Innovation Zeitgeist: Digital Business Transformation in a World of Too Many Competitors

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Alistair Davidson

Reviewer Comments

"Alistair Davidson has written an ambitious, encompassing, and down-to-earth treatise on the current digital transformation. It's the best description yet of the digital transformation engulfing us and what we should do about it, written in plain language and illustrated with his own photographs and questions for the reader after every chapter. An iconic, original contribution to the literature on digital transformation that is hard to put down. There is good advice and commonsense written on every page. Must reading." ***Stanley Abraham, Professor of Strategy and Entrepreneurship (Emeritus), Cal Poly Pomona University, author of "Strategic Planning: A Practical Guide for Competitive Success".***

"*Innovation Zeitgeist* is essential reading for any venture capitalist or startup. It forces the reader to consider what they are doing and what they must continue to do that is different than their many domestic or international competitors, a critical issue for successful startups and for high growth companies." ***Norm Fogelsong, General Partner, Institutional Venture Partners***

"Alistair Davidson has produced an insightful analysis of innovation in the digital era. This book is a must read for executives seeking survival and success in today's challenging competitive arena." ***Robert Allio, founding editor of Strategy & Leadership magazine, former Dean of Rensselaer School of Management. Author of "Seven Faces of Leadership".***

"A.T. Kearney's clients are all facing the issue of their business being transformed by digital technology. *Innovation Zeitgeist* is a great resource for helping our Digital Business Forum clients understand how important it is to actively scope and manage the changes to their business, organizational structure, acquisition strategy, business model and required innovation approaches." ***Michael Roemer, Partner and International Co-head of A.T. Kearney Digital Business Forum***

"Mr. Davidson has a knack for bringing the thirty-thousand foot practice of strategy down to earth. His discussion of strategic considerations leads directly to an actionable planning structure. Strategy, then, can form a tactical plan. The benefit of the book is twofold: food for thought and a framework for action." ***Bruce Rosebrugh, President, VPQ Scientific***

"In *Innovation Zeitgeist*, Alistair zeroes in on many of the key issues we see our market research service-industry clients facing - rapidly changing customer expectations, the need for rapid service introductions, more competition, a need to rethink business models and the types of innovation pursued." ***Jim Hollingsworth, VP Finance and Security, Pacific Consulting Group***

"Bravo! *Innovation Zeitgeist* offers deep yet pragmatic ideas to address today's business challenges. Alistair Davidson's depiction of trends dramatically altering the competitive landscape such as technology overabundance and customer attention scarcity hits the nail on the head." **Adrian C. Ott, author, "*The 24-Hour Customer*"; *CEO, Exponential Edge Inc.***

"Innovation Zeitgeist is a marvelous creation. I love what Alistair Davidson has done. I enjoy most the narrative style (feels more like a weekend read) and yet it is packed with facts, ideas, authority. There is

more content here than an entire MBA course. It's an MBA on digital" - **James Lau, Founder** movesandshakes.com

"*Innovation Zeitgeist* is thoughtful, pragmatic and comprehensive in its analysis of digital product and service opportunities. The business advice it offers is understandable, even to an engineer like me!" **Vint Cerf, VP and Chief Internet Evangelist, Google**

"We all know innovation is speeding up thanks to the rise of digital technologies, but Alistair Davidson gives it a name: Zeitgeist competition. Every business that has not yet been transformed by digitization will be, so let *Innovation Zeitgeist* be your guide in innovating new value." **B. Joseph Pine II, co-author, *The Experience Economy* and *Infinite Possibility: Creating Customer Value on the Digital Frontier***

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Contact information:

Alistair Davidson:

Phone: +1 (650) 450-9011

E-mail: alistair1@eclicktick.com

Web site: www.eclicktick.com

Blog: alistairdavidson.blogspot.com

Book web site: www.innovationzeitgeist.com

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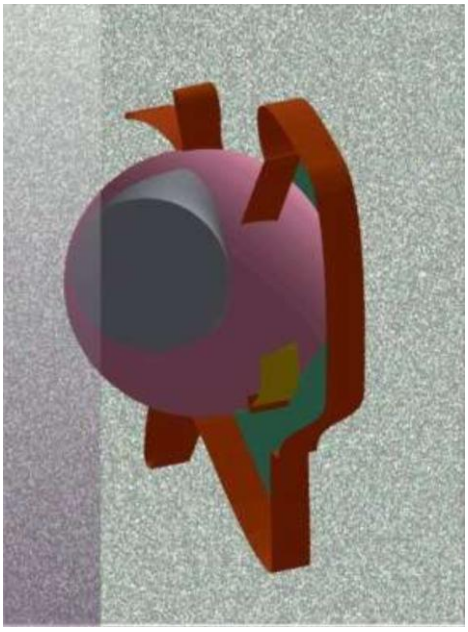


Innovation Zeitgeist is a book about innovation in a world where many companies and entrepreneurs seem to be inventing the same thing at the same time in different international markets. Its thesis is that the Internet, combined with the wide availability of hardware and software components, open source development tools, and linkable services has reduced the cost of innovation and imitation. It has also increased the number of imitative competitors a company must deal with. The net result is that innovation practices that worked well when there were few competitors need to be rethought in a world of many competitors.

So, if you are an entrepreneur or innovator within a larger company, the contents may help you avoid mistakes and shape your business so that it is more likely to be successful. You can also use the book to educate colleagues who may not have thought as much as you about the current state of innovation and requirements for success.

The book is written in four sections.

Section 1 (Chapters 1 through 5) lays out a description of Zeitgeist markets today. It uses insights from multiple industries including data on the digital camera market and the astonishing range of offerings on Amazon to illustrate the high rate of production introduction and imitation.

Section 2 (Chapters 6 through 11) lays out different ways of analyzing innovation and market structures.

Section 3 (Chapters 12 through 27) lays out ideas and prescriptions for succeeding in a Zeitgeist world.

Section 4 (Chapters 28 to 30) lays out more speculative thoughts on the evolution of innovation.

At the end of the book, you will find an extensive glossary of terms which in many cases will refer you back to the relevant chapter and in some cases to books by other authors.

A book like *Innovation Zeitgeist* is likely to inspire different reactions from different readers. It's my expectation that a second edition of the book will contain many new examples of Zeitgeist innovation and best practices in a Zeitgeist world.

Please contact me to let me know your thoughts, suggestions and results. You may reach me at alistair1@eclicktick.com .

Alistair Davidson
Mountain View, California,
June 2013

Introduction

Zeitgeist definition: "The spirit or genius which marks the thought or feeling of a period or age." Oxford English Dictionary, p. 3868, First Edition.

A cynic's definition of Zeitgeist: "An annoying market where everybody seems to have the same idea at the same time."

What do you do if it seems that it is becoming increasingly difficult to deal with an apparently endless number of competitors for your product? How do you start a successful company that can scale to a much larger size? How do you analyze a herd of competitors with slightly overlapping product offerings that impinge on your plans in unpredictable ways? Should you raise more money? Hire better people? Move more quickly? Should you tackle different kinds of business opportunities? Should you change the type of business model you are proposing? Should you ride someone else's ecosystem and give up on building your own? Should you invest in or move to an industrializing country and do there what has been done elsewhere? These are the questions many product managers and entrepreneurs are asking themselves.

It's my simple belief that the reason these questions have become so important is because of a "Zeitgeist" innovation effect. Lots of companies and high tech entrepreneurs are having the same idea at the same time. Combine this collective insight and parallel independent invention with the lower cost of innovation and you have many markets with a huge number of competitors, huge overlap in features, performance and benefits, and a corresponding increased difficulty in achieving successful differentiation and commercial success. (As one measure of the popularity of innovation, if you search on the term 'innovation', you will find between 20,000 and 57,000 English language books on Amazon or Barnes & Noble, 2.69 million academic articles and 396 million web pages with Google search as of May 2013.)

While it is not unusual for there to be a large number of entrants in a new industry – the phenomena occurred, for example, in the early days of the automobile industry at the turn of the twentieth century, the radio broadcasting industry in the 1920s and the computer industry in the 1980s to name just three examples spread over the past century – both the number and the variety of competitors today seems qualitatively different. There may have been 200 competitors in the hard drive business at one time or another (Wikipedia http://en.wikipedia.org/wiki/List_of_defunct_hard_disk_manufacturers), but today's Internet and consumer electronics offerings are orders of magnitude greater in number. As we show in a later chapter, over 2,000 digital cameras have been launched since 1994.

Over the past two decades, I have been involved with many companies and business ideas. Some were ones I have had run or founded. Some were situations where I advised the business or entrepreneur. And while some of the innovations I have decided not to proceed with were due to other reasons -- the idea being unattractive upon investigation -- most were due to the large number of visible and deduced startups in the space. It seems, based on this experience, that *there has been a secular shift in what it takes to succeed in developing and commercializing a successful product*.

If you think of innovation and commercialization as a "product", then reduced cost of innovation/commercialization has increased the supply of available new offerings. And while lower costs may be the characteristic of some innovations, the supply of innovations appears greater than the ability of buyers to absorb the myriad variants developed. Parallel development of similar offerings in multiple markets leads to more potential competitive interactions. Successful offering in niches, regional or national markets are transferred to new markets. Drilling down deeper into the innovation Zeitgeist phenomena, the quick summary of this change can be summarized in the following seven observations:

> *First*, we have moved from a world of technology scarcity to a world of technology glut. This trend means that the narrow ability to build a product is increasingly less valuable by itself. Understanding customers and their usage is correspondingly more important and likely more valuable. While apps on smart phones are often modest pieces of software, they illustrate an Innovation Zeitgeist market, in which for most popular needs, there is a plethora of choice.
>
> *Second*, there is so much technology available that gaining the attention of prospects and obtaining the mastery of buyers is now far more difficult to achieve than the traditional problem of launching a product or obtaining trial usage. This trend means that attention to post sales activities is more important. It also means that many existing products need to evolve along the product-service-solution-experience chain in order to accelerate a customer obtaining benefits and understanding the product value.
>
> *Third*, the competitive position of companies is much more complicated. In many businesses, the "Zeitgeist competitive problem" is that lots of bright people have the same idea at the same time. The net effect is that differentiation is hard for a product manager to achieve. As a result, evaluating the next generation of a product family, investments in a particular business, choosing suppliers when there are so many, and choosing which technology or ecosystem to bet on becomes a bigger problem than in the past. The implication is that hurdles for starting a

business should be higher and consider more than development issues. International competitive analysis, game theory and scenario analysis may be required earlier in the life cycle of innovations to plan for intense competition.

Fourth, international competition is much less ignorable. There are many smart people in the world and the traditional sources of advanced software development or other advanced technologies are dispersed around the world. Silicon Valley's traditional leadership in semiconductors and assembly has been significantly damaged by the transfer of manufacturing capabilities abroad, typically to China. Innovation research suggests that products that draw from global best features and practices do better so more effort is required for competitive analysis and planning to maintain and grow sources of competitive advantage. Given the difficulty of assembling many products in the US because of a weaker electronics assembly ecosystem, more attention is required where to capture value and how to prevent leakage of knowledge.

Fifth, the romantic view of high tech startups has, I suspect, become a detriment to many entrepreneurs and a quite a few managers in established companies. In my own experience, ruthlessness about proposed innovative ideas and the results of testing is a key requirement for success and one *which is often only learned by experiencing failure* with a novel idea, technology or business concept. Success can sometimes be accidental. Failures teach more lessons. The implication is that for some entrepreneurs, a decision to not take a salary and invest in "sweat equity" can be an enormous mistake. There is nothing more difficult than telling an entrepreneur that the idea over which they have slaved has not proven economic, nor has it demonstrated evidence and learnings that would support a positive future. I have been on both sides of that discussion and it is never pleasant.

Sixth, innovation that is likely to succeed in today's world will often look very different than innovation in the past. A key theme in this book is the observation that *product innovation is only one type of innovation*. Today's management team and individual product manager need to be open to alternative approaches to innovation. Other types of innovation, such as process, business model, legal rights, service and solution innovation are often needed in this new and more competitive world. To take a simple and well known example, a music player without an MP3 store is less valuable than a value chain that consists of hardware, software, e-commerce site and content. This need to integrate more pieces in the value chain increases the complexity of a startup, may increase fund raising needs, or it may demand creative ways of acquiring services, software and technologies that minimize capital requirements and speed time to market.

Seventh, in the past, it took sophisticated engineers and developers to build products. Customers who adopted technology often had to descend a learning curve to figure out how to use the products. Today, innovative products and services must often simultaneously address two conflicting problems: first, they must be idiot proof and provide immediate success for an adopter, and second, they must, in many cases also be platforms which provide a different set

of medium and longer term benefits to a user, e.g. providing the ability to add features, work with other products and services, or install additional functionality.

These seven shifts complicate the general process of digitizing a business, creating a new or next generation high tech product or developing commercially successful innovations generally. And if you are, for example, a product manager working for a senior management team whose views about product management were formed in the past, their paradigm and assumptions may prevent success. Companies often have difficulty moving from a "waterfall approach" to specifying a product, to an agile approach where less is spent on upfront specification and more on iterative delivery of functionality. If you work for a company that has been investing in making sustaining innovations in improving a product, a disruptive innovation strategy, where you offer less performance at a lower price may be perceived as cannibalization of the more profitable product lines.

If you are being funded by investors who have not picked up on these shifts, your chances of success will be reduced. Now it may seem ridiculous to you that an investor would have such attitudes, but some investors take a statistical approach to investment, in effect *gambling* that some will work, rather than attempting to select and shape investees into companies with higher chances of success. The lack of success of Silicon Valley venture capitalists with clean tech is perhaps evidence of this.

If you are what we might term a 'romantic' entrepreneur, seized with a vision for a new product, service or solution, then the book provides a cautionary note. In the commercialization of practically every new class of technology, there is a common graph: if you plot the number of competitors, initially, there is a steep rise in the number of competitors, and then there is a rapid fall off. If the impact of the Zeitgeist market forces is that they encourage many new entrants; the corollary is that there will be many failures. This fact may be lost sometimes in hype and enthusiasm for new technologies and also by the fact that when we talk about web based businesses, software, semiconductors and consumer electronics, we are actually talking about many different markets at the same time. If we only consider the successes drawn from across many potential businesses and products, the hype may distract us from the less publicized and much more frequent failures.

In any book about product strategy, an author has to make generalizations or provide frameworks for thinking about your individual situation. So, you may not agree with everything I suggest in this book, but think of the material in this book as the "wireframe" representation of the problem. You can fill in the models, ideas and intellectual frameworks with your own situation. Many management books are keen to describe unique cases that the authors or their firms have worked upon. I have taken a different tack. Because of the complexity of the issues discussed, I have tried to use business examples from well known companies – Adobe, Apple, AutoCad, Best Buy, Blackberry, Cisco, Google, Microsoft, Oracle, REI, Samsung, SAP, Salesforce.com, Skype, Sonos, Sony - that many readers will be familiar with as users. I have tried in many cases as possible to use consumer references as not everyone is familiar with e.g. narrow interest or highly specialized business software. You will find as a result, that I return to these best known companies for illustration in different chapters to simplify the book.

Consultants are often adept at taking a collection of models, selecting one that seems appropriate and integrating it with the information about the particular situation. It's a skill based upon lots of experience. Those with less experience sometimes have difficulty figuring out how to go and look for useful models, analogies and parallels, and then to determine which model to use and how to apply it. I hope the material in this book will save readers time, and provide an initial set of ideas that can be worked through with your colleagues, consultants or with the help of an external facilitator.

To give away some of the insights of the book, I propose seven possibly controversial ideas:

1. Taking an integrated digital view of marketing, product/service/solution/experience design requires actively bridging traditional marketing/product management activities with traditional information technology and information management activities.
2. Digital innovation can be modeled for both revenue generation and production processes by thinking in terms of viral marketing and cycles of learning in production or delivery processes.
3. That innovation increasingly means more than *product* development. It can include innovation around processes, customer selection, business models, and methods of monetization and in some cases bundling and unbundling of legal rights associated with a product or service. Innovation is not just about efficiency, it also is about delighting customers in unexpected ways as they experience interacting with the product and the company.
4. That acting on behalf of your customer may, in some businesses be a powerful way of engendering loyalty in a Zeitgeist competitive market. Acting on behalf of customers can include modest decisions such as taking an outside-in view of the organization in order to optimize relationships all the way up to emphasizing the value created for customers over short term revenue increases.
5. That being upfront with customers about the total cost and total value of a relationship can create exceptional goodwill and referral. Generating a strong emotional commitment to a product or service is a key and differentiating benefit for retaining customers and part of the value proposition a company offers.
6. That intelligent invisible technology (IIT), the metaphorical equivalent of the service level of the Four Seasons hotel chain is a good model for achieving differentiation in the current Zeitgeist environment. The development of IIT, however, required more integration, better design and a shift away from product/service development to solution and experience design and development.
7. That simplification of interactions and relationships on the Internet is critical. Cybercrime may encourage the emergence of a new layer of services, which will communicate a new binary state, to sensitize customers to risk. This binary state I term "in-Tribe" or "out-of-Tribe" will allow inattentive or ill-informed customers to transact in safe spaces (where identities and relationships have been well established) but clearly inform when they are in spaces, applications, or performing tasks where caution is required.

Shikhar Ghosh is a professor of entrepreneurial studies at the Harvard Business School. He is currently finalizing a series of publications about high tech success rates for venture capital investments. His research suggests that many overestimate the success rate of venture capitalists. His research in brief,

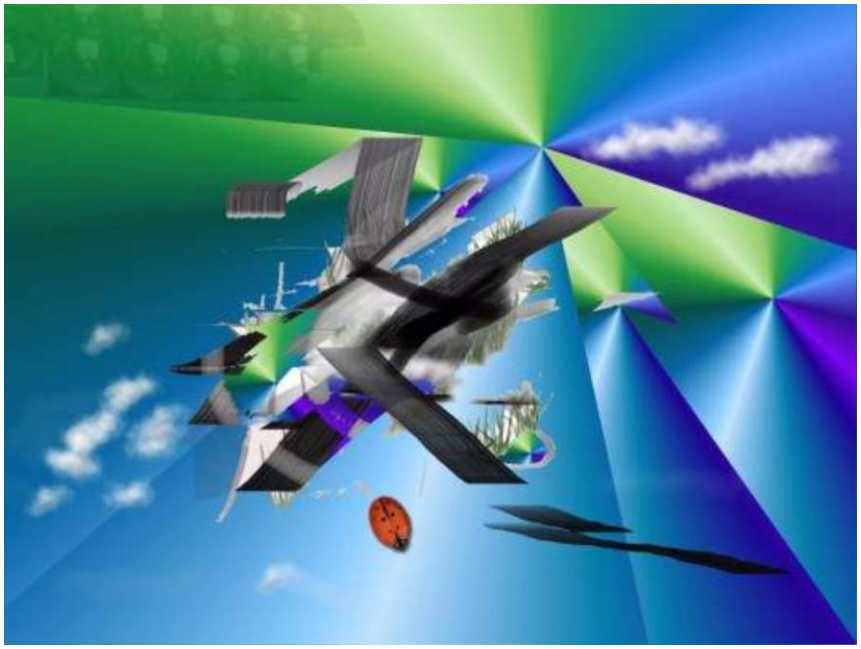
suggests that if you take the most minimal definition of startup success – that the original investment is returned to venture capital investors – only about 25-30% of startups meet this hurdle. If you use a more stringent test, that the company meets the return goals of the venture capital investor, only 10-15% succeeds by this measure. And if you go one step further and examine whether the initial entrepreneur retains his position in the company, only 6-7% still head the company at the time of exit (company is sold or goes public). What we can take from his data is that making an innovative startup successful is a challenging task even with venture capital backing.

If you are still not convinced that Zeitgeist competition is an issue even in large high tech companies, consider the following quote about Sony, one of the best known companies and brands in the world.

> 'Sony is best known as a consumer electronics company, making PlayStation game consoles and televisions. And it loses money on almost every gadget it sells…A new report from the investment banking firm Jefferies delivered a harsh assessment of Sony's electronics business. "Electronics is its Achilles' heel and, in our view, it is worth zero," wrote Atul Goyal, consumer technology analyst for Jefferies, in the report, released this week.
>
> "In our view, it needs to exit most electronics markets." '
>
> (Tabuchi, Hiroko: "Sony's Bread and Butter? It's Not Electronics", **NY Times**, May 27, 2013)

From a capabilities perspective, Sony has a long track record of innovation, capable engineers, international distribution, investments up and down its value chain from camera sensors to cameras, TVs to music and movie studios. When a company such as Sony is facing difficulties in the eyes of analysts, when most of its profits come from financial services, it suggests that businesses based upon digital innovation are challenging for everyone, even the most talented.

Section 1 – The New Innovation Zeitgeist World



Chapter 1 – Enter the Chief Digital Officer

"Adding computers always reduces productivity. Computers only increase productivity if you change the way you run your business."

*Davidson, Gellman and Chung, **Riding the Tiger**, 1997*

Situation comedies are often based upon different personalities and alternative ways of looking at the world. The compulsively neat roommate is paired with a messy slob. The intelligent with the clueless. The romantically inclined and sensitive with the social misfit and insensitive.

In many businesses today, as in the traditional sitcom, two conflicting views must often intersect. The result can be creative triumph or noise and confusion.

One view is the marketing view. It tends to be outbound in its focus, concerned about competitors, allocating most of its budget to advertising. Its remuneration is based upon sales and/or profits. The planning horizon tends to be short and is driven by a need to meet quarterly and annual sales goals.

The other view is the digital view. It is most often owned, at least in part, by the Chief Information Officer (CIO) or perhaps, in technology companies, a Chief Technology Officer/Chief Information Officer combination. Without making too crude a generalization, the CIO role is typically motivated, less by sales and more by cost performance – living within budget goals and ensuring that systems work. CIOs must also live the reality that information technology is harder to implement than people expect and the consequence of implementation last longer than people expect.

In the past, this separation of roles has always been a source of tension in firms. But today, in a world where customers are increasingly carrying portable computers that we call smart phones, where customers may browse catalogs on tablets while sitting on their couch watching television, where ratings, reviews and social network comments are pervasive, the overlap between marketing and information management is suddenly vast and the need for an integrated view, compelling. The integrated view must also take into account issues that extend over individual planning periods and

individual releases of software or generations of product. It may involve building new platform capabilities from which new businesses and new strategies can be based.

From a customer perspective -- an outside-in perspective -- companies can sometimes look highly disorganized. Most of us expect that what we buy on line should be recorded in our account. Historically, when you bought Adobe software and you registered it, your account listed every version you have purchased and enabled re-downloading. The same is true for music you buy on many MP3 stores. But surprisingly many companies don't take this outside-in view. A company as well known as Microsoft, for example, has historically insisted upon registration of its Windows operating system software to activate (legitimate) your software copy, but it did not allow you to re-download the software if your machine crashed or you lost your installation disk. In fact, registration appeared to an individual customer to serve no customer service purpose, which is, perhaps, a poor impression to give.

Microsoft has a highly dominant position in desktop software, which is an unusual competitive position for companies. Other companies seek to integrate information about customers and to make interactions between customers and company a value creating experience. Google by way of contrast is attempting to know a great deal about its customers, their search behavior, location information, etc.

A requirement for, or a goal of, obtaining customer knowledge is not a simple thing. On the one hand, it may, if used improperly, infringe on an individual's privacy and be perceived as intrusive, creating strong negative emotions. On the other hand, companies that operate on behalf of customers, putting their customers' interest and privacy first are likely to gain goodwill. There is, however, no guarantee that either will happen without conscious effort and management by a company. Without a clear messaging strategy, there is no guarantee that customers will understand the risks, benefits or uses of information collection.

Increased competition makes the need to have an explicit digital set of strategies a business requirement and not an option. If your product or service offering is visible, then it can be imitated. What is harder to imitate is the knowledge you gain from interacting with customers. And most difficult of all to imitate is the emotional relationship that superb companies with superb offerings have gained by delivering to customers products, services, solutions and experiences over multiple products, generations of products and transactions. Issues such as privacy, acting on behalf of customers, creating customer goodwill and delight, minimizing the uncertainty around decisions, tailoring interfaces to solve problems and reach goals quickly are all increasingly important components of a product or service offering, or creation of a super solution and excellent experiences.

I am not arguing that merely having a history with a customer is a good defense. Actually, bad companies tend to trumpet their history too much as any senior advertising executive will tell you. Rather, customers like to buy from vendors who have done a good job time and time again, particularly in product categories where performance, risk and reliability are difficult to evaluate prior to purchase.

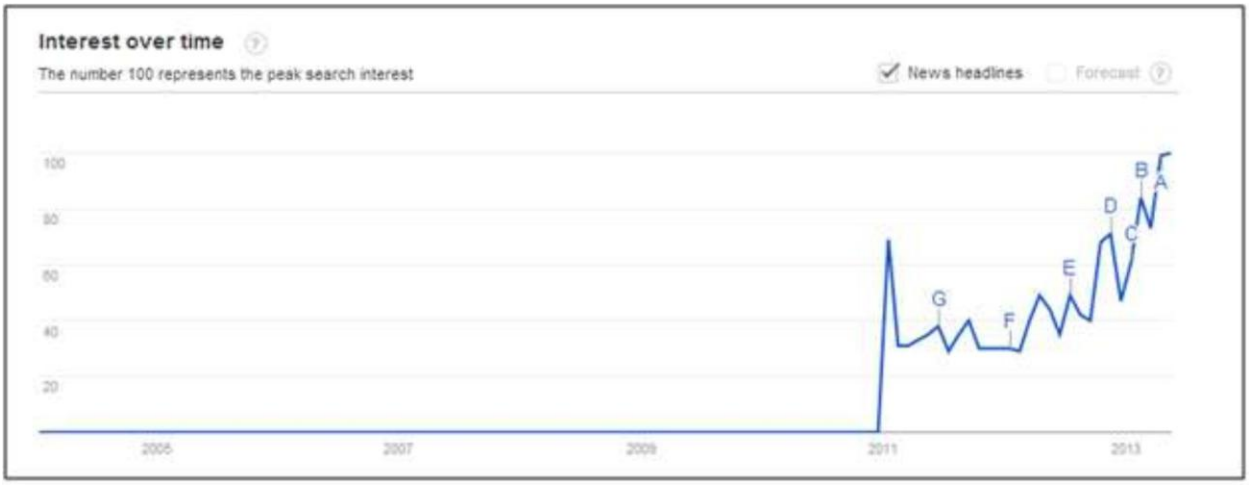
In digitally-enabled product categories and digitally-enabled businesses, the rate of innovation is high. It is, as result, also necessary have both superior insight into competitive offerings and also to ensure that important referral sources are managed. These referral sources in the past were relatively simple to

attend to. Specialty magazines, *Consumer Reports*, '*Which?*', the occasional product review, in-store sales person recommendations, and recommendations from a repair or automotive technician were the few sources of expertise available. Today, companies must shape, monitor, manage and react to ratings on e-commerce sites, numerous specialty rating sites, blogs, Tweets and user videos of their experience with a product. A reaction to negative and wrong feedback must be routinized, in other words *not* demand a crisis management response: the pay-off for fixing misunderstandings and minor technical problems pays off in spades in social media.

Bridging marketing, product/service design, solution/experience mapping and delivery, and information management is a big task, one that requires a view across the functional silos of departments in the organization. And so, rather than *Enter the Dragon* of kung fu fame, we have *Enter the Chief Digital Officer*, whose role it is to take an integrated view, often an outside-in view of the organizations, its offerings and strategies.

By way of measurement, as of May 2013, the Internet has 3.8 million references to the new CDO role, in comparison to 117 million to Chief Executive Officer or CEO, 52.6 million for Chief Financial Officer or CFO, and 9.7 million for Chief Information Officer or CIO. (Source: Google search, May 24, 2013).

Google Trends: Searches on Chief Digital Officer to May 24, 2013



Note: Insufficient Google data for earlier periods before 2011 Letters indicate references to news articles. Live data available at Google Trends and searching on "Chief Digital Officer".

Questions for the Reader

1. Do customers prefer to visit our web site over competitive or distributor/retailer web sites?
2. Is the information on our web site tailored to support the interests of individual visitors?
3. Do we coordinate the development of new products with the self-service and CRM support in organization?
4. When social networking sites such as Twitter or ratings on retailers have negative comments, do we have processes in place to quickly resolve misunderstanding, provide quick support to resolve product or service problems on a routine basis?
5. Are we actively trying to manage across organizational and informational silos?
6. Does our social networking activity support the interests of our customers rather than trying to sell them?

Chapter 2: Rethinking the Digitized Business

*"A good strategy solves several problems at the same time. Good software also solves several problems at the same time. Great software fixes a group of short term problems and provides a framework for making it easier to solve longer-term problems later on." Davidson, Gellman and Chung, **Riding the Tiger**, 1997.*

We currently have no good word for describing the increased use of digital based technology and networks in a business. We might call it integrating e-commerce into your business, digitally enabling a business, digitizing or digitalizing your business. We could call it something like Next Wave business or Digital Business Transformation, but the specific term used is less important than the recognition of the *scope of change* triggered by an explosion of accessible information, massive data centers, pervasive mobile and stationary computing, continuous or at least continual access to networking, a massive increase in the availability of networked sensor data, the substitution of algorithmic control for human decision making, or the power of pattern recognition, analytical engines and induction tools for finding patterns in an explosion of data. It's not just about big either. The lowered cost of digital technology offers new strategic choices for every type of business from home businesses to startups, small and medium sized businesses.

At its simplest, digitizing your business is about a change in the economics of your business. It is as important as the move from water power to coal in the 19th century, or from coal to oil in the twentieth. But digitizing is not just a simple economic transformation. Its effect is even more pervasive than just economics. It changes the cognition of employees, stakeholders and customers. It changes the type of employee, the type of skills and educational background effective employees require. It also can change the social contract with employees: without trust between employer and employee, employees may be reluctant to innovate, share information, take risks and make decisions outside the rule book. Digitizing increases the amount of information about customers, non-users and competitive products and also

lowers the cost of collecting such information. Digitizing also changes the expectations of customers about best practices in business and influences their preference for different competitors.

A metaphor may help illustrate. The definition of light used to be *visible* radiation. Today, we have *invisible* light such as ultra-violet or infrared that we perceive through our tools. In some cities, regular users of cell phones are aware of cell phone 'dark spots', where their phone reception falls out. These users have built a mental model of the wireless coverage of their city, deduced but unseen – information that would have been previously mysterious and incomprehensible. In the same way, information about interactions, opinions, ratings and locations of customers now provides data that was previously unaffordable to collect and was, therefore, previously essentially invisible. We even have new information about the end of life value of products by looking at resale activity on eBay or other auction sites. Previously invisible data gives us opportunities for new insights and creates new processes within organizations.

Behaviorist learning theory also suggests that the type and speed of informational feedback given to customers will also affect both their learning and behavior. The ability to automate reactions to customer behavior increases the ability and power of the selling organization to shape customer behavior. At one end of the spectrum are the addictive and maladaptive behaviors induced by variable ratio schedules of reinforcement with gambling and gaming activities. Customers have a hard time distinguishing between being reinforced and not being reinforced, but feeling almost reinforced by stimuli associated with reinforcement. At the other end of the spectrum are types of informational feedback that encourage more positive behavior.

This choice along the spectrum of destructive and positive behavior creation is likely to become increasingly important as machine intermediated behavior becomes the norm in areas from entertainment to healthcare, from work to exercise.

Value Chains

Digitization of your business affects the full value chain (or value adding activities that you choose to operate) of your business. It also affects your supply chain. It affects your operations. It affects your downstream distribution activities. It affects third parties for whom your business has consequences. It may affect the environment and energy consumption along with the visibility of your non-economic activities and effects. It affects your relationship with customers and relationships *between* customers. It affects the speed of response between marketing/sales activities and customer actions. It also affects the visibility of your morality and the values of your business.

Digitization of your business also affects the resilience of your business and the risks you incur, risks you lay off to third parties or mitigate in some way. It also affects the availability of capital and the factors that influence your cost of capital by changing the transparency of data about you, your customers and your markets. And then there are the side effects, unexpected consequences, that in the past you might well have ignored, but which today can surprise you, like being hit in an intersection by a truck that shot the light, hitting you at 90 degrees.

Because digitization is caused by the introduction of individual or point technology and also by business process changes, the identification of the risks and opportunities, the new and the potential cost structure often requires analysis that runs across different functions in the business, different profit and losses, and different time periods. Changing the digitization strategy of the business can also change the feedback loops in the business, causing unexpected volatility and stock outs.

Getting digitization wrong can mean the end of your business. Getting digitization right can mean new growth. Both are clearly important areas for analysis; but digitization is also more general in its impact – it can be enabling, increasing the capabilities of your business to operate with new types of digitization, providing a new set of capabilities and lenses for addressing existing and new markets. Many of these new capabilities and lenses are unclear until they are used. Evolutionary strategies are often enabled by evolutionary digitization, experiments and technologies.

Harvard Business School professor and influential writer, Michael Porter has made the point for years that if everybody is adopting a technology, it is difficult to gain a long term advantage over a competitor. Perhaps you can gain some advantage by being faster. Perhaps by being faster, you can gain market share a little more quickly, but as I have pointed out elsewhere in the book, sometimes early adopters are too early. The technology is bleeding edge not leading edge.

Competitive advantage can only be derived from building capabilities, strategies and business models that are hard for competitors to respond to. Retailers such as Best Buy and Barnes & Noble have difficulty responding to online competitors because they have huge real estate obligations that are difficult to unwind. And conversely, on-line competitors cannot match all the services of a bricks and mortar location. Large software companies have difficulty responding to software as a service because investors will be upset by the transition from upfront to period based fees. Microsoft has difficulty responding to a competitor such as Google that gives away an operating system and productivity software, and finances itself with advertising revenues where Google has a network economics advantage.

Investing in digital capabilities raises the same issues. If everyone is digitally enabling their business in the same way, it's difficult to achieve competitive advantage. Selecting where the best digitizing projects exist encompasses a major set of strategic choices. Some digitizing will make the business more cost effective but perhaps less agile. Some digitizing will be focused upon increasing revenues and profits, but may not build strong emotional bonds with customers. Some digitizing projects will have little apparent, easily identifiable short term pay-off, but may provide a platform than enables hundreds of exciting capabilities.

These digital decisions have a large impact upon company profitability and valuation. Amazon is rated as the fifteenth most valuable brand in the world at $45.7B. Walmart is rated at eighteenth with a valuation of $36.2B, according to the 2013 BrandZ Top 100 Most Valuable Global Brands. Amazon's e-retailer strategy averages 9.5 turns a year on its inventory with an average margin of 27%. Barnes & Noble has turns of 5.9 times with a similar margin. Walmart, the largest retailer in the world, is primarily a bricks and mortar operation today. Its inventory turn rate is only 7.4 times, again matching Amazon

margins. And Amazon has a secret weapon. It resells its digital platform to other retailers. As with many businesses, development and ownership of platforms can be a powerful way of creating advantage and reshaping markets as Apple with a brand value of $185B illustrates. When other retailers sell through Amazon, Amazon obtains incremental profits from the business activity without having to fund inventory. It is, as British business professionals say, highly geared.

The truth is that there are always trade-offs with digital investments. Those in the software business talk about the three core trade-offs. **Low cost**, **high quality and broad scope**, **fast development time**. The problem is that you can only ever achieve two out of three.

A low cost, high quality and broad scope project will take a long time.

Low cost and fast development will only produce a low quality or narrowly scoped project.

High quality/broad scope and fast development time will be high cost.

Goals matter as well as do expectations. Companies typically need to have different categories of digitizing goals. Each type will have different criteria for success and should be ranked against projects that are in similar "buckets". Here are four examples:

1. Ongoing maintenance and upgrades
2. Regulatory requirements
3. Strategically critical projects
4. Experiments

On-going maintenance and upgrades of digital projects are pretty self-explanatory, though it is often the case that companies overinvest in such activities.

Regulatory requirements are the kinds of projects that a company needs to have in place to stay in compliance with government or customer governance requirements.

Strategically critical projects are the projects that are designed to build advantage and new capabilities that will enable new sources of advantage. They are often platform decisions.

And finally, there are experiments. By their very nature experiments are impossible to evaluate in any highly systematic way. The purpose of an experiment is to learn something, to develop some heuristics or rules of thumb about a product project, about a customer group, about a technology, business model or channel of distribution. Successful experiments lead to insights and more experiments which eventually lead to the ability to predict successfully about a new something.

Dealing with Zeitgeist Competition

I argue in this book, that the Zeitgeist effect not only speeds up innovation, it speeds up competitive imitation of both products and user interfaces on web sites. It raises the risk of competitive leapfrogging. It also widens the number of competitors whose actions must be predicted as they expand outside their geographic or customer home base.

In some markets, the complexity of prediction will be very high. Predicting market evolution at any degree of detail will, as a result, be very difficult. One economical solution to this complexity is to use scenario analysis to lay out different possible futures and use these mapped out futures to identify contingency plans. The assumption here is that thinking through scenarios speeds up the ability of an organization to respond to unpredictable environmental and competitive changes.

As a very minimum, scenarios should be used to map out the landscape of potential value offerings. For, if as I have emphasized, differentiated high value is the strongest predictor of success; a major risk in a Zeitgeist market is being unaware of changing value preferences held by consumers and the introduction of new value propositions by unfamiliar competitors.

Illustrative Increase in Competition in a Zeitgeist Innovation Market

The following two tables illustrate the growth of the photography Zeitgeist market in North America. It illustrates several characteristics of a high tech Zeitgeist market including:

1. A large number of similar strategies in the early stage of the market
2. Consolidation as some competitors fail to keep up.
3. Increasing use of a platform strategy results in an increase in products launched by major competitors and a bunching of product announcements (often timed for major conferences and exhibitions).
4. The most successful companies built upon existing capabilities (e.g. fast product design, high tolerance manufacturing and assembly, lens design capability and existing lens portfolio) or were forced to acquire new capabilities through joint ventures and acquisition.
5. The market is covered by many competitors with similar capabilities. Competitive advantage from performance improvement tends to be short lived. Competitive advantage based upon the overall platform, e.g. product family of devices, removable lenses and accessories and support from third party compatible lenses raises the capital requirements for being a major player. These higher capital requirements necessitate a platform strategy in order spread R&D costs over a wider range of buyers and products.
6. The higher product family profitability of an established high end platform (e.g. dSLR with removable lenses) is a key aspect of success and maintaining profitability because of disruption of the low end of the market (compact cameras).
7. The predictability of the market today is lower. In the early days of digital photography, technology designs had less variation. Today, there are at least four major sensor architectures (Bayer, Foveon, Fuji, and a Foveon-like Canon sensor, currently in development). There are three internal mechanical arrangements (mirror, translucent mirror and no-mirror). And there are at least two vendors visibly offering the ability to change the focus point after taking the photo.
8. Because evaluating photographic cameras and lenses is difficult to do individually, numerous writers, magazines and web sites provide reviews and ratings.

Digital Photography Market Shows High Rates of Product Introduction and Imitation

Total entrants into market: 24	# Competitors Launching Cameras	Average # Products Launched Per Competitor For Year	Total Products Launched in Year
1994	1	1.0	1
1995	1	1.0	1
1996	3	1.3	4
1997	5	1.6	8
1998	12	2.8	34
1999	13	4.0	52
2000	17	3.6	62
2001	18	5.4	98
2002	17	5.5	94
2003	20	5.5	110
2004	16	9.2	147
2005	15	10.7	161
2006	14	10.3	144
2007	13	13.5	175
2008	13	13.6	177
2009	15	12.0	180
2010	13	13.5	176
2011	14	11.8	165
2012	13	12.2	158
Partial year May 17, 2013	11	8.8	97
Total products		(Some double counting, approximately 25 units or 1% due to mergers)	2044

Note: Table includes compact cameras and dSLR/interchangeable lens cameras. Source: www.dpreview.com as of May 17, 2013

Later on in the chapter, I will show how different categories of cameras are competing with each other and smart phones.

Lens Launches 2000-2013 For Selected dSLRs Shows Capabilities Differences Between Competitors

	Canon	Nikon	Sony	Zeiss	Olympus	Fujifilm	Leica	Panasonic	Pentax
2000	3	4							
2001	2	0							
2002	1	1							
2003	3	5			6				1
2004	4	4			3				5
2005	4	2			7				3
2006	3	4	18		1			1	2
2007	4	7	2		3		2	3	3
2008	4	7	4		3		4	2	8
2009	5	7	5		2		4	4	4
2010	7	9	6	1	5		1	5	2
2011	4	6	5	2	5		2	3	5
2012	9	7	8	0	4	5	2	3	6
2013	4	6	4	0	1	1	0	2	0
Total launches	***57***	***69***	***52***	***3***	***40***	***6***	***15***	***22***	***39***
Total lenses available from OEM	***92***	***73***	***52***	***n.a.***	***n.a.***	***n.a.***	***n.a.***	***n.a.***	***n.a.***

Notes:

dSLR digital reflex camera, also includes interchangeable lens cameras without mirrors in this table. Canon, Nikon, Olympus and Pentax had an existing portfolio of older lenses in addition to the new lenses announced in this time period, that work on both traditional and digital cameras. Sony teamed with Zeiss to develop lenses and picked up a lens portfolio from the acquisition of Konica-Minolta. It has subsequently made a $645M investment in Olympus, which provides additional lens capability for Sony. Panasonic teamed with Leica.

Compatible lower priced third party lenses are also available for the three most established companies, Canon, Nikon and Sony from Tokina, Tamron and Sigma. Data for 2013 goes to May 17th, 2013. Total lenses are based on lenses tracked at fredmiranda.com and do not include older generations of lenses that are not considered current or which would require adapters. There is an active market in second hand lenses.

Lenses are offered at various levels of quality. Canon, for example has at least four levels of lenses, e.g. entry level kit lenses, consumer lenses, slower high quality lenses, and faster high quality lenses. Canon also offer three types of lenses that work with their mirrorless dSLR, that work with their smaller APS-C sensors (the majority of their dSLRs), and traditional lenses (originally developed for film cameras) that work with both full frame (larger sensor) and smaller APS-C sensor dSLR cameras.

A good lens will typically cost as much as or more than a camera body. Camera enthusiasts will often spend 2-3x more on lenses than the camera body, increasing relationship profitability. While there exists an active market for second hand lenses and high quality lenses retain a high percentage of their value for an extended period of time (decades), typically lens ownership constitutes a switching cost for a user.

The Digitization Roadmap

While every company's digitization path will be different, there are some themes that may help kick off the process of reviewing your risks and opportunities.

Outside-In Perspective

Building information technology and digitizing a business is exceptionally easy to do badly. Shall we count the ways?

1. A company can have difficult to use interactions. It can fail to compare its product interfaces and web interactions with competitors to ensure that it is best of breed.
2. Interactions can be designed to reflect the inner complexity of the company rather than the goals and task objectives of customers.
3. Application interfaces are too general and are not designed to simplify and shorten interactions.
4. Interfaces are not targeted at different Personas (people with different backgrounds, expectations and goals) so they take too long and cause user frustration.
5. There is insufficient integration between different modes of communication with customers, e.g. phone, on-line service, retail, warranty and repair, product registration. For example, Microsoft demands registration and activation of its Windows operating system, but does not use the registration to create useful services for customers. Would it not be reasonable for Microsoft to offer a cloud back up of the operating system and its settings for re-downloading in the event of a system crash?
6. Excessive information is demanded from customers when the information has already been provided.
7. Investments in automation are made without redesign of business processes, leading to more expensive business processes.

Suppliers can also benefit from an outside-in perspective. Making it easy for suppliers to work with you may cause better suppliers to want to work with you. And the same is true for partnering relationships.

An outside-in customer perspective on interactions provides easy to access, easy to use, targeted interactions that do not frustrate customers, suppliers and partners. The interaction reinforces the brand of the company and encourages a customer to return, a supplier to treat you well, and partners to want to continue to do business with. Ideally, an outside-in perspective provides value as a consequence of every interaction.

In effect, interactions can exist at five levels:

1. **Unintegrated interactions.** These interactions increase the workload for internal and external users. They may also cause invisible business losses or missed opportunities.
2. **Integrated but awkward interactions.** These interactions may permit interaction but reduce the value of the brand or relationship.
3. **Well designed but untargeted interactions.** These interactions may not hurt the brand but they don't increase preference for interacting with the company or make the company an employer of choice for employees.

4. **Targeted persona-oriented designs.** These interactions reduce the amount of work required for interacting with the company by offering a menu of choices that match the most common user profiles.
5. **Highly targeted personalized interactions.** The most sophisticated interactions know about a user and tailor themselves to make interactions as easy as possible and as relevant as possible.

Integration

Most customers expect that companies are competent enough to have an integrated view of their activities with the firm. This integrated view extends from something as simple as "screen pop" when a telephone call is transferred in a customer support center along with the data screen to the ability to see transactions that have been made on-line and in the company's retail outlets (a surprisingly rare capability). Many companies are called on by multiple sales forces from the same company and this complexity is often a source of annoyance to a prospect or customer.

