. Unfortunately, few CE companies currently have that full capability.

An offshoot of customer relationship management (CRM) happens when leading-edge companies leave innovation to the customer,

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11. Company financial reports.

using the approach MIT professor Eric von Hippel calls “democratizing innovation.”<sup>12</sup> Here, the manufacturer acknowledges that suppliers and complementors are part of its value network and can run parts of its business better than the manufacturer itself. Also the customer might take over a critical piece of the business model. The so-called “lead-user” knows better than anybody else, including the manufacturer, what he or she wants. For 3M, applying this method led to “more than eight times the sales forecast [than] for new products developed in the traditional manner.”<sup>13</sup> Even though it “is painful and difficult for many manufacturers”<sup>14</sup> to make that transition, it is another chance to avoid being one of those many CE companies that will fade away in the next few years.

## COMPONENT BUSINESS MODELLING: FINDING THE DIFFERENTIATORS

Recognizing CRM as a key component in CE enterprises is just one way to identify differentiators using Component Business Modelling. Often, what can be removed from a business model can make it more successful. CE companies have squeezed performance out of the finished goods supply chain and are now looking toward the service supply chain as the next frontier for competitive advantage.

But this has not been an easy task for the traditional CE companies. Many years of focusing on products and product innovation have entrenched a strong product engineering culture into the traditional CE players. Many of them do not have the capabilities in house to focus on developing service offerings. Even worse is the fact that many do not fully understand which capabilities they need and which they have. It is extremely difficult to drive a transformation of this kind when you don’t know where you are, and you’re not exactly sure where you’re going.

Through CBM, a CE company can adjust its business model to determine the most efficient and profitable ways of performing

12. von Hippel, Eric, “Democratizing Innovation,” MIT Press, Cambridge, MA, 2005.

13. Ibid.

14. Ibid.

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various business functions. Typically, by concentrating internally on those parts of the business that provide a competitive advantage, CE companies can benefit from looking externally for resources to perform functions such as travel expense management, human resources back office, and indirect material procurement. Instead of basing such decisions on gut feelings, CBM enables fact-based decisions to design the business model in a way that reflects strategy.

To illustrate, CBM enables the flexibility to shape the whole business model according to the customer demand and partner supply: Reverse logistics? Leave that to the logistics specialist for  $x$  Euros per device. Installation? The local expert does it for  $y$  Euros less. Billing? The shared services centre eliminates  $x$  Euros from the budget. Design? It is a core competency with  $y$  full-time people.

Using a disaggregated business model, one can actually do a bottom-up calculation of the entire business case for a new product, directly describing the market potential in relation to the enterprise's capabilities—and stealing the thunder from those who tend to defer decisions. You can finally hope to hit the market at the right time, with the right solution, at the right price. You “just” have to know what the customer wants—and how to structure the business optimally to provide it.

## PARTNERSHIPS LEAD TO SUCCESS

This business model optimization will likely drive an industry consolidation as emerging technologies continue to drive previously unthinkable partnerships and joint ventures that will eventually lead to more mergers and acquisitions. In the white goods industry this consolidation is already in full swing: While Whirlpool acquires Maytag to succeed in the mature U.S. market, Toshiba is going for a joint venture with TCL to capture a piece of the growing market in China.

This is just one example of how the leaders and survivors are taking advantage of partnerships as part of their new business models. Based on IBM client experience, just to survive, those that remain will also have transformed about half of their fixed costs to

variable costs and cut the costs of selling their goods by an average of one-third. This is because revenue volatility within the industry has greatly exceeded the variability of the cost structure, leading to unpredictable quarterly profit results. Operations need to become much more efficient and innovation highly effective. There is no way to remain viable when writing off a huge part of all inventories year after year or missing the market window for the latest innovation all the time. In fact, we believe that a quarter of all companies in the CE market today may not last another five years. They will either abandon the market, like Thomson selling its final piece of CE “to focus on [...] media services, systems, and equipment technology,”<sup>15</sup> or be acquired and cease to exist.

And all of this will work only if the companies do the opposite of what such a fierce battle reflexively implies: Build trust throughout the ecosystem.

## STYLING

By relying upon partners for non-core functions, CE companies can focus on differentiators, such as styling. Product design is critical to creating a successful device. Thanks to smooth playlist control and seamless integration with download and management of songs, Apple has stormed the hallmarks of CE with its iPod. It is software that defines most of the “inner values” of consumer electronics. But as we know from social behaviorism, these values are primarily good for keeping an established relationship. To raise the first interest is what counts most. And again, Apple was able to find the right formula to make electronics irresistible even for people who don’t care about technology.

Even in the 19<sup>th</sup> century, Anselm Feuerbach (German painter, 1828–1880) recognized that “style is knowing what to leave out.” Some 150 years later, most CE executives still do not know. It takes a lot of management commitment to bring an unostentatious product to market. Ill-advised features and numerous buttons

15. “Videocon buys Thomson tube arm for Rs 1,272 cr,” *The Financial Times Indian Express*, June 29, 2005.

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could creep into the design if the technical engineer makes those decisions alone.

What really drives innovation that matters to the consumer in electronics, is simplicity. As renowned Jazz artist Charles Mingus said, "Making the simple complicated is commonplace; making the complicated simple, awesomely simple, that's creativity." Anybody can put out a technologically advanced product that is complicated, but an awesomely simple iPod-esque product really stands apart.

### IT'S ABOUT SOFTWARE

Another differentiator in the CE industry is software. Most CE companies already employ more software than hardware engineers. Software makes the product more flexible. Just download a new application on the screen-equipped mobile communication device, and it morphs from a phone to a navigator to a telehealth-care hub. But software also makes the product more error-prone. Often simply downloading a new application causes a system shut-down. Companies that do their own software development—as well as those that have outsourced it—need to prudently design their requirements and quality management processes.

### GLOBAL TECHNOLOGY OUTLOOK

Ultimately, it is the company with the best idea about the impact of future technology that gains the most from developments such as computing power leaps or compelling Smart Home applications. But one does not gain this understanding by looking through a crystal ball. Nor does the traditional approach of occasionally consulting the “company guru” deliver useful and timely information for making strategic decisions. In the emerging CE industry, the solid baseline for strategic company decision making is built by regular processes to evaluate the options using preset metrics and culminate in clear recommendations (see Chapter 8, “IBM’s

Global Technology Outlook and Its Implications to Consumer Electronics” for more detail).

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## MARKETS BY GEOGRAPHY: CAPTURING THE BRICS

The BRIC countries are now entering their third phase of growth and innovation in CE. First, these countries were recognized as low-cost sources of labor and materials, which helped drive down costs and fuel rapid growth in Western markets. Second, the traditional global CE players saw the growth opportunity of these massive populations of potential electronics consumers. Now, the BRIC countries represent a new source of market growth and innovation by exporting their own products and becoming global industry players.

Unless a CE company has reliable sales data, it will probably have few ideas about consumer expectations in the fast-rising markets like Brazil, Russia, India, and China (the BRIC economies, as Goldman Sachs calls them).<sup>16</sup> Taking a closer look, as we did for China (see Chapter 13, “Consumer Electronics in China in Year 2011,” for more detail), can provide exciting insight to what chances established CE companies of North America, Europe, Japan, and South Korea have in these geographies.

For example, phasing out old CRT monitors and focusing on the higher margin flat screens makes sense if that decision is based soundly on the company’s strategy. However, one should not forget that there is a huge market for low-price, robust CRTs in countries like Brazil. Those CE companies that can leverage low-cost, written-off production lines, and optimize supply chains might be able to capture abandoned profits.

Especially for China, the picture becomes even more distinct. While a consumer also picks a standard Nokia mobile phone and thus buys the same products that appeal to Westerners, specialized

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16. Wilson, Dominic and Roopa Purushothaman. “Dreaming With BRICs: The Path to 2050,” Goldman Sachs Global Economics Paper No: 99, October 1, 2003.

versions of devices can be a big hit. Chinese companies that understand the incredibly huge domestic market have become powerful enough to start taking over firms and markets of the West. But their experience makes it apparent for all other companies that the CE industry will continue to be vividly shaken around.

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## CONCLUSION

The three M's—meta-value, models, and markets—will remain critical elements contributing to CE growth and innovation. As we continue to see the emergence of new technologies like Linux and the Cell processor being applied in the CE industry, we will naturally see the evolution of how services are provided and how business gets done. We will see intense focus on product design and developing innovative solutions that matter to consumers. We will see medical devices bringing the convergence trend to a far more personal and beneficial level, while games continue to keep us entertained with graphics and animation that are virtually indistinguishable from real life. We will see the increasing globalization of the emerging BRIC companies rock the industry as we know it today. We expect a great industry consolidation as those moving toward becoming On Demand Businesses adapt and respond to the new environment and emerge as industry leaders—the others will likely be consumed.

Whatever happens, people will still feel that urge to check out new technologies and gadgets. They still won't be able to help but imagine for a moment how a new device could somehow make their lives better, richer, or more complete. That is why electronics will continue to be irresistible.