Badly managed companies tend to see customer support as a cost minimization exercise when often superb customer support not only enhances the relationship with the company, it makes more likely favorable reviews and ratings, and additional sales from upgrades and cross-selling.

Integration is also about meeting customer expectations around logistics. Some e-commerce sites will make inventory information and expected delivery date information part of the product purchase decision. It's a reasonable expectation for a customer, but the kind of information that only gets displayed if the company places a high value upon (1) understanding customers' wants and desires, and (2) invests in making interactions that delight the customer.

Lean Product Development

Apparently successful models of innovation become part of conventional management wisdom. The general goal is to minimize wasted investment in product development. Over the past two decades, two models of consumer electronics and digital innovation have been popular.

One school is the "Japanese" school of launching early generation products to seed markets and understand usage. In the software arena, Google will often dangle a beta version of a service for months and years to gather data and understand usage, without committing to an actual finalized release.

The second school is the "Apple/Steve Jobs" school of launching "perfected products" born of ideation, internal testing, and incorporation of state of the art components that enable new types of differentiation and value.

The first type of innovation emphasizes fast to market, but at the cost of reliability and completeness. The danger is that the brand suffers because of the failures and inadequacies of these "test" products. Google, pursuing the best practice in innovation of launching many innovations, has received criticism for cancelling low volume products abruptly, perhaps reducing the perceived value of future experiments. Some Japanese companies have also devalued their brand through excessive launching of poor quality first generation products.

The second type of innovation involves placing big bets on a few products. The danger for the *perfected product* approach is that the rate of innovation is too slow to match competitors pursuing iterative and rapid improvement. Some have suggested that Apple's rate of innovation, driven by a perfected product innovation model is at risk from Android's faster cycle of releases. Blackberry experienced the worst of both: it has in the past several years demonstrated slowness in generational perfected product releases.

Product development strategies that permit rapid learning while simultaneously delighting users represent a compromise between the two approaches. Over time, I would argue that product development will tend to move from the Japanese school to the Jobsian school as a product category matures. When a product reaches maturity, disruptive products, offering lower prices and less performance may begin the cycle again with experimentation to discover what minimal level of features opens up a new application area and new type of customer at a lower price points and worse performance to cost ratio.

An example of this last evolutionary pattern is the digital camera business I described earlier in the chapter. The North American oriented web site dpreview.com is widely thought to be an authoritative source on digital cameras. It is now owned by e-retailer Amazon. Since the beginning of modern digital photography, it has tracked 2,019 cameras (from 1994 to May 17, 2013). The categories they track go all the way from consumer point and shoot cameras to high end cameras for professionals. Disruption is occurring between smart phones and low end video and compact cameras, between mirrorless dSLRs (digital single lens reflex camera, i.e. one that can use multiple lenses) and traditional dSLRs with mirrors, and between consumer dSLRs and professional dSLRs.

Their data illustrates both the high rate of product introduction and replacement. Historically, the rate of improvement in cameras has been large (leading to regular, often annual, product introductions and revisions), but low end compact cameras are now disrupted by the increasing adoption of smart phones which provide "good enough" quality and the advantage of always being available for a user carrying his/her phone.

Compact camera product managers are attempting to move up market with improved image quality and larger sensors. Mirrorless and translucent mirror dSLRs, which offer smaller size and improved video respectively, are taking market share away from traditional dSLR vendors. And the improved performance of mid-priced dSLRs makes them increasingly attractive to professionals.

Introduction and Withdrawal of *Compact* Digital Camera Products 1994-2013

Type of Compact Camera	*% Dis-continued*	*Recent Trends*	*# Models Introduced*	*# Current Models*	*# Dis-continued Models*
Ultra compact, fixed lens	75%	Under pressure from smart phone cameras	460	113	347
Compact, fixed lens	69%	Under pressure from smart phone cameras	1229	387	842
SLR like (bridge), fixed lens	3%	Compact cameras attempting to differentiate from phones on zoom lens capabilities and better image quality. Lower cost than an SLR with interchangeable lenses	69	67	2
Large sensor compact, fixed lens	7%	Compact cameras differentiating on image quality and control	15	14	1

Source: dpreview.com May 17, 2013 and authors' assessment

Introduction and Withdrawal of *dSLR and Interchangeable Lens Digital Camera* Products 1994-2013

Type of Compact Camera	*% Dis-continued*	*Recent Trends*	*# Models Introduced*	*# Current Models*	*# Dis-continued Models*
Mirrorless rangefinder	8%	Mainly challengers innovating a new platform against dominant SLR players	60	55	5
SLR style mirrorless	13%	Challengers innovating a new platform against dominant SLR players	15	13	2
Compact dSLR	32%	Dominant SLR players reacting to mirrorless challengers and general desire for smaller camera bodies	56	38	18
Mid size dSLR	58%	Traditional SLR beginning to cannibalize large professional models	69	29	40
Large dSLR	74%	Designed for professionals with premium features	46	12	34
All cameras both tables	**64%**	**# discontinued models is likely underestimated**	**2019**	**728**	**1291**

Source: dpreview.com May 17, 2013 and authors' assessment

Technology notes. A rangefinder camera does not have a mirror or an optical viewfinder that shows what the lens is transmitting. A digital SLR or single lens reflex camera uses a mirror to reflect to an optical viewfinder what is being seen through the lens mounted on the camera. When the picture is taken, the mirror drops out of the way and the light is passed to the sensor and a photograph is produced. A mirrorless camera such as the Micro-Four-Thirds standard does not use a mirror to provide the user with an image. Instead it uses information from the sensor to provide a digital display on the back of the camera or via a digital equivalent of an optical view finder. A mirrorless camera is smaller than a camera with an internal mirror. A camera with a translucent mirror both passes light to the sensor and also reflects the light to the viewfinder at the same time simplifying the internal mechanics and facilitating video. A camera with a fixed lens may have a zoom lens or a prime lens, but is generally not used with add on lenses and cannot be interchanged with other lenses. Historically, most dSLRs used a sensor that was smaller than the film size in 35mm film. Today, high end consumer cameras from Canon, Nikon and Sony are increasingly offering "full frame" sensors that match the old larger 35mm film size.

Platform Development, Management and Prediction

For those of us have been working in the computer age, the idea of a platform is so obvious that sometimes it recedes into the background. Yet, platform strategy and prediction is a critical aspect of digital business transformation and business model evolution. For example, in the digital camera business, over a twenty year period, the more successful camera companies have taken advantage of commonalities across different segments and launched more products at the same time, obtaining an economy of scale in marketing and development dollars. Lenses are portable across many different models of cameras, and over extended generations of technology.

There are basically five choices when it comes to considering being a platform *owner*:

> First, you can decide not to be an open platform. Instead you deliver an appliance that does a narrowly defined task and the commonalities across your various products reduce R&D costs.
>
> Second, you can decide to create a platform and seek to have others develop functionality around your platform.
>
> Third, you can create a platform, provide the critical applications for your platform, and open up your platform to third parties. (Windows, Windows Phone, Xbox, iOS, Macintosh, Sony PS3, Blackberry, Windows Phone 8 and Android would all fall into this strategy).
>
> Fourth, you can create a platform in order to compete with an existing competitor's platform. With this approach, you can develop your own platform, base your platform upon open source versions of a platform, or some combination of the two. (Linux and the Macintosh operating system are excellent examples of this approach. Linux is based on UNIX and the Mac operating system is based upon NeXT, which was in turn based upon the Mach version of UNIX.)
>
> Fifth, you can create a platform with backward compatibility for a previous or competitor platform. (Macintosh with Windows emulation, Windows 3 with DOS emulation, Blackberry running Android applications, and any operating system running virtualized operating systems, courtesy of VMWare, Oracle or Microsoft would fall into this category).

The examples above focus primarily on operating systems. They are something we are all familiar with and the distinction between the platform component and the application components is relatively straightforward, though to be fair operating systems often start to include more functionality as they evolve over time. And of course, in addition to being a platform owner, a company can choose to adopt an existing platform belonging to some other organization, or provide application/products/services based upon another organization's platform. Google provides applications on Apple's iOS platform.

But platforms can be thought of more generically. Families of automobiles often share the same underlying platform. The commonalities may include engines, transmissions, body frames, internal control components, entertainment systems, etc. Cars now have so much electronics that modern cars actually have a local area network (LAN) for internal communication. The LAN minimizes the weight and complexity of wiring in the car. Increasingly cars are part of more than one networked wireless platform

as well. They may include GPS, traffic information, road information, accident information and advance notification of police radar.

A platform approach to product development attempts to distinguish commonalities that can be used across a product family from the unique aspects required for an individual deployed product. But the more that platforms are software based, the more likely it is that the evolution we have seen in products such as a phones, cameras, tablets and computers -- regular upgrades and downloads -- becomes part of a previously un-upgradeable product category.

The increased use of software can have dramatic effects upon the type and quality of engineering required. If we compare, for example, the difference between an analog playback device such as a vinyl record player and a CD player, the record player required a highly accurate, consistent rate of vinyl record rotation. In contrast, a CD player includes buffering, so that the music can be read and processed in advance of being converted to sound. The speed of rotation can be much less precise as long as the buffer of music is large enough. The accuracy and speed constancy of the music is based upon the rate of signal processing and sound production. A cheaper motor and a processor benefitting from Moore's Law changes the design constraints. And of course, a move to a software platform that requires no CD player has completely different design and engineering requirements.

To take an even more extreme example, historically, cars required precise engineering to provide excellent handling. As hybrid and pure electric cars emerge into markets, while the physics of car handling and control remain the same, much of the engineering now begins to revolve around the internal local area network, managing of priorities and latencies of signals, and battery management. In a strange way, automobiles have moved or are moving from being an embedded device (admittedly a large one) to a platform, to which it is increasingly easy to add applications and new functionality. And because of the increasing importance and flexibility of software, the whole idea of options can now be reconsidered. Options can be purchased and enabled after purchase of the car. Mistakes in the infotainment and telecom systems can be fixed over the air.

When a product or service makes the move from proprietary system or embedded device to a more open platform, companies often experience difficulties. It seems to go against the grain to open up the source of competitive advantage. Craigslist.com the well known service that is essentially the free version of newspaper line advertising experienced this problem when third parties, frustrated with Craigslist' minimalist interface, pulled rental information off Craigslist and developed a mash-up with Google Maps to show the locations of properties advertised. Craigslist initially resisted this reuse of their data in the same way that many newspapers have not been happy with the reuse of their material by search engines such as Google.

The right choice for these evolving relationships is often difficult to determine without analysis and testing. The basis of what is permissible and what is not may require fine grained distinctions and granular monitoring of usage. YouTube has been sued for illegal posting of content, but current US laws state that if the content owner notifies YouTube, YouTube must take down the illegal content and it will not be liable as a result. This approach is a *regulatory* approach. The alternative approach is to move in

the direction of win-win: YouTube is now charging for subscriptions of premium content, presumably generating revenues for both its owner Google, and also for the content owner.

Apple's iTunes store and the Google Play store have taken a different approach. Their e-commerce platforms effectively take 30% of revenues in a business model that is pretty much a classical retailer model.

The digital camera business shows how owning a platform is no guarantee of success. Konica and Minolta had been successful in the film SLR business and had a portfolio of lenses that might well have laid the groundwork for digital success. But both companies were forced to merge and were then acquired by Sony which lacked some of the lens expertise of the merged Konica-Minolta. Predicting platform evolution is an increasingly important exercise in a world where software and external innovation is part of the perceived value of a brand, and where the momentum and relative growth of a platform influences your ability to retain customers, migrate them from one generation of technology to another, and to attract third party development dollars, complementary products and marketing support.

Questions for the Reader

1. How well do you understand the changes in cost structure enabled by digital technology?
2. Can you stratify your customers and non-customers by how they transact with you? Physically? Virtually? Across both?
3. What is your platform strategy? How do you expect it to evolve? What economic model is assumed?
4. What are the platform strategies of your competitors? Where are they missing capabilities that will trigger major investment or acquisitions)
5. What capabilities and customer perceptions are required for success in this market?

Chapter 3: Consensus and Vision

"If you don't know where you are going, any road will take you there."

Adding digital technology to the mix of activities in a firm and to product development can challenge the skills, capabilities and culture of a company. Sometimes, it is hard to envision how big the transformation will be, or anticipate the huge number of changes triggered in related products, services and usage patterns. Consider consumer telephony. It illustrates the impact of digitizing upon one of the major enabling technologies of the twentieth century.

Fifty years ago, when you, as consumer, bought a phone, you had little choice in handsets. The telephone company was a monopoly. You had no choice about the cost of long distance or local calls. Competitive choice was essentially non-existent.

Today, you have dozens of decisions to make. Should I buy a traditional fixed line service, a mobile phone service or use a free (or at least low cost) Internet service? What kind of handset should I buy? If the handset is for a traditional fixed line, what kind of wireless connection should I use for a wireless non-cellular handset (2.4 GHz or 5 GHz or DECT)? If I buy a cellular phone, which of standards should I commit to (e.g. CDMA vs. GSM)? Which carrier offers the best voice or data service in the locations I spend the most time in? How fast are they rolling out the next generation of cellular technology (e.g. LTE)? What is the status of the operating system and prospects for the phone platform and ecosystem (e.g. Apple IOS, Android, Blackberry, Mozilla Phone, Symbian, Windows Phone to name just a few). Should I go with a prepaid phone program which requires no commitment, or a post-paid phone program, where I must commit typically to a two year program in return for a subsidized price on a phone, or should I select a vendor that does not subsidize the phone in return for a no-commitment plan?

And I may need to address whether it is more advantageous to pay a penalty if cancel the program early vs. paying for the phone and being able to cancel without penalty, enabling me to sell my phone in the second hand market.

And if you buy a phone service, it is often bundled with other services. Integrated carriers will offer discounts if you bundle into a double play (e.g. Internet and TV), triple play (Internet, TV and phone service) or quad play (Internet, TV, phone and mobile phone service). And to add misery to madness, there are different pricing schemes for family voice and data plans with even more complicated choices for sharing data plans across phone and non-phone devices. You can, in addition, pay extra to use your phone as a hotspot, creating an ad hoc WiFi network with multiple devices, which then use your 3G or 4G data plan to reach the Internet.

Five Blind Men and the Elephant

Unsurprisingly, if you put five people in a room, you will discover that the old metaphor of five blind men and the elephant is surprisingly relevant for the purchaser of today's phone and phone service. The man holding the trunk experiences the elephant differently than the person holding the tail. Both experience something different than the men holding the ears, touching the hide or feeling the tusks.

Just as importantly, a product manager, responsible for assessing market needs, developing a new phone, or assessing suppliers often becomes knowledgeable from the *act* of doing the assessment or managing development. The managers above and below, and his/her peers may hold a different understanding of the problems he faces. And in fast paced markets, the lessons that his/her predecessors may have learned or the narrow expertise of others in the organization will often mean that perceptions about what it takes to succeed vary widely. If the product manager is less skilled about obtaining and evaluating the lessons others have learned, he/she may march off in the wrong direction.

In other words, the market that most innovators or products managers face is downright complicated, a lesson that many successful companies have learned to their cost. Nokia, Microsoft, Blackberry and Intel are, by any historical measure, companies that have had exceptional performance and market leadership for extended periods of time. Nokia for many years was the most successful mobile handset vendor in the world. Microsoft has been the most successful operating system vendor. Blackberry dominated the market for email-enabled cell phones. And Intel which dominates the market for computer microprocessors (selling 180 million CPUs a year) has had enormous difficulty competing with ARM in the mobile device space. While ARM processors are much less expensive than Intel's, ARM's processor technology goes into roughly a billion devices a year via extensive licensing agreements to major hardware and semiconductor partners.

Each of these well known companies is extensively analyzed, praised and criticized in the media, in user comments and by technology analysts. Smaller and less visible companies don't get the benefit (or annoyance) of this extensive analysis. So what happens in a company where there is a dispute about direction? And how do you deal with it?

One useful way of resolving arguments over direction is to consider the concept of Stakeholder Analysis. Stakeholder analysis comes out of not-for-profit marketing and management: you figure out who is

important to your organization or to a decision and you explicitly consider what they want, need or demand. Setting goals and allocating resources for addressing stakeholders should be part of your plan. It's more useful than complaining around the water cooler about how somebody in your organization is preventing you for succeeding.

The formal definition of a stakeholder is "Someone who can help or hinder your proposed strategy." For many startups, a list of stakeholders might include suppliers, financial institutions, venture capitalists, media, technology consultants, different types of customers (e.g. heavy users, early adopters, light users), and internal groups or individuals such as the CEO, the VP Sales, VP Production, etc.

Each stakeholder or stakeholder group has expectations. The critical task is to document and anticipate their needs and decide to what extent you will address their needs. You may decide that some needs are "Satisfiers", in other words, there is some minimum level of outcome that keeps them happy. A VP of Sales may want an opportunity for input into a new product, but actually does not want to be overburdened with details. A Board of Directors may want to be kept informed, but not overwhelmed with data and decisions. A key part of innovation success is not overinvesting in activities that have little pay off for you or the stakeholder.

Other stakeholders don't have this threshold. They want as much as they can get of their need. For example, a CEO who needs to demonstrate revenue growth may make decisions that maximize revenues but harm profits. Delivering a product or service that increases profits without increasing revenues may be unsuccessful.

And finally, sometimes a company must make decisions to *not* address a set of stakeholder needs. Changing a beloved interface for a piece of software or terminating support for an operating system may upset loyal users, but it may also be a call to action that will finally trigger an upgrade.

A simpler way of putting stakeholder analysis into perspective is that "You can't deliver apples if your stakeholders are expecting oranges." And if you have stakeholders with radically diverging views, "You can't deliver apples, if your stakeholders are expecting a salad bar."

Power and the Product Manager

Resolving conflict quickly is an important issue. A major study in the 1990s (Clark, Kim and Fujimoto, Takahiro: *Product development performance: strategy, organization and management in the world auto industry*, Harvard Business Press Books, 1991) compared the success of US and Japanese product managers in the automobile industry. At that point in time, Japanese car companies were designing and bringing cars to market in 3-4 years while US firms were taking around 7 years. They key difference between the two cultures was that US product managers tended to have a weak "coordinating" role. In contrast, the Japanese product managers were more product owners or mini-CEOs. They were senior and experienced. They had the authority to make decisions quickly and remove roadblocks.

The same can be true with high tech products and services. Google follows the same practice. Strong product owners have full responsibility for the development of new products. (Jaruzelski, Barry, Holman,

Richard and MacDonald, Ian: "Product Management Gets Stronger", **Strategy + Business**, Spring 2013, Issue 70).

In high tech startups, the CEO is often the "owner" of the product. Its progress is visible and the CEO can add resources or remove roadblocks. Passion for the project is clearly visible in most startups and often less visible in larger companies. And as anyone who has built a product knows, there is always one person who is passionate about driving the product forward from a business and/or from a technical perspective.

Building Consensus

Explicitly mapping out important stakeholders and formally evaluating their needs provides a way of analyzing difficult decisions about the future. But surfacing assumptions about stakeholder needs may be insufficient to build consensus. So, in most companies, conflict may need to be quickly resolved. There are at least six common ways of tackling the problem.

1. Wield a big stick
2. Reframe the problem with new data
3. Test and reframe
4. Ignore the problem and ask for forgiveness later
5. Set up a separate organization to pursue a strategy because there is too much conflict between the existing organization and its vested interests.
6. Facilitated planning session

Wield a Big Stick

In many companies, the resolution of conflict is often achieved by enlisting the support of a senior manager to resolve the dispute. Unfortunately research by innovation researcher, Bob Cooper who is a professor at McMaster University's MBA program suggests that the support of senior management does not correlate strongly with innovation success. (Cooper, Robert: *Winning at New Products*, Basic Books, Fourth Edition, 2011). And anyone who has run planning retreats will have observed the problem that participants expect the CEO to have a point of view and rarely will argue against it.

Wielding the big stick of power is, therefore, an unpredictable approach. A new CEO may not feel comfortable making changes before he has had time to scope his/her new team and their business strategies. A company facing a competitor with a disruptive technology or low price may be reluctant to cannibalize its own business. Involving those invested in the past may prevent the creation of next generation products directly by preventing necessary investment and attention or indirectly by drowning the new business in the paperwork and processes of the older businesses.

Reframe the Problem with New Data

In a simpler world, good management would be based on data. But innovation is rarely simple. In an early stage market, there may be no data, decisions are based upon intuitions. The initial launch may provide some rules of thumb or heuristics about product development, new technologies, distribution success and adoption. Over time, refined data changes the business into a more rule based and data

driven company. The challenge is therefore, that an organization needs to agree on what kind of data is reasonably likely to be obtainable and useful rather than imposing the standards of a more mature business upon the innovation. (Martin, Roger: *The Design of Business: Why Design Thinking is the Next Competitive Advantage*, Harvard Business School Press, 2009)

Managers from different industries may also hold different assumptions about how to position products. Products are typically purchased based upon benefits rather than features, but high tech developers tend to spend their life focused on features. Good marketers also understand that different customers purchase in different ways. Some are highly involved in purchases. Some care less and are more impulsive. Some buyers make their decision based upon the emotional appeal of a product or service. Others are more focused on analysis and rational comparison of products. Marketing and advertising campaigns can, therefore, be classified usefully in four different types.

Emotional		
Rational		
	Low involvement	**High involvement**

Original developers: Foote, Cone and Belding

What is clear, however, is that in a Zeitgeist world, having the best performing product for the targeted user *and* emotional connection with buyer is likely to be advantageous.

Test and Reframe

For many products, the secret is to move quickly, test quickly and to avoid attempting to build the perfect product. For some companies, this may mean offering a service first with humans in the background to bolster the features that have not yet been built or perfected. For other companies, it may mean relabeling someone else's product. For other companies, it may be assembling a solution from off the shelf components to learn about customers, their current and prospective usage.

The secret is to avoid spending your budget, brand equity and internal political capital in such a way that they run out before you have been able to iterate to a second or later more refined generation of your offering.

Ignore the Problem and Ask for Forgiveness Later

In many dysfunctional companies, slow decision making dooms a product development project to failure. A product owner or product manager must drive the process forward, sometimes stepping on toes, based on the principle that it is better to act and ask for forgiveness later. But this kind of aggressive approach is a high wire act. A product manager or startup CEO runs the risk of being fired if the results are poor. Even worse, if the decision is associated with only one person, key stakeholders may not provide sufficient support for the product strategy to be implemented successfully.

Set up a Separate Organization

In many innovation situations, an important source of conflict are the vested interests of a particular group that has a commitment to an existing business model or an existing product-channel-segment strategy. There are no simple ways of solving this problem other than (1) selling off the business with the vested interest, or (2) setting up a separate organization that must live or die around their proposed and different approach to the market.

Facilitated Planning Session

A useful lower risk approach to resolving conflict is to involve key internal stakeholders in the decision. This approach works best with a neutral facilitator running the meeting and the clear understanding that the disagreement will not be used as a way of slowing down decision making. In the event of disagreement, projects will proceed as directed by the project owner. Speed matters in product

development and involvement of stakeholders has one goal – to speed up the process, not to slow it down.

Questions for the Reader

1. How clearly articulated are the digital strategies of the firm?

2. What are the assumptions of the firm about the growth of existing businesses, digitized businesses and unidentified new businesses?

3. Which areas of the firm are inwardly focused but need to consider the outside and customer consequences of their activities?

4. Which areas of the firm are outwardly focused and need to consider the inside consequences?

5. What processes are slowing down our rate of innovation and number of innovations?

Chapter 4 – Grabbing Attention and Obtaining Usage

"Fast learning really does matter."

Many entrepreneurs have the idea that they can bring a product to market faster than competitors. Over the past twenty years, smart product managers have become big fans of "iterative prototyping" or agile development, in other words, developing the minimum functionality that you can learn from the market quickly. Another way of thinking about it is what I term "Pareto functionality" or the minimum functionality that provides sufficient benefit to be useful to a customer. Others have called this the minimum viable product or MVP.

Many managers hold the assumption that being first to market enables a company to win big, iterate its product or service faster than the competition and keep its value proposition superior to its inevitable competitors. But the advantage of being first to market is, in fact, much debated. There are a wide range of scenarios to consider. In some being first to market is a positive. In others, it provides little advantage. And in some, being first to market is an actual disadvantage.

Where Being First to Market is a Disadvantage?

There are at least seven situations where being first to market is often a disadvantage. They include:

1. Being too early into the market and bearing the burden of educating customers so that competitors can take advantage of your expensive learning or marketing program.
2. Picking the wrong technology, which is then leapfrogged or which signals that other technologies have better prospects. Sometimes the wrong bet is reflected in spending all your money on the Generation 1 product and failing to anticipate the need for iteration.
3. Spending all your budget on product development and leaving insufficient funds for marketing, sales and distribution to develop the market.
4. Building the product for the early adopters, but gaining insufficient profit and having insufficient capacity to make the move to servicing the mass market.
5. Designing a high cost production or sales process combined with pricing your product so that you leave a price umbrella under which competitors can enter the market.

6. Rushing to market in order to be first and delivering an inadequate level of performance that damages your brand equity. This error may include not having sufficient early success or adequate capital to create complementary products, services and relationships needed to increase the value of your initial offering.
7. Overestimating your likely sales with the result that amortizing of R&D and market launch is spread over too few users or product sales, ensuring that the product appears unprofitable.

Where Being First to Market is an Advantage – Experience Curves

The classic situation that is consciously or unconsciously referenced by many entrepreneurs is the idea of an experience or learning curve. Moore's Law, which was an early observation that the number of transistors per unit of area will double every 18-24 months (depending upon whether it was the early or later version of the Law), has driven much of the digitization of society and business. What most strategists understand, and surprisingly is still not widely understood by many, is that an experience curve strategy has profound implications for business strategy.

If your cost of producing a microprocessor drops e.g. by 25% every time you double your cumulative volume of production, you are faced with a strategic pricing choice.

A traditional marketing strategy is to "cream, then skim". In other words, you charge more initially to the people for whom the new performance or functionality is most valuable. And once you run out of such customers, you drop your price to address the needs of the buyers who value the product less. The advantage of this approach is that you capture profits from early buyers and these profits can finance your expansion of production and marketing. The disadvantage of this strategy is that you hold a price umbrella over a competitor that has pursued a learning curve strategy.

The classic electronics experience or learning curve strategy is to simultaneously consider the price elasticity of the market (i.e. if the price is lower, more people will buy), the cost of sales (typically lower if the product is less expensive), and the dynamic nature of the production cost. If you price on where a product is today (say based on a production cost of $300 per unit), then you will have fewer buyers than if you price based upon where you are going to be if you achieve your volume goals. So, if you double your cumulative production twice so that you have produced four times more units than you have today then your cost per unit will be lower. If for example each time you double your cumulative volume of production, the cost per unit drops by 25%, then by the time you have reached this quadrupling of cumulative production, you will be producing at .75 X .75 X $300 or $168.75. So, the more you base your pricing model upon where you will be in the future, the lower your price can be, the more sales you will gain, and the more likely you will reach the volume necessary to justify your aggressive pricing (that appears to be below your initial production cost).

If ever there were an example of your need to understand the needs of stakeholders, pursuing a learning curve based pricing strategy would be one.

Sidebar: Price vs. Performance

One conceptual error that people make is to confuse cost improvement with performance improvement. Hard drive costs have consistently dropped in price since they were first developed and

the size of hard drives has shrunk from being the size of a large refrigerator to being the size of a pack of cards. Hard drives have improved on the dimensions of both size and cost per megabyte. However, the rate of improvement in *access and transfer times* has been much slower than the relative rate of improvement in processors. Given the lack of competitive storage technologies, the lesser rate of improvement mattered little. But tablets, ultrabooks and blade servers in data centers demonstrate how solid state drives enable better processor throughput (as much as 4X) and for portable devices, improved battery performance.

This example of a systemic effect where one component affects processor requirement and perhaps software licensing costs (if licensed on a CPU basis) is an example of how a new generation of technology can create market transformations.

Other Strategic Cost Drivers that Create Competitive Advantage

Most strategists believe that the cost of a product or service is driven by some combination of five or six strategic drivers. Each of the drivers can have impact on different elements in a company or product value chain. The fuller list includes:

1. **Experience or learning curves,** which I have just described in the previous section.
2. **Scale**, e.g. the larger a chemical plant, typically the lower the per unit cost; the more customers you have, the lower the per customer cost allocation of your initial software development or hardware R&D.
3. **Capacity utilization**, e.g. if you can operate a plant or a restaurant over three shifts rather than two, you typically are more profitable (lower overhead, with the minor downside of higher maintenance costs)
4. **Complexity**, generally, the more complex the business, the higher cost per unit. Often companies that are good with hardware are bad with software. Companies that are good with services may have difficulty getting into hardware businesses. The complexity of two different value chains with different planning cycles and risks can increase costs. Apple which likes to own both the hardware and software in its products, reduces its organizational complexity by having a highly centralized and focused development process with relatively few products. And they are ruthless in terminating old products and standards.
5. **Economies of scope**, if you can share costs across two products or services, the likelihood of successful innovation and lower costs is often higher. You can think of complexity as the opposite case to economies of scope. The Amazon Kindle family exhibits two types of economies of scope. First, by having a family of products with different performance, features and costs, Amazon can match the needs of customers with no logistical penalty. No new capabilities are required to ship both e-Ink and tablet Kindles. Second, by having a universal device such as a tablet, multiple downstream products and services can be enabled (e.g. Kindle Books, Audible Audio Books, streaming video) in addition to facilitating purchase of other products.
6. **Time based cost advantage**. Time is a more difficult variable to think about. One aspect of time based cost advantage is the concept of the “cycle of learning”. Both agile software developers and complex manufacturing operations benefit from short development or production cycles, so

that mistakes and learning are addressed quickly. Faster iteration tends to lead to faster improvement. In some businesses particularly low volume ones, or businesses dealing with high uncertainty, the ability to react faster, e.g. using a demand-pull ordering system can have significant impacts upon the cost of production.

For some readers, these models may seem too theoretical. But building a business without considering strategic cost drivers can often be a huge mistake. For example, for several years I worked with an executive in a semiconductor company that was using the relatively unusual technology of *programmable analog sensors*. There are some significant advantages to programmable analog. It's more energy efficient and it has lower latencies so it responds faster than digital signal processors (DSPs). These are specialized benefits, but they had been sufficient to raise venture capital investment. But with the full benefit of hindsight, the key problem that the startup faced was that every time you make a design mistake with hardware, it's a at least a hundred thousand dollar problem because you have to do a redesign and send it to the fab which incurs a significant fee. In contrast, a digital signal processing approach (DSP) merely requires a software change and a download into a standard DSP chip.

Building a successful programmable analog chip requires hiring great people in a market where there are few with experience of programmable analog and good people are scarcer than hen's teeth. With programmable analog, the development process was unforgiving of mistakes. In a sense, programmable analog, while a theoretical more desirable technology from a performance perspective, was less attractive both from a *staffing* and a *cycle of learning* perspective. The generally more flexible approach of a DSP ends up having a faster cycle of learning and offers quicker changes in response to usage experience or evolving customer needs.

The slower iterations with hardware vs. DSPs in a way parallel the benefits of a rapid iterative cycle or agile development in software. For many reasons, engineers and programmers like to build things. But both from a return on capital and from a rapid learning perspective, there may often be an opportunity to reverse the R&D process to pursue rapid learning before you need to stabilize the design or put it into hardware. Techniques that can be used included:

1. Distributing or re-badging a white label version of a competitor's product
2. Delivering a service that is partially delivered with software and partially with human staff
3. Using a quick but less efficient technology to deliver for the period while you are learning customers' usage patterns and emerging needs, only visible as the result of usage
4. Delivering in software first and only in hardware, once the critical deliverables have been nailed down

I learned this lesson in my first startup. It took us four generations to get the design right. The first generation of products had a development cycle time of about a year. The second generation of products improved more quickly, but only because the company was making incremental changes to the product. The third generation was based on more flexible technology but the company's development staff was not as proficient and clients demanded more customization making each new product and project extremely difficult to deliver on time.

It was not until the firm redesigned its architecture with customization in mind that it finally achieved the kind of flexibility and rapid evolution that clients required. This fourth generation, which had required new tools, more training, new staff and clear product vision enabled consulting teams to accelerate development by 20X for each new custom project. A key part of the new technology was the ability to build rapid solutions that were not optimized for hardware constraints that no longer mattered due to the accelerating performance of processors and decreasing price of storage.

This evolution of design and development capabilities is common across many technologies, tasks and businesses. It's often referred to as the Capabilities Maturity Model and was first proposed by the Software Engineering Institute at Carnegie-Mellon. The table below shows some typical progress that a firm makes:

Capabilities Maturity Model

Stage 1	Stage 2	Stage 3	Stage 4	Stage 5
Heroic efforts. High uncertainty about skills needs and time to develop	Limited competencies. Some rules of thumb about project development. Still high uncertainty about novel or first time features. Some understanding of market.	Generally high competencies. Many rules of thumb about product development. Better understanding of markets and segments.	Predicable product development processes. Good understanding of evolving customer needs.	Optimization of product development and marketing. Both are continually tested and optimized at a high level of sophistication.
Typical problems: Wrong skills Unpredictable delivery Over-budget High error rate Platform capabilities non-existent	**Typical problems:** Scaling and performance Missing emerging user needs. Overconfident about skills and budget. Unrealistic senior management expectations	**Typical problems:** Failure to address platform shortfalls. Loss of key team members to other projects.	**Typical problems:** As “mature” product, resources and passion are in short supply. Incremental innovation pursued.	**Typical problems:** Company many have difficulty responding to process innovations, business model innovation, and/or disruptive competitors

Questions for the Reader

1. To what extent do we understand how good we are at product development?

2. Do we have an articulated goal and plan for improving our capabilities?

3. Have we measured the strategic cost drivers in our business for each key element in our value chain?

4. Have we war-gamed how different business models will play against our proposed strategy and figure out where we are vulnerable?

5. What is our internal bias around being first to market or entering later once a market is proven?

Chapter 5 – The Competitive Glut

'Well, in OUR country,' said Alice, still panting a little, 'you'd generally get to somewhere else--if you ran very fast for a long time, as we've been doing.'

'A slow sort of country!' said the Queen. 'Now, HERE, you see, it takes all the running YOU can do, to keep in the same place. If you want to get somewhere else, you must run at least twice as fast as that!'

*Lewis Carroll, "*Alice Through the Looking Glass*",*

If you are not yet convinced that there is a competitive glut, consider the following figures from Amazon, taken in May of 2013. A user searching on both commonly sought and more obscure products is faced with an enormous range of choice. This breadth exists for digital devices, appliances, entertainment, software, home healthcare, and even non-digital products. The selection, of course, includes duplication due to Amazon hosting multiple retailers and also an expanded number due to accessories, but it also reflects the results of being in a world where the cost of access to customers has changed, and the economic opportunities for long tail or highly specialized offerings is expanded.

Massive Increased in Consumer Choice in Entertainment, Sport, Health and Kitchen Categories

Product Search Term Used	***# Listings***	***Digital Technology (If Any)***
Books in *Books Section*	42.1 million	Books increasingly delivered in digital or audio format. (327,000 Kindle Books, 30,435 audio books)
MP3 in *Music MP3 Section*	24.4 million	A digital format that has replaced CDs and vinyl
Laptop	8.0 million	A digital device
Mobile phone	2.9 million	A digital device
Camera	2.5 million	A digital device
Video in *Movies & TV*	992,000	Content increasingly delivered as a digital stream, replacing DVDs which replaced videocassettes
Tablet	904,000	Laptop variant
Watches	294,000	Typically powered by digital technology
Bicycle in *Sports & Outdoors*	271,000	Provided for benchmarking purposes, though bicycles often have digital odometers added as accessory
TV	150,000	Digital display device
Ultrabook	38,000	Thin laptop. In comparison, 151 reviewed in www.ultrabooknews.com as of May 26, 2013
Kayak in *Sports & Outdoors*	9,000	Benchmark data for comparison purposes
Toaster oven in *Appliances*	5,027	Microprocessor controlled appliance
Microsoft Office in *Software*	4,160	Software
Fitness monitor	3,885	Digital monitor of heart rate, movement, etc., but searched for in all departments
Sphygmomanometer	2,937	Microprocessor controlled blood pressure monitor sometimes available with USB-cable link to health care software on computer or Internet
Antivirus software in *Software*	2,529	Software
CPAP	1,609	Microprocessor controlled device for patients with sleep apnea
Adobe Photoshop in *Software*	1,365	Software
Fitness monitor in *Health & Personal Care*	896	Digital monitor of heart rate, movement, etc.
Bread machine in *Home & Kitchen*	694	Microprocessor controlled appliance

Note: by way of comparison, the Sears Catalog, probably the largest and most important retail catalog in the US between the period 1896 to 1993 adds up to only approximately 250,000 pages of merchandise, perhaps equivalent to roughly 5 million product listings over the period, assuming 20 products per page . This number of pages would suggest an average of 50,000 products listed per year over almost 100 years, and with many products repeating from year to year. In comparison, the Amazon categories listed above represent roughly 100 million listings or ***200,000 times more listings*** *and are only a small percentage of the total Amazon or other e-retailer listings.*

There are many reasons for today's competitive glut and the proliferation of Zeitgeist competitors. Seven factors stand out in particular for digital products and services based around digital technology: the lowered cost of reaching customers globally, the availability of more sustainable niches, the hardware-software lag, the widespread availability of inexpensive development tools, 'great minds thinking alike', and modular architectural components (think of them as Lego blocks).

1. Lowered Cost of Reach

One of the obvious consequences of the Internet is that the cost of reaching prospects and supporting customers is dramatically lower than with other technologies. For many categories of products, the Internet substitutes for sales offices, customer support centers and some activities of sales forces. This effect is not just for regional and national markets, but for international markets. One small example is the availability of free automatic translation software in browsers, which makes it easier for a prospect to have non-internationalized content translated on the fly.

2. More Sustainable Niches

Economic geography is the field of studying how geography affects the economics of businesses and regions. One important insight is that small markets support fewer niches. Retailing choices are close to non-existent in a one gas station town. You may have a general store or the general store may have the gas pumps. In contrast, large cities such as Los Angeles, New York, London, Paris, Berlin and Shanghai have an astounding array of retailing, from large department stores to big box outlets to boutiques. Cities with high *density* often can support more variety because each store's draw area includes more potential buyers with the niche requirement. Many companies from small domestic markets have historically experienced failure when they attempted to enter the large US market: they were unaccustomed to dealing with the wide variety of national, regional and segmenting competitors that the large US market supports. Their experience presages the competition in a Zeitgeist world.

The Internet changes the rules of economic geography. Niche strategies can be sustained by reaching across national and international boundaries. Now, if niches were completely distinct and had no overlap with other products, the proliferation of niche products and services would not be as large a problem as it is. The reality is that for many product and service categories there is tremendous but highly variable overlap between products. So not only is there the problem of a large number of competitors, there is an additional problem for buyers and competitive analysts of understanding the degree and impact of overlap, all of which creates analytical work and makes market analysis more difficult.

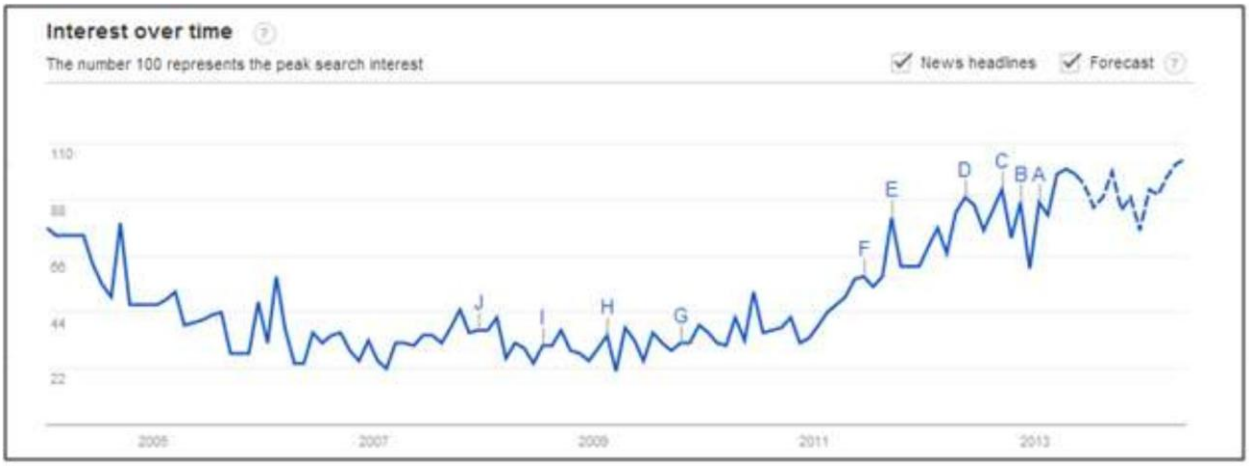
Top Environments for High Tech Development

1. Silicon Valley
2. Tel Aviv
3. Los Angeles
4. Seattle
5. New York City
6. Boston
7. London
8. Toronto
9. Vancouver
10. Chicago
11. Paris
12. Sydney
13. Sao Paulo
14. Moscow
15. Berlin
16. Waterloo (Canada)
17. Singapore
18. Melbourne
19. Bangalore
20. Santiago

Source: Startup Genome. (Asia underrepresented in survey)

Startupcompass.com which develops the Startup Genome tracking of different centers of innovation, profiles the development and success of individual startups. It currently tracks 50,000 startups in its database according to its *Startup Ecosystem Report 2012, Part One*. Clearly, what they are able to track is an incomplete sample of the total number of startups in the world. But the figure is also an indicator of the growth and breadth of innovation activity in the world.

Google Trends: "Tech Startup"



Google Trends, May 24, 2013. Lettered points represent news headlines and can be accessed online by searching on "tech startup" with Google Trends.

And legal decisions that permit the importing of products, e.g. books, from foreign markets where pricing may have been different can also increase the amount of competition.

3. The Hardware-Software Lag

For several decades, smart people have noted that hardware has been improving faster than software. The average home computer is actually used for a very small percentage of the time. There is so much unused capacity that a number of scientific projects have enlisted this unused capacity for the SETI Institute and genetic analysis. Most programming languages and software don't do a very good job of exploiting the parallel processing opportunities that a multi-core processor could provide. And while data centers increasingly consist of myriad racks of processors, their operators are still learning how best to exploit their capacity. The use of virtualization makes it easier to move tasks around in the data center and to reduce unused capacity, but most programming languages and file systems are not generally designed and optimized for parallel processing so virtualization's primary benefits are obtained from running multiple tasks in the data center rather than from how each tasks accesses processor cores.

To take a simple home computing example, in 2012 I installed a 512 gigabyte solid state hard drive in a two year old dual processor laptop. I certainly expected that it would boot faster, it would resume faster, and that applications would load faster. But what I did not expect was that Internet pages would open faster. Upon thinking about this result, I realized that opening a web page is actually a complicated process that may involve opening up data interactions with a file on the hard disk to access a cache or to read and write cookies.

In fact, the use of solid state drives in data centers, according to some vendors, allows four times more throughput because the processors are not waiting for the hard drives. So, if you have a per processor licensing model for your software, there are significant opportunities for savings on licenses in addition to obvious savings on energy use and hardware.

The availability of unused computing capacity means that computing power is much less of a constraint than it was in the early days of computing. I recall that my first software product, when it was launched in 1987 was so large it did not fit on the hard drives of the early laptops and speed of execution was an issue.

The gap between hardware and software also means that much of the innovation that will occur will not actually be terribly innovative, it will instead be the results of optimization -- software catching up with the hardware -- a problem that is obvious to many and, therefore, a Zeitgeist problem for a product manager. Optimization is not a small issue. Google for example, has developed and uses a file system that is based upon the assumption that redundancy is required to compensate for the unreliability of their own self-constructed, inexpensive hardware. And it is widely believed that its huge computing power, based on individual data centers with hundreds of thousands of processors, is operated at lower cost than its competitors.

4. Rent vs. Own

Perhaps the most under-appreciated aspect of the availability of cloud based capacity and services is that many product investments and experiments can occur *without massive capital investment*. If a company or a startup team needs to build a product, the availability of capacity priced on a usage basis means that you only incur expenses if you have customers using your product. Just as importantly, you can avoid the negotiation with information technology departments to acquire and set up hardware and tools. While the cost of cloud services may in the long run be higher for some companies, cloud services will often still be attractive for seasonal businesses or for ensuring resilience.

5. Inexpensive Tools

For many companies, product development requires extensive investment in development tools. I recently met with the CIO of an architectural firm. His company was now half the size that it had been prior to the Great Recession of 2008. His typical employee required an investment of around $30,000 in architectural and design software, a somewhat specialized market, dominated by AutoCad. This kind of figure matches my own experience leading a software company in the 1990s and early 2000s. But today, the availability of relatively inexpensive and often open source tools development tool for more general development reduces the barriers to entry, making it easier for many to tackle many a consumer or business problem. And the existence of APIs and Software as a Service (SaaS) architectures makes it possible to design new products that work with the functionality of established non-replaceable products.

6. Great Minds Thinking Alike

If you look at the history of innovation, it has been extremely common for inventors to simultaneously and independently invent the same product at the same time. Television was invented in North America (Philo Farnsworth) and the UK (John Logie Baird) at much the same time. (Tim Wu, *The Master Switch: The Rise and Fall of Information Empires*, Random House, 2010) These past innovations occurred in an environment where there information did not flow as easily across telegraphs, via correspondence and shipping lines. Today, if you put an idea upon the Internet it is read around the world pretty much instantaneously.

And there is something structural about Zeitgeist innovation. If hundreds of millions of people are experiencing the same frustration with a piece of software, a specific piece of hardware, a service or some more general problem, it is likely that more than one will say: “I think there is an opportunity here.”

7. Lego-Based Innovation

While no one who develops software will claim that we live completely in a “Lego” world of modular software components, over the past fifty years, significant progress has been made. The availability of class libraries (i.e. prebuilt reusable functionality) in programming and scripting languages, application programming interfaces (API) that allow communication with existing software, and software as a platform (SaaP) architectures or software as a service (SaaS) (where programs can call on external services for information or functionality) may complicate the selection of vendors; but once decided upon, these tools speed up innovation.

Questions for the Reader

1. To what extent have we as a firm been taking advantage of faster methods of product development?
2. Does our product management acknowledge, recognize and track the increased number of international competitors and competitors with adjacent products that may represent springboards for launch against us?
3. To what extent are we shamelessly imitating best of breed in other competitors and related markets?
4. Are internal commitments causing us to prefer internally developed capabilities when external sources would enable faster development and the time/budget for investment in superior non-commodity value added?
5. Do our product and process architectures facilitate modular production and modular product development?

Section 2 – Types of Innovation in a Zeitgeist World

Chapter 6 – The Most Important Predictor of Innovation Success

"Offering a differentiated high value product is the most important predictor of success and it's harder to do in a Zeitgeist environment."

My first experience with commercializing innovation began with a crazy idea that my partner, Mary Chung and I could build a piece of software that would help people assess their business strategies. I had studied cognitive psychology and artificial intelligence at Harvard and MIT. It took ten years before what I had dabbled in at university seemed technically and commercially interesting enough to justify raising venture capital and building a collection of products. As with many first time entrepreneurs, I look back in amazement at my own passion for the idea and the huge learning curve I had to descend. That's perhaps a polite way of saying, "Boy, did I make a lot of mistakes!"

Our firm developed software for a strategy workstation. It included an expert system with 3,000 rules about business strategy and created reports constructed from thousands of recommendations. Over time, our company acquired the distribution rights to a number of additional pieces of planning software, one of the most interesting of which was a model, based upon the research of Bob Cooper, a professor at the MBA program of McMaster University, in Hamilton, Ontario in Canada. He had analyzed 3,000 product development projects and developed a model, NewProd (Cooper, Robert: *Winning at New Products*, Basic Books, Fourth Edition, 2011). Our firm put the model into Windows for him and for his Danish distributor, the Dansk Teknologisk Institut (www.dti.dk), a technology transfer institution

whose innovation leader, Erik Lars Sorensen had had great success in affecting the innovation success of the entire country of Denmark (raising it by ten percentage points according to one study). They used a slightly adjusted version of the model called DanProd and provided training around it with many small and medium sized businesses in Denmark.

The model is quite successful in predicting innovation success. It has approximately 30 key variables with some adjustment for whether you are in an industrial or consumer market. It correlated about .8 with actual product success, so it explained 64% of the variance in the data.

There are many take-aways from the NewProd/Danprod models. The first is that explicitly surfacing the assumptions that a group of managers holds about a proposed product is even more valuable than the actual use of the product. The second is that training about what makes innovation work is much more important than the software. The software is most useful as a *hook* to motivate people to be more systematic in their approach.

However, the DanProd/NewProd model does suggest two particularly important insights:

> **First, the single largest predictor of new product success is offering a differentiated high value product/service.**
>
> **Second, the single largest predictor of new product failure is inadequate market research and customer knowledge.**

Not surprising, some will say. But this insight, the need for significant differentiated high value is a common weakness of business plans in a Zeitgeist era. Most assume that nobody else will identify the same needs or that there are few projects, as yet unpublicized, tackling the same opportunity. Few assume that a large number of competitors will build a similar product with similar tools or offer similar value propositions.

In a Zeitgeist competitive environment, the lack of value differentiation, which the model identifies as being the most important predictor of success, is almost certain to be a problem. And even worse if you don't know enough about your customers, then your definition of value may not match with the market's requirement, or you may not be able to identify who is likely to buy quickly with a low sales cost.

Value varies by segment and in some cases by individual customer, so market and customer ignorance will send you down the wrong development path. You may offer a product, when the customer wants a service or a solution. You may target the wrong group of buyers. You may offer an inadequate set of benefits. Alternatively you may over-deliver features, performance and benefits when a simpler product may be easier to understand, purchase and become competent with.

Agile Development

One of the consequences of software playing a role in practically every product is that previously specialized topics such as best practices in software development become important to non-specialist general managers developing and executing digital strategies. Software is now often a part of a product

and where it is not, the supporting marketing, self service and support software infrastructure that supports the product is a component of the overall business offering.

Over the past twenty years, software developers have distinguished between two fundamental approaches to software development. The first is the waterfall method and it assumes a well defined world where a project can be designed with a high level of certainty at the front end of the project. The second approach suggests that iterative or agile development is more likely to produce projects that deliver the value creation sought.

The waterfall method starts with a design which is turned into a software specification, which is then handed over to developers who build and test the software. The two basic problems with the approach are first, that an initial design does not incorporate learnings that occur during the project from the act of developing the software and second, from showing the software to the software owner and potential users. It lacks the idea of continuous refinement of the product or interaction design.

An agile approach (e.g. Ken Schwartz, *Agile Development With Scrum*) is focused less on the initial design and more on a development approach that motivates developers by using a self-managing team, keeps the product owner involved throughout the development process, and uses an iterative series of short development cycles (sprints) where there is a clear deliverable of functioning software for each short phase or sprint. The assumption is that complexity is difficult to design and evolves as the project is in development.

The goals of the two projects are also different.

With the waterfall method, the assumption is that full delivery of the specified project is the goal, without confirming reference from users who have actually used the product.

With most agile projects, the goal is delivery of the minimum set of features that create value for a customer or user, but with the attendant assumption that a first release will reveal additional needs and problems that should be incorporated into a second or subsequent release. In effect, it is a continuous improvement model where user feedback refines development.

Perhaps counter-intuitively to some readers, the waterfall approach typically has a higher failure rate. Developers are less motivated by the development process. Managers tend to impose their views on developers because they are managers not because users provide feedback. And the chance of developing an unusable, untargeted or non-value creating product is extremely high.

In contrast, an agile approach keeps the product owner deeply involved through the project. Deliverables are kept small and typically delivered in 2-4 weeks, making progress much clearer than in the waterfall approach, where programming may not come together until just before the targeted release date. The smaller deliverables provide for more opportunities for review and testing with targeted users.

Some joke, not without merit, that agile is a philosophy of build it quickly and fix it quickly.

Questions for the Reader

1. Do we offer a product with superior value?
2. Is the value differentiated and visible to buyers or users?
3. Are we over-delivering value to customers and ignoring the opportunity for a disruptive product that would be attractive in new customer segments and non-users?
4. If we offer a disruptive product, what additional feature would make the lower performing disruptive product suddenly very attractive?
5. Have we analyzed the opportunity for transforming the value proposition by adding financing, other services, or solutionizing the product?

Chapter 7: Club Med, the Marines and Software Usage

"Don't skate towards the puck. Skate to where the puck will be."

If you have developed and deployed software for a living, you quickly realize the similarities of software usage with going to Club Med or joining the Marines: the experience transforms you. You are not the same person when you leave that you were when you arrived. So to extend this parallel, if you are a hotel competing with Club Med in a resort destination, it is quite likely that the experience you create for your customers is quite different and perhaps less social and transformational. And if you are a different branch of the military, the experience you provide to your recruits may be perceived differently than that provided by the Marines.

With software and high tech products, users are amazingly difficult to assess. What they believe to be true or important before they buy or access the software often bears little resemblance to their views, first, after they have some mastery, and second after they become highly competent. They are *transformed* by usage particularly with first of breed or innovative products.

The problem for the product manager can best be compared with Wayne Gretzky's comments on how he played such successful hockey. He said what was important to his success was that he did not skate to where the puck was, but rather to where it would be. Product managers need to test, design and launch products, services, solutions and experiences that match where the user will be not where they are today.

So, while product managers worry about features, benefits and supporting services, the Zeitgeist challenge is that consumers often based their assessment, reviews and ratings of a high tech product upon their *initial* overall experience with the product. That may include researching the product category, selecting whom to buy from, the experience of unpacking the box, the initial process of set up, the early stages of use and competency acquisition, the expected and unexpected benefits obtained from early use, the need for support and the support experience, the ease of discovering new features or extending the functionality of the product (e.g. via apps, networking, data exchange, purchase of content, compatibility, battery life, etc.). Their ratings and reviews represent an important source of differentiation that often has more credibility than other sources but it may not reflect their transformation once they are users.

Cross Technology Competition in a Zeitgeist World

Another Zeitgeist problem – that of interactions between innovations -- is illustrated by the overlap between voice services over land lines, mobile phones, and VoIP services such as Microsoft's Skype. The adoption path for phones has historically gone from land lines to mobile and Internet-based VoIP services. Each technology of course has a different pricing model and offers different degrees of quality. Initially, there would seem to be a justification for having all three types of service:

Evolution of Land Lines, VoIP, Mobile and Cross-Service Competition

Stages of Development	Land Line	VoIP (e.g. Skype)	Mobile
Historical usage	Only technology available	N/A	N/A
Experimental usage	Land line kept for reasons of phone number identity and higher call quality	Free between friends, but requires active linking e.g. on Skype. Call quality unreliable.	Convenience of mobility but high cost and voice quality often poor, particular with mobile to mobile calls
New technologies catch up	Land lines unchanged	Improved codecs lead to higher quality. Features such as free teleconferencing and messaging added.	Call quality improves. Screen size improves permitting use as portable computer. Music features incorporated.
Resource allocation decision triggered by recession or perception that too much money is being spent on telecom services		Skype now considered mainstream particularly for international calls and teleconferencing.	Mobile device is now device of choice, preferred over landline exception in increasingly rare situation where call quality is poor.

Over time, consumers evaluate their telecom needs across different services, and often include in their analysis, the cost of related services such as the additional cost of their fixed broadband connection (DSL, cable) and their TV subscription cost.

A product manager that looks merely at *direct* competition for land lines may have difficulty in this Zeitgeist market in interpreting customer spending. Initially customer spending increases as consumers purchase all three services. (Skype, while free, does charge for having a phone number and for unlimited calling to national non-Skype numbers.)

The initial spending reflects the inadequacy of each solution. Landlines are not mobile and typically lack video conferencing or video messaging, and sometimes lack on-screen directories. Skype is slightly more cumbersome to use and sometimes in the past had call quality problems. Mobile phones are expensive for both voice and data. Over time, as the alternative technologies improve, there comes a point at which the need for all three seems excessive, particularly in the light of the high levels of spending on

adjacent products such as TV services and fixed cables services. A sudden drop in fixed line usage can easily be triggered by the improvement in the substitute technologies or alternatively by the perception of overspending in the larger telecom category.

This phenomenon of multiple technology substitution for a traditional technology (land lines) can also be magnified by the introduction of other products. For example, some leading edge adopters who use Google Voice have taken advantage of its unified communications functionality. You can set up a number on Google Voice and then redirect it to a land line, VoIP service such as Skype, multiple mobile phones (e.g. your business and personal mobile phone) or pick up the call on Google Voice itself. This flexibility, effectively virtualization of voice communication in effect, changes who has account control as a vendor. It can also reduce the loyalty of a consumer to a particular telephone technology.

The Google Voice features beyond simple VoIP capabilities *amplify* the effect of technology substitution by mobile and VoIP services. Given that the Google voice number is the front facing number to the external world and it is not currently (as of 2013) portable, Google has acquired an important relationship with the customer that may be difficult to dislodge for customers who are emotionally attached to their phone number.

Here we have a competitive situation where a product that is not directly competitive changes the balance of power between three different product offerings. These kinds of interactions between slightly overlapping competitors make the problem of competitive analysis and evaluating and valuing differentiation far more complex than in prior periods. It's not enough to look at direct competitors, one must also look at indirect competitors, amplifying technologies and sketch out how usage interactions, feature additions and mergers may alter the competitive landscape, *sometimes quite suddenly*.

Questions for the Reader

1. What assumptions have we made in the past about how our market will evolve?
2. What are the areas of overlap of our product with adjacent products?
3. What discontinuity in the market is possible or likely after users gain experience with multiple overlapping products?
4. What amplifying products have been or could be introduced into the market to change the usage patterns?
5. Who has account control? Who could have account control?

Chapter 8 – The Innovation Smorgasbord

"There are, of course, innovations that spring from a flash of genius. Most innovations, however, especially the successful ones, result from a conscious, purposeful search for innovation opportunities, which are found only in a few situations. Four such areas of opportunity exist within a company or industry: unexpected occurrences, incongruities, process needs, and industry and market changes." Peter Drucker, ***The Discipline of Innovation***

Over the past sixty years or so of computer usage, five trends have remained pretty constant.

First, the number of computers in the world has consistently increased. The Zeitgeist implication is that there are more users and more users can support more competitors.

Second, the number of areas where computers are used has consistently increased along with huge changes in the size and form factor of digitally controlled devices. The Zeitgeist implication is that many products are the result of combinatorial innovation, which is often easier to imagine than something quite new, so lots of people will come up with the same idea.

Third, the cost of solutions has dropped dramatically, reducing the margin available for sales and support. The Zeitgeist implication is that more vendors will use lower cost sales approaches such as the Internet and the resulting visibility of what they do will be higher on a global scale.

Fourth, mistakes made with one generation of developers have often been repeated by the next generation of developers. This trend is one of the more positive aspects of computer evolution. A Zeitgeist competitor, whose team is smart enough to avoid mistakes that can be learned from

prior generations of development may gain advantage over those with less experience. One of my most successful software architects had two key strengths. First, he had worked with mainframes and knew about developing highly scalable applications. Second, he was passionate about object oriented development. The combination of experience was tremendously powerful and made him exceptional valuable both as an architect and as a developer when we built an information warehousing product.

Fifth, while network effects certainly exist (where the more of a product that gets sold, the more valuable and useful the product, as happened with fax machines or has happened with the iPhone and Android), larger markets support more niches and a greater variety of business models. The Zeitgeist challenge resulting from this trend is that while network effects may exist for some aspects of a product, e.g. operating systems and key standards, the sheer variety of segmentation strategies dramatically increases the number and variety of overlaps between competitor offerings.

Computers have evolved from specialized military devices to general purpose mainframes to engineering workstations and servers to personal computers and laptops to mobile phones and tablets, to sensor oriented devices.

This proliferation of usage and form factors has led to an inevitable shift between *embedded devices, appliances and platforms*. Failing to navigate the generational shifts between platforms, appliances and embedded devices has proven to be a major cause of failure or loss of market share for companies.

Nokia a hardware oriented company that built well engineered phones (devices) had difficulty matching the email oriented phones of RIM/Blackberry. Blackberry (as it has now rebranded itself) was primarily a service company with devices that offered a great keyboard and a secure email network. The key source of Blackberry's differentiation, a closed and proprietary network and a physical keyboard made it difficult to focus on the idea of a "soft keyboard" needed for a general purpose device and the building of an ecosystem of applications and content availability. Not surprisingly they were late to market because to compete with Apple, they had to reject what had made them great. They would have to substitute a soft keyboard for one of their major differentiations – an exceptionally good physical keyboard. And they would have work with other firms, either at the operating system level (e.g. Android or Windows Phone) and with app developers – all of which pretty much ran against the grain.

Nokia sold products primarily. RIM succeeded as a service business with a dedicated piece of hardware and in the future will likely be more of a service business than a hardware business. Apple built a platform business but paradoxically with a consumer appliance orientation. And as so often happens to a successful digital business, Google went after Apple with Android, an open source set of parity capabilities.

In the embedded systems world, there is a common problem: squeezing everything into an embedded system often requires significant trade-offs to meet the small form factor, performance and battery constraints. These constraints often prevent more open development approaches or use of a more general platform. But when the volume of the general platform becomes high and when size and form

factor match the embedded device's capabilities, the value and attractiveness of the proprietary embedded or dedicated device is suddenly devalued.

For example, many consumer electronics companies such as Sonos, the vendor of superb wireless music systems, offer proprietary remotes, but they also offer free apps on Android and Apple iOS that substitute for the expensive proprietary controllers. A consumer might in the past have bought one proprietary and somewhat expensive controller, but it is unlikely they will buy two unless they have very high income. And over time, formerly primary platform devices (old IOS and Android phones) may migrate into the role of a controller, reducing the market for high priced hardware based custom controllers.

The consequence of these generational shifts is that most businesses must either move from a proprietary embedded system to a more platform oriented solution, or they must package a platform based solution in such a way as to make it more like an appliance. Note that I say "more" in both cases. The lines between the two strategies are often difficult to agree on precisely. Apple's entire business model is based upon taking a platform and converting it to primarily an appliance approach for the core usage needs of the user. But clearly, the Apple environment does offer incremental value from third party apps which is a platform strategy. From the perspective of value and profit capture however, the vast majority of the value capture is obtained by Apple. The majority of apps are little used and unprofitable for the developer.

Innovation is more complex today because there is more choice about how to innovate, something I call tongue in cheek, the "Innovation Smorgasbord". The idea is that product innovation can be done in many different ways. While reasonable people will differ, most would agree that you can innovate, improve or transform your business by changing the product, changing the process for delivering the product or service, or by changing the targeted customer.

Product Innovation: Apple changed the market for smart phones by turning the emphasis of a mobile phone from being a phone to being a general purpose connected device – a hand held computer with telephone capabilities.

Process Innovation: Dell grew its business initially by eliminating the use of a retail distribution channel and building inventory in response to customer orders (a pull system, rather than the more traditional push inventory system). This simpler production cycle lowered their costs by minimizing premature purchase of components whose value declined every day and by minimizing inventory composition errors and enabled them to compete on price.

Customer Innovation: Google has used its AdWords products to provide highly targeted direct response programs that are affordable for small businesses that previously might not have been able to pay for non-performance based advertising.

But these three obvious types of innovation are not the only ways you can change the relative position of a product.

Business model innovation is a powerful way of differentiating a product offering. Netflix changed the rules of the game in the video rental business with four important decisions.

First, they refrained from setting up a retail rental store network, which kept their costs low relative to existing players such as Blockbuster.

Second, they offered a fixed monthly price that eliminated the inconvenience of having to rush back to the rental outlet to avoid late fees.

Third, the fixed monthly price included unlimited rentals because they knew that with a mail based delivery system there was an actual physical limit to the number of movies a family might rent. And in reality, there is only so much time in the day to watch video.

Fourth, they exploited the US Postal System as their delivery method while putting a self-service ordering system on the Internet.

Pretty obvious in hindsight, you may say, but let's take the more general case of content delivery of all sorts. Can we draw some conclusions?

The following table suggests that the options for differentiation are even wider than the three basic approaches of *product, process, and customer innovation*. You can pick and choose from a wider menu of business models in most businesses than managers expect by changing how you *monetize* the business.

Business model	Purchase	Rental	Subscription	Advertising based	Sponsored	Product placement
Books and magazines						
Music and audio books						
Video						
Software						
Services						
Games						

The digitization of content has had profound impact upon numerous businesses – music, movies, TV, traditional books, audio books, newspapers, magazines and newsletters. Many of these businesses have suffered as a result of easier piracy and also because the economics of past approaches to monetizing the business have been transformed. Most of these content businesses were sold as physical objects with an assumed set of rights associated with the object. For example, you can typically lend a physical object such as a book, vinyl record or CD, videocassette or DVD to a friend or relative. You can resell the physical object. Heirs can inherit the physical object.

Digital content is more flexible. One can consider six different potential ways of monetizing the content. And of course, they can be combined. A "buyer" can buy the digital content (though in reality it's typically a license with restricted rights not an actual purchase), rent it, subscribe to services that includes it as part of the offering, and/or obtain it in a way where it is supported by advertising. Less often content can be provide on a sponsored basis. For example, at one point my subscription to the New York Times was sponsored by Lincoln, presumably because I had visited the Lincoln site and Ford thought I might be a prospect. It's also possible to imagine a product placement monetization model where fees for product placement are a source of income to the content owner. These six methods of monetization can, of course, be combined.

The idea of monetizing content in different ways is not particularly new. What is new is that content does not exist in a vacuum in a digital world (at least not since vacuum tubes became unpopular). Other

digital rights and services associated with a piece of digital content represent a powerful way of differentiating a piece of content.

Consider digital music files (MP3s). Apple launched the first successful online music store: when you purchased a piece of music, you had the right to download it *once*. If you lost it, it was too bad for you as a customer. You had to repurchase it if you needed to replace it. The music that you purchased was copy protected to reassure the content owners (music companies and artists) that piracy would not be an issue. And Apple restricted the number of devices upon which you could play the music.

Amazon changed the rules of the game by developing a music store without copy protection. Subsequently, Amazon added a new right, the ability to keep a copy of your purchased music in the cloud. This new right enabled a buyer to both play from the cloud to multiple devices without much in the way of restriction and for the first time, to re-download music from a back-up/master copy in the cloud. Apple, Google and uncountable smaller players have now created similar value chains with varying combinations of digital store, music player, streaming and storage.

Bundling or unbundling legal rights is now the new frontier in product differentiation for content. And there are many types of rights than can be selected, for example:

1. Different levels of quality, e.g. with video (SD, HD, 3D) or audio books (quality of encoding)
2. Number of devices on which the content may be played, e.g. with cable, music or video
3. Back-up and cloud storage, e.g. Amazon, Google, Apple iCloud, Norton Zone
4. Resale and inheritance rights
5. Services that facilitate access across multiple devices, e.g. tablets, phones, computers, game machines
6. Services that permit accessing the same content via different media, e.g. Amazon will now sometimes off the option of purchasing both a Kindle and Audible audiobook version of the same book with the ability to seamless switch from where you stopped reading in either medium.
7. Bundling of services and software, e.g. MS-Office, cellular voice and data plans
8. Upgrade rights, e.g. CD + MP3 download, DVD and Blu-Ray, next generation upgrade (low cost upgrade rights from Windows 7 to 8 was offered in 2012 to encourage purchase of machines)
9. Privacy levels

Unbundling of features and legal rights provide a method of addressing the needs of a buyer with simple needs or a low purchasing power. One could imagine for example different prices for a book depending upon the period of ownership, the number of reads, the ability to lend, the ability to resell, the ability to resell, the ability to resell and share the revenue with the copyright owner. A more aggressive and innovative legal model might actually enlist readers in the sales process by sharing revenues from referrals or second hand sales.

However, a more thorough stakeholder analysis might identify the importance of author involvement to ensure that innovation does not kill of the goose that lays the golden egg. If authors are not rewarded, then either they will not write, or they may be tempted to set up a different publishing channel using different business models. It's clear for example that self publishing has far lower barriers to entry for authors than in the past. In contrast, the marketing of content, a traditionally weak area for book publishers, may represent a significant opportunity to attract authors.

Bundling of adjacent products and services can be used to generate stronger relationships and create new sources of value. For example, one could have different pricing for the purchase of a physical book, an e-book, physical plus e-book, audio book, audio book plus e-book, or for access to all three. A reader may well ask, "Why would a customer want two or three different media versions of a book?" The answer is that some books benefit from being available in all three formats, e.g. a text book or a novel being studied in a course where note taking and underlining have value to a reader or where busy time schedules mean that studying occurs while driving or on public transportation.

A Kindle e-book reader bundled with lifetime 3G service is a wonderful example of simultaneously adding a previously unpaired service (free downloading without having to be on a WiFi network or exposing your Amazon account information) that benefits both customer and vendor. Having an always available 3G connection is the ultimate in enabling impulse book buying. It minimizes the number of situations where a customer intends to buy a book but forgets to do so. It also allows a customer to queue up a series of books in a wish list and not have to buy them until an opportunity for reading that type of book occurs. Spending less by not needing an inventory of unread books is a clear benefit to customers and particularly to heavy readers, who often end up with many unread books on their shelves.

The *Product-Service-Solution-Experience* Value Migration

In highly competitive "Zeitgeist" markets, the proliferation of competitors will often mean that picking a new combination of activities on the value chain may be necessary to gain an advantage over the pack of competitors. While this selectivity is generally true in most business for gaining and maintaining a competitive advantage (Michael Porter: *Competitive Advantage*, Free Press, 1998), it is even more important in a Zeitgeist market because of the number of competitors.

For many high tech companies, this set of decisions will be both uncomfortable and risky as the new areas of value added are not necessarily those that the company has experience with. For example, Cisco decided in 2012 and 2013 to sell off or close down its consumer electronics investments (Flip video camera, Linksys home networking and small business telephony). It concluded that the firm's strengths did not lie in retailing and consumer marketing. Its historical strengths lay in serving corporate needs for routers, switching, telephony, a complex set of needs that often required support, consulting and installation services. These services were typically delivered by external value added consultants (VACs) and value added sellers (VARS).

But many product companies learn that offering a product, particularly when it is perceived as being important and perhaps even "mission critical" is insufficient. They must take on a service role as Cisco has had to do for its largest and most important customers.

In fact over time, what constitutes a product and what constitutes a service will often evolve. The normal progress in business-to-business markets is from customized project to product. For a small firm, this evolution can be a wonderful way of developing a product and minimizing the amount of capital to be raised. The risk of this approach for the smaller firm is that a series of projects may not converge on a final scope that can be sold to multiple customers at increasing profitability.

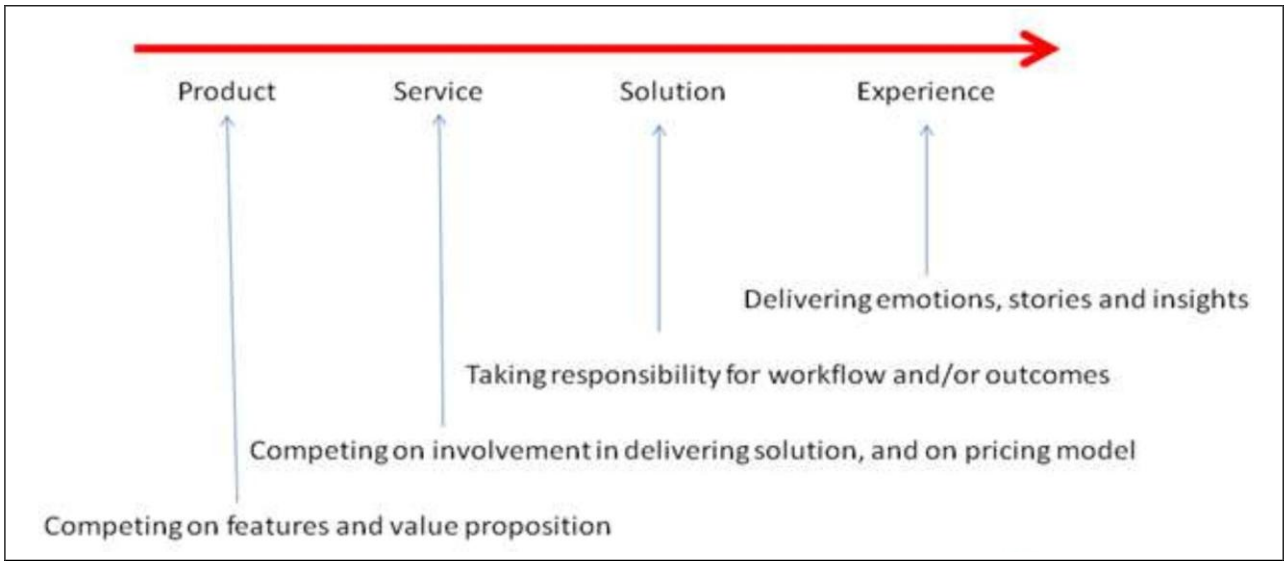
Graphic: The Productizing Cycle: From Project to Product

For other more product oriented companies, a different set of evolutionary choices may occur. If a product is insufficient by itself to solve a customer problem or to provide adequate differentiation, the product owner is faced with the need to pursue a more complex product strategy that may include a decision to:

1. Add additional *product* functionality, e.g. application software bundled with the Apple Macintosh.
2. Encourage the building of applications for the environment, e.g. any operating system owner (Microsoft, LINUX, Android, Apple, Blackberry, Symbian, Mozilla phone, etc.)
3. Change the product purchase into a *service* purchase, e.g. traditional ERP systems vs. software as a service solutions such as Salesforce.com
4. Take responsibility for outcomes by providing a *solution*. The solution might consist of hardware, installation services and operating support or outsourced support, likely with a mutually negotiated service level agreement (SLA).
5. Sell the *experience* rather than the underlying technology, services and staffing that creates the experience. For example, when you go to Disneyland, you anticipate and believe you are buying the Disneyland experience (typically primarily for your child) not the various underlying services that create the experience (parking, hotel, reservation system, food services, transportation,

customer services, individual interactions with park employees). An experience is more than the sum of its parts as any visitor to a high end hotel or to a great artistic experience, can attest.

Graphic: The Product-Service-Solution-Experience Value Migration



Finally, there may also exist another product choice made possible by the sheer number of Zeitgeist competitors. A company may choose not compete and instead to specialize in a component or narrow function required by the many players in the market. The advantage of this approach is that it may spread its development costs over a larger number of users.

The increasing availability of services, components and software from third parties is one of the many reasons why Zeitgeist innovation is greater today than in the past.

Questions for the Reader

1. What is our bias as a company in terms of product development, process improvement, customer selectivity, and business model innovation?
2. Have we considered different offerings with different monetizing options?
3. Are there opportunities to bundle or unbundle product features, products or services to gain advantage and create difficulties for competitors?
4. Are there opportunities for legal rights innovation?
5. Are we actively managing value evolution, e.g. product-service-solution-experiences, embedded device-appliance-platform, or from custom to productized?

Chapter 9 – Getting Above the Noise

"Truth has value."

Getting your message out and differentiating your product has always been a key marketing problem. All the traditional issues of designing marketing campaigns exist in a Zeitgeist market. If you are selling to businesses, you still need to make sure that influencers are targeted early, whether they be technology consultants such as Gartner, magazine columnists or influential users with a public profile. The more innovative a product, the more likely it is that you may have named a new product category to differentiate your offering from less historical offerings (which is how OLAP software became rebranded as Business Intelligence).

But in a Zeitgeist market, there are two particular problems. First, there is more product choice on offer. Second, there are more channels for reaching (communicating and selling to) customers. The consequences of these two factors can be quite unexpected. Consider the following examples.

The Power of the Right Review

Slate Magazine (www.slate.com) is a relatively small on-line magazine, owned by the Washington Post. Its focus is upon analysis and explanation of the news as opposed to delivering the news. By providing sound and solid information about questions raised by readers, or background insights about news stories, it has, over time, established some trust with readers. Perhaps how much trust has surprised them.

Columnist, Farhad Majoo wrote a positive review in December of 2012 (something quite rare on the site) of American Giant's hoodie (a zippered sweatshirt with a hood for those unfamiliar with the term). He called it "the greatest hoodie ever made" and raved over its quality, durability and fit. The story was picked up by networks, Facebook and Twitter. American Giant's entire production was sold out in 36 hours. Subsequently, they have had to increase their production capacity in the US by 20X and they still seem to be unable to fulfill orders immediately and have established a mailing list so that frustrated

buyers can be informed when the product is back in stock. The waiting list as of April 2013 seems to be about 2 or 3 months. One contributing factor seems to be that it takes 3.5 months to manufacture the raw material and the hoodie.

As a marketer, I have to say, that while it was a rave review, I would not have predicted this outcome at all. Yes, the product is of high quality it appears. Yes, it is expensive but not unreasonably expensive at $79 given the rave review. Yes, the fact that it is made in the US is probably a big plus for American buyers. I would not have predicted that Slate magazine would have triggered so many sales. And nor would I have predicted the ability of Slate to influence other media.

The American Giant example suggests the following lesson. Hoodies receive little attention in the market place. They are a commodity item of clothing that few have differentiated except by putting a logo on it. Having a reputation for quality, being endorsed by a serious columnist and being made in America raised American Giant above the noise. Scarcity has probably helped enhance the perceived brand value in the same way that BMW constrains its production to maintain some mystique about the brand.

I had never seen hoodies as a particularly desirable type of clothing. But since moving to California, I have taken more care about my exposure to the sun and sought out long sleeve clothing with sun or SPF protection. One type I have purchased for kayaking is a very lightweight hoodie from Kuhl, with high SPF protection that has the advantage of not being too warm in the sun. For my personal purchase, the lightweight aspect of the product and sun protection were key differentiators. Amusingly, the material in this lightweight hoodie includes recycled coffee grounds, which leads a number of potential jokes about what happens when I fall out of the kayak and get wet. It has also triggered discussion and referral among friends.

One journalist referred to the results of the Mahoo article as “catastrophic success”. It’s a good problem to have, I suspect.

Multiple Channels for Referral and Purchase

A second example is my own music acquisition habit. Like many Baby Boomers, I have a large music collection. I have converted most of my music to MP3s. But my spending patterns have changed over time. While in the past, I may have been influenced by what I have heard on the radio or recommendations from friends, today I am more influenced in what I listen to by three sources:

1. Reviews on NPR (National Public Radio) and in newspapers that I read.
2. What is on sale at Amazon.
3. What is recommended on the subscription music services he uses.

I buy albums and individual songs on Amazon because of excellent integration with iTunes, but increasingly listen to the music via music subscription services via a computer in my living room with

speakers or a Sonos wireless music system. Sometimes, I merely add an album to my Amazon wish list to keep a record of music I should investigate on my subscription services.

In this example, the multiple channels affect me as a music listener and buyer in at least four ways. First, there are multiple sources of information about what constitutes good music worth paying attention to. Secondly, there are multiple ways of listening to the music before buying. Third, there are multiple ways of accessing the music. Fourth, where I listen to the music may not be the place where I buy music. I will sometimes just listen to an entire album in 30 second samples per song out of preference to listening to the entire album. Surprisingly, the first 30 seconds of a song, and sometimes the first few seconds of a song are sufficient to determine whether I am likely to enjoy it.

There are three important take-aways from this small example.

First, of all, Amazon's integration with iTunes is a significant differentiator. My music subscription services will sell me music, but don't deal with the post-sale use-case of minimizing the work of getting the file into iTunes because they want a user to use their own music library software. It's a classic example of not solving the customer problem.

Second, traditional music radio has very little influence over my personal music sampling. But the small number of music reviews on NPR, or best of lists at year end in newspapers, magazines and web sites *do* influence my trial listening and purchase.

Third, while music is not as data intensive as video, I don't stream music over 3G/4G because of my limited data plan. If the cost of mobile data plans decreases, then my behavior would change significantly as he would increasingly rely on my own cloud files or on my music subscription service.

Again, this usage situation illustrates how traditional simple businesses – retailers selling CDs – have become much more complex with more channels, more ways of sampling and purchasing, and more business models and technologies in play for accessing the music.

The Power of Ratings

Anyone who has shopped on line for unfamiliar product categories has found that some retailers are better than others in terms of their product selection and their information presentation about products or meta information.

Amazon and REI are two excellent examples of retailers at opposite end of the retail spectrum that use rating information to reduce the difficulty of purchasing products. Amazon is a generalist retailer and has a mind boggling product offering. REI, in comparison, is highly specialized and focuses upon sporting equipment and clothing. Its staff are typically heavily involved in the outdoor activities that REI provides equipment and clothing for. They are as a result, often quite knowledgeable about the products on sale. And when they are not, they are comfortable in recognizing their own ignorance, which I personally find exceptionally charming.

Amazon generally has pricing that is not excessive particularly when shipping costs are taken into account. And by having other retailers' offerings, a shopper can compare Amazon's pricing to other

retailers without leaving the site. Typically Amazon has, in addition, more user ratings than any other site making its ratings more useful and credible. Amazon return policies are also simple and welcoming.

Sports clothing and equipment varies widely in quality and performance. Breadth of offering may not be as important as endorsement by an actual user. REI has a much narrower offering than Amazon, but an REI decision to stock a product is an implied endorsement of the supplier. REI offers articles on what type of equipment you should buy and has user ratings on the equipment it offers.

REI has a lovely customer strategy which includes content and experiential components.

First, REI educates you with articles.

Second, it provides ratings from other users.

Third, it constrains your choice through its inventory selection which is based upon what works for its employees and customers. On one occasion, I had read reviews on Amazon that gave a vendor a low rating. In a discussion with an REI employee, the employee stated confidently that REI had dropped this vendor because of quality problems. This kind of consistency between sales staff on the floor in the store and the on-line evaluative experience seems to me to give REI, a much smaller organization, a small advantage over Amazon in its area of specialization.

Fourth, REI rewards you for shopping at REI by having a completely flexible return policy in the event you make a purchasing mistake. If branding is about reducing risk for purchasers, REI clearly understands that sometimes it takes usage to understand whether a product actually works.

Fifth, members get rewarded with an annual dividend which tends to encourage repeat purchase at REI in the same way that Amazon's Prime program rewards frequent purchasers by offering savings on shipment costs.

Sixth, REI offers excursions to provide members with the experience of using sports equipment, receiving training and in effect, deciding if they wish to take up the sport.

Launching Bad Products

A consequence of Zeitgeist markets is that creating and launching a bad product is exceptionally costly, more costly than in other types of markets. A bad product is not only unsatisfactory to a buyer, it causes higher costs for the retail channel and the manufacturer when the product is returned. Even worse, bad on-line ratings create negative word of mouth that may be hard to recover from. In a Zeitgeist world, it is exceptionally easy for both buyers and retailers to buy from the competition after returning a badly designed or badly performing product. One could argue from a marketing perspective that *what you represent about a product and what a customer expects, while legally informal, becomes almost the semi-legal basis of the transaction*.

I did some work a few years ago for a company that was unskilled in consumer electronics. I compared the music product they had developed against its competitors and the result of my comparison was the

conclusion that the product was not ready for prime time. It was almost impossible to install. I actually had to buy a new virgin computer to get it to install after failing on two other machines. The product was unreliable and it was not a pleasure to look at or use in any way. The user interface was particularly awful.

Fortunately for my client, it decided to accept my recommendations not to launch the product because it would have detracted from its overall reputation and brand. The irony of the project was that the competitor they were targeting had done everything right: lovely design, great installation, reliable software, excellent networking, great hardware specifications. The road map for success was laid out for them. All they had to do was achieve parity with their smaller competitor, or as I suggested in my assessment, just go out and buy the competitor. I reported to them that their own product had been built by someone without passion yet it targeted passionate music audiophiles. The product seemed to have been developed via a checklist, but did not consider the user interface, setup experience, or the overall experience.

In a Zeitgeist market, it's typically foolish to try and get above the noise with traditional advertising, when reviewers and raters will do what I did for the client, point out the many ways in which the product is inferior. When there are many offerings in the market, reviewers and raters become more important. Truth has economic value. If you don't have a clear sighted view of your product and its performance, you will waste money on launching it. It would have cost the client company tens of millions of dollars to launch a product internationally that would have created losses and subtracted value from the brand equity.

Questions for the Reader

1. Do our internal systems allow us to track both internal and external transactions with customers, i.e. can we track and map customer social networking activity and respond to it as required on a one to one basis or in mass?
2. Have we measured and modeled what customers value in our product and service? Do we understand the value of improving different dimensions of performance?
3. Do we track the willingness of customers to recommend our product or service?
4. Do we benchmark our performance in delivering service through different channels?
5. Does our product development easily track, incorporate or enable customer recommendations and innovations?

Chapter 10 - Signals and Portents

"Red sky at night, sailors' delight,
Red sky at morn, sailors be warned."

Weather forecasting is one of the areas of modern life where performance has improved. Improved computer modeling and analysis has made weather forecasting more accurate and able to reach out further into the future. Forecasters are now capable of accurate predictions of hurricane landfall. The question for a reader is to what extent his/her industry, his/her business, or his/her area has been or is likely to be affected by digital transformations that have helped weather and hurricane forecasting. What are the favorable signs for digital business transformation equivalent to "red sky at night" for sailors? And what are the negative indicators for a business, equivalent to "red sky at morn"?

The Worst Way of Implementing a Strategy

Strangely, one of the most useful methods of figuring out how well you are doing is rather counter-intuitive. It involves an exercise of describing what would be the worst way of implementing your stated strategy. Surprisingly, when a group of managers produces a list of the worst way of implementing a digital strategy, it often looks similar to the way in which the business is being run.

Ruthless Competitor Analysis

Another powerful way of analyzing your risks is a technique called the ruthless competitor analysis. The idea behind the approach is to construct a competitive strategy that a competitor could use to destroy your basis of competitive advantage and, as a result, put you out of business. The inverse of the process is to construct a digitally enabled strategy that your organization could use to put a major competitor or group of competitors out of business. A third variant is to construct scenarios based on changes to the overall business environment that would put the company out of business. (O'Meara, Bob: "Are You

More Capable Than Your Competitors Are Ruthless?", **A.T. Kearney Executive Agenda**, http://www.atkearney.com/strategy/ideas-insights/article/-/asset_publisher/LCcgOeS4t85g/content/are-you-more-capable-than-your-competitors-are-ruthless/10192)

Barriers to Entry

The idea of barriers to entry is an old one, but in a world of digital technology, barriers to entry remain exceptionally important. For businesses with a digital component, there are a wide range of barriers to entry:

1. Branding: being a purchaser of a brand provides the user with status, e.g. expensive watch brands.
2. System effects: if you have invested in lenses for digital cameras, they tend to work best with the vendor's matching camera body and control software.
3. Accessories: accessories purchased for a particular smart phone will typically not work for other brands and sometimes even for different models from the same vendor
4. Skills and knowledge: customers typically dislike having to learn a new way of solving a problem as is required when you switch operating systems or applications. If you are comfortable with Windows, you may be reluctant to switch to a different operating system.
5. Set-up time. If you have set up bill payment on one bank site, you are often reluctant to repeat the process on another banking site.
6. Ecosystem breadth of offering. Platform based products are perceived as more valuable if they have a wide selection of supporting software, magazines, supporting web sites, consultants, etc.
7. Bundling. Bundled products or services will tend to discourage purchase of individual superior products or services from another vendor.
8. Time constraints. An existing and trusted supplier requires less time investment in terms of searching, purchasing and arranging for shipments.
9. Conventional wisdom about the future of a vendor or a product line. Because digital products evolve and are also dependent upon the momentum of the platform support, meta information about the ecosystem is often critical to purchase decisions. Once the momentum of the conventional wisdom is established, it can be extremely expensive to overcome.
10. Customer satisfaction and habit. When a vendor provides a consistently high level of service, product line breadth and excellent pricing, customers see little need to actively search for alternative vendors.
11. Existing installed base support. When you purchase an upgrade or a new product, or try out a new service backward integration with hardware or software can overcome a past barrier to entry and, in some cases, create a new barrier to entry. For example, Amazon's music stores tackles iTunes in two major ways: first, Amazon downloads seamlessly integrate with iTunes unlike many other music stores; second, the music is duplicated in the cloud, in effect creating a painless alternative music access player that requires little work and offers the advantage of permitting streaming across multiple devices.

12. Operational excellence. Some firms are better than other firms at the day to day operating of the business. Their service level, their employee interactions with customers, the overall ability to deliver an excellent experience is superior to that of their competitors.

Metrics

So what metrics are likely to signal that your business is not keeping up competitors or pursuing its digital transformation as successfully as it might? It's a difficult question to answer because digitizing happens in different ways for different industries and also for different value chains. But there are some clear signs of danger. Consider the following:

1. You are facing what seems to be an unending flow of new competitors into your market and the cumulative market share of the new competitors is increasing over time.
2. Your cost advantages as a large business are being eroded by technology, resulting in a lowering of barriers to entry.
3. Changes in the retail channel are triggering more experimentation by retailers in order to survive. They are, as a result, becoming more demanding and may also be investing in house brands in order to increase their margin.
4. Customer repeat purchase rates are declining.
5. Customers attitudes reflect increased recognition that premium priced vendors are overcharging.
6. Customer ratings and referral rates are declining.
7. Account control has shifted from your product to another vendor's product or another vendor's service.
8. Customers are increasingly frustrated by your level of service due to its lack of an outside-in ability to integrate disparate information from multiple systems.
9. Customers are dissatisfied with your product user interfaces.
10. Reviewers comments on your lack of rapid upgrading of the software used for running the product and for missing software functionality.
11. Reviewers comment on your slower rate of performance improvement relative to your competition.
12. Reviewers comments that your new products are buggy or incomplete.
13. Customer support calls are increasing.
14. Satisfaction with customers support calls is dropping.

Questions for the Reader

1. How loyal are our customers? Is the level of loyalty changing?
2. Objectively, how does our performance compare with competitive products?
3. Where have there been changes in the barriers to entry in our business?
4. What is happening to repurchase rates?
5. Are our ratings and reviews improving, maintaining or deteriorating?

Chapter 11 – Industry Restructuring and Delivery Models in a Zeitgeist World

"As a general rule, competence-enhancing innovations come equally from established firms and from outsiders. Competence-destroying innovations nearly always come from outsiders." James Utterback, Mastering the Dynamics of Innovation*, Harvard Business School Press, 1996.*

The impact of digital transformation upon businesses and the economy is not a unique event. Economies have been influenced by many important changes over the past centuries: printing and literacy, the scientific method, water and steam power, moving from cottage to industrial scale production, standardization of parts in manufacturing, universal public education, public libraries, decentralized management of railroads and standardization of time zones, long distance communication with the telegraph leading to the ability to service a national market, broadcasting with radio, TV, cable and satellite business computing, personal computing, mobile communications and computing, low cost networking, mobile networking, democracy, expansion of political rights, and explicit individual rights, control over fertility leading to greater economic choice for women and more participation in the workforce, tariff reduction leading to increased world trade, and the changing understanding of human cognition (from motivation by gods and devils to behavioral, cognitive and neurochemical brain processes)

And the list could obviously be much longer.

Conventional Wisdom

Conventional wisdom in strategy describes the evolution of markets as an S-Curve. The early stage market is characterized by leading edge adopters, who have special needs or interest in the product. When the market growth turns up, it becomes more of a mass market where users have different needs and price expectations than the initial buyers. Products and marketing often has to change during this transition (Geoffrey Moore: *Crossing the Chasm*, HarperCollins, 1990).

During the mass market, high growth stage, a company that grows faster typically spins off more cash flow so that it can expand its capacity and production faster than its competitors. Eventually, the market growth flattens and products become commoditized. In the saturated market, price premiums are harder to obtain and the winning companies tend to have lower cost of production, typically due to larger market shares and the resulting lower production costs (due to scale or experience curves).

With the widespread education of MBAs, this model is widely known. The rules for competing in such a developing market are well understood and have even been modeled in an expert system I developed. The important question, therefore, is "Do the characteristics of a Zeitgeist market change the evolution of industry structure?" Clearly the evolution will vary depending upon the type of industry and its economic characteristics, but some conclusions can still be drawn.

Zeitgeist Industry Structure Models

Two questions are particularly important. First, what will the general effect of the Zeitgeist innovation surge be on customers generally? Second, what kinds of predictable shifts in markets are likely? These are big and difficult questions to answer. However, some conclusions seem more likely as a result of a Zeitgeist world. Some are actually a little paradoxical.

Paradox 1: in a world where communication is easy, it may increasingly become difficult to reach people who are drowning in e-mail, e-coupons, e-newsletters, advertising and spam. The evidence for this is the low success rate of direct response e-mail campaigns. Unsolicited emails are filtered out by software, deleted by users and increasingly the deletions are tracked by software that will learn from user behavior. The difference between being liked and trusted vs. being blocked will be enormous.

Paradox 2: heavy users of technology will take holidays from technology in order to "think differently". Individuals will increasingly understand that types of thinking are influenced by the type of technology in use, or by not using technology. I suspect that a "holiday" from technology may involve continued use but at a much lower level rather than a complete shut-down of services.

Paradox 3: profit maximizing companies may have to restrict their profit maximizing in order to retain trust. Retaining the massive information about a consumer may alienate the consumer. Self serving marketing may increase the alienation.

Paradox 4: shareholder value creation may require more attention to the external non-profit consequences of business activities, e.g. social impact, environmental and energy impact, differential impacts upon local, regional, national and international scales. This external performance information will be increasingly easy for a customer to access for two reasons. There is more information to access

and it is easier to access. The decreasing cost of powerful new networked sensors also increases the amount of information about pollution, increasing its visibility to the larger population.

We see the impact of this kind of analysis in the emergence of different kinds of ratings for coffee: fair trade, sustainable harvesting, etc. Similarly, recent tragedies in Bangladesh, working conditions at assembly plants in China, reporting on recycling activities in developing countries have all reached the attention of consumers. And in 2013, student activists have been pressuring universities to minimize investment in companies that contribute to global warming.

If we consider a narrower focus – the impact upon individual company strategies – one way of thinking about the problem is to consider different prototypical industry structures. Consider the following six industry situations for example:

1. A business that is creating a new industry with digital business transformation.
2. One company in an industry aggressively pursuing digital business transformation.
3. Two companies pursuing the same level of digital business transformation.
4. A three tier industry: one group aggressively pursuing digital business transformation; a second group pursuing a hybrid traditional and digital transformation strategy; and a third group of new entrants with a wide range of digital strategies offering niche offerings or narrow functionality for incorporation into the offering of other companies.
5. A large international market where the competitive structure is similar to Situation 4, but the market shares look very different in major markets such as China, the US and Europe.
6. The same situation as in Situation 5, but with the additional complication of a well funded government seeking to create an international player (e.g. an oil rich sovereign state or successful exporter like China).

Obviously, making prediction is hard without knowing more about the specific industry, the source and rate of change, but I would speculate the following:

Situation 1: Single Innovating Company

The situation of being a single innovator with little or no competition is likely to be a rare case unless the company is commercializing a breakthrough product that is difficult to imitate, has high barriers to entry, privileged access to capital or significant patent protection combined with deep pockets. For this kind of company, the biggest challenges are likely to be well funded competitors using the legal system as a competitive weapon, or a competitor with deep government connections. A different threat would be an alternative technological approach to solving the problem or the same approach in a market with poor intellectual property protection.

Situation 2: One Company Aggressively Pursuing Digital Transformation

The most obvious historical example of this situation is the development of Amazon. The previous generation of book store strategies had primarily been focused around mega-book stores. Such stores provided an exceptionally large choice and many attempted to turn a bookstore into a social experience by providing coffee shops or restaurant facilities. Amazon, of course, chose an e-commerce business model which has disrupted the industry. The lessons that can be learned from Amazon as a prototypical

competitor is that companies with extensive investments in non-digital businesses (e.g. store leases) must either increase the value offering made possible by their existing non-digital investment, and/or they must move quickly to understand (in detail) and match the strategy of the innovator.

Situation 3: Two Companies Aggressively Pursuing Digital Transformation

Coca Cola and Pepsi, Boeing and Airbus, Apple iOS and Google Android are all examples of pairs of companies that dominate their market and whose marketing is generally focused on their larger competitors, often squeezing out smaller players. If companies are attempting similar use of Digital Business Transformation then little competitive advantage is likely over their other major competitor, unless they are smarter and faster in their digital transformation. This pairing of competitors likely means only superb execution of the transformation, perhaps with the help of outside experts is likely the major way of gaining some small advantage.

Situation 4: A Three-Tier Industry (Digital, Hybrid, Small)

A three tier market is a complicated one to analyze and predict. Mergers and acquisitions are likely to be important, so the quality of candidate tracking, pre-integration merger planning and execution of merger plans are likely to be important activities. Understanding potential cost structures early on the market restructuring is likely to uncover significant opportunities. Focusing upon high levels of customer satisfaction in order to have a high rate of customer retention and referral will also be critical.

Situations 5 and 6: Multiple International Three-Tier Markets

The emergence of major players in multiple markets with different digitization strategies is the most complicated company a situation will find itself in. Because of the existence of national development strategies and plans in China and in oil-rich sovereign states, sudden industry structure changes are possible. Game theory, scenario analysis, contingent planning for existing business operations and for acquisition strategy are all likely to be important.

New Technology vs. Old

One observation about competing technologies was made several decades back by James Utterback, a professor at MIT who specialized in studying innovation (Utterback, James: *Mastering the Dynamics of Innovation*, Harvard Business Review Press, 1996). He suggested that there are standard stages in the adoption of a successful technology and his multi stage model seems appropriate for digital transformation.

1. The initial technology is adopted by a small group of buyers.
2. The older technology improves a small amount in response to the improved performance of the new technology. For example, in the automobile business, one response to hybrid technology has been to improve the performance of internal combustion engines..
3. The older technology becomes a niche or disappears.

The part of his model that seems least obvious to people is Stage 2, where the older technology briefly has a period where its performance improves. Perhaps the analog here is that when a competitor is faced with a competitor with a superior digital business transformation, it may briefly improve its performance before it realizes that the economics of its older model are not sustainable.

Questions for the Reader

1. Have we considered what changes in industry structure would be most damaging to us?
2. Have we modeled and do we have an in-depth understanding of competitors who are building businesses with different cost structures and value propositions?
3. Do we regularly map consumer attitudes about the relative advantages of digital and non-digital delivery?
4. Do we have an ongoing tracking process for potential acquisition candidates?
5. Have we developed scenarios and contingent plans for sudden changes in market structure?

Section 3 – Innovation Strategies for a Zeitgeist World

Chapter 12 – The Soap-Holder Effect: Why Acting on Behalf of Your Customers Might Be Your Next Strategy

"Building customer trust and reducing a customer's perception of risk and actual risk are key brand attributes."

Note: this chapter is based upon an article by Michael Moriarty and Alistair Davidson originally published in Executive Agenda from A.T. Kearney. The slightly modified content is used by permission.

Until about six months ago, George seemed to go through bars of soap very quickly. Then he bought a simple $1.95 soap plastic holder that prevented the soap from slipping off a shower-stall shelf. He also moved the soap from under the shower head, where he had a hanging rack for shampoo and conditioner, to the other end of the tub. Since then his soap bars last forever. They don't reach that gooey end-of-soap life cycle that can happen in a soap dish or when too much water sprays on them.

So why is this apparently trivial example important for a product marketer? The answer is simple: *most companies that market soap would never sell a soap holder or suggest a "best practice" in soap location to a customer.* It's just not in their short-term interest. If a vendor prolongs the useable life of its product, sales drop. And who is rewarded for that?

Food companies compete to produce the tastiest food, engineering food with the optimum combination of sugar, salt and fat to create a food bliss point and make food addictive or at least exceptionally hard to resist. The short term goals of winning sales produces long term obesity in a significant number of their customers. This trade-off between revenue maximization and customer benefits represents an important choice in a Zeitgeist world. (Moss, Michael: *Salt Sugar Fat: How the Food Giants Hooked Us*, Random House, 2013), but one that to date probably requires government regulation to avoid virtuous companies that consider consequences and outcomes losing out to less socially aware competitors.

In some situations, competitors that compete differently can often create significant competitive problems for traditional competitors. For example, a software company such as Oracle is accustomed to having a revenue model that consists of an upfront payment and annual maintenance revenues. Moving to a period-based pricing model, such as that offered by Salesforce.com has a major timing impact upon businesses like Oracle. Instead of recognizing all the purchase revenues up front, a period model moves revenues into subsequent periods, reducing the immediate revenue recognition. The stock market will probably not like the transition from one revenue recognition approach to another.

It's hard to imagine a product manager proposing to his or her boss a solution that will reduce consumption, reduce revenues, reduce market share and perhaps reduce negotiating power with retailers. But in a fiercely competitive market, a Zeitgeist market, there do exist situations where acting on behalf of the customer may make a lot of economic sense both in the short and long term.

Why is this idea even more important today? Because, unlike the "old days" (prior to the Great Recession of 2008), we are in a different market. Consumers are reevaluating their most basic purchase decisions. Established product positioning, and market share can be dramatically altered by the non-product-specific elements of the offer. And the more that a business is digitized, the harder you have to work to differentiate your offering. To the extent that social marketing becomes important, the resulting transparency about usage can have serious impact upon customers' understanding of the economics of product usage.

Customer Primacy Strategies or Putting the Customer First

If asked, most companies would claim to put the customer first. It's a bit like claiming to be ethical for doing things that are in your own interest. The truth is that putting the customer first and being ethical are strong claims only if your decision costs you money (at least in the short term). Any decision that requires trading up-front results for longer-term competitive advantage is almost always a strategic product management decision that requires leadership. It will not happen naturally in most organizations without culture and measurement systems that look quite different from more short term and sales- driven organizations.

What Happens When You Put the Customer First?

A few years ago, I did some work with a highly successful credit union. In its regional market, the credit union outperformed all the local banks. It had become successful by being more aggressive both in attracting new members and selling to them. It had, however, reached a decision point in its operations. Its transactional information technology was reaching the end of its useful life. The credit union's management needed to decide where and how to invest their limited capital budget.

Our strategic and IT planning retreat enabled the credit union to return to its roots, reclaiming its traditional cooperative mission of creating services *on behalf of* their customers. With that value firmly in place, the credit union changed its information collection strategy and decided to develop a more sophisticated capability for tracking and profiling customers and their expenditure patterns in order to design new products that would create value for members. This rediscovery of putting members first

gave a new basis for growth that was consistent with the values and aspirations of employees: acting on behalf of members was more appealing than aggressively selling to customers.

For a leader of a cooperative movement, acting on behalf of customers must be a core value. For other organizations, particularly those with less-than-compelling value propositions, working on behalf of the customer, or *customer primacy,* can be a powerful tool for invigorating the organization—but one that will work only with supporting changes in place.

Putting the Customer First Does Not Mean Offering the Lowest Prices

Putting the customer first does not mean selling the lowest-cost product or reducing profit margins. Rather, companies that put customers first create excellent products – and are rewarded for it. Anyone who has bought a non-Apple mp3 player has likely been disappointed by competitors' inability to match the simplicity, ergonomics and integration provided by the Apple device. In some markets, a company should not sell to a price point. Rather, it can—like Apple—sell a solution that creates a solution for the customer need, even when the customer does not fully understand the choices implied by the purchase. Selling to the lowest price point may win sales in the short term, but it will not win "word-of-mouth" reputations and repeat purchases.

Premium pricing makes more sense when there is inherent value in the product that, when discovered or experienced, transforms the customer's perception of that value.

For Apple, the long-term protection of its franchise is likely to be customers' emotional involvement with the experience of using Apple products and doing business with Apple rather than the traditional branding of Apple iPod or iTunes stores as a premium solution. Owning the relationship and the emotion is more important for Apple than for other companies, because its future growth will come from customers trusting Apple in the digital living room where the technology is confusingly complicated and often unreliable.

A similar example is Richard Branson's Virgin brand, which is used to 'certify' new experiences in areas that customers don't typically trust or like. Its slightly controversial brand name has the side benefit that the brand is rarely used in other product categories. It is, as a result, easily extended to multiple product categories, an advantage few brand names offer. Virgin reduces the entry cost for new initiatives because of the goodwill and name recognition associated with its brand. With a customer primacy strategy, Apple may be able to do the same in the emerging connected digital living room if it can resist the temptation to hold an excessively high price umbrella over competitors.

Competitive Positions and Customer Primacy

Part of the difficulty of thinking about putting the customer first is that it represents a continuum of possibilities. At one end of the continuum lies the traditional approach: building the best possible product for a customer segment or individual. At the other extreme are businesses that are cannibalizing traditional offerings or reducing profitability by informing customers about their best possible decisions.

Few would argue against the idea of building better products. Rare are the organizations that encourage cannibalizing their own sales. There are, however, circumstances under which customer primacy strategies are clearly compelling even to less than visionary leaders. These situations tend to be more typical of later entrants, or of companies selling the first generation of a "gateway" product—one that leads to additional sales of subsequent generations of products or related products and services. Let's look at three case examples.

Case 1: Stealing Market Share with Lower Total Price

Companies that act on behalf of customers can use a customer primacy strategy to take market share from high-margin competitors. Video rental Netflix does not charge late fees, a major revenue source for traditional movie-rental operations and a source of annoyance for customers.

Netflix also allows unlimited movie rentals and streaming for a monthly fee, which sounds like a home-video extravaganza. As in many mature markets, though, fixed-fee pricing is a clever solution to saturated usage. It does not actually cause loss of revenues because most customers have limited time to watch movies. Cell-phone vendors are to some extent moving in this direction, particularly as they switch to in-home and in-office voice and data service using femtocells and unlicensed wireless (WiFi) spectrum at home. Both of these solutions are less expensive to deliver and connect to their backhaul networks reducing demand on cell towers. The critical variables here are that the customer values no-surprise pricing, and the supplier is confident that "all-you-can-eat" pricing has a natural upper limit.

Case 2: Retaining Customers and Building Loyalty

In the early days of a new service, active contact with customers to identify where they can save money not only reduces churn but also creates customer loyalty, particularly in commoditized markets. Long-distance telephone companies and financial institutions used to call customers to recommend more attractive plans or investments. By doing so they sent a signal to their customers that they were putting the customer first and, just as importantly, that there might be less reason to shop around. Those financial organizations that were exposed in the financial collapse as having been duplicitous are in many cases no longer around.

In the automobile industry, the lifetime of an automobile is longer than that of the technology in the car. Honda, a company that tends to emphasize the value and long life of its products, has taken rather brilliant step of offering technology upgrades to Honda owners when they bring their cars in for service. Offering an oil change and new stereo capable of linking with your smart phone is a brilliant economy of scope that keeps the emotional involvement with the brand high and delights owners.

Expanding service offerings beyond one's brand, however, requires more careful planning as potential customers may be wary of ulterior motives. The attempted transformation of insurance agents to "financial planners" or IBM's move in the 1990s on to support multiple vendors, for example, is a type of primacy strategy that requires careful attention to incentive systems. Internal separation of profit centers is necessary in order to retain credibility with customers that the services will not be biased toward the self-produced products and services.

Case 3: Owning the Gateway Product or Relationship

In many customer relationships, there exists a "gateway" or "wedge" product that opens up future sales. Acting on behalf of the customer to obtain, retain or grow the gateway product generally guarantees future sales of adjacent, related or next-generation products. Once you have learned Windows, for example, switching to Linux is difficult to justify because of the potential pain of migration.

The risk for gateway-product providers is that of hubris. When you distribute a gateway product, the value you place on acting on behalf of the customer often drops. Closely managing lifecycle profitability is important to ensure that generally high gateway margins are managed to lower levels in later stages of product maturity; this ensures that overall relationship margins meet customers' expectations. Sony is a master of this on the pricing side, while LVMH is an expert on the supply-management side. In a more dramatic example, fast-fashion players such as Zara manage lifecycle profitability as all-or-nothing: The shopper is either delighted and Zara makes its margin on short inventories—or misses the item and dreams of the next one and leaves without buying anything.

How to Finance Customer Primacy Strategies

Customer primacy strategies can be divided into at least five types. Each type is likely to have different organizational and capital financing issues.

Five Customer Primacy Motivations and Situations

Self-Interest	Long-Term Vision	Cooperative Membership	Societal Benefit	Environmental Focus
Give away a product or service to encourage an eventual purchase	Relinquish short-term profits to focus on longer-term goals	Develop a cooperative where members participate in the design and value creation process	Invest in research and programs that benefit society	Focus on sustainability
Example: Adobe gives away Acrobat Reader in hopes of selling the full version of the software for creating Acrobat documents.	Example: Amazon initial focused more on acquiring customers than being profitable, believing that customer relationships would eventually drive profitability	Example: credit unions and other customer owned institutions	Example: the Bill and Melinda Gates Foundation invests in education and disease prevention research and programs	Example: many businesses are now reporting an environmental income statement and balance sheet. Some companies are pursuing green strategies to enhance their brand. Utilities are under pressure from regulators to use more renewable energy and manage demand.

Self interest and profit-driven. This is the easiest market in which to execute a customer primacy strategy. Putting the customer first has strong financial benefits and leads to higher valuations of the company in the short and medium term. Companies are able to gain market share for an offering, increase revenues across a family of products, or gain additional revenues from purchases of iterative generations of products within a short time period. Adobe, for example, gives away Acrobat Reader to encourage the eventual purchase of the software required for serving up or creating Acrobat documents. Many companies use a *freemium* model. They offer a low level of service for free and charge a premium if you upgrade to the more capable or higher volume usage. For the customers with simple needs or low volume, the company offers great value with a free service. But if the service is really useful, the customer will willingly upgrade.

In high-end sales, key account managers are tasked with representing the interests of the customer because organizations understand that "trust" is essential to obtaining business.

Pure self-interest in sectors with regulated or non-economic profits can also result in a more savage variety of customer primacy—where a new entrant provides interesting value propositions to shoppers. Amazon.com eviscerated established players in the book sector when it used discounted book prices as an investment in building its customer base for a broader A-to-Z distribution strategy.

Leadership-driven. The benefits of customer primacy require a long-term market perspective and visionary leadership. Management, investors and boards need to agree on the advantages of building the franchise. In the early days of Google, funding was provided without the firm having a growable business, all in a vague belief that a useful search engine would eventually have some commercial value as the Internet grew. Amazon's early days were characterized by the belief that building relationships with customers and reaching a minimum scale were more important than short-term profits.

Membership-driven. In some markets, the obvious funders are the consumers of the offering. In financial services, credit unions represent one example. It is possible in the future that cult niche TV series may seek funding from their highly involved viewers, an example of co-creation of value with customers. REI is a cooperative that attempts to buy the highest-quality sports goods on behalf of its members. In most co-op markets, the profits of the organization are reinvested to provide more capabilities or services with surplus distributed to customers based on their purchases. Patterns of profit-sharing represent a new dimension of relationships than can influence customer choice. Investments in infrastructure such as water and waste treatment can fall into this cooperative category. Such services can be funded privately or by government.

Society-driven. In some markets, putting the customer first does not create a long-term business that can be financed through traditional capital markets. In these situations, public-private communities may be required to fund the resources required. The Bill and Melinda Gates Foundation has chosen to invest in research and programs for disease prevention. Here the value of the offering is externalized in the form of societal benefit. It's possible that more project-oriented investment might emerge as a new type of business, or as a way of government spinning out a social objective with an organization that has a defined exit.

Government-driven. For some issues, globalization and governmental intervention are driving the customer-primacy strategy. Sustainability and regulating the food industry, which might be dually considered a society-driven issue, are prime examples.

Some businesses are representing themselves as being green or increasing sustainability on behalf of their customers. A wide range of issues go beyond narrow marketing claims. Examples include: reducing impact on the environment; increasing use of recycled or sustainable materials; using renewable energy in production; assisting users to avoid creating waste or consuming energy; and purchasing credits to compensate for production of greenhouse gases.

Utilities probably have the most complex set of problems. They may be tasked by public utility commissions to reduce consumption, which alters traditional incentives that encourage usage. The PUCs' mandates are, in an organizational sense, more difficult to address than cap and trade systems that provide economic signals for investing in less polluting technologies. Here, government intervention has been the lever.

In the processed food business, competition between major players makes it difficult for a company to move first in acting on behalf of customers without regulatory intervention. Kraft attempted to reduce the salt, fat and sugar in its products only to have competitors introduce higher salt, fat and sugar products in competition. And Kraft's desire to present the number of calories in a package as opposed to the often meaningless calories in a "serving", required FDA approval. As with many green businesses, acting on behalf of customers often requires a parallel regulatory change.

Organizational Implications

The organizational implications of customer primacy strategies are often difficult, because such strategies might cannibalize traditional businesses and challenge the values of the organization. Strategic schizophrenia is likely for many firms. Leadership may encounter several hurdles:

1. **Managing SBUs' Divergent Strategies.** It is difficult to manage core and cannibalizing businesses at the same time. As a general rule, the cannibalizing business unit should be separated, given autonomy, funded and measured differently. Cisco acquired the retail-oriented Linksys and kept it separate for most of the period of ownership. For many years, General Electric drove a culture of dynamic self-destruction that powered the company almost, but not quite, through the recent recession.

2. **Integrating Overlapping Customer Bases.** The biggest challenge occurs when the overlaps or potential synergies with the cannibalized business become important, or the customer primacy strategy has to replace the traditional marketing approach. Such a requirement may require difficult combinations of culture and business models.

3. **Dealing with Fierce Competition.** In consolidating markets, or markets where user spending patterns are likely to drop to a new, lower level, it may make sense to use a customer primacy strategy to kill off weak competitors. Such aggressive actions will require changing the incentives for management teams to focus as much on the competitive objectives as on the revenue and profit objectives.

4. **Managing Short-Term Expectations**. In markets where putting the customer first has a long-term economic payoff, leadership and patience are required. Jeff Bezos played this role at amazon.com. Metrics that reframe the expectations of investors are critical to maintaining the strategy and may require revealing more metrics than before.

5. **Creating Customer-Focused Incentives.** In organizations making the transition from selling to a customer primacy relationship—training, remuneration, scorecards and measurement of customer outcomes must all be made highly visible to reinforce behaviors. Selling that puts the customer first must be rewarded and selling that is short-term and counter to customer interests has to be caught quickly.

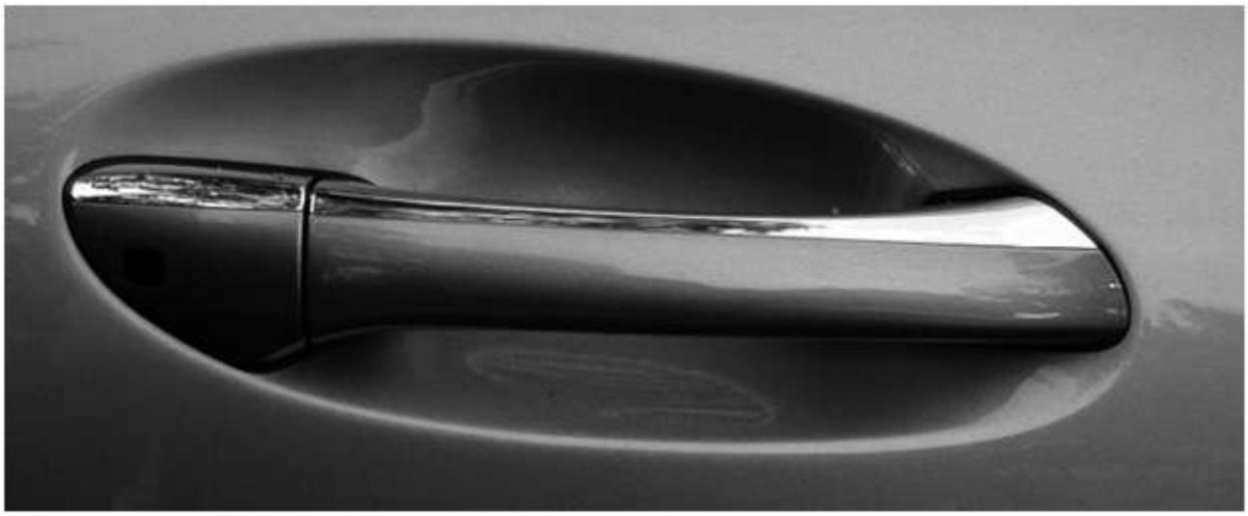
Easy to Say, Harder to Do

"Putting the customer first" is easy to say, but difficult to implement. If you believe that spending patterns in a recovered economy will look different from those before, it is more likely that you should consider a strategy based on putting the customer first in a discontinuous way. A customer strategy needs leadership, ongoing encouragement and rewards. The education of investors and customers will be crucial to surviving the implementation of the customer primacy strategy. Most importantly, understanding where on the continuum of customer primacy your strategy lies will help ensure that you understand the likely impact upon stakeholders and your ability to implement a strategy of acting on behalf of the customer.

Questions for the Reader

1. Where do we as a company lie on the customer-primacy spectrum?
2. What can we do in the short term to act and signal that we act on behalf of customers?
3. Where do our cross selling activities have the potential to alienate customers and imply that we do not put their interests first?
4. What ways of exchanging information with our customers could create new sources of value for customers and create strong and positive emotional commitment to our organization?
5. What long term strategies, products or service offerings would signal to customers that we put their interests first?

Chapter 13 – TCO, TVO, TCR and TVR



"You can respect your customer or you can let them feel that they are being nibbled to death by ducks."

Many companies are focused on immediate sign up of customers. Great companies take a longer time horizon and emphasize repeat purchase. The best companies not only take a longer term perspective, they build deep and enduring relationships with their customers. Repeat purchase is generally far more profitable than having to go out and find new customers all the time. And in a Zeitgeist market, owning deep relationships with customers is an important growth tool and, just as importantly, a key defense against many competitors.

The shorter sighted companies put in place programs and marketing to emphasize immediate sales closes, but not necessarily multi-period loyalty and relationship profitability. They emphasize ways of signing up customers quickly by reducing the initially perceived cost by minimizing the upfront cost of doing business.

You buy the razor and the company makes money on the blades. You buy the mobile phone at a subsidized price and the carrier makes money off the period payment of the monthly fees. The pod coffee maker is inexpensive or free and coffee pods are highly profitable. But the economic proposition is not made clear to the buyer. At best, consumer rating magazines such as *Consumer Reports* or *Which?*, a friend, other buyers' ratings may reveal the total cost of the relationship with the vendor before you buy, but I suspect many customers only figure out the cost of usage gradually.

If the cost of usage is lower than the customer expects, then perhaps upfront revelation of such information might have obtained more customers. If the cost is higher than expected, then negative word of mouth is likely and a user may switch to another brand at the first opportunity.

An alternative way of marketing to customers is to be more honest and upfront about the relationship and offer greater transparency. One can provide an offering with an explicitly presented lower Total Cost of Ownership, in other words, communicate all the costs of ownership in comparison to competitors' offering. Using a TCO approach, a variety of strategies become more visible, including the

development of Total Cost of Relationship (TCR) models that can be exceptionally motivating to consumers.

Information technology departments have, for years, used the concept of *Total Cost of Ownership* or TCO to analyze the real cost of an information technology (IT) decision. IT departments have understood that developing or purchasing a piece of software or hardware triggers a set of costs that extend beyond the purchase price. For example, a piece of software may require training of employees, a set up process, on-going maintenance fees to the supplier, and in some cases upgrade costs to move to a next generation or expanded version of the software. And in addition, there is the End of Life or EOL cost when the system is terminated or transferred to another piece of software.

TCO is rarely talked about when presenting to or selling to *consumers*. Most suppliers prefer to focus on the small up-front costs. Mobile phone carriers will emphasize the low and subsidized cost of a smart phone (typically in the range of $200 or less for a two year cell phone commitment). They rarely talk about the cost of the two year commitment, which may run in the range of $50-100 per month or $1200-2400 over two years. In other words the typical up-front cost of around $200 for a smart phone only represents roughly $200÷$2600 or 8% of the total commitment.

Clearly, consumers are not stupid, but behavioral economics tends to suggest that how you set up an economic problem will change the behavior of otherwise rational consumers. Forcing consumers to opt out of a savings program for example, tends to produce higher rates of savings participation than an opt-in approach. Organ donation rates are higher when opt-out decisions are required, i.e. where agreeing to donation is the easy choice.

A marketer might well conclude that if concealing the TCO of a purchase produces higher initial sales, then who would be so foolish as to reveal the TCO of a purchase decision to a prospect? But consumers do catch on, and sophisticated consumers are often opinion leaders, whose comments in social networks, advice to friends, family and colleagues, and product/services choice are a powerful form of referral. As a result, companies have the option of using *TCO revelation* as a powerful means of differentiating their product and encouraging positive social marketing activities. TCO revelation does not necessarily mean forcing a particular purchase model, but disclosure of the value of different pricing models may create brand equity in some situations. A company could for example offer two different purchase models and let the customer decide which is more appealing, based upon up-front cost or total cost of ownership.

Two successful companies that directly or indirectly focus on TCO illustrate different ways of dealing with TCO:

1. **Toyota**: over the past two decades, Toyota has gained market share in the US by offering an extremely reliable product. Reliability means lower service and parts costs over the life of the vehicle, in other words, lower total cost of ownership. And as reliability over an extended period of time affects resale value, Toyota TCO also benefits from higher resale values.
2. **Netflix**: Netflix is a well known success story. The basis for its initial growth was the dislike of consumers for late fees, endemic to those who rented from traditional video stores. But a

secondary reason for lower TCO was a fixed price, “all you can eat” model. Netflix, recognizing that subscribers had an upper limit to their time available for viewing movies, offered a fixed rate plan, so subscribers had certainty about their monthly costs.

The difference between Toyota and Netflix is that Toyota operates in a business where fixing TCO is difficult. Its objective is to offer superior *relative* TCO. Netflix, in contrast, is able to *fix* the total cost of ownership.

Differentiating Based Upon TCO

A successful TCO-based strategy often trades off higher rates of initial business for lower rates of churn, higher rates of satisfaction and customer referral. Because most companies focus more easily upon adding customers, using a TCO based strategy requires more work and new measurement approaches.

Because churn (customers switching from one supplier to another) and referral can take time to change, measuring attitude change and referral/word of mouth activity is important to maintaining internal support for a proposed messaging, business model and pricing change. Test markets will also be important.

One side benefit of a TCO approach is that it can motivate employees and increase their influence with their personal and social networks. Knowing that you offer a superior value proposition is a compelling reason to be proud of an employer.

Changing the Rules of the Game: the Analogy with TVO

Not all businesses and IT departments focus upon TCO. Others focus on a new metric, *Total Value of Opportunity* or TVO which combines the revenues and the costs of an investment. There is an analogy here for consumer marketing as well. Some purchases have both cost and value or outcome implications. In the closest parallel to a corporate TVO, a consumer purchase may enable a consumer to earn new revenues. For example, a writer may purchase a computer and spend extra for an ergonomic keyboard to enable income earning projects.

But a more common situation for consumers is a purchase that enables a consumer to obtain a new value or feature or avoid a significant cost. Insurance products or features are an example of this second type of benefit.

Given that offerings can provide different value propositions or have features that are valued differently by consumers, different TCOs can be associated with different value propositions. For example, when purchasing a Kindle reader, a consumer can choose between versions that work well in well lit rooms or outdoors, versions that work in both bright and poorly lit environments, each with the option of using an existing WiFi network or having free 3G connectivity.

Responding to TCO Strategies and Opportunities

Most companies are likely to ignore TCO issues and focus upon up-front costs. But in highly competitive markets, response is often required.

In the luxury automobile market, many high end brands don't have category-leading quality and reliability. These laggards offer extended warranties with extended service plans in an attempt to reassure buyers of a fixed cost of ownership over the initial three years and most visible and expensive part of automobile ownership (because of depreciation). In the same way, certified second hand cars are an attempt to reassure buyers of the quality of their purchase.

In the cell phone market, T-Mobile US is attempting to differentiate itself from its larger competitors by unbundling the hidden subsidy in the initial smart phone purchase. It provides a phone with a financing plan attached, which guarantees it will not lose money due to subscriber cancellation. And as compensation to the consumer for the financing charge for the phone, they can offer a lower priced monthly plan.

This slight shift in packaging provides a consumer with the option and psychological comfort of being able to cancel a service plan (a relatively unlikely event given the importance of mobile service to most consumers). While no different in reality than a change to the cancellation penalty, the perception of the pricing model relative to AT&T, Sprint and Verizon may be quite different. The pricing model also allows T-Mobile to compete with pre-paid carriers (who typically don't subsidize their phones).

Indirect TCO Issues

In a digitized world, knowledge has value and affects the experience, rate of learning and availability of support for a product or service. As a result, indirect costs, though difficult to include in a TCO calculation often represent significant opportunities for differentiation.

In the early days of consumers purchasing computers, retail outlets provided advice to buyers and often provided additional support to the generally much less knowledgeable first time buyers. Apple's renaissance in the 21st century inspired Apple to set up retail outlets to showcase innovative high design products and provide support to the generally less technically literate population of Apple users. The retail outlet reassures buyers that will not have to incur training and support costs for purchase of novel technology. And if a customer buys a product at an Apple store, it is likely that he/she lives relatively nearby and does not have to deal with either free or fee-based support calls to far-away places and annoying script-based support calls.

Consider, as well, the advantage of buying a well known car brand with an extensive service and parts network. When driving cross-country it is extremely comforting to know that your automobile is so popular that service mechanics and parts will be easily found to fix problems you may run into. Quantifying the value of the network is often hard, but definitely possible. In the car example, one could quantify the cost of towing the car to a distant city, time spent staying in a hotel while parts are shipped or the value of lost days.

With cell phones, the purchase of a popular model such as an iPhone or a Samsung Galaxy will result in more cases and other compatible accessories being available. While the cost of searching for a supplier or a particular may be hard to quantify, there is a clear cost both with respect to time spent, the variety of choice and local availability for hands on testing.

Not Every Consumer Focuses on TCO

It would be foolish to think that every consumer is an economically rational decision maker focusing exclusively upon TCO. There is a long history, going back to the 19th century of new and expensive products being financed with monthly payments. The adoption of a technology such as the sewing machine in the 19th century, computers and automobiles in the 20th century and cell phones in the 20th and 21st century has clearly been aided by period-based pricing.

There are, therefore, four common strategic situations:

1. An expensive and often innovative product whose adoption requires financing and period payment business models (e.g. sewing machines, computers, autos).
2. A service that targets the poor and those without credit, sometimes seeking usurious financing profits (e.g. furniture and TV rental stores).
3. A blended strategy where different groups of customers may be segmented based upon their understanding and perception of TCO (e.g. video rental stores vs. Netflix).
4. A disruptive strategy where a TCO-based business model can be a meaningful means of reshaping a market (e.g. prepaid cellular programs, high quality automobiles).

Total Cost of Relationship (TCR)

A key idea behind measuring TCO is that all the costs of purchase and ownership are taken into account. But TCO innovation can also be highly targeted to great effect to cement the *overall relationship* with the consumer. In this case the TCO analysis is extended to relationships and can be thought of as an economy of scope. One could consider this valuation as the Total Cost of the Relationship (TCR) to the customer which in turn permits calculating the Total Value of the Relationship (TVR) for the consumer.

Purchasing products from e-commerce vendors is a particularly hard area to achieve differentiation. The most successful companies have identified areas in which they can address highly visible components of the relationship, perhaps with the underlying assumption that other aspects are roughly equivalent or commoditized.

Amazon offers a program called Amazon Prime which essentially eliminates shipping costs and is easily justifiable for a frequent purchaser. And in an unusual value proposition, it also offers free streaming video content and borrowable e-books as part of the offering (for a Kindle hardware device). Three marketing goals are achieved. Frequent purchasers reduce their cost of purchase by eliminating shipping costs and Amazon becomes a preferred supplier for the customer leading to higher annual consumer purchases (at around $1400 annually). Amazon lays a foundation for video streaming competition with its major competitor, Netflix. And the value proposition of the Kindle e-readers and tablets is enhanced.

REI, the delightful outdoor equipment store is not only a member owned co-op, typically repaying 10% of purchases as a dividend it has also integrated forward into financial services, offering a credit card that adds an additional 5% discount for most purchases. It attempts to reduce the risk and cost of poor purchases for members though knowledgeable purchasing and staff, product reviews, articles on what to buy for different sports and skills levels, an unconditional guarantee of satisfaction and a wide product selection made possible through an inventory strategy of allowing on-line ordering of slow-

moving products or unusual sizes to stores at no charge. REI's approach to minimizing delivery cost is to combine individual orders placed over the Internet with store shipments, enabling customers to pick up items at their local store and avoid being charged for shipping.

Both these retail examples focus on TCR by addressing areas of cost uncertainty and high visibility to their purchasers.

Using Timing as a Pricing Strategy

Customers have different amounts of disposable income available to them at different periods of time. As a result, the structuring of payments can offer the same TCO but a cash flow that fits more closely with customer needs. Adobe's various Creative Suite combinations (Photoshop, Illustrator, InDesign, etc.) are expensive suits of software, which is updated regularly. The TCO is very high and probably not justifiable for many consumers. While Adobe has segmented its market and offers less capable versions for less money (e.g. Lightroom, Elements). Adobe has now announced that its subscription model approach will be the only way of obtaining its major design software (sold under the Creative Suite brand). This pricing model ($49 per month) reduces the cost of staying up to date and reduces the likelihood that a disruptive competitor can come in beneath its price. Internally, continual upgrading of all customers likely reduces software development costs and certainly simplifies support costs.

The most straightforward approach to analyzing costs when one can specify the TCO of the product or service. A slightly more complex situation is illustrated by Amazon's sales of Kindle readers and tablets at cost or close to cost. The initial purchase enables future but unpredictable transactions that will both generate profits for Amazon and save readers money (because most e-books are less expensive than physical books). Evaluating this type of opportunity for a company has to be based on a more probabilistic modeling approach but over time and with access to data, refined forecasts of profitability and benefit to customers can be made.

TCO Driven Product Development

Building a great brand often means putting yourself in the shoes of the consumers. While focusing upon the issues around purchasing and trial is obviously important, the experience of using a product or service after purchase is also important and contributes to brand equity. Product designs and pricing decisions that make consumers feel good about their extended full life cycle relationship with a company represent an excellent way of enhancing relationship profitability and brand value in a Zeitgeist market. This longer term satisfaction may provide a form of differentiation that is difficult for competitors to match.

Questions for the Reader

1. Do we quantify the total cost of ownership of our product?
2. Have we quantified the value of different options for different versions of the product?
3. Do we understand the total cost of the relationship from the customer perspective?
4. Do we understand the total value we create for the customers across all aspects of the relationship?
5. Are we using pricing and programs to encourage the customer to obtain an economy of scope, i.e. lower total cost or higher value, by concentrating their purchase or usage with us?

Chapter 14 - Agile Demand Creation

"If a customer does not understand the product, its usage or benefits, it's your job to educate them quickly."

One of the characteristics of cluttered Zeitgeist markets is that the quick and effective communication of benefits from often novel, complex products and services is a key requirement for differentiating from other competitors, creating demand, and growing the business. Some would call this old fashioned marketing, but the words used to discuss or describe marketing today, are like any fashion business, constantly changing, perhaps because the nature of marketing has changed. Today, many companies regularly use terms such as *thought leadership*, *content strategies*, *social marketing* and *demand creation*, to describe some of their marketing activities. However, as with traditional advertising where the rubric is that "half of all spending is wasted; if only we knew which half", these areas can vary widely in how they are deployed and their resulting effectiveness. One simple insight still holds: speed and measurement matter. Fine tuning results through being more *agile (going through rapid revisions)* is critical to obtaining sales and influencing customers in a cost effective way.

Definitions:

Thought leadership: a piece of content designed to communicate to prospects and customers information about a leading edge product/service and its implications.

Content strategies: the design, production and measurement of multiple pieces of content that a company makes available to prospects and customers directly though web sites and downloadable

documents, though physical brochures, through press releases and resulting articles, and through blogging/newsletter strategies.

Social marketing: the identification of and use of word of mouth marketing, ratings and reviews as an alternate channel for influencing the attitudes and actions of prospects and customers.

Demand creation: activities that change the way that customers and prospects perceive a product or service and change the probability of their purchasing.

Agile: the idea of rapid learning through iterative development and improvement for both content and software.

Clearly, marketing problems come in many varieties, but common *content* mistakes include the following:

Failing to have a messaging strategy. Many content development projects take too long and cost too much. And worse, they fail to produce attitude change or revenues. An initial mistake that causes these problems is a failure to agree on a messaging strategy.

Boring the customer to death. Many thought leadership pieces are so dull and have so little impact that their readers are reluctant to come back at another time and download a different document. In effect, low quality thought leadership pieces negatively brand a company when they are "content light", self serving, or poorly disguised sales brochures.

Not tracking the full ecosystem. Traditionally, when a consumer purchased a product in a store, or a business user used a product within their own organization, information about the buying process, problems, successes, referral, and evolving usage patterns were hard and expensive to obtain. Today, such usage information, while complex to track, is extremely inexpensive. For example, second hand sales of some products are relatively easy to track on eBay and provide a measure of the changing value of a product over its life cycle. Tracking Twitter activity and the content of the Tweets can provide a finger on the pulse of usage. Amazon reviews are often extremely useful as is information in customer relationship management and support systems.

Not being agile. It is more obvious in small companies. Often, their budget is spent at the front end of projects when less is known about customers and prospects. Little budget is left over and available for ongoing improvement. The lessons of agile development in software parallel those of content development: learning occurs over a project, so delivering quickly and revising quickly leads to superior performance, both in terms of project cost and business outcomes. In larger companies, organizational inertia, a reluctance to admit that a project is always imperfect, and lengthy cycles of approval cause expenditures to be less effective. What both large and small companies forget is that it's important to do things quickly and iterate frequently.

Why Strategic Marketing Matters

Content development, thought leadership and social marketing are often thought of as being the domain of marketing. But taking a more *strategic marketing perspective* also matters. For example,

content development strategies can be focused upon improving results with search engines, increasing the dwell time of visitors at a web site, increasing the number of visits to a site, changing perceptions or understanding of a product or service, obtaining trial or purchase, generating referral and reviews, or providing post purchase support, to name just a few potential objectives. Content development strategies often fail if the initial objectives and target audience are not well specified.

A key approach to minimizing these strategic marketing problems when designing content is to take a "Persona" or task-based approach to content development. The idea behind a Persona, made popular by Alan Cooper (*The Inmates Are Running the Asylum: Why High Tech Products Drive Us Crazy and How to Restore the Sanity*, 2004) is that the interaction with the Persona should be based upon (1) defining a prototypical user or reader, defining what they are likely to know, their temperament, skills and expectations, (2) defining their objectives or goal in approaching the content, (3) defining the fastest way of delivering to their objective, given their skills, interest level and expectations. Many web sites, for example, demand a high level of involvement, many page traverses and extensive reading or video viewing time for a visitor to achieve his goal. And worse, logs of visitor visits are insufficient to help define how paths can be shortened to make the visit faster and more productive for a particular Persona.

A best practice, as a result, is to develop a "messaging strategy" that can guide the rapid development of the content. As a general rule, content developed with an agreed to messaging strategy for a Persona can be developed anywhere from 3-10X faster. Different packaging of content will typically be required for different Personas, e.g. for a senior economic decision maker, a consultant looking to advise a client, an engineer trying to identify the advantages of different competitors, a hobbyist vs. a professional user, or a consumer trying to understand specific problems.

What complicates the use of Persona content development is the *search and evaluation* strategy of prospects and buyers. They may seek out multiple sources of information, some controlled by the vendor, some from well reputed web sites, and some from a wide collection of confused users with varying degrees of knowledge, skills, experience and competence. As a result, a messaging strategy should exist for the particular piece of content, e.g. a white paper or thought leadership article, and also for the surrounding campaign to bring attention to the content.

But it's also important to remember that different companies have different competitive positions and different messaging needs and strategies. Take for example, the difference between two leading companies, Apple and Microsoft. Apple competitors are often annoyed by the success of Apple in obtaining massive amount of free publicity in business, general and technology publications. They complain that the media is filled with content from Apple "fan-boys". They wish that their social marketing via reviews, publicity and comments from users could match that of Apple.

Microsoft, in contrast, is rarely praised (currently) for one of its most successful strategies: owning and developing one of the great ecosystems of all time. People take for granted the number of pieces of software that will run on Microsoft operating systems or the supporting ecosystem of developers, skilled users, magazines and software providers. It's the kind of strategy that is immensely difficult to execute

and takes years to create. Microsoft has a consumer, gaming consumer, business partner and business strategy, making its content strategy much more complex to execute, requiring different messaging and content strategies for different players in the ecosystem.

From a narrowly defined content perspective, Apple currently appears to have a major head start in social marketing over Microsoft, at least in the consumer space. But from a platform and business perspective, Microsoft's ecosystem is very hard to match. Apple has traditionally not been successful in the business environment. Its success with smart phones and tablets provide narrow solutions relative to Microsoft's offerings to business, which include groupware, databases, enterprise requirements planning (ERP), development tools, cloud-based tools and services, and productivity suites. What these two companies demonstrate is that strategic marketing is multi-dimensional. Microsoft is executing a different and perhaps more complex set of content strategies than Apple, with different leads and lags.

How Thought Leadership Matters

Consulting firms, high tech firms and firms must often demonstrate thought leadership and educate their users and prospects about novel and often complex ideas and their implications. The idea may be new; the discovered benefits may be new; the technology advantages may require elucidation; or, the economics of purchase and use may be novel. In every case, there is a product or service associated directly or indirectly with the content. The hope is that if a customer reads the content, it will predispose them to do business with the authoring company.

But not all thought leadership is equally effective.

1. Bad thought leadership tends to be overly technical in nature or exclusively features oriented, when perhaps the Personas that should be targeted are interested in other topics and goals, e.g. the business impact of the product, service or technology. It focuses upon educating buyers about the idea or technology *without* being an "easy" or memorable read.
2. Better thought leadership will often help the potential or actual purchaser understand the personal and business consequences of the new idea or technology.
3. *But the best thought leadership is communicated in such a way that the reader will not only be excited by the new idea but be empowered or programmed with a useful story or metaphor, a set of concepts, a key number and perhaps a reproducible graphic that he or she can use to influence others.*

Why Demand Creation Matters

In traditional marketing models, marketers think about different stages of marketing goals: (1) awareness, (2) interest, (3) trial, (4) recognition of benefits leading to referral, widespread organizational adoption or repeat purchase. Demand creation fits squarely within this traditional model often using well established methods of awareness and interest building.

But demand creation in the twenty-first century adds some new tricks to the equation.

Many engineered products are both expensive and difficult to evaluate without a hands-on *experience* or a third party *endorsement* (by an individual, group or knowledgeable reviewer and evaluator). As a

result, demand creation stretches all the way from informational (letting a prospect know about a service and its benefits), to making it easy to obtain information from third parties, reviewers and evaluators, to creating opportunities for hands on experiences. REI for examples offers excursions where an expert leads the group, provides training and advice, and equipment is provided to the customer, permitting a trial experience of both the sport and the product.

High-end large-format cameras are exceptionally expensive, costing in the range of middle five figures. Medium format camera maker, Phase One participates in photographic tours with well-off photographers and makes access to their equipment with its higher resolution photography part of the experience. Prospects get to use equipment they might normally have difficulty obtaining access to, let alone have a positive experience with in spectacular locations. The benefit sold is a great vacation in an attractive location, the experience of using high end equipment and the possibility of exceptional photographs. It's the equivalent of renting a car before you buy it. A car rental provides an extended period of evaluation that is superior to a test drive.

The same issue is often true with consulting firms. Hiring a consulting firm is often perceived as a high risk endeavor. Projects are often driven by difficult to evaluate changes or a crisis. The staffing of the consulting team poses a potential risk for the hiring manager or firm. It's not surprising as a result, that many consulting relationships begin in a contingent way in order to reduce risk. An initial smaller project is used to build trust and a working relationship. The small project helps define the boundaries of the phase two project so that the hiring organization is comfortable with the risk level of engaging outsiders.

For these types of experiential demand creation, measurement can be tackled at various levels. For example, with the Phase One Photography Tourism approach, one might measure at four different levels:

Level 1: Did the customer enjoy the experience of the trip and the use of the camera? (The social marketing implication is: "Did they write about their experience or rate it on the company web site?)

Level 2: Did the customer master usage of the more advanced camera? (Measurement of this level may be observational, measured with questionnaires and interviews, tracked through visits to help systems, or by user comments in social media.)

Level 3: Did the customer produce noticeably improved photographs that he/she is proud of? (Techniques for measurement might include interviews, comments on the Internet, or actual pictures put on a corporate owned or popular web site.)

Level 4: Did the customer decide to buy the camera? (Measurement requires having an ongoing relationship with the customers, e.g. through direct purchases or via product registration.)

A similar measurement approach can often be taken with content development strategies. Did the customer download and read the material? Did the customer find the material interesting and useful? Did the customer's attitude towards the topic change? Did some desired action occur?

Why the Ecosystem Matters

Demand creation often revolves around perceptions of a supplier's momentum as a standard setter and likely future business success. Content development strategies need to anticipate the importance of obtaining user feedback and ratings, signing up of business partners, developers and resellers, and making it easy for experts to evaluate products. Often the content development strategies required for prospects, business partners, resellers and evaluators are quite different and require different content, access and pricing strategies.

One only has to look at the major efforts required for Nokia/Microsoft and RIM (now rebranded as Blackberry) to catch up with installed base of apps for the iPhone and Android. While many mobile apps are trivial and merely represent an easier way of accessing information than having to type in long URLs via a browser, the early stages of the smartphone market have often been based around the claimed number of apps available.

Blackberry, an exceptionally successful company in its first few generations of technology appears so far to have done a poor job (April 2013) of communicating that in the same way that Windows 3 could run MS-DOS programs (which made upgrading to Windows 3 perceived as low risk), the Blackberry 10 operating system (based upon QNX) will run Android apps (i.e. one variant of UNIX will run apps written for Android, another variant). Clearer messaging on this point (i.e. that Blackberry is taking advantage of existing apps) would have benefits with opinion leaders writing about mobile platforms and devices, application developers and mobile carriers.

Agile Personalization

In a simpler time, advertising and reputation tracking presented fewer choices. Today, the existence of more data about customer attitudes, usage, satisfaction and referral makes the development and measurement of content about a product or service more complex. Traditional content development strategies such as "one size fits all" brochures are likely to be less effective. In addition, traditional cycles of content development and tracking are likely to be too slow.

A more agile approach to content development must be based upon a clearer understanding of users and prospects and the willingness to move quickly. Ideally, it should be based upon rapid content development, a willingness to revise content quickly as data comes in and lessons are learned, and stratification of content for different Personas and on-going measurement.

Questions for the Reader

1. Does information about our company support the product branding?
2. Do customers understand what our product or service does, its benefit and how we are differentiated from our competitors?
3. Do we explicitly discuss benefits and the value of our product rather than discussing features?
4. Do we have data that clearly indicates that customers and prospects understand the overarching benefits and key features of our product or service?
5. Is our content interesting, memorable and circulated by customers to colleagues and friends?

Chapter 15 - Sales Strategy in a Zeitgeist World

"Simplicity matters and it's very hard to achieve."

If you are running a startup or launching a new product, you typically don't have the luxury of selling to an installed base of customers. At best, you have a strategy of switching or migrating customers to a new product, service or platform. A key issue is how do you obtain sales quickly in order to keep stakeholders happy, and ensure you are on a fast rate of learning about the market and usage patterns?

One way of thinking about the problem is evaluate the amount of effort and returns from your sales efforts. Clearly investing in high effort, low revenue potential customers is the least productive strategy. The ideal customer is a low sales effort, high potential revenue customer. Insights about internal customer buying situations are key to finding such customers. (Shapiro, Benson P. "Sprint Selling and Turbo-Charged Market Development." Boston: Harvard Business School Publishing Class Lecture, 2003. Electronic. (Faculty Lecture: HBSP Product Number 1504C).

But many sales efforts are targeted at high sales effort, high revenue potential customers. These prospects tend to be the ones that everyone in a Zeitgeist market wishes to obtain. There are two obvious choices:

First, make sure that you are offering a differentiated high value product that is relevant to the needs and situation of the high potential customer.

Second, take a multi-step approach to reaching the desirable customer. Target the smaller revenue opportunity, one that requires less sales effort. Use the success with the less difficult customer to maximize return on sales effort, establish credibility (e.g. a reference site, providing of rating and reviews, etc.) and build upon the sale to reach the even more desirable high revenue customer.

Graphic: Spring Selling: Don't focus on the most difficult clients first.

Internal Sales Complexity

So far, we've addressed the problem of multiple startups complicating product development and marketing strategies, but there is an internal consequence as well. Some companies are using the lower cost of development, the proliferating availability of potential acquisitions to develop product portfolios of much greater complexity. The complexity may be in terms of breadth, i.e. the functionality covered or depth, the number of layers in the solution. Sometimes the complexity is due to having too many sales forces calling on the customer. Organizations that reduce the number of sales forces calling upon the same customer often gain significant simplification of the relationship.

A database company such as Oracle has integrated forwards and acquired ERP systems such as PeopleSoft, business intelligence applications with the acquisition of Hyperion, operating systems and hardware with the acquisition of Sun. Its major competitor, SAP, in the ERP space has acquired database and business intelligence companies. Microsoft, best known for its operating system, gaming, languages and productivity software, has database tools, ERP and hardware offerings.

I recently sat down with "Jane", a new sales executive in a large software firm with a complicated offering. The bags under her eyes were deep. She looked like she had not slept well in some time. While she had four accounts, his major account, a marquee account with a well known international brand, was a troubled relationship and as a recently hired employee, she had a steep learning curve to descend. She was working very hard at mastering all her company's product family. She needed the knowledge to turn around the problem account relationship. And knowing something about the company she was representing (I had done a project which involved interviewing their developers and marketers), I knew she was doomed to failure unless she changed her approach. Coincidentally, the

previous day I had talked to a hardware company executive who was also having problems with the same client company.

My advice was simple:

> "I think you are tackling the problem the wrong way. Look, your company has an exceptionally large set of products. Individually, they are very complicated. The chance of you learning enough to be passably competent in front of the customer is quite low. You will still be learning about your company's product offering in 10 years.
>
> Your immediate sales problem seems to me to require fixing the implementation problems at the client. Now that's a skill set you don't have today, and won't have any time in the near future. Your job is to be the "conductor" – to orchestrate your internal team so that when you meet with the client, you have the necessary expertise on tap, on the other end of the phone. And you need to send out an agenda in advance to your internal experts and rehearse the meeting, the likely issues, the goals and the strategies, what you will promise to do before you go into the meeting."

A smile of recognition appeared on her face. I had reframed the problem for her and she 'got' the insight instantly. She had been trying to solve the account management and sales problem by herself – an impossible task for any individual. I went on:

> "There's another advantage to the approach, by involving a team, when sales success occur, everyone will take credit. As the old saying goes, 'Failure is an orphan. Success has many parents.' And by getting internal agreement, you won't be embarrassed or shown as ignorant in the meeting. Rather you will have communicated that you will orchestrate the resources to solve whatever problem they have."

Jane's problem is a common one -- selling with product complexity. Many companies are attempting to build complete solution stacks, in other words owning the different layers of a solution in order to address the decreasingly available resources within client companies, to simplify life for users, and to gain some lock-in of the account. Apple owns the processor, the device, the operating system, key apps and services on the iPhone and iPad. Microsoft is moving in the same direction for its hybrid ultrabook/tablet offerings. And Samsung will probably follow with its own operating system variant of Android.

If product complexity were not enough, there is the additional problem that selling and account management requires knowledge of competitors' complex offerings as well. And benefit oriented selling requires understanding the details of the customer value chain. It's a lot to master in a hurry particularly when product offerings are evolving quickly.

This product complexity represents only one type of Zeitgeist selling problem, but what it illustrates is the reason that many organizations have separated the development side of product management from product marketing. The product marketing side of the business needs not only to address competitive

analysis, market sizing and evolution, but also the marketing communication needs of different sales and distribution stakeholders. With a broader portfolio of choices, the resource allocation decisions are more complex.

The one long term consistent lesson about sales people is that they tend to sell what they understand best and what sells fastest. In a Zeitgeist environment, fast to market product development and marketing needs to be paralleled with fast to market sales training and roll out of programs to support sales people challenged by the constant change.

Sales and Social Marketing

Traditional sales models often don't take account the special characteristics of a Zeitgeist market where social networking and referral are powerful influencers of sales. Twenty years ago, a sales model would typically focus on the first four stages of the eight listed below (time to qualify, time to interest, time to intent to purchase, time to purchase).

1. Time to qualify
2. Time to interest
3. Time to intent to purchase
4. Time to purchase
5. Time to competence
6. Time to productivity
7. Time to referral or on-line rating
8. Time to repeat sale (or bulk purchase)

In the past only very sophisticated companies with complex products such as software companies might worry about time to usage or the time it takes before the purchaser has actually used the product (software that sits on the shelf is neither creating value for the customer nor enabling future sales). These sophisticated companies understood that usage is required before a user can become a competent user. And competence is generally required before the user recognizes the benefits of the product sufficiently that both personally and in conversations with others, he/she communicates the benefit of usage sufficiently well to trigger additional sales, e.g. a larger purchase within an organization, or additional copies for family members.

What social marketing adds to the equation is the intermediary step of time to referral and/or on-line rating. With a constant stream of requests for ratings, obtaining a social platform referral or retailer rating is not automatic. It needs to be encouraged. Amazon and REI, for example, will prompt a purchaser for a rating if no rating has been provided.

But today, with more products based upon digital technology, mastery cannot be assumed, certainly not for the full suite of features available in many products. In my own personal experience, I was embarrassed when, at the death of my first 2 megabyte digital camera, I took a look at the manual and discovered features I had never known were there during its active life.

In other words, the managing and monitoring of post purchase competency development, attitudes and referral is now an increasingly valuable part of the selling process. And as the price of digital products has dropped, many of the sales and post sales activity tracking need to be automated. Marketing automation systems such as Marketo use relatively simple monitoring of activities and scoring of customers to determine when a more expensive human sales intervention is likely to be effective. Big Data approaches that build more complex classifications based upon integrating information from different sales channels making more varieties of information about customers will be available at lower cost.

Sales Channels and Product Management

Different businesses have different patterns of distribution and sales delivery. And these patterns are changing.

A common problem in consumer electronics today is the dearth of retail outlets in the US. Best Buy, a company that has experienced profitability problems itself has killed off its major "Big Box" competitors, leaving few equivalent bricks and mortar retailers.

Best Buy itself has suffered from on-line competition in two ways. First, the on-line competition tends to have lower prices. Second, the product variety in a pure bricks and mortar store is rarely as broad as that available from an on-line vendor that can centralize inventory to serve a national or international market.

As a very minimum, a bricks and mortar store must use e-commerce to inventory and deliver lower inventory turn products. Customers expect an integrated approach to their interactions with a retailer (and sometimes with the vendor selling through the retailer), so the sales approach must often be supported by integration of information across transactions in the bricks and mortar stores, a retailer credit card and on-line activities.

A product marketing manager must today often grapple with a more difficult sales problem than in the past. While people may differ on the different types of selling approaches available, there are at least ten approaches to choose from or to combine.

1. **Complex sales** involving third parties or consortia of companies, e.g. including value added resellers and consultants, e.g. Cisco or SAP's relationships with consultants
2. **Distribution models (wholesale and/or retail),** e.g. Ingram for books and software at the wholesale level and a variety of retail outlets
3. **Integrated sales models** (bricks and mortar combined with ecommerce), e.g. REI which puts seasonally appropriate fast moving inventory into stores and less seasonally appropriate or unusual sizes on the ecommerce site
4. **Direct sales**, e.g. a field sales force calling on customers directly for high end software or part time sales approach using personal networks such as those used for Tupperware parties
5. **Company owned e-commerce models**, based on purchase, rental or subscription, e.g. Tantor Media's own audio-book site which sells audio books in competition with Amazon's Audible business.

6. **Freemium e-commerce models**, e.g. Evernote where the service is free until you want a more secure encrypted service and higher storage
7. **Indirect e-commerce models**, e.g. supported by advertising, sponsorship or product placement, e.g. any magazine or newspaper business
8. **Co-op models**, where the distribution channel is owned by customers, e.g. credit unions and coops.
9. **Event driven sales models**, e.g. couponing businesses
10. **Location based sales models**, e.g. using customer information to influence visits to service establishments, a strategy being pushed by many vendors and likely to be increasingly popular on mobile devices

A common theme in high tech sales is that as the cost of products has dropped, the amount of time available for selling, educating and support has been reduced. The consequence is that many services previously bundled with expensive products are now unbundled or offered as self service training.

Jane's problem with big software presented at the beginning of the chapter is an increasingly rare location on the continuum of product selling. The consumerization of information technology means that many new products and services start off at the consumer end of the market where budgets for expensive human selling and support are low to non-existent. Differentiation is, as a result, sometimes harder to achieve.

Take Evernote as an example. It's a useful tool that allows you to save information from the Internet, your emails or pdfs to a cloud based service which can be accessed from multiple devices. You can also publish the information you collect in a "digital notebook" for sharing with colleagues, friends and family.

Most customers probably select Evernote based upon a review or referral from a friend. The sales process involves no human interaction from the company, but rather from the initial use of the free version of the product. The sales pitch to move up to a paid version of the products occurs when one of three things happens: an Evernote email message tells you that you are reaching your limit on space, you read an article or blog about the virtues of the paid service, or you decide you want to use Evernote as a publishing medium on a business project and your boss asked about security (which is available on the paid version).

Owning Your Own Retail Outlets

In a world with declining margins, it may initially seem hard at first to see why a vendor such as Apple, Microsoft, Samsung or Sony would want to own its own retail outlets. There are at least five potential reasons:

First, if your retail outlet improves the competency of users, then it is more likely that they will recommend your product both on-line and in person.

Second, in highly competitive markets, fast moving or 'addictive' products sold through a company outlet represent a margin opportunity. Prices at company owned stores and through resellers are

typically similar, but owning the retail outlets gives a supplier both the wholesale and retail margin, which compensates for declining industry margins provided enough volume can be pumped through the retail channel to pay for the retail space. However, given that the retail space per capita in the US has grown excessively for thirty or forty years, there is a glut of retail space available.

Third, the competency of the store sales staff is more focused and as a result likely higher than in more general unspecialized retail outlets. Company owned stores are also a more friendly way of obtaining information for some customers in comparison to the Internet or support calls. This competency provides a source of differentiation relative to Zeitgeist competitors selling over the Internet or receiving little sales support in more general bricks and mortar retailers.

Four, feedback from field staff and support staff in stores can provide continuous feedback on the impact of marketing campaign, social networks and usage problems for very little extra cost. A number of companies have learned that tapping into store floor level staff can improve inventory selection, turnover and product development.

Five, because it takes a minimum sales volume level to justify retail outlets, a vendor that sets up a retail chain of stores *signals* to consumers their leadership among a plethora of competitors.

This fifth point is illustrative of a larger point, first made by Regis McKenna, marketing guru and early director at Apple, in his work with Apple. (Regis McKenna: *The Regis Touch: New Marketing Strategies for Uncertain Times*, Basic Books, 1986) Information about a company (and the signals that a company sends through having e.g. retail outlets) sends as much of a message about a company as product marketing.

Example Digital Sales and Support Design Templates

A different way of thinking about sales, logistics and support is to think in terms of design templates. One of the tricks used by software developers is to think of different types of coding problems as patterns that can be reused. The same type of thinking can be used to map digital sales and support strategies and the associated logistical consequences. For example, the following types of issues could be considered as prototypes.

Pure Bricks and Mortar Operations

1. Single store, no warehousing, delivery from supplier or suppliers. Digital issue: shipment information or custom order turnaround.
2. Multiple store, no warehousing, delivery from supplier or suppliers. Digital issues: inventory availability or skills availability across stores, order time for out of stock or custom orders.
3. One or more stores with one or more warehouses. Digital issues: inventory availability at store or warehouse, shipment schedule, supplier order times and delivery time to store or customer.
4. Standard retailer functions common across above three: policies on sales, price testing, own credit card, accepting third party credit cards, wedding registry, returns, etc.

Pure E-Commerce Model: Digital Issues

1. What to stock at one or more locations.

2. What inventory to order from suppliers in response to customer order.
3. Shipping policies to customers, e.g. cost, minimum order size, frequent purchaser policies, choice of shipping organization, return policy.
4. Web site interface, personalization, tracking page views, wish lists, shopping basket, billing functions, offering own credit card.
5. Analytics on web activity, frequent purchaser programs, share of wallet analysis, recommendation engine, aggregating indicated customer demand to obtain large discounts from suppliers, one to one marketing activities.

Hybrid Operation: Digital Issues

1. Pricing policy for on-line vs. in-store ordering. Price testing on a one to one, segment or total universe of users.
2. Inventory availability in-store and available on-line.
3. Delivery policies to store for pick-up vs. delivery to customer directly.
4. Inventory stocking policy on-line vs. ordering from vendors.
5. Customer support for on-line vs. support for both on-line and in-store transactions.
6. Personalization information available in-store or only on-line.
7. Price and business model testing.
8. Information sharing with suppliers.
9. Renting space on digital site.

Questions for the Reader

1. What assumptions have we made about the required channels for distribution of our product or service? Have they been revisited?
2. To what extent do retail channels have good understanding of the advantage of our offering?
3. What rules of thumb are we using for targeting customers?
4. Are we taking advantage of front line retail staff learnings, social networking commentary and on-line ratings to track attitudes and product success?
5. Do we have integrated view of customers' activities on e-commerce sites and at bricks and mortar stores?
6. How coordinated is our sales training, on-line content and external content development?

Chapter 16 – Accelerating Innovation in New Areas

*"It is not size that is an impediment to entrepreneurship and innovation; it is the existing operation itself, and especially the existing successful operation." Peter Drucker, **Innovation and Entrepreneurship**, 1985.*

In a Zeitgeist market, it's easy for dominant competitors to fall behind. The inertia of market leadership often creates processes and a culture that devalue the importance of market shifts, e.g. from device to service to platform. And with a wide variety of form factors, feature sets, platforms, development tools, and business models, identifying which of numerous combinations is the next shift can be a source of great debate. Adding to the complexity, the user interface requirements of different Personas may also require different channels and messaging.

Historically, dominant companies have tended to wait when faced with a new trend. With large cash reserves, they have believed that if they miss a trend, they can buy into it. They argue why buy at the initial flat stage of the S-shaped industry life cycle? Wait instead until the inflection point and come in "heavy" or make an acquisition. This strategy works less well when first to market companies gain a network advantage that is sufficiently large to make catch-up more expensive. Sony, Microsoft, RIM/Blackberry and Nokia have certainly found this to be a problem competing with Apple in the smart phone and tablet markets.

A more significant problem is that companies with dominant positions tend to bias their investment activities towards the existing more mature revenue generation products and services. If there is a hard choice to be made, the existing business gets the dollars. The sales force prefers to sell what they understand, products where processes, support and perhaps an ecosystem make the offering the preferred choice for existing customers. The more established product is more predictable in terms of the earning it will generate for the sales force.

The bias towards the historical makes it difficult for many successful companies to introduce innovations at a high rate. Most research suggests that successful innovators introduce more innovations than their less innovative competitors. The successful companies tolerate and expect failure to be part of their innovation outcomes. Less successful companies are embarrassed by failure.

Using a Hackathon to Increase the Rate of Innovation

Take for example, the well established company, Hertz, a long time success in the car rental business. Hertz, like the automobile manufacturers themselves, is being affected by the rapid drop in the cost of electronics, networking, GPS and application development. Historically, Hertz has not been particularly innovative, but in April of 2013, it decided to underwrite its first Hackathon in Redwood City, CA, a town in Silicon Valley. At a Hackathon, small teams of programmers propose and develop small applications, in this case using an API (application programming interface) that would work on the computer installed in a Hertz rental car. The ten winning applications receive prizes and may be incorporated into the Hertz offering. Example solutions developed included:

1. An application for identifying the least expensive gas station closest to the Hertz drop-off.
2. An application for permitting an executive to request a car be dropped off at the front door of his hotel by a driver and be picked up at his/her destination with a map showing the location of the approaching car and driver.
3. Calculation of the total cost of driving or taking public transit between two locations.
4. A tour guide solution that permits designing a tour and requesting a driver to temporarily drive the car during the tour.

Hackathons are by no means the sole or even the best solution to increasing innovation. The more general goal of increasing the rate and quality of innovation can be achieved in many ways. Hank Chesborough, a professor at UC Berkeley, has proposed the idea of open innovation (Chesbrough, Henry *Open Innovation*, Harvard Business Review Press, 2005) where companies seek to scan the environment for external innovations and also license innovations to competitors before the innovations lose value that can be monetized. Cisco has set up internal groups to pursue innovation and has also spun out companies to focus on innovations, with the option of pulling them back in when required. Heads of R&D at some pharmaceutical companies are charged not just with internal R&D but also with scanning and inv0esting in external R&D at universities and in smaller biotech companies.

Business to Business Innovation Partnerships

In simpler times, companies often sought vertical integration. In its earliest days, Ford owned steel mills and iron ore mines. IBM produced pretty much the full solution stack for mainframes from semiconductors to memory, hard drives to printers, operating systems and applications.

As so often happens with technology, the full solution stack approach of IBM or DEC was challenged in several ways:

One group of strategies exploited the availability of a third party operating system originally developed by AT&T Labs, which went on to become UNIX, Sun-OS, HP-UX, IBM-AIX and eventually various flavors of

LINUX. They, in almost biblical fashion begat today's Apple operating system, RIM's latest operating system, and Android.

At the smaller end of the market, Windows and Intel partnered to create what became the most successful ecosystem of all time for computers and laptops. They employed a more horizontal strategy with different partners dominating different components of the hardware and software. Seagate and Western Digital were big in hard drives. Sandisk and Intel in SSDs. Microsoft in operating systems and productivity software. Intel for the microprocessor.

And then the pendulum swung again and vendors sought to offer and in some cases own a full solution stack from hardware through operating system to key applications, as we see with portable devices (Apple IOS, Microsoft Windows, etc.)

Computers are different than many other businesses, so we need to be cautious about drawing the wrong analogy. But it is useful to think about when it is advantageous for a company to be more vertically integrated, and when it is better to pick an area of specialization.

The Importance of Supply Chain Strategies

What we can say with some authority is that supply chain strategies, which are often perceived as less glamorous than product design or product marketing, do, in fact represent significant opportunities for digitizing the business and generating innovation. The more that a company is operating in a horizontal manner without extensive vertical integration, the more important will be its supply chain strategy. Supply chain strategies, if executed well, can create differentiated advantage which as I keep emphasizing is increasingly difficult to create in a Zeitgeist market.

Let's look at hardware first. And here, one of the most visible companies, Apple has something to illustrate. (Adam Lashinsky: *Inside Apple*, Business Plus, 2012) Apple is very secretive about its strategy, but what we can see is that different suppliers have different degrees of importance to Apple, are different in their ability to help Apple create value, and pose different degrees of risk. Apple negotiates with and partners with suppliers to build its brand and its competitive advantage. It uses its cash to influence the capacity of suppliers and uses advance orders to lock up high performance components and assembly, particularly in domains where they are scarce. Preemption is a particularly useful strategy when you sell through retail, where the last quarter of the year has the highest volume and when products iterate quickly. Locking up the Christmas season prevents competitors from catching up easily.

In the early days of the iPod, Apple locked up supply of small hard drives, making equivalent products difficult for competitors to produce. A similar strategy was pursued with flash memory.

The high quality Retina screen of the iPhone and the iPad were also locked up by Apple and Apple has invested in Sharp for a next generation of screens and likely also in order to diversify its supply away from Samsung, which is both supplier and competitor.

Apple has also made acquisitions e.g. acquiring design skills for ARM processors, which provide the basis for iPhones and iPads.

Apple in effect, identifies five categories of suppliers:

1. Suppliers with key capabilities that Apple needs to own in order ensure differentiation or superior performance.
2. Suppliers with capital constraints, or which are experience scale up difficulties, e.g. Sharp, whose direction can be influenced favorably in Apple's direction through some kind of partnership, advance commitment of business, loans or investment.
3. Suppliers with leading edge performance, which likely cannot be acquired without anti-trust or competitive consequences, but where preemption can create differentiation, e.g. Corning Gorilla Glass.
4. Suppliers with capacity that can be locked up by Apple.
5. Commodity suppliers.

The idea of actively managing ownership of intellectual property and proprietary production capabilities is not restricted to high visibility consumer products. Honeywell's $13 billion aerospace division makes similar decisions about its internal manufacturing vs. external sourcing. In comparison to Apple, Honeywell is selling to businesses. It has much longer product cycles, more reliance upon service and replacement revenues, and certification of components by regulators.

Strategic importance classification schemes transform the procurement function into a key partner in product design, and for some companies, in process and production design and selection. This means that a cost-focused procurement strategy may be missing the opportunity to capture more of the dollars spent in a market. If product value drives profits, then procurement needs to have a seat at the table. The procurement function has a design, evaluation and negotiating role.

The same stratification approach can also apply to value added that is based upon software. A digital business or a business moving to increase the digital nature of its business must make the same judgments that Apple makes for its products, with two key differences. Most companies will have far fewer strategically critical acquisitions to make and most will avoid developing tools for resale to third parties.

Supplying a Zeitgeist Innovation Market: Gold Rush Strategies

If we accept that many Zeitgeist innovation markets are likely, then one risk reducing strategy for capturing value out of the market is to avoid competing directly: instead pick a key piece of the value chain and attempt to dominate that particular activity.

Assume for the sake of argument that 1000 companies enter a low barrier to entry market and each company requires a key service/product component. Assume for the sake of argument that the management of the company believes that the market demand will grow and some fraction of the 1000 companies will end up as reasonably successful commercial businesses. We are then faced with two choices:

1. Compete directly with the 1,000 entrants.

2. Attempt to make money off the 1,000 entrants and achieve a higher scale than each individual competitor can achieve individually for some portion of their activity.

The second strategy is a classic “Gold Rush” strategy, one that is often recommended in markets with many new entrants. A Gold Rush strategy is often summarized as follows: “In a gold rush, the people who make money are the people selling the picks and shovels. Few miners will find gold, but every miner needs the tools necessary for exploring for gold.” Iconic jeans from manufacturer Levi Strauss & Co. were born of the California Gold Rush in 1853. Apparently miners need pants as well.

Questions for the Reader

1. Do we have a program in place to track external R&D, identify promising R&D partners, and good contacts with leading researchers?
2. Have we put in place a classification scheme and supplier management strategy to understand where suppliers are strategically critical and joint development is actively managed?
3. Do we understand where there are supply constraints and risks in the supply chain?
4. Is the procurement function focused narrowly on optimizing purchasing or actively involved in supply chain strategy, product innovation and partnering with suppliers? Do they have adequate resources to achieve what is expected of them?
5. Are we consistently outpacing competitors because of a superior supply chain strategy?
6. Have we considered the option of supplying competitors with tools or a key component and building up scale for that key component?

Chapter 17: Zeitgeist Work Culture: Employee Value and Values

"Having access to lots of information is a pain. You want access to high quality information. Develop your reputation for good information management and people will flock to you. You will be an employer people want to work for." Davidson, Gellman and Chung, ***Riding the Tiger****, 1997*

"Netflix also tends to employ older people than its peers. 'We hire fully formed adults…We let them do five years at Google before taking them on.'" Adrian Cockcroft quoted in Vance, Ashlee, "Netflix, Reed Hastings Survive Missteps to Join Silicon Valley's Elite", ***Bloomberg BusinessWeek****, May 9, 2013*

When you think about the enabling consequences of technology, the existence of Zeitgeist competition seems straightforward. What is perhaps not so straight forward is the impact of digitized businesses upon employees, employee skills and capabilities, employee creativity and productivity and the values of a company. People often observe that large companies seem to succeed more through inertia than through their ability to decide and implement quickly. Dealing with faster moving Zeitgeist competitors and rates of innovation may demand rethinking internal work practices, supporting technology and the relationship with employees.

This topic is a difficult one to review because depending upon your own experience, your beliefs about the nature of work, and your values, you may be looking at work through one of many "lenses".

For example,

> You may believe that work is a privilege. You should be grateful for work. And if you don't like your job, get another.
>
> You may believe that employers are not to be trusted, and that you have to manage your own brand, constantly selling yourself and investing in your reputation and skills.
>
> You may see yourself as a professional with a high level of skills and knowledge, who should be respected for your capabilities.
>
> You may believe that the longer you work with an employer, the more there is an implied long term employment relationship.
>
> You may see your job as a way to earn enough to do outside work what your value, whether it be raising a family, participating in more social activities, your religion, a hobby or some passion.
>
> You may be lucky enough to work in a position in a company that give you great joy and let you work on projects that delight you.
>
> You many enjoy working in a team with a common goal.
>
> You may like routine activities with lots of customer interactions
>
> You may want to have an ill structured job with discovery and solving problems that others have been unable to solve.
>
> You may enjoy exploring new software and new technologies.
>
> You may be interested in learning new skills at work.
>
> You may be working for survival or paying of past debts.

These twelve lenses are by no means comprehensive or mutually exclusive. You may hold more than one of these lenses simultaneously, or you may have changed your beliefs over time.

But what is clear is that for many businesses, the nature of work has changed and is continuing to change because of the application of digitized technologies. The value of an employee is mediated by both their capabilities and also by their use of personal and corporate technology. Because these digitizing technologies are new – we have little experience with many of them – the consequences of introducing an individual technology is often unclear.

If the consequences of introducing one technology are unclear, then it is even more true that the impact of introducing a large number of technologies is even less clear, and ought to be the subject of test and measurement. Google is fortunate enough to be a highly profitable company. Its employees include many highly paid employees. Its approach to human resources and employee development is to run

experiments and tests to determine how the digitally mediated environment and the physical environment and services affect the work and interactions of employees.

Part of Google's strategy is to be an employer of choice. Such employers are more likely to be able to hire the best people. The premium salaries and support costs needed for attracting the best people are often some of the best investments that a digitizing enterprise can make. But increasing the effectiveness, skills and capabilities of all employees is also an important and required goal in highly competitive Zeitgeist markets.

Potential impacts of digitizing

Positive effects	Technology compensates for employee lack of skills or time constraints available for achieving goal. Employee role is improved through elimination of dangerous work. Routine decisions can be automated to free up time for employee to do other activities. Asynchronous communication such as texting and email don't require coordinated access unlike a phone call.	Technology extends abilities of employee improving breadth of issue manageable, enabling use or development of more skills and knowledge. Team work and cooperation encouraged. Performance improvement encouraged. Employees are able to be effective whether in the office, traveling or at home. Problems can be solved without physical presence or travel back to the office.
Negative effects	Technology deskills employee and devalues employee knowledge. Employees are paid less and are less able and less motivated to solve obvious problems. Employees are perceived as replaceable.	Technology shapes behaviors in directions that are unhealthy and eventually unproductive. Teamwork, cooperation and sharing of knowledge implicitly discouraged. Performance improvement discouraged Work intrudes excessively into home and personal space
	Compensating	***Enhancing***

In a Zeitgeist world where startups are easier, employees may be more likely to retain their insights and not share them with an employer, if the employer has not managed its business so as to make its use of technology enhancing and positive. Employees may, if poorly treated, be more motivated to recreate successful internal innovations externally.

While not all innovations can be recreated outside of an employer, continuing improvement, experimentation, and the creation of adjacent businesses all clearly require employee commitment so motivation of employees is clearly important and value creating.

Cisco represents a potential model from which lessons can be drawn. It's by no means a perfect company and its business situation as a dominant player in many of its markets is not one that many

companies share. SVP, Inder Sidhu in *Doing Both* describes innovation at Cisco as taking place in three different spaces:

First, innovation occurs at the product line level as new generations of products are developed and released.

Second, an innovation group is tasked with creating new technologies that provide the basis for new adjacent or "Advanced" businesses.

Third, some business opportunities are judged to be difficult to create within Cisco and are, therefore, spun out as independent businesses to gain the advantage of fast moving entrepreneurial development. Cisco will often fund or partially fund the spun out business but retain an option to purchase the business if it is successful and bring it back inside the corporation. This approach provides a mechanism for retaining the most creative and entrepreneurial staff. It also addresses the very real problem that disruptive businesses, which will cannibalize existing Cisco product lines may experience so much resistance inside Cisco that they can never succeed as a internal business unit.

Lessons Learned from Software Development

When you manage a software development team, you quickly learn ten important lessons:

First, hiring and unleashing great developers is the single most important management decision that you can make.

Second, identifying and firing bad developers quickly is critical because they reduce the effectiveness of all the other developers on the team. They are value subtractors.

Third, while teamwork and brainstorming along with information exchange are extremely important, some complex tasks require focus and attention. If a developer is interrupted while doing a complex piece of work, it can take a long time to get back to where he or she was before the interruption. Some estimate an interruption can set back work by 45 minutes to an hour. The ability to shut a door is sometimes the most powerful productivity tool available. Working at home can also sometimes be a powerful way of speeding up development because of the lower level of distraction.

Fourth, complex difficult-to-solve tasks often require non-task related activities. Sometimes when you do a task wrong, you need to sleep on it, and magically the following morning, everything falls into place. Sometimes the best thinking is done in the shower, while going to the bathroom, while commuting to work, while working on something completely different.

Fifth, most people cannot work on a large number of complex projects without their productivity suffering. Multi-tasking generally only works for short interactions and simpler tasks.

Sixth, training does make a difference. Many high tech firms confuse project success with training success. They seem to believe that if an employee succeeds with a new technology, they have been trained. They miss the obvious point that good training can speed up projects and ensure higher quality projects.

Seventh, when specialists work by themselves, frequent performance and problem review is critical to keeping projects on track. If an individual project deliverable is more than two weeks, it is almost certainly too long.

Eighth, the most productive software project is typically the one you don't have to develop. Buying is generally less expensive than developing.

Ninth, the best software architectures are modular in nature.

Tenth, most managers overestimate their ability to deliver projects quickly and underestimate the consequence of projects .

What About Regular Managers in a Digitized Environment?

Your organization may be different. Your people may have figured the self management requirements for success in a changing digitized environment. But maybe not.

Companies seeking to evaluate the consequences of these relatively randomly introduced changes to the running of business perhaps need to consider asking important questions. Do employees like or resist the digitized technology or software? Did they master it via training? Did they use it on the job? Did outcomes for the job improve in a measurable way? Has the system continually been improved by suggestions from employees and/or other users?

But there are two additional questions that seem important as well. They look at the overall intersection and interaction of digitizing technologies:

- Did the new tool affect other usage of tools positively or negatively?
- How, in aggregate, are the tools used by the employee, group, department, or business unit affecting the overall performance?

For example, companies place great reliance upon phone teleconferencing and email. But most managers would agree that face to face meetings are often much more productive, particularly when a teleconference ends up being more of a broadcast medium and less an interactive session. E-mail is a great tool for responding to simple informational requests, but lots of small informational requests can suck up huge amounts of time and distract from more important interactions and thinking. One on one requests for information from experts are highly efficient but don't scale well. In contrast, corporate wikis, corporate archives, training materials and conference recordings place less burden on the creators if the need is widespread.

Employees with deep knowledge are often not recognized or rewarded for their knowledge and the informal network of people they support, or rewarded for documenting their knowledge so that it can be shared more easily. In fact, in companies with low levels of trust, the opposite of recognition and reward may be inflicted on employees. Once they have revealed their knowledge, they may get fired or their job outsourced. High trust companies, in contrast, create roles and career paths for the exceptionally knowledgeable and useful.

Clearly, there are no general conclusions that we can make about the impact of the technologies that seem to dominate our personal lives (smart phones, texting, video conferencing, ubiquitious video and photo capabilities, search engines, email, voice mail) and our business activities (email, phone, conferencing, telepresence, physical and virtual whiteboarding, business intelligence systems, transaction systems, budgeting and planning systems, project management tools, dashboards, HR support sites, corporate directories, internal wikis, etc.)

Most companies know little about how employees spend their time. As a result, employees must often determine their own best practices organically. But what seems to be clear is that explicit measurement of technology usage and resulting outcomes is amenable to experimentation. And it is likely that experimentation will lead to improvement.

Example Best Practice Memes

The high rate of introduction of new digitizing technologies suggests the need in a company for documenting and supporting best practices or memes about the digital world, the digitizing of business, and competition. This is not a particularly new idea – Honeywell for years has been disciplined in training its managers on best practices in meeting participation and decision making – but it seems particularly necessary in a Zeitgeist world where speed and quality of internal decision making matters.

Example best practices might include some of the following:

1. The executive summary of an email should be written last and placed at the top of the email.
2. Every messaging document needs a messaging strategy that defines who the target audience is, what the key point of the document is, and what supporting points need to be made.
3. Memorable documents have a story or example, a memorable number and a picture or graphic.
4. Discussions should be summarized and commitments documented in a follow up email or project repository.
5. Emails should be categorized with a schema in a company to indicate the type of email it represents, its urgency and what action is demanded if any.
6. Ad hominem criticism is not productive.
7. Admitting problems is an acceptable behavior.
8. Admitting that you don't know something is acceptable behavior.
9. Setting aside time periods during the day where you don't check your email is a productive decision.
10. Don't open attachments that are executable, e.g. .zip or .exe.
11. Never respond to external emails that might constitute a phishing attack by clicking on links in the email.
12. Don't give out information to people you don't know without confirming their identity and legitimacy to avoid socially based cyber-attacks.
13. Don't leave your laptop in a hotel room. Place in a safe.
14. Assume industrial espionage is an ongoing risk.

These examples memes may in some cases appear trivial, but best practices in companies are often the result of many small decisions.

Questions for the Reader

1. Are we viewed by candidates as an employer of choice?
2. Are we losing the iconoclasts and innovators because our system rejects creative talents?
3. When innovators leave the company, are we maintaining excellent business relations with them so that future partnering or acquisition is possible or likely?
4. Are we experimenting and measuring the impact of deployed technologies, processes and services for employees?
5. Are we doing adequate training on best practices in a digital world?
6. How easy is it for customers and suppliers to communicate with people in the organization who need such feedback?

Chapter 18 – From Traditional to Digital

"People who succeed in growth markets often confuse the luck of their timing with their own talent."

Loosely speaking most new businesses in Silicon Valley often fall into one of two types. You can, of course, argue over whether there are more sub-varieties, but often the essential difference revolves around what drives the transformation from traditional delivery to digital delivery – technology improvement or self service.

Type 1: Ride the Curves

Type 1 businesses are driven by the costs curves of their components. The most well known cost curve is Moore's Law. It states that the number of transistors on a microprocessors doubles every 18-24 months. Similar types of performance improvement (but not necessarily similar rates) have occurred in photovoltaic cells, wireless radios, telecom transmission, hard drives, the cost of computer memory and screens.

However, the rate of improvement varies. Battery performance only improves by roughly 7-8% a year, barring some breakthrough. This slow rate of improvement means that it take about 10 years to double performance, which is quite a difference from Moore's Law.

Type 1 businesses work because as costs decrease, price typically decrease and thanks to the laws of supply and demand, lower prices lead to more demand. An additional driver of growth is that as performance becomes possible with a smaller form factor at lower prices, new application areas, previously unserviceable become possible.

Within Type 1 businesses, there are two types of innovation, sustaining and disruptive. Sustaining innovations increase the performance and features of the product, e.g. adding larger hard drives and more memory to a laptop. Disruptive innovation (Christensen, Clayton: *The Innovator's Dilemma*, HarperBusiness, 2011) are products that exploit the over-delivery of performance and features in the mainstream product. By offering a less featured, less well performing product, disruptive products can create new usage patterns and new classes of users. And if disruptive technologies are combined with one or two significant novel features, they can create enormous new markets. Two examples of this market creation are the cell phone (a bad computer with a small screen, typically a bad keyboard, phone features, and pervasive networking) and tablets (a defeatured laptop with a high resolution screen and a bad soft keyboard). In contrast, the netbook, a defeatured laptop with poor performance and no incremental advantage other than size, is in the process of dying as a product category.

Type 2: Take an Existing Business On-Line

Type 2 businesses are much beloved of risk averse investors. You take an existing business, digitize it and take costs out of the business. The Internet makes self service possible which takes additional costs out of the business. The lower cost digitized business can now compete successfully with traditional businesses.

The idea of Type 1 and Type 2 businesses is pretty straightforward, but in a Zeitgeist market, these types of innovations require relatively linear thinking. Breakthrough businesses often require more creativity to come up with sources of competitive advantage that are less obvious.

Informating

Shoshanna Zuboff is a Harvard Business School professor who wrote many years ago about the impact of computers upon business. (*In the Age of the Smart Machine: The Future of Work and Power*, Basic Books, 1989). She observed that one of the consequence of automating business processes was that not only was the process made more efficient, the use of computers allowed the process to generate meta-information *about* the process. And some of this information has previously not been available before. She termed this consequence of digitization "*informating*". The term never caught on, but the observation remains powerful. The meta information not only changes information about the process, it changes the power relationships within an organization by making information more distributed to employees. Later authors have pointed out that increasingly, products are co-designed with customers or the value that customer create is a co-creation of activity by the customer and the supplier (Prahalad, C.K. and Ramaswarmy, Venkat: *The Future of Competition: Co-Creating Unique Value With Customers*, Harvard Business Review Press, 2004).

Take, for example, the tracking of retail customers in today's multi-channel retail environment.

Prior to e-commerce, companies would have little information about the decision making and buying process of purchasers and non-purchasers that investigated a product or service. It would have been very expensive to interview customers on a large scale as to why they bought a product and what processes they followed. It would have been very rare to track user behavior in a bricks and mortar store, let along correlate it with what pages in a mailed catalog the customer looked at before the visited the store to make a purchase.

But today, that mailed catalog is now on-line and dwell time on pages is trackable. Ratings and review information about a product is visitable on a web site and trackable. Items that get put into a wish list or shopping cart are trackable. Abandoned shopping carts represent potentially useful data. And visits to the web site can be linked to eventual sales activity in other channels, e.g. via phone or in-store for a more complete multi-channel view of the customer. Customers can store information about products they are interested in and access such information in-store, and where they access such information may reveal if they are shopping at the retailer's or a competitor's store.

The *informating* of retail business allows companies to develop granular one-to-one marketing programs with customers and deliver effective personalization. And from a sales or support optimization

perspective, this granular information permits extensive testing of what works to encourage sales or increase the competence of users.

Crowd Funding

It may seem that the consequence of Zeitgeist markets is always negative, but there are also upsides. Two in particular, are obvious:

First, when many people experience the same frustration with technology, they are in a sense, "prepped" for purchase of a solution that addresses the problem. If the downside is many new entrants attempting to tackle the problem, then the upside is that adoption may be fast, particularly, if you attempt to add incremental functionality to your platform as Hertz appeared to be attempting with its first Hackathon described in the previous chapter.

Second, innovations that require investors who understand a problem and believe in a proposed solution are easier to solicit. There are now over 450 crowd funding platforms in the world (mainly in Europe and North America) according to recent research by AT Kearney. These platforms represent a potentially disruptive approach funding innovation, particularly for venture capital firms that have been placing small bets on low capital cost development projects. From a competitive perspective, the existence of crowd funding platforms is likely to increase the challenges of Zeitgeist competition by increasing the number of new entrants.

Questions for the Reader

1. Does our organization understand what types of innovative businesses we are comfortable with?
2. Is the organization investing to developing the capabilities to pursuing different types of digital innovation?
3. Does our competitive analysis including modeling the basis of competitors' strategies?
4. Does our product development processes consider multiple planning periods sufficiently?
5. Are we quantifying the barriers to entry that we and competitors are creating?

Chapter 19 – Privacy as Differentiator

"All human beings have three lives: public, private, and secret."
— Gabriel García Márquez, *Gabriel García Márquez: a Life*

In past times, the amount of information that businesses held about an individual was relatively small. Today, the amount of information held about a user can be astonishingly large. Location information alone gives detailed granular information about somebody's life and travels. In a Zeitgeist world, differentiation on the basis of privacy policies represents a range of positioning that can be used to gain competitive advantage and also to claim (and presumably deliver) different levels of ethical relationships with customers.

Roughly speaking one might imagine companies in a market pursuing ten alternative strategies:

1. Lie about what information is collected
2. Don't reveal what information is stored about the user
3. Reveal policies and superficial description of information stored about the user
4. Reveal partial information about what is stored
5. Reveal all raw information stored about the user

6. Reveal all raw and evaluative information stored about the user including connections to other users
7. Allow editing and export of privacy information by user
8. Pay user to use their stored information
9. Make the information stored useful to the user
10. Make the information stored useful to the user and charge for it as a service

Today, few companies have been aggressive in their use of privacy information as a differentiator. Perhaps an early sign of competitive use of privacy as a marketing weapon is an internal 2013 video developed by Microsoft (http://youtu.be/-Cr6AgUo764). Now leaked outside Microsoft, the video's theme is that Google tracks everything you do so that it can make money off you. While it may not have been intended as an external marketing weapon, it does illustrate the kind of marketing campaign that might be pursued by aggressive companies in the future.

Some of the larger web sites reveal how long they retain information. But as I pointed out in an earlier chapter, innovation for digital content now includes bundling and unbundling of services, legal rights and methods of monetization. Privacy is, in a sense, no different than attaching the right to re-download a book more than once on an audio book service such as Audible.

One can easily imagine that in a highly competitive market, where differentiation is hard to achieve, or when a smaller player wishes to gain on a larger player, that trumpeting premium privacy policies might switch customers. After all, in banking, one of the oldest information businesses, privacy has been a key product attribute for decades, if not centuries. And it is also reasonable to expect that those that collect information from customers will make counterarguments around collected information making the service more useful or permitting the service to be free.

Example of a Company Differentiating Around Privacy Policies - Ixquick

"Here's how we are different:

> Ixquick does not store any user data. We make this perfectly clear to everyone, including any governmental agencies. We do not record the IP addresses of our users and we don't use tracking cookies, so there is literally no data about you on our servers to access. Since we don't even know who our customers are, we can't share anything with Big Brother. In fact, we've never gotten even a single request from a governmental authority to supply user data in the fourteen years we've been in business.
>
> Ixquick uses encryption (HTTPS) by default. Encryption prevents snooping. Your searches are encrypted, so others can't "tap" the Internet connection to snoop what you're searching for. This combination of not storing data together with using strong encryption for the connections is key in protecting your Privacy.
>
> Our company is based in The Netherlands, Europe. US jurisdiction does not apply to us, at least not directly. Any request or demand from ANY government (including the US) to deliver user data, will be thoroughly checked by our lawyers, and we will not comply unless the law which

actually applies to us would undeniably require it from us. And even in that hypothetical situation, we refer to our first point; we don't even have any user data to give. We will never cooperate with voluntary spying programs like PRISM.

Ixquick cannot be forced to start spying. Given the strong protection of the Right to Privacy in Europe , European governments cannot just start forcing service providers like us to implement a blanket spying program on their users. And if that ever changed, we would fight this to the end.

Privacy.

It's not just our policy - it's our business."

https://us4.ixquick.com/eng/prism-program-revealed.html

Two other factors make it likely that privacy will become a more important marketing issue. First, governments over the past several decades have put in place, Freedom of Information (FOI) laws and which enable citizens to request government information. In 2013, the US Federal government is being required to make the default for government files a machine readable open format to increase the transparency of government information and decisions. In the US, the Obama administration has suggested a Privacy Bill of Rights which includes

1. Individual Control: Consumers have a right to exercise control over what personal data companies collect from them and how they use it.
2. Transparency: Consumers have a right to easily understandable and accessible information about privacy and security practices.
3. Respect for Context: Consumers have a right to expect that companies will collect, use and disclose personal data in ways that are consistent with the context in which consumers provide the data.
4. Security: Consumers have a right to secure and responsible handling of personal data.
5. Access and Accuracy: Consumers have a right to access and correct personal data in usable formats, in a manner that is appropriate to the sensitivity of the data and the risk of adverse consequences to consumers if the data is inaccurate.
6. Focused Collection: Consumers have a right to reasonable limits on the personal data that companies collect and retain.
7. Accountability: Consumers have a right to have personal data handled by companies with appropriate measures in place to assure they adhere to the consumer-privacy bill of rights.

Second, different jurisdictions in the world have different levels of business privacy requirements with Europe typically leading the US and often reframing privacy issues in an influential way. Pending legislation in Europe is likely to be particularly significant.

In California, where legal innovation often occurs early, customers have a right to know what information is being disclosed to third parties:

"D. California's Shine the Light Law

California Civil Code Section 1798.83, known as the "Shine The Light" law, permits our customers who are California residents to request and obtain from us a list of what personal information (if any) we disclosed to third parties for direct marketing purposes in the preceding calendar year and the names and addresses of those third parties. Requests may be made only once a year and are free of charge. Under Section 1798.83, LinkedIn currently does not share any personal information with third parties for their direct marketing purposes."

Source: LinkedIn.com, May 2013

Even if businesses in particular countries are able to prevent or modify legislated disclosures, we speculate that market forces will, albeit slowly, move competitors to reveal more, and aggressive competitors to test and subsequently expand increased disclosure.

At first thought, revealing to customers information you have stored about them poses three obvious potential problems and probably additional ones as well, depending upon the business practices and industry:

1. Some businesses might be concerned that disclosure of information might change consumers' behavior. One might worry that revealing how much a customer has spent at a retailer, might cause them to spend less in the future, or develop a budget. However, it is worth pointing out that consumers might appreciate having information conveniently in one place and might choose to consolidate their purchases for informational reasons.
2. When a consumer sees how much information is stored, he/she may be so concerned that they demand that the data not be retained, thereby, damaging the analytical capabilities of the company. This reaction could be dealt with in two ways. First, a firm might decide to put in place programs to incent customers to permit records retention. Second, a firm might choose to permit customers to request deletion of data that might be embarrassing, e.g. purchase of pornography, payments for staying at an addiction center, purchase of alcohol or medical marijuana, or taboo breaking of various sorts, etc. More generally, companies with good reputations for privacy management may be given more leeway by customers and will be less likely to lose customer trust.
3. Customers might export their data and use it to obtain an account with preferential terms at a competitor. This data might provide revealing pricing information to a competitor as a result.

It's strangely comforting for someone who grew up reading science fiction to observe that we now seem to need something equivalent to science fiction writer, Isaac Asimov's Three Laws of Robotics. They read:

1. *A robot may not injure a human being or, through inaction, allow a human being to come to harm.*

2. *A robot must obey the orders given to it by human beings, except where such orders would conflict with the First Law.*
3. *A robot must protect its own existence as long as such protection does not conflict with the First or Second Laws.*

Perhaps our equivalent Three Laws of Privacy might read:

1. *A company may not store information that could injure a user without the permission of a user, or through poor security allow such information to be disclosed causing harm to the user.*
2. *A company must honor user requests to reveal what information is being or will be stored and to delete information, except where such deletion would harm the user by removing legal rights from them or where the absence of such information would harm the user.*
3. *A company may collect information about users provided that such collection does not conflict with the First or Second Laws.*

It's not a perfect parallel, but it does illustrate the problem that increasing intelligence located in the "network" raises ethical issues in the same way that Asimov raised them in thinking about the relationship between human and machine intelligences. In a sense, when businesses choose to store massive amounts of information, they take on a new responsibility not to damage the lives of those they serve. The responsibility is likely not merely ethical, but rather also a legal one. In the same way that we have slander and libel laws, unauthorized disclosure of private information will increasingly be exceptionally costly in terms of both legal suits and company reputational damage.

Even more thought provoking is the idea that a company may acquire, model or infer information that allows it make predictions about a user. Disclosure of such evaluative or predictive information, e.g. about financial condition, health, life expectancy, job prospects, political views, gender preference, proclivities around a taboo might be exceptionally damaging in some societies.

Questions for the Reader

1. Have we documented your privacy policies internally?
2. What have we disclosed to customers?
3. How do our privacy policies compare to your competitors in your home market and internationally?
4. Have we tested the value of increased privacy rights with customers?
5. Do we have a plan for reacting quickly to a competitor who has decided to use increased privacy rights as a marketing weapon?

Chapter 20 - The Digital Transformation of Sustainability and the Consequences of Consequences

"There are two possible outcomes: if the result confirms the hypothesis, then you've made a measurement. If the result is contrary to the hypothesis, then you …[may have] made a discovery." Enrico Fermi

What you can see and what you can measure changes the way you see the world. And in a Zeitgeist innovation world, a buyer or prospect may choose to look not just at the offering of multiple vendors, but also their effect upon the environment, social activity and energy use.

In simpler times, our understanding of the consequences of a business operation were limited. What we knew tended to be local rather than international. Understanding tended to be about single points of information rather than about feedback loops, systems and connections, what Peter Senge called "The Fifth Discipline" (Senge, Peter*: The Fifth Discipline: the Art & Practice of the Learning Organization*, Doubleday 2006). In effect, modern science, increased data availability, pervasive data collection with increasingly inexpensive sensors and rapid dissemination of scientific information creates a world of science based models and data.

So, while the following businesses all have significant positive benefits - they represent some of the most important and essential businesses in our economy - they all have side effects. Having side effects is pretty much inevitable when you extract resources, grow food, create or produce products. Side

effects are also caused by services and experiential marketers as well. Purely for the purposes of illustration, recent issues raised by critics include the following:

- If you are in the processed food business, the consequences of your activities include customer obesity and diabetes, or the consequence of overuse of antibiotics in factory farming.
- If you are in the financial services business, the consequences of your lending and derivative activity include the need to seek help from a central bank and a national government to prevent triggering economic depressions.
- If you are a retailer or clothing manufacturer, the consequence of your supply chain activities can be dramatic upon working conditions and industrial accidents.
- If you are in the coal or oil business, burning fossil fuels produces emissions that cause global warming.
- If you are a consumer electronics manufacturer, some countries are now forcing "cradle to grave" responsibility. And recycling of electronics involves toxic metals and materials.
- If you are involved in pharmaceuticals, drugs can now be found in waterways, and approved drugs may work variably on different population genotypes.
- If you are using fracking technology to extract gas from shale formations, some practices lead to water table contamination and methane emissions.
- If you are a farmer, your use of pesticides, genetically modified foods and fertilizers, may be causing algae blooms that kill off fish.
- If you provide gambling or violent video games, certain users will become problem gamblers or will go on to be serial killers.

And in developing countries with weak environmental regulation, the problems are even worse, reminiscent of the 19th century but with more population and a wider invention of pollutants. The water table in India is polluted. Food supply in China is increasingly perceived as unreliable by the local population. Expatriate and local parents in China are worried sick about the exposure of their children to exceptionally high air pollution to the point where many are leaving.

We can categorize the responses of industries, companies and business leaders in five ways.

First, some companies completely deny that their activities have consequences. They seek to eliminate, reduce or postpone regulation.

Second, some companies argue that while the activities have negative consequences, the positive side of their businesses (employment, economic growth, production of a key output). Their primary goal is minimization of regulation or to delay the onset of regulation.

Third, some companies have made a decision to focus their investment on high return mitigation activities. They have accepted an obligation to address the problems raised, but are being selective in their response.

Fourth, some companies are embracing sustainability issues and making management of their environmental footprint a key part of their brand.

Fifth, some companies are actively offering mitigation or recycling services because they believe that the opportunity for building a business is large.

The Consequences of Consequences

Unless we create a society in which science is devalued, the Internet censored and the free press is muzzled (which would be a terrible thing), it is likely that all companies will be faced with measurement of their activities that goes beyond the financial balance sheet, income statement and cash flow. Measurement is here to stay. That likely means for most companies green balance sheets, input and output models, energy and pollution measurement, along with social scoring.

Because laws of supply and demand, lower cost measurement devices and lower cost publishing leads to more measurement not less. Decentralization of measurement means that we no longer live in a world where there is only one source of data controllable by government, a regulator or the company itself. Data has been 'democratized'. We can, therefore, predict that the consequence of consequences will increase in impact.

Rapid improvement in measurement precision also exacerbates the importance of the issue. We can now often measure pollutants at levels where we have may have little understanding of the consequences. There are three potential results: first, regulations may be tightened up, second, there will be pressure to tighten up regulation before we know the extent of the risk or effects, or third some problems can be prevented by earlier warning.

Even societies such as China cannot conceal pollution, water deficits and unreliable food quality from its population. And while the well off can spend money to ameliorate some pollution problems (e.g. air filters in Beijing, buying imported food from well reputed foreign retailers, filtering water), the economics of pollution abatement suggest that it is often more efficient for pollution to be attacked through regulation (perhaps due to a scale effect) and the use of market based pricing (which changes the behavior of firms). And from a game theory perspective, virtuous companies will often suffer from competitors with less social responsibility, unless regulation is put in place creating a new set of rules by which all must play.

Cigarette companies demonstrate the high costs of selling a product with negative consequences for its users. It seems to us highly unlikely that information about negative consequence of a product use or a production process in a high communication world will decrease, so the strategic consequences are that measurement of the external impacts of your business are going to happen with or without the cooperation of a business. The question is: "Are you in front of the issue or behind the issue?" It's not a small question because competitors can choose to play their cards differently. For example, in the cigarette business, a company with leading market share would benefit more from an overall advertising ban. A smaller firm may have difficulty if it loses advertising as a tool to increase its share.

The net result is that digital business transformation will be driven not just by more information about customers, changed ways of interacting with customers and suppliers, it will also be driven by the perceptions of stakeholders. And stakeholder perceptions will be driven by increased knowledge and measurement of the consequences of business activities.

What makes the issue of side effects so difficult for companies is that the type of regulation triggered by overpopulation, climate change, food processing, agricultural practices, financial risk, over-use of resources and pollution are likely to be *dramatic and sometimes sudden* in their effects upon a company's business model, value chain activities, production processes and pricing. Straight lining the present does not paint a picture of the change that businesses will inevitably undergo as costs alter, e.g. flood or storm insurance in coastal location), availability and cost of water inputs, charges for pollution and recycling, carbon emission pricing or permits, higher equity requirements for financial institutions, or remediation costs for pollution (e.g. BP).

Prescriptions

What then should a company do? Scenario analysis is obviously important, but the answers are not straightforward. In some cases, the best approach is actually seeking regulation. An industry should lobby for, demand or accept a new playing field. The automobile industry in the US and the food industry in the UK are now playing on new playing fields with different requirements for efficiency and salt/sugar/fat respectively.

In other cases, the best strategy may be for transition programs. Public utility commissions in many states are now mandating the use of renewable energy for a certain percentage of generation. The sometimes higher cost of renewable energy is effectively blended in with lower cost, more polluting energy sources.

For greenhouse gas emissions, two approaches have been offered – a carbon tax and a Cap & Trade system. Though hard to set up initially, the latter is likely more efficient because lower cost abatement approaches can be pursued first.

For other companies, consequences represent an opportunity. The opportunity may revolve around communicating superior environmental or social performance and creating/improving a brand. The opportunity may be to development measurement equipment, recycling services or approaches to ameliorating the consequences of another business's pollution.

The most interesting case is where reduction of consequences makes a business more efficient and more profitable. For example, many of the steps required to reduce carbon emissions are, in actually, high ROI projects in their own right at current energy prices. Energy efficient buildings have lower total cost of ownership and operation and may be worth more than less efficient buildings in the same way that a gas guzzling car is valued less in the marketplace than an efficient automobile.

Perhaps the most frustrating situation for a company is where a "popular view" held by some percentage of the population is wrong and based upon bad science. The erroneously claimed association of childhood vaccines with autism in the UK based upon fraudulent assertions by a UK MD, whose license has now been removed, falls into this category. The research has been discredited by the British Medical Journal (http://www.cnn.com/2011/HEALTH/01/05/autism.vaccines/index.html) In a world where bad information can be promoted on the Internet, retaining the trust of customers and other stakeholders seems, in the long term, to be likely to create more value for a company and its reputation, customers and society.

The Denial Umbrella

Pricing analysts have written for years about holding a pricing umbrella over a competitor. It's one of the reasons why, counter-intuitively, competing against a larger competitor is actually associated with a higher probability of new product launch success. It's expensive for a large market share owner to drop pricing across its entire product range. It costs less to let a new entrant take market share from price sensitive buyers. And sometimes, low price disruptive offerings discover new classes of users who have previously not purchased the product category at all.

There is perhaps an analogy here for a company denying the consequences of its activities. Economically, at least in the short run denial is often more profitable in the same way that maintaining high prices is more profitable for a dominant player, although downstream legal liabilities may sometimes alter the economic equation.

But the medium to longer term impact of a "denial umbrella" needs to be reckoned with as well. For many companies with a denial strategy, the assumption is:

1. With the appropriate (or inappropriate depending upon your point of view) investment in public relations, marketing and lobbying the company can persuade buyers, voters and legislators that its view of the topic is correct, the topic is unimportant, or that the costs of addressing the topic are too high;
2. That competitors will not be able to take significant advantage of a denial umbrella by innovating, gaining market share, developing new advanced technologies or business models that the resisting company will have difficulty catching up with later.

In the automobile business, Toyota claimed early leadership with hybrid technology beginning with its product launch in Japan in 1997, while its competitors held a denial umbrella over Toyota. They chose, prior to 2008, not to emphasize the radical pursuit of high mileage cars. Today, Toyota's wide hybrid selection, e.g. three versions of the Prius, a hybrid Camry, hybrid Lexus and SUV models and close relationship with Tesla combined with more than a decade and a half of customer experience provide an operating advantage that other car companies have had to work hard to match.

Even if a company acknowledges its denial umbrella, it often then must face the classic resource allocation conflict. If, for example, you are a successful and enormous energy company, attempting to prolong your businesses based upon fossil fuels, it is exceptionally difficult to divert management attention and significant capital investment into renewables in a major way. If your level of fossil fuel production drops below a certain level, you may start to feel the effects of decreasing economies of scale. Your employees have built skills over decades that may or may not be transferable to a new business category.

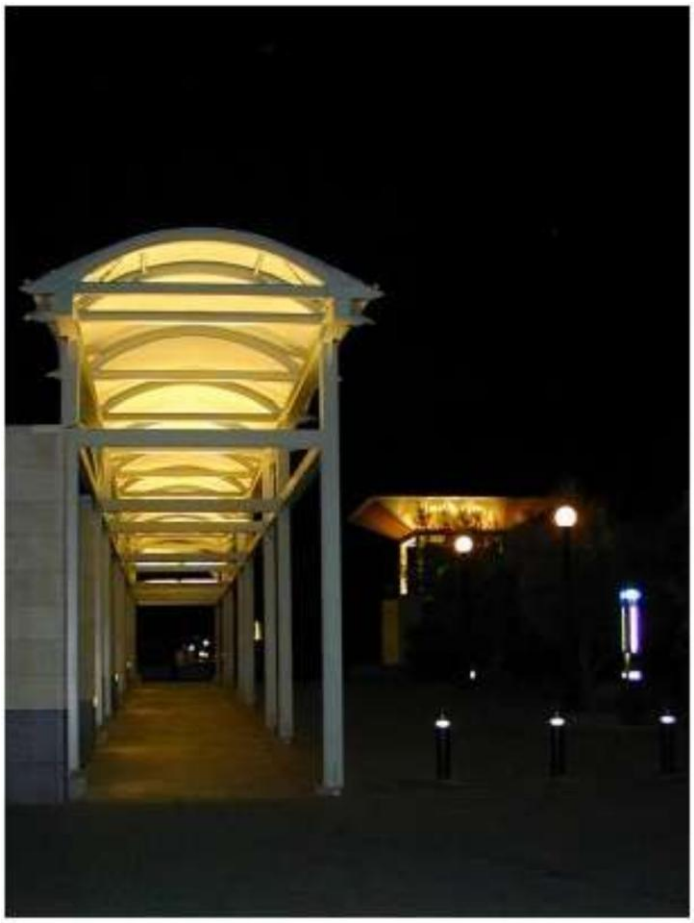
The cynic would expect that such an example energy company will be reluctant to accept the consequences of its business. More optimistically, it is possible that the commitment of such a company to its more general business concept (energy rather than fossil fuels) may cause it to expand its innovation horizon and undertake both fundamental research and projects that may surprise us all.

Under any planning process, it is likely that scenario analysis and contingency planning will be important as sudden shifts in public opinion, changes in regulation, and the increasing visibility of climate change make discontinuous change in the economy likely.

Questions for the Reader

1. What external information about our business is currently being measured and reported?
2. What future external information about our business is likely to be become more visible?
3. What demands on our business can we predict?
4. What opportunities, costs or risks are currently unmanaged around these external sources of information?
5. What international exposure do we have from the operations of our business?
6. What will the effect of a denial umbrella be upon existing and potential competitors?

Chapter 21 -- Modeling the Zeitgeist Environment



"Because its purpose is to create a customer, the business enterprise has two – and only these two – basic functions: marketing and innovation." Peter Drucker, The New Realities, 1988.

One of the results of competing in a Zeitgeist competitive market is that modeling is not only easier to justify, it is pretty much required. Modeling the choices around an innovation or a product development and marketing process can be handled in multiple stages. These models may include some of the following:

1. Stage gate review processes to quickly create and winnow product ideas and features
2. Modeling which features create value which is highly valued by customers or segments of customers.
3. Probabilistic modeling of development projects.
4. Analyzing supply chain constraints and supply preemption strategies.
5. Comparing cycles of learning for competitors in order to project the rate of value improvement for players in the market.
6. Estimating the number of visible and non-visible competitors.
7. Estimating the time and effort for competitive imitation and new market launch.

8. Correlating marketing expenditures, social activities, and product assessments/reviews against purchase rate.
9. Market scenarios and impact upon ranked competitors.
10. Market reshaping activities and their likely results. One useful technique is to perform a "ruthless competitor exercise" and define what activities a particularly ruthless competitor might invest in to destroy your business.

Stage Gate Review Processes

The idea behind a stage gate innovation process is to avoid continuing to invest in innovations with little probability of success. A typical process defines a series of review points to force a formal review of the idea, an initial piece of market research, a prototype or a regional launch. Given the tendency of larger companies to continue investing in likely unsuccessful products, the goal is kill unsuccessful innovation candidates early and divert their budget to other processes. In large companies for every 11 innovations proposed, 1.5 are launched and one succeeds. And just under half of innovation expenditures are spent on unsuccessful projects. Companies using a stage gate model end up wasting less of their budget on unsuccessful projects and can put more money behind the projects that are looking promising. (Cooper, Robert: *Winning at New Products*, Basic Books, Fourth Edition, 2011)

Modeling Which Features Are Highly Valued by Customers or Segments.

While analysis-paralysis can slow down product development, understanding what customers value and will pay for is a core decision for any product. And different customers will value different features differently. Take for example the ubiquitous cell phone. As the market matures, it is likely that different segments will value features like screen size, quality of photos and video, battery replaceability, a slot for a memory card, Near Field Communications, two SIM slots, battery life, size of ecosystem, security features, separation of personal and corporate applications differently.

Probabilistic Modeling of Development Projects.

In the early stages of a Capabilities Maturity Model, there is a high degree of uncertainty about the length of time product development will take. As capabilities mature, there is more certainty about project scope, resources and development time. But, using a probabilistic model where there risk assessments on development times can provide additional insights.

Analyzing Supply Chain Constraints and Supply Preemption Strategies.

In some high tech markets, one cannot assume availability of capacity for components and assembly. Well funded competitors (e.g. Apple) have used their cash hordes to preempt critical components and lock up assembly, making it difficult for competitors to offer a comparable product on a similar delivery schedule. A good product owner will ensure that the default assumption of supply availability is valid and dependency risks such as several competitors relying on the same contingent supplier in the event of interruption are understood.

Comparing Cycles of Learning for Competitors in Order to Project the Rate of Value Improvement for Players in the Market.

Because of the transformational nature of many technology interactions, pointed out in Chapter X, the iterative nature of product development is worth modeling. Companies that are gaining less experience with customers, particularly demanding customers who push the performance enveloped or which are iterating their software and hardware more slowly may be falling behind without realizing it.

Estimating the Number of Visible and Non-Visible Competitors.

In a Zeitgeist market, identifying competitors who have launched products is often relatively easy. And if you go to the trouble of searching international markets as well, you may end up with a better idea of potential competition. The difficult area to measure are the unreleased products, the projects under development. One approach to surfacing such companies is to research hiring requirements that signal the nature of the development activities in companies. Another useful approach is to pick the brains of managers in the supply chain or analysts at technology consulting firms.

Estimating the Time and Effort for Competitive Imitation and New Market or Product Launch.

While accepting that there will always be similar and unrevealed projects in startups and competitors, it is a useful exercise to estimate the time required and cost for building a competitive product. It's worth noting that building a competitive product is much easier if you have an example in front of you, so your costs and effort may be significantly greater than that of a potential competitor.

Correlating Marketing Expenditures, Social Activities, and Product Assessments/Reviews Against Purchase Rate.

A useful exercise is to track traditional marketing expenditures and also social and e-commerce comments to discover the share of attention that different competitors are obtaining. Correlating performance, if the data is available, may signal what tools are more effective.

Market Scenarios and Impact Upon Ranked Competitors.

In an uncertain world, predicting the behavior of Zeitgeist competitors is always going to be challenging. As was pointed out in Chapter 7, combinations of competitor actions can have impact on your product. Acquisitions can alter the shape of the market. And amplifying technologies can change the usage patterns of products and services. Constructing scenarios around these ideas can useful help identify what product management development ideas are robust under multiple scenarios and which are high risk under particular scenarios.

Market Reshaping Activities and Their Likely Results.

Optimistic managers and entrepreneurs sometimes forget that an aggressive competitor can attempt to put you out of business. One useful technique for understanding your exposure is to perform a "ruthless competitor exercise" and define what activities a particularly ruthless competitor might invest in to destroy your business.

You can also reverse the process and consider what activities you might consider to kill off a key competitor or make the market less attractive for new entrants.

More generally, a company can consider how it might change the rules of the game and reshape the market to its advantage. For example, in a situation where a company has developed a technology that will be obsoleted by a next generation of the technology, it could consider licensing the technology to competitors. The profits from licensing might represent incremental revenues that can be used to make the next generation even more attractive or to speed up its development. From a customer perspective, the adoption of the technology by competitors may increase the perceived brand value of the licensing company.

Integration of previously separate functionality may also reshape the market. Apple's launch of the iPod with the iTunes store, Amazon's Kindle e-readers and software combined with an online book store, both represent significant reshaping of the prior markets.

Questions for the Reader

1. Do we have a formal new product stage gate process in place?
2. Is speed of decision making emphasized in approval processes? How would we compare with a smaller entrepreneurial business?
3. Is there a product owner with authority and experience able to drive the product development process forward and ensure quality?
4. Are we using a waterfall or iterative approach to product development?
5. Is our product development approach managed taking into account our level of competence and experience with the technologies proposed?

Chapter 22 -- Exponential Modeling of Viral Marketing and Improvement Cycles

"She told two friends. And they told two friends." Fabergé Commercial

Another way of thinking about the impact of digital strategies and innovation is to look at the iterative mathematical characteristics of digital strategies. Those of us that have worked as venture capitalists or helped startups in an incubator know that mathematical tools can easily be misused. The classic Spreadsheet Fallacy for a startup begins with the assumption that there are a large number of potential buyers. If the business can obtain a small percentage of a large number, it will be successful. The fallacy is, that acquiring customers is rarely cost free. Sorting through 300 million customers to find 100,000 and then getting them to pay something can be an expensive proposition.

But with full acknowledgement of the Spreadsheet Fallacy, exponential modeling does reveal the importance of successful digital strategies. Constructing models around different rates of viral marketing, process improvement, ecosystem construction or learning curves provides target metrics against which progress can be measured in new markets for new products and business models.

Consider the following potential exponential relationships:

Revenue Exponential Models

1. Viral models of referral as in the famous Fabergé commercial. “She told two friends. And she told two friends.”
2. Viral model of recommendation, where one person who has a good experience with a product tells five friends about it.
3. Viral model of non-recommendation, where one person may tell ten friends about a negative experience with a product or service.
4. Cycles of learning, where evaluation of each campaign, group of users, different segment improves understanding of pricing/value relationships, feature valuations, marketing efficiency, customer support efficiency, leading to improvement in perceived customer value.

Cost Exponential Models

1. Learning or experience curves where the cost per unit is a function of the cumulative number of units produced.
2. Cycle of learning models, where the product cost improves due to better understanding of the requirement for producing better lots or runs of production, after each batch is produced.
3. Demand pull ordering models where inventory depreciation is avoided by postponing purchase until the order is placed.
4. Financial working capital models where the business is built around a negative working capital requirement, e.g. where cash is received and cleared before suppliers are paid. The faster the company sells, the faster its cash grows.

These eight examples illustrate why mathematical modeling is important. And the more that data exists about customer behavior and the operations of the business, the more important it is, not just to monitor current performance but also to track progress towards aspirational performance.

Creating Cascades and Avalanches

Combining digital viral marketing and exponential improvement of digitally mediated production processes represent important ways of improving the performance of a company. Parallel processes exist for business model development, product innovation and ecosystem development. Companies that only measure today’s performance may miss tomorrow’s opportunities for growth based upon future multi-period cumulative improvement and cycles of learning. Iterative production improvement or *Cascades* become even more powerful when combined with viral, social and word of mouth marketing a combination which we might term a “Digital Avalanche”.

One Improvement or Many Improvements?

Judgments about the past and future success of a business spawn many disagreements among executives. For some, the initial lack of profitability of a business demonstrates that it is a bad idea. For others, current failure merely means that, with the right learning and improvement, the business *can* succeed. Resolving which interpretation is right means distinguishing between stubbornness (my business model is right) and persistence (my model will work but I may have to iterate my strategy or tack left and right to achieve my goal).

Executives often have different experiences upon which they base their intuitions and heuristics (rules of thumb). One way of resolving disputes about difficult-to-articulate intuitions is to look for more quantitative ways of understanding and modeling strategies. Modeling iterative and multi-period improvement in performance (a "Cascade") provides a useful set of tools for determining the reasons for current failure and the opportunities for performance improvement.

Because different businesses, different business models, different production processes and different marketing/sales approaches have different potential Cascades, scarce capital should be deployed into Cascades that provide the best pay-off. The idea of "best" with a Cascade can be preemptive (we can gain a first mover advantage), short term, (we can make money quickly), or longer term (we can own the market and create high shareholder value).

Cascades and Avalanche Definition:

A Cascade is a series of events in a company where one event triggers a subsequent event and where the subsequent event is dependent upon the previous event. Cascades fall into two types mathematically: the number is greater than 1.0 so successive events produce growth.

The Faberge "She told two friends." campaign is an example of soliciting viral growth with a traditional advertising campaign.

In the second group the number is less than 1.0 typically expressing yields. We call the combination of the two an Avalanche.

Perhaps the best known example of a cost Cascade is described in Moore's Law: the observation that the density of transistors in a microprocessor has doubled every 18-24 months for the past thirty years. At the same time, production yields have increased in the manufacturing process.

Example 1. Marketing and Sales Cascades: Getting the Customer to Sell on Your Behalf

In the 1980s, a famous shampoo TV commercial anticipated today's social networking by creating the catch phrase: "I told two friends. And she told two friends."[1] The shampoo maker, Fabergé, has since repeated a version of this "word-of-mouth marketing". The commercial has the potent mathematics of exponential growth behind it. In theory, after just 32 generations of recommendations, just about every woman on the planet would be contacted. A good name for such marketing mathematics is "the Virtuous Cascade."

"Negative Cascades" also exist. Consumer marketers become very concerned if the repeat purchase rate on a new product is low because dissatisfied buyers not only fail to purchase after their initial trial, they may well counsel others that the product is a "dog". And research on word of mouth suggests that

[1] Faberge advertisement video:
http://www.youtube.com/watch?v=TgDxWNV4wWY&feature=player_embedded

negative word of mouth is more potent than positive word of mouth with more friends and acquaintances being told about product dissatisfaction.

Referral strategies don't have to be used just for the initial purchase. They can also be used to change the perception of a brand prior to purchase. State Farm Insurance in 2010 began running a referral oriented campaign, which instead of directly asking for business like its smaller competitors, advised potential customers to validate the quality of service and cost from its forty million customers. And as an aside it pointed out that its existing customer based was bigger than the next two competitors.

Example 2. Exponential Growth

Another example of the power of exponential growth, from the earliest days of the Internet, email services such as Hotmail initially based their growth around a novel concept for the time — free email service. The math of this Cascade was more advantageous than the Fabergé tell two friends Cascade: one customer might be emailing to 10 or more non-users. At an infection rate of 10X it would only take 11 generations of referral to reach every human being on the planet with a ten times referral rate.

Example 3. Learning Curves

A third example of a Cascade comes from the well established idea of an experience or learning curve. In the same way that viral marketing in any given period is affected by your prior success in attracting customers, manufacturing and process yields improve as companies become smarter about a production process. The more you produce the smarter you get at producing and the lower the cost per unit. What is less well understood about both production and marketing Cascades is that the economics of the business can be looked at in two radically different ways.

1. The "accounting view" looks at the business based upon the current period's manufacturing costs and installed base of customers. With an "accounting view", a company might price its product or service based up today's costs, which are higher that next year's cost per unit.
2. The "strategic marketing" views looks at the business based upon the speed of descent of the cost per unit and the rate of growth of customer referrals. A company with a strategic marketing perspective has the option of pricing its product or service based upon where its average cost per unit *will be,* taking into account the projected improvement over time. If you price based upon your future costs, your price is lower, adoption is faster and you get to your lower costs more quickly; and you make it more difficult for competitors.

Take for example, the difference between microprocessors and batteries. Historically, microprocessors have doubled their performance over a period of 18-24 months. In contrast, battery technology has improved in the range of 6-8% per year, which means that it will take approximately 10 years for battery performance to improve by a factor of two or a 5-7X slower rate than batteries. Strategies and economic expectations that make sense in businesses based upon quickly improving microprocessors may not transfer readily to businesses whose success is based upon slower improving battery technology.

Implications of Cascades

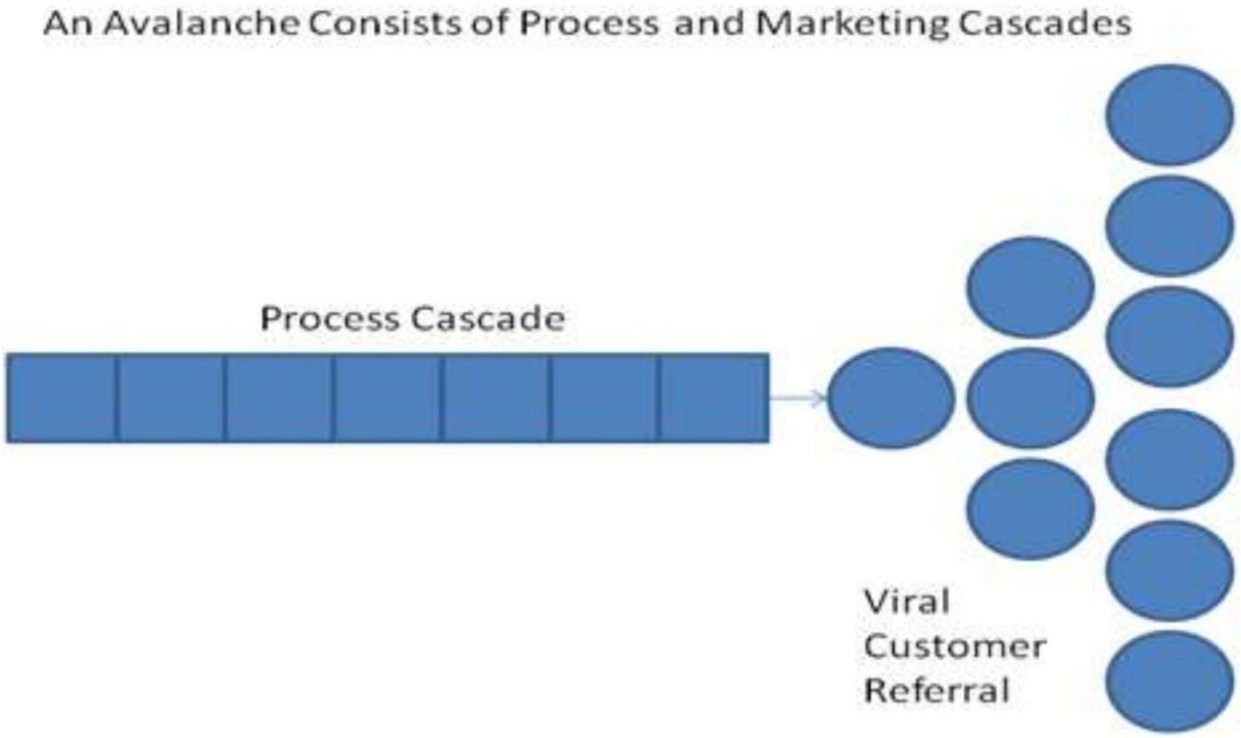
For modern-day digital strategists, these examples of Cascades offer four notable lessons:

First, *referral is an exceptionally powerful marketing approach* because one satisfied customer can, with encouragement, positively influence many other customers and often do so at very little cost, lowering marketing and sales costs, and increasing profitability. Just as importantly negative word of mouth needs to be managed quickly, particularly when it shows up in a highly visible tweet or highly visible rating on a popular e-commerce site.

Second, *analyzing and projecting yields over time i.e. rates of change of yields or the first derivative, on sequences of processes is a powerful way of creating or rejecting investment opportunities*.

Third, innovating yield models on *both* production and operational processes to achieve a *Virtuous Cascade*, and combining it with sales and marketing referral models represents a useful framework. It can help evaluate new markets and markets in transition from one stage of the market life cycle to another. Process Cascades (which reduce costs and improve value propositions) plus Customer Cascades (exponential growth in customers and customer referrals) create an "Avalanche" of advantages.

Fourth, the planning, budgeting and incentive systems of most companies are typically too short. As a result, Cascades that occur over multiple planning periods are likely to be given short shrift by employees and those evaluating their performance.



The mathematics of Cascades often surprise managers. Year after year improvement in performance transforms markets in ways that seem almost ridiculous at the beginning of the evolution. Cell phones today are more powerful and capable computing devices than the initial personal computers of the 1980s. The old joke is that if cars had improved as much as computers have in the past fifty years, a Rolls-Royce would cost a penny and get 1000 miles to the gallon.

Dramatic performance change has four obvious effects:

1. *Usage can go through the roof.* Consider how many computers, lasers or MP3 players you own today and few people may have owned thirty years ago. A social networking sites such as Facebook has roughly a billion registered users.
2. *Prices can drop to the point where the cost of the product is actually unimportant to usage.* Today a microprocessor can cost less than $5. The first generation of calculators cost between $90 and $250 and were based upon a much less powerful microprocessor with highly limited capabilities. Today a cell phone's manufacturing costs in nominal dollars (i.e. less than the inflation adjusted cost of an early calculator model) about what a high end calculator used to cost. Or course, a smart phone has much more functionality that a simple calculator. In fact, the profitability of the service contract is sufficiently high that some phones are provided for free in exchange for a two year commitment.
3. *The breadth of application increases dramatically with dramatic increases in the number of competitors using the technology*. WiFi is increasingly an assumed feature in many product categories, e.g. cell phones, music players, DVD players, TV sets, printers, home automation, etc.
4. *Knowledge about previously obscure products explodes.* Today, eight year olds want cell phones and MP3 players. And it is hard to keep the under five crowd away from smart phones and tablets.

Even resource rich and technologically advanced firms like Xerox, IBM, Microsoft and Digital Equipment Corporation significantly underestimated the size of their markets in the early stages of product development because they viewed market size through the lens of the past and not through exponential performance improvement. IBM's CEO's initial reaction to the development of the computer was that there was demand for about 8 computers in the US. Digital Equipment Corporation's CEO could not see the point of a personal computer. Intel, one of the most successful companies in the world, has found it difficult to date to match its success with computers in the application of microprocessors to mobile devices where volumes are five higher but revenues per unit lower. (In mobile processors, non-Intel ARM processors dominate when measured by unit volume).

Because potential Cascades are not always obvious early on in the market assessment process, commonly used management techniques for forecasting, resource allocation and scenario analysis often

do not consider the prospects of rapidly increasing demand and dramatically dropping costs And, indeed, even the creators of a unique technology don't always understand its potential to transform markets and create a Cascade of new applications and customers.

Process Cascades can also be the source of incredible competitive advantage. Google's recent ascension to the top ranking of translation software occurred because the company took the radical approach of selecting a Cascade technology for developing translation. Instead of using human-specified translation rules, Google used its massive computing power to automatically process more than two billion documents that had already been translated by organizations such as the United Nations.

In effect, the project demonstrated a particular learning curve driven by the number of documents processed. Google's Big Data, machine-based, pattern recognition, statistical approach to translation proved (in less than three years) to be superior to more traditional rule-based translation programs that had taken decades of person-years of laborious rule documentation to develop.

Classifying and Ranking the Cascade Portfolio

For most companies, the first step in managing Cascades is often to ask two important questions:

1. How would we handle a business strategy where the production process requires a multi-year strategy?
2. Would our strategy, culture and incentive systems allow us to invest in a business where the triggering Cascades is more important than initial profitability?

Loosely speaking, Cascades can be grouped into five major types:

1. Customer Cascades
2. Production process Cascades
3. Business model Cascades
4. Product innovation Cascades
5. Ecosystem Cascades

An organization built on sound Cascades will often produce superior financial performance and, in some cases self-financing strategies.

The Cascade Portfolio: Examples

	Self financing	***More capital intensive***
Customers	Viral and social marketing	Direct sales plus referral
Production Processes	Iterative software development	Learning curves with pricing based upon future cost structure
Business Model	Experiments using someone else's product or platform	Platform creation
Product Innovation	Fast time to market and rapid generational product introduction	Free use of service with conversion to paid model at higher levels of use
Ecosystem	Complementary investment and product development by third	Investment in ecosystem in order to grow supporting

parties	infrastructure	

Customer and process Cascades are the most obvious since they are often the most visible within organizations. But the three other types (business model, product innovation, and ecosystem Cascades) may be less visible in some companies and receive less management attention so they are worth spending some time describing.

Business Model Cascades

Amazon, the successful online retailer, demonstrates the idea of business model Cascades. Amazon's initial business model was based on two very simple ideas.

> *First*, an online retailer could carry less inventory than a chain of supersized bookstores such as Barnes & Noble. It would have fewer stock-outs because it could manage a single inventory and it could access slow moving inventory from its wholesaler, Ingram, or directly from publishers, without having to carry the inventory in its own warehouse. It could preempt and hold inventory of popular products such as Harry Potter books in order to increase its reputation for reliability.
>
> *Second*, its initial products, books and CDs did not require significant personal interaction unlike, for example, trying on a pair of shoes. They were, as a result, low risk purchases for buyers.

Today, Amazon's initial capabilities—selling standardized goods—have created a "platform" and enabled business model extensions in numerous areas, including many areas where product reviews, social marketing and business models matter more than in the early years. For example, entertainment content available from Amazon includes new and second hand CDs and DVDs, purchasable or rentable streaming/downloadable videos, secondhand books, and digital books deliverable on the Kindle hardware or on Kindle software for Windows, Macintosh, or iPhone/iTouch/iPad/Android/RIM and Windows platforms.

Today, Amazon sells to customers, provides its platform for retailing to less technically capable retailers, and sells cloud computing services. It has understood that its platform cost structure is driven by scale. Co-opetition with other retailers allows it to build scale advantages faster than competitors and iterate more quickly.

Business model and platform cascades are driven by the typically *incremental* nature of the capital investment required and the reduction in risk, due primarily to improved understanding of some aspect of the value chain. The lower capital costs make such innovations easier to justify, easier to test, and often less likely to fail.

Product Value Cascades

Product Value Cascades are common in consumer electronics. While from a user perspective, it is generally a mistake to buy a first-generation product unless one has an urgent need for it, for the vendor, the first generation of a product is often a test to determine what customers can or will use. Companies that learn quickly from their users can iterate product improvements faster than competitors, gaining advantage and reducing sales and marketing costs.

	Company A (3 month iteration cycle)	Company B (6 month iteration cycle)	Company A Advantage
Initial Value Proposition	1.0	1.0	0%
Value Proposition at End of Year 5	6.7	2.6	158% value advantage

Consider two firms where Company A innovates every three months and Company B innovates every six months, and where each iteration improves customer value by 10 percent. At the end of five years, Company A achieves a value improvement of 1.1 to the 20th or 6.7 times more value than the initial product. Company B improves value performance by 1.1 to the 10th or 2.6 times the initial value offering. The more effective innovator, company A (assuming no overserving of needs) has a compelling value advantage.

Digital cameras illustrate product innovation Cascades. As the cost of high-end features has dropped, storage, sensors size and sensitivity, display screens, automatic dust cleaning, face recognition, and HD video have moved quickly from professional grade to point and shoot.

What's more interesting is that the sum of all these falling cost curves suddenly enabled a new game-changing category of camera— a type of camera such as the Micro Four Thirds standard . The small and mirror-less standard from Panasonic and Olympus now competes with large, more complex high-end single lens reflex (SLR) cameras made by the traditional industry leaders, Canon and Nikon. This new category of cameras offers close to SLR quality images and larger sensors in a smaller point and shoot size plus the flexibility of removable lenses. Customers quickly understood the benefits. In the United Kingdom, this new format achieved 10 percent market share in the removable lens camera segment almost overnight. (http://www.dpreview.com/news/1003/10030401gfkq4salesreport.asp)

In contrast, niche competitor Ricoh launched a product line on the assumption of a different Cascade, one that combines the lens and the sensor into one mountable unit, a strategy now possible because of the decreasing cost of sensors. Sensors are now almost "throwaways". When you remove your lens module from the camera, it can contain a sensor to match to the optical characteristics of the lens. Performance in the short term may be high or even superior, but the Cascade probably goes the wrong way (and is not very green). Because sensor technology continues to change quickly, the Ricoh approach runs the risk that improvements in sensor performance will make the device obsolete. Consumers who understand the high rate of sensor performance improvement may prefer to invest in camera lenses without sensors and with a 10- to 20-year life rather being tied to a less modular system such as Ricoh's.

The entry of the Micro Four Thirds standard (and its competitors) into the high-end dSLR camera market demonstrates how intersecting Cascades can suddenly and completely disrupt a market. The Ricoh case is a situation that will reveal how consumers will make purchase decisions based upon their judgment about the rate of product improvement or Cascades.

Ecosystem Cascades

In a networked world, ecosystem Cascades matter a great deal. Larger ecosystems tend to grow faster and attract more attention than smaller ecosystems. The ecosystem of a business is, of course, analogous to the ecosystem of a biological system such as an island. On an island, plants, herbivores,

first level carnivores and second level carnivores all depend upon each other. Economic geography and biology both point out that large markets (and biological ecosystems) support more variety of niches. Companies that succeed in creating rich ecosystems of suppliers, resellers, consultants, related products, services, etc. build a large barrier to entry that can deter or put at disadvantage other potential competitors.

Researchers who have investigated these network effects observe that larger ecosystems (and also more popular web sites) often grow much faster than smaller ecosystems because the value of being associated with a large ecosystem is higher. Linking to a much linked web site is more valuable that linking to a rarely linked web site. Their growth cascades faster.

Developing an application for a Windows platform addresses more customers than designing for proprietary UNIX operating system platforms. The Android Play store is in a catch up game to match the historically wider choice in Apple apps.

The growth of web links to sites on the Internet is also not homogenous: it tends to be faster for bigger sites because they are more valuable. Because they are more linked to, they are found more easily by search engines, visited more often by users and become more valuable at a faster rate than smaller competitors.

Assessing and Exploiting Cascades

Formally identifying and prioritizing a business' portfolio of Cascades often requires a fresh perspective to see opportunities that might be missed by the conventional wisdom residing within the organization.

The steps for exploiting Cascades are conceptually straightforward. The challenge is measuring, estimating and monitoring the rate of change. Steps include:

1. Identify the possible Cascades and document past Cascades that have contributed to success.
2. Develop high-level estimates of the opportunities caused by or threatened by Cascades.
3. Map the opportunities against scenarios for your business.
4. Review the rigidities in your system that prevent the pursuit of Cascades.
5. Encourage small experiments to gain experience with Cascades. These may have to be pursued in a separate organizational structure or within hybrid internally or externally staffed teams.
6. Reward those who develop new skills and learn from the early stages of Cascade experiments.
7. Monitor the rate of improvement.

Riding the Avalanche

Understanding and triggering Cascades means investing in processes that start small and grow. The key is to understand and manage these Cascades in a thoughtful way rather than let them happen accidentally. If they do happen accidentally (and many will), organizations need to have internal processes in place to support them as soon as they are understood or identified. Determining how to encourage internal Cascades, where and when to invest in them and, just as importantly, how to nurture external Cascades will determine who succeeds and fails in many industries.

Another way of thinking about Cascades and Avalanches is to consider them from a quality perspective. Measuring where you are today is less important than figuring out *how fast you are improving*. In industries such as automobiles, where improving productivity and product quality has been key to achieving word of mouth, high ratings from reviewers and lowering the cost of ownership, the most successful automobile companies such as Toyota (and those competitors that have tried to imitate Toyota) have focused on the rate of improvement (the first derivative, mathematically) rather the current product quality.

In fact, too much emphasis upon current quality levels may freeze the system and increase the riskiness for managers wanting to improve quality. Programs need to be put in place to provide a minimum hurdle for a proposal, but reduction in risk for experiments that will provide opportunities for learning or improvement.

It is, however, important to remember that Cascades have their limits. Markets have limits. Iterative product innovation can exceed users' needs (perhaps revealing a disruptive innovation opportunity). Any portfolio of Cascade opportunities will likely include Cascades that should not be pursued or which have reached the point of diminishing returns.

Questions for the Reader

1. Does our project evaluation include dynamic modeling of possible revenue outcomes based upon use of viral marketing approaches?
2. Can we use models to make explicit improvement assumptions so that we can measure success by tracking the rate of improvement?
3. Are there active programs in place to measure learning and feed it back into both marketing and production processes?
4. Are we using a waterfall or iterative approach to product development?
5. Are we doing sensitivity analysis on modeling the sources of revenue growth and cycles of learning?

Chapter 23 – Guidelines for Product Development and Competing in a Zeitgeist Market

"Evolutionary memes for Zeitgeist times."

1. Product owners need to have sufficient power to keep development fast and focused. Decision making processes must be focused on rapid decision making and dispute resolution.
2. Researching and measuring what customers value and will pay for is a non-negotiable requirement for success. Avoid over-delivering.
3. Test user-interfaces against different Personas and use-cases. Don't assume a general purpose interface – the one obvious to engineers or developers – is adequate for most buyers.
4. Wherever possible, don't develop. Buy or rent the technology to speed time to market.
5. Don't sell a platform unless your target is developers and your value offering is enabling something they wish to do. Sell a product with targeted features, a service that solves a particular problem or a solution that makes the problem go away.
6. Don't try to be all things to all people. Communicate clearly what your product does and deliver it. Don't be seduced by all the possible buyers and uses.
7. Don't get confused by what the product could do with sufficient time and budget and what it actually does well, day in and day out.
8. Prune features ruthlessly to get the product to market and use technologies that facilitate iterative upgrades.
9. If you are developing a business idea without reference to what others may be developing, then assuming that all the spontaneously developed similar ideas are approximately equally as good,

the probability of market share goes down as the number of new entrants goes up. If you have 3 players in the market, a simple minded model would suggest a 33.3% market share. If you have 100 players, a 1% market share is more likely. A more reasonable assumption is that some competitors will have superior value offerings and market shares will be weighted to those offering superior value. Analysis and quick imitation of superior value in other markets may permit rapid catch-up or leapfrogging of offerings before competitors with superior value reach your launch market.

10. Assuming that competitors have equal ability to generate awareness and obtain distribution, offering a higher value proposition will increase your referral, win rate satisfaction over other competitors. The extent of the higher win rate is likely to be influenced by the availability of and your ability to reach opinion leaders, reviewers and perhaps retailers providing positive ratings on your product. There probably exists for each major segment in the market, a level of value offering that is sufficient for you to obtain market share leadership in that segment. Measuring the value requirements of each segment through market research can be mapped to your development budget to prioritize development efforts and timing. If different segments demand different value propositions, planning should be multi-generational and anticipate how generational product improvement and product line extensions will succeed with predicted evolutions of competitors, some of which will have dominance in particular segments or regions.
11. Demand creation that provides clear messaging targeted to the correct segment and perhaps use-cases can be used to gain faster trial and sales.
12. Post sales support is likely to increase customer usage, customer satisfaction and generate superior word of mouth, ratings, referral and bulk purchases.
13. Superior availability and awareness for your product may increase market share against parity products, but without superior reviews, ratings and word of mouth, the advantage may be lost.
14. Analyzing your cost of development and launch will provide an estimate of the budget required to compete with your product. However, imitating someone else's product is typically less expensive that designing it from scratch. The conservative approach is to assume that your offering can be matched more quickly and at lower cost than your product launch required.
15. As the future is unpredictable in general, and particularly difficult to predict when there are many Zeitgeist competitors, scenario analysis may provide a time saving approach to anticipating how the market will evolve. Scenarios should be developed in particular for both reactive strategies, i.e. dealing with many competitors, and also for market shaping strategies, where you or competitors attempt to reshape the structure of the market through acquisition of key suppliers, supplier preemption, roll up of competitors, or superior control over distribution channels desired by other competitors.
16. Unless you can figure out a major way of achieving cost advantage over your competitors, alternative approaches to differentiation will be more useful as a way of increasing your rate of learning, scale, scope or capacity utilization. Pricing strategy, business model choice, selection of customer segments, delivery processes or technology choices may have the most impact on your value proposition.

17. Analysis of non-users, light users and heavy users may reveal ways of expanding the market, increasing volume consumption by light users or capturing heavy users in order to grow your volume.
18. Time to market does make a difference, but not as Robert Cooper points out at the expense of quality.
19. Product designs should, wherever possible, be based upon information about successes and failures in multiple markets including international markets.
20. Estimate the costs for competitors to switch markets and segments and create a map of their potential marketing moves.
21. Evaluate business models that increase certainty and reduce areas of risk for purchasers in order to make decision making easy.
22. Introduce programs that reinforce loyalty, bundled purchases and easy upgrades.
23. Provide programs that separate product or service purchase from financing decisions to enable users to have choice in cash flow.
24. Seek business models that have negative cash flow requirements, i.e. the faster your grow, the more cash is spun off, as this will permit you to grow faster than competitors constrained by working capital limits.
25. Wherever possible turn fixed expenses into variable expenses to permit rapid and scalable growth.
26. Take an outside-in perspective on all interactions with your organization and seek to make interactions as short and easy as possible in order to minimize lost sales and be a preferred purchaser. An outside-in perspective is particularly important for existing businesses attempting to increase the use of self service via e.g. the Internet or mobile devices.
27. Fire bad people quickly. One bad person can detract from the productivity of 10 good people.
28. Pay your top people much more than they think they are worth. The pay-off will be large.
29. Keep good teams together.
30. Use agile development approaches rather than waterfall development to increase motivation of the team and ensure that projects are more likely to be completed and deliver something of value to customers.

Questions for the Reader

1. Do we provide training to ensure that innovation is based upon what we believe to be best practices in innovation?
2. Do we train all managers so that they understand when they are supporting or detracting from innovation projects?
3. Do we have a culture of truth so that individuals are rewarded for telling the truth about progress?
4. Is feedback frequent and honest?
5. Do employees feel free to propose iterative and agile development approaches rather than nailing down all aspects of a project in a classic waterfall development approach?
6. Does our organization realize that all products have software consequences?

Chapter 24 – Performance Improvement in a Digital Zeitgeist World

"Building a corporation without an architecture is like trying to build a house without load bearing walls." Davidson, Gellman and Chung, Riding the Tiger, 1997

I once ran a large meeting for a service offering of a major well known hardware vendor. One of the questions that came up was the loyalty of its customers. Without exception, everyone in the room claimed that customers were extremely loyal. That was until I, as an outsider, pointed out that only five percent of their hardware customers used their training services, and 95% used the competition. The group promptly became embarrassed. This type of blindspot can occur easily in an organization where an employee is surrounded by information and reports on customers (but not on non-customers) and it is one of the reasons why innovative companies bring in customers, suppliers and outside experts to "kick them out of their rut".

When a large company proceeds down the path of digitization, its existing culture can be a source of strength or weakness. Its employees may feel empowered or helpless to innovate. Supporting systems may encourage experimentation or encourage marching down a well defined road without looking to the left or right.

So the question arises, how should the digitized business be monitored and managed? Are there any guidelines or best practices that can provide a starting point for monitoring and assessing future directions? The answer to this question probably varies depending upon your position in the organization. Consider the following different situations:

CEO or Divisional CEO (*Your attention matters*)

Harvey Gellman, the first person to buy a commercial computer in Canada in 1952 and one of the earliest computer consultants in the world, observed over his long and successful career that companies only got good information technology if the CEO demanded it. The same rule seems to apply for the transformation to a digital business. Without CEO direction and support, the chances of success are low.

If you are the CEO, you may feel uncomfortable with rapidly changing technologies that underlie your business, but as I have argued continually throughout the book, when the economics of obtaining customers, producing products and services, and designing new products and services are changing dramatically, attention to digital transformation is no longer optional.

Even if you have already appointed or intend to appoint a Chief Digital Officer, *your attention matters*.

Chief Digital Officer (*You need friends and enthusiasts*)

As a CDO, you have likely been appointed because you have that rare combination of marketing and technology skills that is hard to find. You feel comfortable with technology, are likely a bit of a technology geek yourself, probably have acquired or developed products and projects in the past. And you have had success in commercializing new products and services.

Your biggest challenge is likely the culture of the company. The larger the company, the more people need to be involved in even the smallest decision. And success will require unleashing the tiger of employee creativity, which is likely to make your workload impossible.

You must therefore, simultaneous be strategic and demonstrate some quick wins, be political and enlist enthusiasts who can leverage your personal time, change the organization to put in place programs (perhaps a digital business program office) to facilitate processing of proposed innovation ideas, and become an educator and influencer. Your riskiest move will probably come from seeking out the iconoclasts in the organization, perhaps people have failed with prior innovations, and back them in new projects or ventures.

VP Strategy and Business Development (*Reminding people that we should not 'straight line' the past in our projections of the future*)

The major advantage of the role of the strategist should ideally be the permission to consider the evolution of the business over longer time horizons. The digital challenge is that exponential change can appear small and relatively insignificant over one or two planning periods. Over more iterations, improvement in performance is qualitatively different and transformational.

Voice recognition, automatic language translation, document scanning, and web search are four examples of technologies whose performance is reminiscent of Arthur C. Clarke's famous law: "Any sufficiently advanced technology is indistinguishable from magic." His other two famous laws are, by the

way, “When a distinguished but elderly scientist states that something is possible, he is almost certainly right. When he states that something is impossible, he is very probably wrong.” and “The only way of discovering the limits of the possible is to venture a little way past them into the impossible.” (Reference Wikipedia, http://en.wikipedia.org/wiki/Clarke%27s_three_laws)

Strategy at its simplest can be thought of as making the current business successful and creating new businesses to replace the current business. Digital transformation can therefore, be thought of in at least three important spheres: first, improving the economics of an existing business, second, creating a new platform for growth, or third, investing in complementary businesses that will enhance other investments.

If we take the shareholder value of the company as a metric, the value is composed of four components: the existing business, identified new businesses, the effect of complementary businesses, and sometimes very importantly, a value that is ascribed to *unidentified* businesses. This fourth category of value is, in a sense, the consequence of innovation success. It’s a bet on the more generalized capabilities of the team and sometimes, the quality of relationships with customers. A company that has shown a consistent capability to innovate, improve and combine complementary businesses, gains a potential financing advantage over its competition. The challenge for the strategist is to ensure that success in the current business does not stifle the new platform, make complementary investments less likely, or prevent the birth of the new businesses.

VP Marketing/Product Management (*In a less certain world, contingent products and testing make lots of sense*)

In high tech firms, the VP of Marketing is often a separate role from the VP Product Management. The sheer complexity of product management with its different development cycles than the marketing cycles of learning is difficult for one person to manage without delegating the two roles. This difference in cycles of learning poses the largest challenge for such management teams. Marketers, in many industries, learn faster about customers than do product developers. And it often take longer to develop improvements to processes and products when you are in a reactive model.

But there is an attractive solution that, in a sense, parallels the idea of contingent planning in scenario analysis. It is the concept of multiple development for advertising campaigns, user interactions, processes and products.

In a traditional IT world, the cost of information technology was so high, that it was unthinkable to consider multiple process and product development. But today, with much of marketing revolving around measurable user interactions, A/B testing is both affordable and necessary. In a similar way having a broader product portfolio can also make it easier to shift product production as fashions, tastes and usage patterns vary. Modular development also provides greater development flexibility, though what constitutes a module or building block may vary dramatically by industry and market.

If you pursue platform or multiple product or process development strategies, the shared development cost can in some cases be reduced. Having a product ready to go, or set up for quick promotion addresses the cycle time inconsistencies between marketing and development.

CIO (*Adding an outside-in perspective*)

There is no simple way of talking about any CIO's job. It's big. It's busy. It's complicated. And people's expectations keep on changing. For most CIOs, the mission of IT is complex. It includes:

1. Maintaining existing systems and ensuring that they are resilient and recoverable.
2. Providing information to managers that enables them to improve the business and its operations.
3. Managing external relationships with suppliers, customers and other key stakeholders.
4. Assessing new opportunities and systems.
5. Managing crises and unplanned subterranean or "grey" systems that got put together by business managers in a hurry.

The digital transformation adds three new areas:

1. Integrating e-commerce, corporate web information, social networking information, marketing campaign information with customer information and other support systems in the company.
2. Improving analytics on the resulting "Big Data"
3. Redesigning external interfaces with the company from an outside-in perspective to improve the experience of customers.

The impact of these new areas can potentially be large. Customer analytics should improve the ability to service customers better. Persona-based user interface design and data integration should increase customer satisfaction with user interfaces for both e-commerce and product interactions. For many businesses, improved outcomes should be seen in frequency of visit, customer satisfaction and referral, better product and service ratings, and higher sales.

CTO (*Agile development without annoying customers*)

A good CTO has excellent judgment about the difference between bleeding edge and leading edge products. Yet, he or she must also wager on uncertainty and place bets on technologies, people, process technology and new value propositions. For many businesses experiencing the effects of digital technology, there are six key strategies:

1. Invest in gaining a deep understanding of users, their goals and needs and how different personas and segments require different offerings.
2. Build and deploy test products and interactions and measure their appeal. It is, however, important to ensure that test products do not damage the brand. A succession of leading edge test products can, if done badly, reduce the likelihood of adoption of a more successful products.
3. Imitate and upon occasion improve upon the current best of breed.
4. Measure usage and referral about early products.
5. Wherever possible seek to obtain learning early and inexpensively by obtaining interactions with customers before you have your own offering, e.g. by distributing third party products or branding someone else's product.

6. Assume iterative development, particularly for product categories where usage will change customer expectations.

VP Finance (*Rethinking financial goals*)

For public companies, meeting earnings estimates is often raised to the level of a religion. One extremely well known software company is so keen to demonstrate quarterly and annual performance that consultants recommend only buying their software at quarter end, when sales people are under pressure to close sales. The discounts are often even bigger just before year end. For this company, the consequences are in the range of hundreds of millions of dollars a year, perhaps as much as over a billion dollars a year.

In effect, the company has trained its buyers to expect discounts. Unwinding this training is likely to be difficult. This deadline driven behavior seems to us be in marked contrast with the success of companies that don't have to discount. These companies are managing to a different playbook. By focusing upon value creation for customers, they are more likely to be selected for reasons of choice rather than reasons of price.

Research also suggests that disclosing strategic drivers of the business reduces investor uncertainty and increases valuations. Higher valuations mean easier and lower cost fund raising, which in turn translates to more capital to grow the business faster. For example, in the fiercely competitive digital photography market, an investor would likely prefer to invest in a vendor which discloses is having success selling cameras with removable and interchangeable lenses. One camera body sale may trigger multiple lens sales. In contrast, a compact camera is often sold primarily on price and is, as a result, much less profitable.

Controller/Cost Accountant (*Dynamic costing for changing products*)

Costing, product and relationship profitability in a digital age often have to be framed as strategic decisions. As a result, judgment is important to helping internal clients understand the profitability of their product, process or product. It's also important in preventing self-deception.

Consider the following different views of the world:

1. Single product profitability vs. product family profitability.
2. Single period profitability vs. multi-period profitability for a product, spare parts and services.
3. Single product profitability vs. cross selling profitability
4. Experience curve based cost curves
5. R&D allocation over different assumptions of users
6. Total cost of ownership vs. total value of opportunity analysis (TCO vs. TVO)
7. Multi-generational profitability over more than one generation of product with assumptions about installed based marketing success.
8. Relationship profitability and share of wallet.

And then against these profitability analyses, one needs to look at value created for customers and the costs created for customers as outlined in Chapter 13 where we look at the Total Value of the Relationships for the customer, and the Total Cost of the Relationship for the customer.

Chief Risk Officer (Active management of supply chain and delivery risk)

Resilience

One important insight about successful companies that depend significantly upon digitizing is that they are also digitally resilient. Parts of the business, e.g. IT or web sites, can "break" without destroying the entire business. Resilience may exist at some fraction of capacity of normal operations or at some lesser level of performance. When companies are under financial pressure, there is a huge tendency to skimp on IT investments or the implementations of architectures that support the desired level of resilience. And without review, past assumptions about resilience may become out of date.

Resilience also exists within the supply chain. Some companies have discovered that contingent suppliers may not be able to deliver when the primary supplier goes down, because competitors have also contracted with the contingent supplier, leading to oversubscription of the contingent supplier's resources.

Recovery

Digital resilience is not the same as recovery of capabilities. Companies can be equally resilient, but the time and cost to return to prior levels of profits and performance may be different if they have taken different approaches to recovery. Different speeds of recovery require different mitigation and recovery approaches and naturally have different cost structures.

Redundancy

In highly distributed globally businesses, modular and redundant supply chains, manufacturing and distribution make sense in a world of increasingly extreme weather. The emergence of on-demand cloud computing can provide similar redundancy for information technology. The key issue here is to make decisions based upon the revenue and profit loss from being out of action, rather than basing decision purely upon risk and cost issues. The total value of the lost opportunity may be significantly greater than the total risk adjusted cost of ensuring sufficient redundancy.

Questions for the Reader

1. Is the head of information management considered a senior executive and does he report to the CEO?
2. Does the CEO invest time in the digital strategy of the firm and signal its importance?
3. Do we have a program office in place to encourage the design, planning, and ongoing implementation of digital strategy?
4. Are we incorporating appropriate outside expertise in the development of our digital strategy?
5. What is our plan for increasing internal capabilities around digital strategy?
6. Do you have a plan to ensure that in emergencies your customers can still communicate with you?
7. Under different disaster scenarios, what is the cost and time period to recovery? What time period is assumed?
8. How resilient is your information technology architecture? Where is there a single point of failure? Where is there redundancy?

Chapter 25– Acquisitions, Scale and Disruption in a Zeitgeist Market

"A business that wants to be able to innovate, wants to have a chance to succeed and prosper in a time of rapid change, has to build entrepreneurial management into its own system. It has to adopt policies that create throughout the entire organization the desire to innovate and the habits of entrepreneurship and innovation. To be a successful entrepreneur, the existing business, large or small, has to be managed as an entrepreneurial business." Peter Drucker, Innovation and Entrepreneurship, 1985

"There's no such thing as a global strategy without China." Bill Roedy, former CEO of MTV

The obvious characteristic of a Zeitgeist market is that there are more new entrants and more competitors. The downside of more entrants is clearly the risk of having to compete with so many competitors. The upside is that there is a wide variety of technology under development and potentially a wide range of acquisition candidates. The wider range of business models, products, services and technology may also offer a series of "laboratory experiments" from which new insights about the types of value customers are seeking. Interpolating may also reveal opportunities for new offerings.

With venture capitalists typically being biased towards investing in single product offerings and single business models, the probability of failure is exceptionally high for most new entrants, particularly if you believe that a Zeitgeist market will force successful strategies based upon services, solutions and experiential marketing and sometimes also on platforms. A narrow focus among available companies

makes picking up an acquisition attractive particularly for large businesses with existing customer relationships or complementary value added.

In some markets, there may be an opportunity for a vertical integration play. In other markets, the opportunity may be product line diversification. For some companies, the acquisition may be focused more on improving internal processes and increasing capabilities. In rare situations, roll ups or creating a large presence out of combining multiple small players may be possible.

To put in another way, much of this book has focused upon differentiating an offering vs. the competition. But acquisitions represent an alternative strategic model – changing the rules of the game, by changing the structure of the market, or the value added available from one supplier.

It's worth understanding that high tech acquisitions are far more evanescent that traditional acquisitions. There are three reasons for this slipperiness.

> First, small acquisitions are often highly dependent upon the brains of the initial technical team. Lose the team and you lose much of what made the company valuable.
>
> Second, product life cycles are often extremely short. Past success is no predictor of future success. Evaluating an acquisition means understanding what is in the development pipeline and the degree of loyalty of customers. Perceptions of momentum are also important particularly for platform oriented companies competing for third party support.
>
> Third, because a Zeitgeist environment is global in nature, the value of an acquisition can be affected quite dramatically by international events.

China

One example of the third issue is the industrial policy of China. China is sitting on roughly $3.4 trillion of foreign currency reserves, most of which today is invested in US government debt. China is faced with the problem that if it reflates its currency, which is what a high level of reserves would normally signal, then its exports will drop, increasing unemployment and social unrest. If China converts its dollars to other currencies, the US dollar will drop and the relative price of Chinese exports will increase, again causing unemployment and social unrest in China. It is, as a result, increasingly likely that China will only allow a small increase in its currency appreciation. Chinese businesses will increasingly seek to invest in the US via direct investments (e.g. Chinese auto parts suppliers investing in the US), and through acquisitions (e.g. Lenovo's purchase of IBM's personal computer business or the proposed purchases of European holiday village operator, Club Med and meat packer, Smithfield Foods by Shuanghui International). The consequence of this type of investment is likely to be tighter linkages between the Chinese owned US operation and its Chinese parents and suppliers.

China's industrial policy goals include acquiring international brands that increase the value capture by Chinese businesses, who wish to move from being suppliers and assemblers to marketing their own brands. This ambition raises the potential volatility of markets and increases the risks for competitors in markets where China has ambitions.

Scale and Competitive Position

Corporate expectations about scale often bias a management team's perception of market opportunities and the likelihood of competitor success. The growth of economies in Asia demonstrates how new investment activity in this fast growing area of the world may so change the scale of businesses that North American businesses may be far more at risk than they realize.

At least three types of Mega-Scale Competitors are likely to be worth considering: Asian based competitors, Internet based thin markets and new usage patterns in high technology products.

Managers' Current Assumptions About Scale

What we know and expect is, not surprisingly, determined by what we have seen and experienced. American managers, accustomed to operating in what has historically been the largest market on the planet take for granted that they operate at economies of scale not available in smaller markets. Much of America's competitive advantage is derived from American companies' ability to operate at larger scale than their competitors. In some markets, the scale of China and India is currently and potentially significantly larger. For example, China is estimated to have 1.2 billion mobile phones as of April 2013 and India almost 900 million in comparison to roughly half a billion users in Europe and the US base of approximately 328 million (June 2012).

Scale is important and often underestimated. In the early days of the European Common Market, now the European Union, French writer Jean Jacques Servan-Screiber argued in his book, *The American Challenge* (*Le Defi Americain*) that American multinationals were more adept at exploiting the expanded European community than European firms.

In contrast, foreign managers from small countries show a consistent pattern of failure launching in the United States because they do not understand that not only is the American market much larger than their smaller domestic market, it is also many times more competitive. Canadian firms are often blinded by the 10:1 rule – that the US market is typically 10X bigger than the Canadian market, and forget that the US is more competitive than it is bigger, perhaps 20X or more greater competition. It has regional, national, and highly targeted niche competitors, creating an intense competitive environment to which they are unaccustomed. South Korean companies have a bias towards offering a broader product line that is economically unsustainable in the US.

The key insight from economic geography is that as in population biology, small markets such as South Korea support few niches and therefore, companies tend to be more generalist. Large markets support many niches and foster the fierce competition that has laid low many international entrants.

The Impact of Chinese Scale

With China developing at a rapid rate, many companies have realized that they need to participate in the Chinese market. In GM's turnaround, the retention of Buick as a brand name was largely driven by the success of the brand in the Chinese car market. But looking at scale impacts means that American managers should consider the possibility of much more dramatic shifts in value chain scale. A recent video illustrates the problem:

http://www.archdaily.com/88245/video-ark-hot is a short video that demonstrates the construction of a 30 story hotel in 6 days using a highly modular and prefabricated building approach. Although modular in design and construction, the Ark Hotel building has been built to survive a 9.0 earthquake.

China is building cities to accommodate a new urban population of roughly the size of the United States (around 230M-300M people) over a ten year period. This scale of construction offers the opportunity of rethinking construction processes to dramatically speed up construction, lower construction costs and as a side benefit "green" the construction process. As a by-product, this type of scaling up in an industry generally, seems to promise a subsequent domestic bust unless capacity is used to service new export markets.

The speedy construction of the hotel above ground structure in the video was, no doubt, aided by the lower cost of labor in China and the fact that the foundations were completed before the structure was erected; but the implications of the scale change are potentially dramatic for companies that don't participate in the massive construction taking place in China. The scale of the business is utterly outside any thinking that a manager in the US might consider. Such a building would be more likely to take 9 months or more in the US.

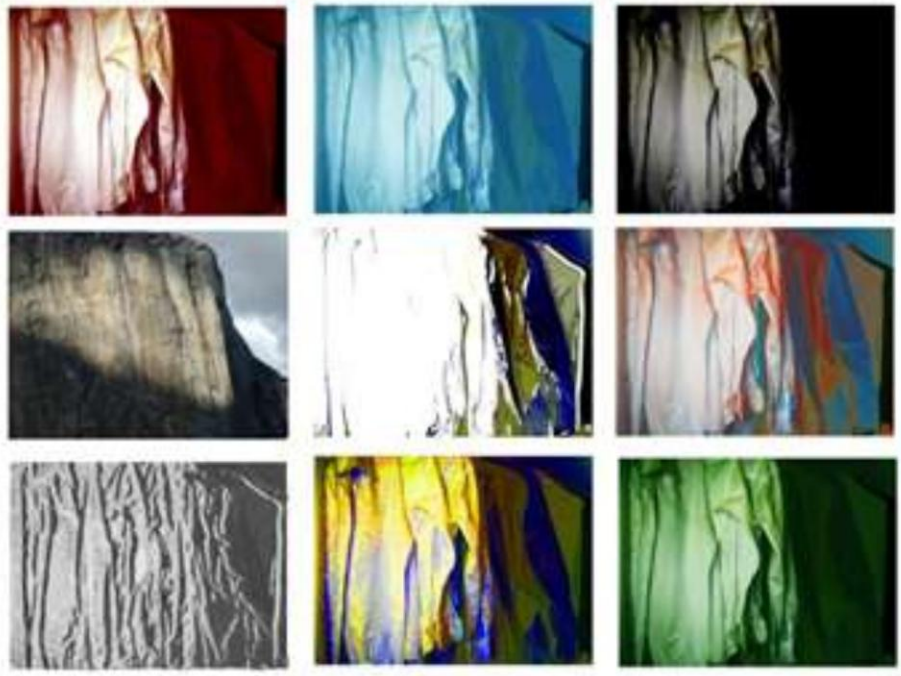
While the US has a history of ventures promoting modular construction, companies such as Marshall Erdman, founded in the 1940s have not been able to make this strategy successful, but China's accelerated growth demonstrates a new potential path and type of competition

In other words, stepping beyond this narrow industry specific construction example, in any industry where volumes in China are large, a failure to consider the emergence of a disrupting Chinese competitor with different experience of scale could have dramatic impact upon relative competitive positions.

Questions for the Reader

1. Are we scanning the environment for acquisition candidates that could increase our value capture as a business?
2. Are we tracking companies with complementary products that could take advantage of economies of scope when combined with your business?
3. Are there opportunities for a roll-up series of acquisitions in our market?
4. Does our planning include scenario analysis to take into account major foreign investment in your industry?
5. What moves are we making to invest in China so as to understand potential competitors and deny competitors complete control of the Chinese market?

Chapter 26 - Toolboxes, Program Offices and Learning from Failure



"Failure is an orphan and success has many parents."

Investors and executives don't really like talking about failure. Part of the problem is the natural tendency of human beings to remember their successes and disassociate themselves from failures. The data from failed projects is often quickly buried. But academics who have researched failure have generally drawn the conclusion that more is learned from failure than success. And conventional wisdom among Silicon Valley venture capitalists is that failure is part of the maturing process of a manager.

Failure often sensitizes a business or a manager to the need for assembling sufficient pieces of the puzzle for digital innovation to work. It may also reveal biases and misjudgments that represent useful learning – a cycle of learning for new perceptions and knowledge.

Over the past three or four decades, some rules of thumb have emerged about failure. We can summarize them in the following way.

1. Large projects are riskier than small projects.
2. Projects which involve technologies you are unfamiliar with or which are unproven have higher failure rates.
3. Pursuing innovation in adjacent areas to your business has a higher success rate that pursuing innovation in unrelated areas.

4. Success is more likely if you don't tackle too many new areas at once. If it is a new product category, try it in a market you are familiar with. If it is a new geographic market, try a product you understand well.
5. Try to avoid launching new products where success requires many different and dependent plans to go right. A go to market strategy that depends on less coordination is likely to have a higher chance of success.
6. Avoid designing information systems at the front end of the project before you really know what you are doing. Design should be iterative.
7. Retain the key people in your organization so that you don't build a project and lose the expertise.
8. Consider scalability. Information management projects often fail when then get big. Amateurs assume that projects and technologies will scale. Professionals begin projects by estimating size, measure throughout the project, and engineer for scalability.
9. Always start small and prototype.
10. Assume failure and plan for failure.

Failure is also a matter of definition. One project with a major pharmacy operation which revealed this perspective. This company has been very innovative and had developed many useful IT applications, but internal adoption has been low for a variety of reasons, the most major of which was that it was a conservative and regulated industry. When a new CEO decided to focus upon performance improvement, a program office was put in place with internal and external experts, a new production model was designed and prototyped with 500 stores. Some production processes were centralized and knowledge intensive customer interactions were maintained at the retail outlets. The team like to joke that they divided the business into a "Genius Bar" portion of the business and a MacDonalds portion of the business with excellent business results. (O'Meara, Bob and Huseby, Todd: "Looking at Failure with a Fresh Eye" A.T. Kearney Executive Agenda, http://www.atkearney.com/executive-agenda/full-article/-/asset_publisher/0HoTu01PO8ov/content/looking-at-failure-with-a-fresh-eye/10192)

The basis of the prototype and part of the reason for the success of the new and more efficient processes was the organization's inventory of past underutilized IT projects that could be easily combined into systems for supporting the new processes. What had been perceived as failed or at least underutilized projects became an enabling technology toolbox with powerful impact upon the profitability of the business.

Digital Capabilities

A good professional, such as a carpenter, brings to his/her work four important capabilities:

- Personal knowledge about projects that he has done in the pasts or has contemplated doing in the future
- Tacit skills for tackling sub-tasks of the project, e.g. creating a bookshelf or the leg of table
- Knowledge about use of tools, and skill and familiarity with the tools he/she owns
- A network of possibly complementary professionals that can help on larger projects

The same breakdown exists for developing digital strategy. Companies and their staff possess:

- Knowledge about IT and digital transformation projects that they have done in the past or have contemplated doing in the future
- Individual practical skills that can be deployed in a project
- Knowledge about the existing IT infrastructure and organizational processes
- The availability of complementary professionals that can be brought in to help on projects.

What makes information technology different than carpentry is that it must deal with both IT *and* business and organizational consequences in its design and implementation. And users, no matter how experienced, have difficulty in assessing their needs, specifying short term deliverables or understanding the architectural implications of their evolving needs. Building a system is no guarantee that it will get deployed or used as Todd's pharmacy client had demonstrated.

There are, as a result, two important consequences:

First, successful digital business transformations must often include active change management. In many companies, the use of a program office has proven useful. A program office is accountable for ensuring that the proposed change is implemented. The managers in the program office, whether internal or temporary experts from outside the organization are less likely to be distracted by the day to day running of the business.

Second, those responsible for information management, whether it be a Chief Digital Officer, a Chief Information Officer, a Chief Technology Officer, or a project architect are faced with two important dimensions of the change program. The first dimension tends to be project management related – getting things up and running on time to meet commercial needs. The second dimension is building capabilities, knowledgeable people and technology that represent an architecture that will, in the future, enable rapid change and support of relatively unpredictable needs. Complicating these two dimensions is the challenge that one can choose to iterate an architecture over time, so that what is first deployed may be supported by a temporary architecture that will be replaced in the next release.

This may sound awfully theoretical, but consider the experience of organizations with massive investments in data warehouses. Constructing a data warehouse has proven to be a very expensive exercise. One well known East Coast Bank spent $55 million on its first generation information warehouse. Data always has to be cleaned up to make it useful. And owning lots of data is not very valuable unless you do something clever with it. Given the vagaries of corporate budgeting, sometimes the classic change management strategy of being selective and using a phased approach is more likely to be successful. Seeking a quick turn-around win with obvious business impact has two consequences: first, stakeholders are reinforced in their support for information warehousing, and second, the project team is likely to gain knowledge, benchmarks and the ability to estimate subsequent projects activity more accurately. And by tackling a subset of the problem, deficiencies in internal tools and capabilities can be identified in a less public way.

In competitively volatile Zeitgeist environments, scenario analysis is often useful for anticipating and designing strategies for responding to sudden change. Triggers are identified that will initiate contingent plans in order to speed up response to a major environment change or competitive action. But such plans are often more focused on the market and product side of the business rather than on the underlying information management portion of the business that is required to support the newly triggered contingent plan. An IT department that can deploy new systems and processes quickly to support contingent plans is potentially very powerful.

Questions for the Reader

1. Have we inventoried the digital capabilities of our organization?
2. Have we inventoried the knowledge and skills of your technology staff to understand which skills are being used and which are available?
3. Have we developed training plans to broaden the knowledge and competence of our staff in anticipation of a more uncertain environment?
4. What past projects, successful or less than successful, have we analyzed for lessons learned?
5. Have we assessed the flexibility of your underlying architectures and understood where we are currently or potentially have a competitive advantage or disadvantage?

Chapter 27 – Big Data and Its Implications for Digital Transformation

"It is a capital mistake to theorize before one has data." Sherlock Holmes in , Arthur Conan Doyle, A Study in Scarlet, 1887

"Data matures like wine, applications like fish." James Governor

We have already met the issue of Big Data frequently throughout the book, but it seems worth a particular section on its own. Computers have been used for record keeping, accounting and decision support for decades, but it's worth considering whether Big Data is both strategically and operationally important in a Zeitgeist world, and if it is, for what types of business and tasks.

Storing information on a computer has gone through four phases historically.

The first generations of information storage were often fairly clunky. Computers were slow, software tools were complex to use and batch processing was typical. Filing systems tended to be flat files like spreadsheets or hierarchical in organization.

The second generation of modern database storage is typically thought of as being based upon IBM's development of SQL or standard query language, first proposed by IBM researcher Edgar Codd in 1970. Relational databases using SQL were designed to efficiently store data in collections of tables and also relationships between data in different tables. Reports were rarely ad hoc.

In the 1990s, a new and third generation emerged, Object Oriented Databases that were optimized for storing complicated data and associated methods (programs) that could operate upon the data. OODBs were possible because processing power had become inexpensive and so had hard drives, so that optimization for storage efficiency could be traded off against the flexible development advantages of an OODB.

However, the fourth generation of storage technologies plays in a different world. Whereas the first three generations of storage tended to be deployed primarily on individual computers (such as mainframes, minis or workstations which were all quite individually expensive), today's storage technologies typically assume a data center consisting of hundreds, thousands or hundreds of thousands of inexpensive blade servers, set up in racks. The software that runs upon these rows of blade server racks is typically run in a virtual environment – that means that the software activity is independent of the physical location in which it is running and the container with the software running inside it can be moved easily from blade server to blade server or expanded across additional blade servers. Fourth generation data storage is also virtualized with data moveable from storage device to storage device without reprogramming.

The fourth generation of technology is, as a result, less expensive than previous generations, typically more flexible (though IBM will tell you that it had distributed virtual processing on networked mainframes way before blade servers) and it offers an additional benefit: if you have a task that can be decomposed into lots of little tasks, you can speed up the analysis of a problem by using parallel processing (running different tasks on different blades or on different processing cores within a blade server). You can also handle more analysis of more users in real time. This capability turns out to be rather important. Historically, transaction processing (e.g. taking an order over the phone at a sales desk) was a *short transaction* that placed few demands upon computing power. In contrast, decision support (now often referred to as Business Intelligence) is a *long transaction* that often requires extensive analysis of numbers. It demanded a great deal of computing power. If you ran an analysis of millions of customers with your decision support tools, you might slow down the systems and interfere with the running of the business.

The massive requirement for interacting with millions of customers fortunately does not typically require processing all the information on all the customers at the same time. Rather, processing can be done one customer at a time. A new class of tools has emerged. Hadoop is the most popular, but these tools are typically referred to as NoSQL tools because they are optimized for large numbers of users and interactions.

So, when we look at some of today's largest and most computer intensive companies, they will have hundreds of thousands of processors, and, in some cases, more than a million. They will have customer interactions in the hundreds of millions or billions per day. Statistically, the high level of activity changes the rules of the game for these businesses. The reason is simple: if you have a small number of customers, and little data about them, then it is extremely hard to do statistical analysis with any degree of confidence. For the past three or four decades, only a few companies had large data sets which allowed them to do statistical analysis in a sophisticated way.

- Consumer packaged goods marketers had the advantage of relatively low priced and frequently purchased products so they could do good measurement. MBAs often went to consumer packaged goods companies such as P&G because it was like taking a post-MBA degree in how to apply quantitative methods to marketing.
- The largest retailer in the world, Walmart had a significant information warehouse because of its size. Its information gave it a negotiating advantage over its suppliers.
- Financial institutions had the advantage of large quantities of data for consumers from credit cards, which could be combined with other financial product usage. Clever financial institutions used this information to calculate customer profitability, change pricing and bundling models and design new financial products.

But as I have pointed out elsewhere in the book, e-commerce specifically and the Internet generally have changed the rules of the game. Activity that was previous off line, e.g. search the Yellow Pages for a relevant store, physical catalog searching, viewing product pages, comparing products, seeking reviews, putting products into a shopping basket or wish list, customer support activities, customer evaluations of products, referrals and ratings are now all on line. It's a treasure trove for a statistician.

In other words, we have the coming together of inexpensive distributed processing with a massive supply of new data. The result is Big Data – real time processing of lots of personalized information so that real time mass customization can occur. Featured products, recommended products, reminders about past product searches, pricing, coupons, reviews can all be tailored down to the level of the individual customer. And just as importantly, new segmentation analysis can emerge that would not have been easily visible to a human analyst. New products and pricing can also be inferred or constructed by interpolating product features in a set of products.

Big Data therefore, can be used in at least eight ways:

1. Improved real time interactions with customers by eliminating the need for lengthy analysis, done on a schedule unlinked to the customer interaction.
2. Improved advisory activity to reduce the amount of work for the customer to solve their problem.
3. Optimized pricing for the vendor.
4. Optimized value for the customer.
5. Creation of and interpolation of new products, features and pricing.
6. Predictive logistics that anticipates likely customer orders based upon actual interest earlier in the sales stages.
7. Improved user interactions based upon predicted interests, voice processing and choice presentations in interactions.
8. Faster identification of trends, new usage patterns or inflection points in product or technology adoptions.

Big Data and Healthcare

There are at least three reasons why Big Data is and will continue to be important in healthcare.

First, many drugs have different effects upon people with different genes. Existing drugs have been based upon the average effect in trials of people with heterogeneous genotypes. Increasingly drug effectiveness will be based upon understanding which genotypes are benefiting from a particular drug. Who are responders and who are non-responders? It seems likely that testing costs would become unaffordable if all drugs are analyzed against different genotypes, so it is more likely that the subtle effects of genotype and drug effectiveness are likely to be learned from monitoring after the drug is approved for use.

Second, in the US, where the healthcare system is particularly expensive at 18% of GDP and offers very poor return on investment, healthcare reform will increasingly focus on tracking best practices, routinizing the treatment of chronic diseases with lower cost personnel and treatment process reform.

Third, in the US, a major switch from treatment based payments to outcome based payments and penalties will trigger extensive treatment redesign. This redesign will require different tracking and analysis and will be based upon electronic medical record tracking and analysis.

More generally, healthcare is expensive and likely to become more expensive with the aging of populations. Home based healthcare monitoring and treatment is significantly less expensive than institutional delivery. Networked information flows from the individual via home measurement devices, email and cell phones will extend the web of medical information and monitoring.

Big Data and the Invention of New Products

Human beings learn in many different ways. One important way is seeing patterns and learning from them. Our visual and sound/speech processing systems work this way. A second important way is through the transmission of rules from individual to individual.

In the early days of computers, most programming was based upon the second method, the idea of specifying rules. In fact programming is largely about specifying the algorithm or collection of decision rules for solving a task. But over the past several decades learning of the first type, based on machine learning -- genetic algorithms, pattern recognition and induction tools have proven remarkably successful in analyzing complex data.

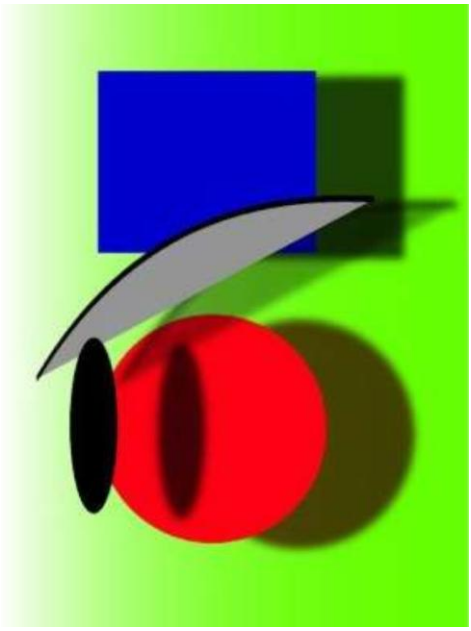
1. Genetic algorithms or programs that compete to analyze data with the best program surviving to spawn new combinations has proven successful in finding patterns in financial markets.
2. Pattern recognition has proved itself in numerous areas, including voice recognition, translation and font recognition in document scanning.
3. Search engine technology is based upon more that reference citation model for ranking web pages (i.e. the more pages that point at your page, the more important it is, and if a page that points at your page is important, its link to you is valued more highly); it now takes into account its success in finding a page that you chose to linger on (if you come back to the search page quickly the reference was presumably inadequate).
4. Fraud detection by banks and credit card companies.

One might suspect, for example, that Google's self-driving car technology was based upon collecting data from human drivers as they drove around photographing streets for Google Maps. Comments from a TED talk by the developers suggest that the software is based upon driving 140,000 miles of roads.

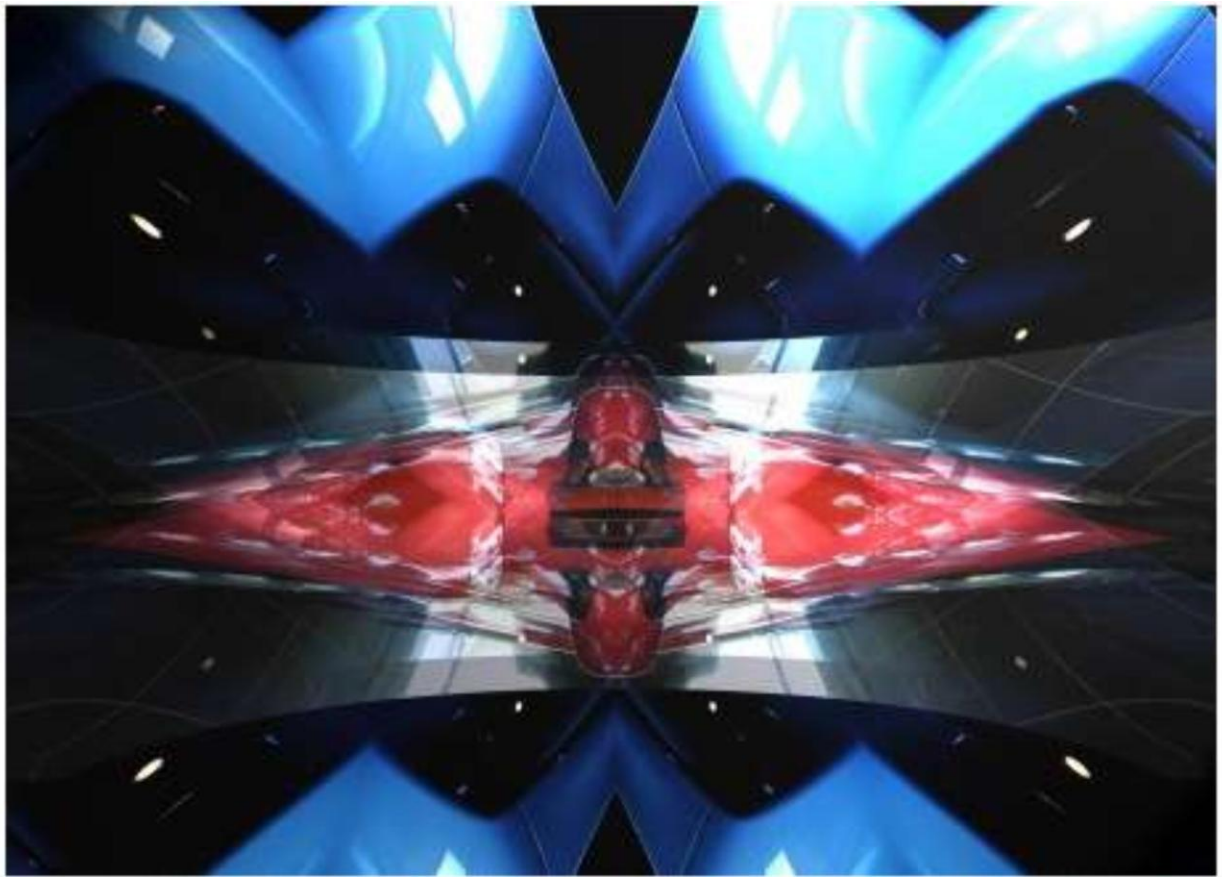
Questions for the Reader

1. Do we collect increasingly large amounts of information about your customers and users?
2. Do there exist external sources of data that can be usefully combined with the data we are or could be collecting?
3. Are we integrating useful customer information across all our information systems to enable higher levels of service, improved customer interactions and higher sales?
4. Are we experimenting with different pricing, product mixes, recommendation engines, etc. to improve our business?
5. Have we identified what information in our business is valuable and requires significant redundancy?
6. Have we attempted to determine what information our competitors or potential competitors are tracking and using?

Section 4 – More Speculative Thoughts on the Future of a Zeitgeist World



Chapter 28 – Counter Intuitive Zeitgeist Marketing and Intelligent Invisible Technology



"To every thing there is a season." Ecclesiastes 3.1, Pete Seeger, The Byrds

When you spend a great deal of time using technology based products, or even worse, developing technology based products and services, I think there is an assumption that all technology-based products are in principle "good" in some sense. I have spent a great deal of my career being fascinated with and developing technology. I personally use a great deal of technology in my live, as do my friends and colleagues.

However, there is, I think, a limit to the amount of time that human beings are willing to spend on technology interactions, monitoring the environment or one's body, watching videos, and listening to music in the same way that there is a limit to how long one should sit in front of a computer every day or to how much one should eat.

Netflix streaming services demonstrates a strategy for a saturated market. It simplifies one's life. No trips to a store. No worries about whether the product is available or out with another customer. No concerns over budget. It provides recommendations based upon your taste and ratings so it is no longer a purely self service cost oriented business. Its strategy is a response to a saturated market and time

starved customers. So are music subscription services such as Spotify or Rhapsody. And Pandora goes one step further in becoming your personal DJ.

In the food business, books by influential writers like Michael Pollan (*Cooked: A Natural History of Transformation*, *The Omnivore's Dilemma*, *In Defense of Food*) or Michael Moss (author of *Salt Sugar Fat*) have been educating readers about the merits of buying local and fresh produce, avoiding prepared food, minimizing salt, sugar and fat, and retaking control of cooking and eating. These authors are, in fact, revolutionary or revisionist, going against the grain of the commercial messaging of hundreds if not thousands of processed food manufacturers. They are, in a sense, anti-convenience and pro-outcome. They want you to be healthier both physically and spiritually.

Early signs of similar revisionism are evident in MIT Professor Sherry Turkle's book, *Alone Together*, which highlights the impact of social networks and computers generally on teenagers and their sense of connection. One could argue that the recent tragedy of two Boston students, unassimilated into American society or at least American values, being radicalized into becoming bombers is a small sign of the alienating effect of some aspects of the Internet.

In a more mainstream revisionism, those worried about the consequences of cell phones held close to the brain, the health impact of too much time spent sitting interacting with computers or watching TV and videos, the proliferation of spam and phishing, the decreasing usefulness of e-mail, and the use of distracting devices in automobiles, all may represents the early signs of reaction to the current pro-technology, self service Zeitgeist.

Additionally, many would agree that distraction is the enemy of focus and achievement. They are concerned that the seduction of the trivial causes distraction and interferes with work, without difficult to achieve discipline and restraint on the part of the user. For many tasks, frequent interruption prevents deep and complex thought. It certainly destroys the productivity of a programmer or writer. The implicit argument is that the *experience of using many trivial technologies* may add up to less than the sum of its parts in the same way that the experience of eating and socializing can be lessened by too much use of pre-cooked meals.

I am not arguing against the use of technology or consumer electronics (or even prepared food), still it is, I believe, worthwhile for a CEO, strategist, product developer or marketer to consider the possibility that some markets and uses will saturate or reach a level beyond which consumers and businesses lose interest. This decision point may come quite suddenly for some users. They may lose interest because they have too many relationships with technology vendors and self service based businesses delivered via the Internet. They may lose interest because they lack the ability to manage all their relationships and technology. They may become shell shocked by identity theft or cyber-fraud. Some may give up on the never ending need to recharge devices that always seem to be running out of juice and decide to simplify the number of devices they use.

As a result, the types of innovation required will be dramatically different. At this point, this type of innovation may not be part of the current Zeitgeist, but in the short to medium term represents a generational 'upgrade' to the current Zeitgeist. A new revisionist Zeitgeist may emerge in the same way

one industry may be replaced by another industry. It may not happen overnight, but it will influence the shape of the changing Zeitgeist. Hegel, the 19th century German philosopher wrote about history as two opposing forces bumping against each other, a thesis and an antithesis, with the result being a synthesis of the two opposing views.

Out of Self Service Comes a Market for Full Service

As an analogy for this revisionism take the simple example of self service. I argued earlier that self service is one of two major sources of innovation in Zeitgeist technology-based businesses.

In the food business, the introduction of the self service supermarket was a major leap forward in productivity in comparison to the traditional grocery store with a counter, where the owner behind the counter pulled what you requested off the shelf before totting up the bill. But in a self service world, *food delivery*, the complete opposite of self service has been a growth area.

For many technology businesses, there will exist products, services and solutions that are 'simplifying' for users tired of self service and the obligation to manage self service. This user need is a challenging task in many areas. Mobile application developers will often attempt to use location information, and other information about the user, to minimize the data input required from a user on a small and relatively difficult to use smart phone screen and to ensure that what is displayed is likely to be relevant. To date, this attempt has not been as successful as vendors have hoped.

An Example of Saturation with Technology

Many of the myriad services offered on the Internet require tracking of account user names, passwords, setting policies on email notifications, setting up automatic payment, making decisions on what kinds of mailings to receive. All of which are pretty simple if you have few on-line commercial relationships, but which can become overwhelming in aggregate. So tactically users now must subscribe to a secure login and password tracking service. Alternatively, they might shift their pattern of usage.

Perhaps even worse, the consequences of many of the decisions are not obvious. When Java is cited as a security risk, non-technical users need to know the difference between Java and JavaScript. Most users have no idea what an appropriate level of security setting is for their browser and many don't understand how to secure their WiFi network or the risks of an unsecured public WiFi network. And as I pointed out in the chapter on privacy, most consumers have little idea about how companies are using their information.

A personal example that illustrates the complexity.

> "*As a consultant, I do research on many industries, register at many sites, receive many newsletters. In the first few months of 2013, I reached a breaking point. Email on my smart phone had become impossible because of the overwhelming number of promotional emails and newsletters that I received every day. It had not been a huge problem in the past as I generally review my email at my desk on my computer with three screens and I had adequate filtering. But I was frustrated that I was not getting the same use out of my cell phone when I travelled or moved around.*

What were my top choices?

1. *Set up a new email and notify the important people in my life that they should use my new email.*
2. *Move from my corporate email account to a cloud based account so that spam filtering when done once in the cloud carries through to all my devices.*
3. *Unsubscribe from the various emails in order to reduce the ratio of information to noise.*
4. *Up the security level on my spam filter to the maximum.*

Now clearly, there are many other alternative approaches to the problem, but four listed are enough to illustrate both the problem and the consequence to the self service user. I decided, as an experiment, to see what would happen if I unsubscribed from all the newsletters I subscribe to (with a few exceptions).

Over a three week period, I unsubscribed from over a thousand web sites. These included both newsletters I had explicitly subscribed to and also marketing mailings that somehow had obtained my email. Some sites take ten days to cancel a subscription, so I did in fact unsubscribe from some sites more than once. I also deleted all the email – about 6,000 emails -- on my secondary cloud-based email account which had become overwhelmed with junk. My third and fourth email accounts have been kept pristine, so I was not drowning in spam in these low usage sites.

I had to take an active role in both these decisions, invest time, and get somewhat annoyed at the fakery of many spammers. I also sought out tools that could help with the problem and found the several I tried less than satisfactory unless I was using a cloud based e-mail service. During the process, it was not clear what the consequences of unsubscribing would be. While most of the unsubscribing worked reasonably well, my volume of Nigerian types of scams increased, suggesting that at least one of my unsubscribes was not kosher. And that's annoying."

Zeitgeist Backlash and Invisible Intelligent Technology

If the consequence of many people with the same idea is that the self service customers end up with more work, then it is likely that one way of succeeding in a Zeitgeist world is to step up a level of abstraction and ask the question, "What is it that the customer wants that I can do invisibly for them?"

Invisible intelligent technology that does not demand expertise, require difficult to evaluate choices, and insist on lots of attention is an idea easier to suggest than it is to deliver. But it may be a route for both commercial success and exceptional customer experiences that make products and services stand out from the crowd.

This notion of invisible intelligent technology, let's abbreviate it as IIT, is the *technology equivalent of a luxury hotel such as the Four Seasons hotel chain*. The luxury hotel you are staying in is prepared for you and your visit. Its staff anticipates your needs. Its staff answers your questions on the rare occasions that you need answers but does not intrude. The hotel has both standard understandable and predictable services such as a bell hops, restaurant, in-room service, laundry, business center and exercise rooms,

and also custom services that a concierge might do for you. The hotel chain uses technology to track and support the needs and preferences of guests, but it does not feel like a technology in need of mastery and self service. It does not create work, neither does it demand a best practice in learning how to use the hotel.

In a different space, top designer, Ding-Hoon Chang EVP and Head of the Design Team at Samsung puts it this way in 2013:

> "We are living in an era in which consumers are being flooded with complicated technologies and data. However, the direction we are moving toward is one where personalized services and functions are provided to consumers by ascertaining their individual needs and removing the layer where consumers need to give deep thought to their needs. We are developing means of interaction that are based on a range of more natural methods that go beyond the limitation of current remote control and touch modalities." (Shaughnessy, Hayden: *How Samsung Competes With Apple In Design*, **Forbes**, April 18, 2013)

His equivalent at Apple, Jonathan Ive put its slightly differently in 2012.

> "Simplicity is somehow essentially describing the purpose and place of an object and product. The absence of clutter is just a clutter-free product. That's not simple. The quest for simplicity has to pervade every part of the process. It really is fundamental."
>
> (Reference: http://mashable.com/2012/05/23/jonathan-ive-studio/)

In other words, Zeitgeist backlash products should feel like the experience of dealing with the Four Seasons and not like the problem of figuring out how to clean up the way you manage your email and spam.

Comparison of Self-Service Internet E-mail vs. Four Seasons Hotel

Area	*Dealing with e-mail*	*Staying at the Four Seasons*
Initial interaction	Lots of details to set up	One phone call or registration at site
Best practices	Deciding how many emails to have and how best to use them Use of email for subscription to newsletters Decision to permit emailing from target web site and privacy settings to permit third parties to email	Other than not eating or drinking too much and using the in-room mini-bar, no best practices.
Clarity	Rarely clear what the consequences of actions are when you provide your email or interact with services that use your email for identification	Always clear. Few negative consequences.
Expectations	Not well established, e.g. usage of email vs. RSS, expected volume of email, reliability of senders	Completely clear.
Knowledge about user preferences	Limited and inconsistent with other packages and services	Customers profiled in IT system and available across hotel chain
Pricing	Free except for a few premium encrypted services	High but clear
Add-ons	Unclear whether they are reliable and the current version works with current client email software	Visible on a menu Major uncertainty is around tipping policy

My belief is that this 'backlash' type of product, focused on simplifying life for customers, represents a potentially powerful way of competing in our current Zeitgeist environment, but it will require much more of a solution and experiential orientation than a product and service orientation. It may also require much more integration and intelligence than many developer are accustomed to embedding in their products and services. And that of course, is how expectations and Zeitgeists change.

It's also worth pointing out that while I use the Four Seasons as an illustrative example of a luxury hotel chain, other luxury hotel chains also pride themselves on their own high level of service. More importantly, the use of IIT is not limited to a high end hotel with premium pricing. Hotels at different price points with different arrays of service offerings can and do pursue similar strategies. In fact, the lowered cost of the supporting information systems make tracking guest preferences an IIT option for all hotels, though I suspect it might have more impact for hotel chains who have frequent traveler

programs. But the use of IIT as we have seen though-out the book, is motivated first by improving the experience for customers and only secondarily by repeat purchase. The assumption is that customers (or a significant portion of them) will prefer to return to a hotel if the experience is better than their expectations or their experience with other hotels.

Digital Tribes

One of the attractions of the Internet has been the open nature of the technology underlying the Internet which has permitted innovation and anonymity. Some writers have decried the walled gardens and complete hardware/services/app stacks that are being created by major firms such as Apple, Google, Microsoft and Oracle. But in a world where cyber-criminals seek to exploit the ignorance or good nature of Internet users, it is not surprising that Internet users must increasingly be cautious.

How then will Invisible Intelligent Technology emerge? It is and will continue to emerge in narrowly defined products, but it may also trigger a new category of wider competition: a new class of wrap-around services could emerge that would provide increased reassurance and authentication. Within the wrap-around service, certainty of identity, prevention of phishing and malware, spam control, cyber-attack control, monitoring of unusual activity, etc. may create a Digital Tribe where trust is high. Communication outside the Tribe would still be easy and possible, but the binary categorization of being within or outside the wrap-around, would make transition from in-Tribe to out-of-Tribe a simple and clear signal of a change in risk to inattentive or ill-informed users.

The performance and value offering of competitive Tribe environments would increasingly represent a platform commitment decision in the same way that today buyers make decisions about Windows vs. Macintosh vs. Linux, or Apple iOS vs. Android vs. Windows Phone vs. RIM vs. Mozilla Phone. Non-platform businesses would be faced with a new set of larger decisions about which Tribe platforms to support. Repressive governments will unfortunately likely use similar technology to control dissent.

The Zeitgeist Challenge and Economic Growth

There is also a corollary to the Zeitgeist Challenge. If the types of innovation being pursued today are much of a muchness, then smart strategy, as described in this book, can only create some kinds of competitive advantage. Other types of innovations and the creation of new industries *do* require breakthroughs. These breakthroughs may come from many sources, but it is likely that they will only occur in economies that commit to a longer term perspective than venture capitalists. They can only be created in societies with superior research and development, where educational attainment, diversity, creativity and the scientific method are valued. They will only emerge in societies where forward thinking politicians, policies, pricing mechanisms, and infrastructure investment are enabling of progress and remediation of past errors.

One way of thinking about the mix of innovation is to distinguish between four paradigms. This book has focused primarily on the first two paradigms, while superior long term economic growth also requires the third and fourth approaches.

Four Innovation Paradigms

Paradigm 1: Logical incrementalism	Widely shared independent development that falls out logically from usage or usage problems (Zeitgeist invention)
Paradigm 2: Strategic innovation	Selective construction of a business to maximize market share and competitive advantage (Successful Zeitgeist strategies)
Paradigm 3: Breakthrough innovation	Commercialization of a highly novel and difficult to predict invention
Paradigm 4: Creation of an ecosystem around the breakthrough innovation	Creating a new industry or ecosystem around the breakthrough and creating a self sustaining series of new commercializations and improvements.

The Renaissance and the Industrial Revolution were born of experimentation and enabled by mass education, the rapid dissemination of breakthrough knowledge, the development of practical tacit knowledge, and the scientific method. Such history is important for all of us to remember when we look at our current Zeitgeist economy. It surely suggests that we should not be deceived by the often smaller and, in a sense, “easier” innovations of Zeitgeist thinking. Rather we should vote and lobby for funding of breakthroughs when we see governments and politicians rejecting basic science. Those who fail to support basic research and development and substitute ideology or theology for facts fail all of us -- society, business, institutions and individuals in addition to damaging the environment and economic development.

Questions for the Reader

1. Where are we being unimaginative in our definition of innovation?
2. Are we investing to acquire skills and capabilities in solution development or designing and managing the customer journey of product use and resulting experiences?
3. Are we actively attempting to simplify the life of customers?
4. How are we making relationships with our firm more reliable, more trustworthy, more authenticated?
5. How are we building or participating in a Tribe to create a secure space for customers?
6. Are we supportive of basic research and the use of science in developing new opportunities in solving problems?

Chapter 29 - An Afterthought: Digital Tribes

"Dear, dear! How queer everything is today! And yesterday things went on just as usual. I wonder if I've been changed in the night. Let me think: was *I the same when I got up this morning? I almost think I can remember feeling a little different. But if I'm not the same, the next question is 'Who in the world am I?' Ah,* that's *the great puzzle*." Alice in Wonderland*, Lewis Caroll.*

If the future for a connected world is about managing connections and business relationships, then we can expect changes in the way that connections are managed. Cognitive psychology suggests that one of the ways we become expert is by recognizing patterns and using the patterns to simplify complexity. A chess master does not see chess pieces on a chess board, he sees multiple groups of 6-8 pieces. Experts *can* choose to see details or patterns and can shift up and down in levels of abstraction as required. However, expertise about what is trustable in a connected world is increasingly difficult even for the highly knowledgeable.

The Internet and the businesses that communicate over it are constantly changing. Recognizing the patterns of trust, attack and abuse is difficult today. Different people are protected by different spam

filters at work and on personal equipment. Different operating systems have different degrees of risk. People deal with different financial institutions, suppliers and retailers. The international exposure of a recent immigrant to a country may be different than a native born user.

I speculate, therefore, that simplicity means not just removing complexity from products and user interfaces, as the head of design at Samsung suggested in the quote used in the previous chapter; it is also about areas of, and membership in Tribes of trust. Many people have relatives, friends and colleagues that they identify as trustworthy. But they can still be fooled. They have transactions with business entities that incur different levels of exposure and risk. Intelligent invisible technology, if applied to this type of problem, needs to protect users from unexpected consequences, to automatically certify identity of web sites and emails, and transmission paths of interactions. Just as importantly, it needs to signal clearly the level of risk.

Consider the idea of downloading a piece of software that has been reviewed in a popular magazine such as PC Magazine, PC World or on a reputable hardware site such as tomshardware.com. For many readers, there is an implicit assumption that if the magazine provides a link for a download of the reviewed software, it is a safe location from which to obtain the software. But this assumption has proven invalid at various, supposedly curated app stores. And it is likely to be less true in the future, if we extrapolate cyber-crime growth.

It is likely that in the future, we will recoil at the idea of downloading uncertified, unauthenticated software due to the frequency of cyber-crime. On the vendor side, many financial institutions and corporations are reluctant to reveal their losses from cyber-fraud. But if cyber-fraud grows, a vendor with superior protection and superior relationship with its customers and suppliers would have a cost advantage over vendors that absorb losses.

As I write these words, a news story in the New York Times is being reported about a major $42 million theft. It involved multiple individuals in multiple countries and thousands of ATMs. The fraud scheme was based upon hacking a credit card processor in India and withdrawal limits for credit cards at RAKA bank in the United Arab Emirates. (http://www.nytimes.com/2013/05/10/nyregion/eight-charged-in-45-million-global-cyber-bank-thefts.html?hp&_r=0) Only the fact that credit card companies shield users from the costs of fraud directly causes companies and individuals not to be up in arms about this type of crime. It is certainly not the type of crime that that most companies or individuals could anticipate, identify or pay for.

A typical user would, therefore, be likely to participate in at least two Tribes: a business Tribe focused around his or her employer's activities, and a personal Tribe focused around non-employer activities. Simplicity tends to be scalable, so a simple model of trust is required. You are safe in the Tribe. You are notified if you deal with non-Tribe entities. Tribe to Tribe communication would be subject to validation. Unauthenticated and/or anonymous interactions could still exist, but would be explicit in the same way that browsers permit anonymous browsing or political dissidents might use Tor (www.torproject.org) to conceal their identity.

Much has been written about managing a public reputation on the Internet, the problem of being libeled by anonymous individuals, flame wars, misrepresentation, identity confusion, identity theft, etc. The value of communications on the Internet and between individuals and businesses is sufficiently important that membership in a Tribe may provide an alternative and more certain way of managing an identity with the support of entities, transactions and individuals within the Tribe, in the same way, that the authenticated existence of someone in a village is bolstered by the existence of accessible and authenticating friends, relatives, family, employers and suppliers. Tribes may provide a safety net around preservation of identity, character and reputation and be enabling of transactions without risk or perhaps with good enough certainty.

In a Zeitgeist world, it is not only business ideas and computer interactions that can be easily and quickly imitated, it is also the identity of businesses and individuals. In a Zeitgeist world, legitimate and illegitimate competition will be fierce. Constructing deep relationships and authenticated connections will be important both between businesses and customers, and between individuals sharing the values of a common Tribe in order for connectedness to remain trusted.

Chapter 30 - Post-Script: Competitive Advantage in a World with Zeitgeist Innovation

The Less Obvious Consequences of Digital Business Transformation

If in reading this book, you have become depressed, don't be.

I have suggested that it is easier to innovate because of the easier availability of ideas, imitation and technology but also claimed that it is harder to succeed. That remains true.

But digital technology also allows for genuine cleverness. And it is in genuine cleverness that some Zeitgeist businesses can be constructed successfully. What these businesses require is a higher level of creativity – some would call it lateral thinking.

Take, for example, the problem that customers seem to want to use your service at the same time. So, you have capacity problems. There are a variety of potential solutions.

First, you might be able to rent some additional capacity. Adding capacity in the cloud might work if you are mainly an information processing business such as tax processing firm, Intuit, that has two peak loads based on tax deadlines.

Second, you might target a different group of customers who have different demand characteristics. Perhaps you have a product where the demand from Muslims, Jews and Christians is different over their respective Sabbaths.

Third, you might decide to use price to control demand. It's an old technique, often used by service businesses such as hotels and airlines, who price differently at different times of the year or on different days of the week.

Fourth, you might choose to service the customers whose relationships are most valuable to you over customers with less chance of repeat business

Fifth, you might choose to acquire or partner with another vendor to capture the business and segment your customer base so as to divide up customers which have different value for each firm.

Sixth, you might decide, if perhaps you were a restaurant to offer take home dining, a delivery service or earlier meals in the day to expand capacity.

Seventh, if your brand is exceptionally strong like Starbucks, you might choose to deliver your product through a different channel, e.g. a supermarket, or via a subscription coffee club.

Seven ideas. Maybe they are not a fit with your particular business, but the key point is when information technology enables flexibility, the range of strategic choice is much greater than most people realize. Digital business transformation is not one path. It is potentially many.

Competitive Advantage

So, what are the lessons from this book? Perhaps the most simple answer is that there are no simple answers when it comes to Zeitgeist innovation.

Having lots of competitors should, I suppose, make you better as a business, but there is of course, no guarantee. As economists have pointed out frequently and Michael Porter pointed out in his first important book, *Competitive Strategy*, some markets are just tough to succeed in because it's easy to get into them. It's even worse when you have competitors for whom leaving a market is expensive or prevented by government policy. What Zeitgeist innovation does is amplify the problem – you have more competitors: they are less visible if they are in stealth mode or because they are internationally based in markets you may not be as familiar with.

So, you have to have a game plan. You have to be pursuing some basis of advantage that is difficult to imitate. I have identified ten sources of advantage that I think are important in a Zeitgeist Innovation market:

1. **Sales and marketing cascades**, where your success breeds success.
2. **Production cascades** where the more you do of something, the better you get at it.
3. **Superior value**. Whatever you offer has to be superior in value and the value has to be visible to the customers and users. In many cases, the development of value may require 'selective extravagance' in developing or delivering some aspect of the business.
4. **Specialization**. Value needs to be targeted based upon superior understanding of the customer. Averaging a value offering across customers with different needs may have worked in the past. It may even still work in some categories of products, but decreasingly so.
5. **Emotions**. Customers have to like you. They have to care about your product and want you to continue to exist. That may be hard to achieve in some product categories, but it's the kind of loyalty every marketer wants and needs. In most cases, it means being more caring of

customers, being more outside-in in your perspective and perhaps sacrificing short term profits for long term relationships.

6. **Superb execution and moving quickly**. Tough markets demand excellence in execution in a period when change makes execution particularly difficult. It sounds like a paradox. It raises the bar for how you select, motivate and lead people. It probably means that negative people who subtract value from your organization need to be fired or fixed.
7. **Training**. It sounds obvious, but well educated, well trained highly motivated employees make a difference. If you see employees as cogs in a giant machine, perhaps you need to rethink your values.
8. **Encouraging risk taking and learning from quick failures**. Risk taking is important if you are trying to improve your organization. There are always many reasons for saying no to innovation, particularly extreme innovation, but an iterative approach to risk taking can often allow learning at low risk and cost.
9. **Scale**. Understanding at what scale you need to operate to succeed. Yes, Zeitgeist innovation is based on the idea that barriers to entry are lower, but success often depends upon scale. The scale may be in sales methods, marketing, production, financing or some other aspect of the business. Scale continues to matter, but for many businesses it will likely be based eventually upon a global market not a national or regional market.
10. **Deciding what not to do**. In a fast changing world, you can't do everything. Deciding what not to do, what to contract out, where to cooperate with other companies is often one of the most important strategic decisions you can make.

Incremental Innovation, Creating Magic Through Continuous Improvement and Agile Value Capture

The thoughtful reader will by now have noticed that I talk about innovation in at least three ways in the book.

The first way is the theme of the book – the observation that many companies are making small, incremental innovations where the increase in value is modest.

Second, I also talk about the consequences of exponential change. Here the claim is that exponential change can over extended periods of time produce new levels of performance that are like magic, as Arthur C. Clarke pointed out. But even a technology experiencing exponential improvement in performance can suffer from a generational change in technology or process improvement. The key concern here is to have an innovation strategy based upon iterative improvement, scan for the risk of generational upgrades and also quickly identify over-servicing of customer needs.

The third idea is the changing nature of value. As markets mature or become more innovative, and competencies get distributed more widely, what may have been the source of value creation and value capture from customers may cease to be as important. The migration from product to service to solutions and experiential marketing illustrates one possible shift. When value is changing, iterative improvement needs to become more agile and scope needs to be reassessed more frequently. The scope of the innovative offering and the value creation changes more quickly than traditional project

management processes permit, not just waterfall, but also iterative development. Profits are most likely to be captured from discovering what customers crave and having the ability to change scope quickly to stay in a leadership position. Agility is not just about flexible product development, rather it is about helping customers discover what they need during the process of innovation development.

Author Biography: Alistair Davidson

Alistair Davidson has worn three different hats in his recent career: software CEO and business developer, consultant, and part time author. His entrepreneurial career includes software development for both planning decision support products and large software tools. He has worked in and consulted to a wide range of industries including international consulting firms, large and small high tech firms, media and publishing, financial services, healthcare service and equipment providers on a wide range of topics including: software development, business and product strategy, innovation and performance improvement. He has also worked as a strategic facilitator, mentor, venture capitalist and head of an incubator.

His first job was a financial position with a Citibank affiliate and his second a treasury position with Harlequin, the romance publisher, so he likes to joke that in his initial career he moved from the romance of high finance to the finance of high romance. He has developed over a dozen software products including three first of breed software products: the first strategic expert system with 3,000 rules about business strategy that advised users on their business and product strategy; a leading edge networked training simulation he designed and used to teach hundreds of telecom executives how to cooperate internally and compete in a world of converging technologies; and, a novel highly configurable information warehouse and business intelligence product using object oriented database technology.

In addition to *Innovation Zeitgeist*, Alistair's publications include *Seizing the Future* (with Ralph Fisher) on industrial policy, strategy and technology, *Riding the Tiger* (with Harvey Gellman and Mary Chung) on best practices in information management strategy and project management, *Turn Around!: A brief guide to starting and turning around software and Internet companies*, and *Silicon Valley Poems*, a collection of poems written upon the event of his move to Silicon Valley and a period of poor sleep. He is a contributing editor for *Strategy & Leadership* magazine and has occasionally designed/taught MBA courses in three countries. His articles have been published in a variety of publications including *The Globe & Mail*, *AI Magazine*, University of Western Ontario's *Business Quarterly/Ivey Business Journal*, A.T. Kearney's *Executive Agenda*, *Strategy & Leadership* magazine and various corporate web sites.

Alistair was born in the UK, completed high school at the University of Toronto Schools, and studied at Harvard where he obtained his undergraduate degree and his MBA. He holds three scrum certifications. His current hobbies include kayaking, tennis and photography, which makes him sound a whole lot more athletic than he is. He lives in Mountain View, California.

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This book would not have been written without Jeremy Hill. Jeremy saw the initial presentation on strategic product management (April 2013) upon which the book is based. It was his suggestion that the presentation should be turned into a book and he continued to encourage the project during its writing.

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Innovation Zeitgeist: Glossary

Agile

Software project and product development that depends less on up-front specification (as in the waterfall method), and more on an iterative development process. By extension, the use of a rapid development process and frequent revision, say for content development. Agile is similar to the idea of iterative development, but with distinction that changes to scope based on discovery of customer needs is more important in agile. A good read on agile development is James Shore's *The Art of Agile Development*.

Adjacencies

Adjacent businesses and products are ones that are relatively similar to existing businesses. The more adjacent a business, the more it shares characteristics with an existing product or business. The general thought is that adjacent businesses are often lower risk than businesses where a company has less experience with a product, market or type of customer. See Chris Zook's *Beyond the Core*, HBS Press, 2004.

Advertising supported

A monetizing approach for a product or service, e.g. traditional TV, magazines, newspapers, some web sites.

AI
First made popular in the 1960s, artificial intelligence is the term used to describe giving computers the ability to manage natural language and knowledge. The joke in the business is that once we know how to program it, it is no longer AI, just programming.

Alpha test
An internal test, typically of a software product.

Amplify
In the context of the book, the idea of amplification is a technology that magnifies demand for a product or service.

Analog
With digital technology, a signal is converted to numerical values, e.g. music is encoded in MP3 format which is then processed by a digital microprocessor and fed out to digital to analog converter that feeds electrical signals to an analog speaker. A vinyl record is an example of an analog signal. There is a one to one relationship with no processing required between the representation of the sound and the signal.

App/App Store
Shorthand for an application on a mobile store that can be downloaded to your mobile device. Now, extended to other operating systems.

Appliance
A type of digital application that minimizes the need to understand the operations of the device. By extension, you can differentiate a Macintosh or iPhone as being more like an appliance than a more open system such as Linux, Windows or Android, where the user has more control over the device.

Authentication
Narrowly, authentication is a term used to increase the certainty about the identity of a user. In the future, authentication may be a requirement for certain kinds of interactions on the Internet because of the growth in cybercrime.

Avalanche
The concept of exponential growth in customers combined with exponential improvement on the cost side of the business.

Back of the envelope calculation
In an uncertain world, scoping a project before you build is a key task. As a general rule, if you can't do a back of the envelope calculation about a potential project, you probably don't know enough, or you need to phase the project in order to keep it under control.

Barrier to entry
Economic factors that make it difficult for a competitor to enter a market.

Barrier to exit
Economic factors that make it difficult for a competitor to exit a market.

Behavioral psychology

An unfashionable school of psychology that focuses upon the relationship between observable behavior and patterns of reinforcement. When a rat presses a lever and is reinforced with food pellets, it learns to press the lever more. Different schedules of reinforcement produce different patterns of behavior. Shaping the behavior of a pet by reinforcing them with food is an example of the use of behavioral psychology. The school was made popular by B.F. Skinner.

Behavioral economics

A modern extension to economics that attempts to combine experimentation in the real world or a laboratory with the economic choices that people make. For example, organ donor rates are higher if the default decision on a driver's license is affirmative. Requiring a conscious decision to donate organs, requires work, and reduces donation rates.

Beta test

Testing a close to final version of a piece of software (or hardware) with customers to discover problems and bugs that cannot be found with internal testing.

Balanced score card

A popular management technique that attempts to balance off shareholder value improvement vs. marketing, production and employee performance. A fundamental idea is that shareholder value improvement is driven by performance improvement in a basket of metrics. No single metric is adequate for motivating managers. Testing the interaction of metrics creates opportunities for overall performance improvement. (Robert Kaplan, The Balanced Scorecard)

Big Data

Generally capitalized, Big Data is the fashionable term for describing companies that have large number of customers, many transactions, and large quantities of information about customers. Big data is also used for certain types of product development where machine learning can be used to create a new capability, e.g. font recognition, language translation, self-driving cars, pattern recognition in financial markets.

Bricks and mortar

Short hand label for non-ecommerce retailers or the physical retailing of hybrid retailers.

Blade server

A computer board that can be mounted and removed from a rack, permitting easier removal of defective boards and shortening the distance between blades in a rack.

Brand value

The value of a brand in signaling to consumers that purchase represents superior value, lower cost, prestige, reliability or some other attribute sought by buyers.

Brand equity

The value that a brand contributes to the value of a company in excess of its book value. See Chapter 2 for estimates of the brand equity of Amazon, Apple and Walmart taken from the *2013 BrandZ Top 100 Most Valuable Global Brands*.

Breakthrough innovation

A break though innovation changes the economics of a business, process or product in a way that cannot be achieved through small incremental improvement.

Bundling

Combining functionality, products or services so as to change the value perceptions of a user or buyer. In telecom, service providers are keen to sell triple and quad play services to lock in customers. Microsoft dominated the productivity software business by bundling word processing, spreadsheet, presentation software and email software at a price that made it irresistible even if you did not use or prefer a particular individual product.

Buffering

A common technique in engineering for managing bottlenecks. Streaming video is pre-loaded into a buffer on your computer or mobile device so that interruptions in the flow of video data are reduced. During interruptions, the buffer feeds the video signal to the display, while waiting for the interruption to end.

Business intelligence

A fashionable term for report creation and presentation, with the underlying assumption that additional functionality may be required for grabbing and manipulating the data that goes into report creation and presentation. The technology is often based upon multi-dimension spreadsheets, which are referred to as On-line Analytical Processing or OLAP.

Business model

The way in which a company makes money or monetizes its relationship with users. Common examples of monetization approaches include advertising supported, sponsored, financed by product placement, purchase, rental, and subscription "all you can eat" models. Business models are purely defined by the monetization approach but often also by the delivery method. Traditional video rental stores were standalone stores typically with three day rentals and late fees. Redbox uses kiosks in supermarkets and has unbundled pricing to a lower daily charge. Amazon Prime, Hulu and Netflix Streaming offer "all you can eat" streaming. Netflix disk subscriptions uses online ordering, delivery by US mail with no late fees.

Business model innovation

Changing the way that a company monetizes and delivers its product or service in order to survive competition or grow the business.

Cannibalization

Customers purchasing a less profitable products over a more profitable product, leading to a reduction in revenues or profits.

Capabilities
The activities that a company is able to manage and develop. Often addressed as part of the idea of core competence or key activities a company needs to be good at in order to succeed.

Capabilities based strategy
In an uncertain world, to narrow a definition of a strategy and the activities associated with the strategy may make it difficult to deal with change or invest in adjacent business opportunities. A capabilities based strategy places more emphasis upon building capabilities that can enable new products, services, solutions and relationships.

Cascade
A term used in Innovation Zeitgeist to describe iterative improvement in product value, production processes, ecosystem development, or business model evolution.

Capacity utilization
An important driver of strategic costs. The higher the capacity utilization, the lower the amortization of fixed costs for each product sold or customer served. A company such as Southwest Airlines that turns around its planes quickly, has standardized on one plane model, and has flexible employees achieves higher utilization of its capital equipment, its planes, lowering its overall costs and increasing profitability.

Capital budgeting system
Most companies have at least two types of budgeting: an operating budget and a capital budget. Software can be acquired as a capital expense with an upfront licensing cost and ongoing annual maintenance fees. Or it can be purchased on a monthly or period basis, which turns the purchase decision into an operating expense.

Chief Customer Officer
Some companies have created the new role of Chief Customer Officer to ensure that someone in the company is actively monitoring, managing and encouraging the company to look at itself from the customer perspective. This role is often associated with taking an Outside-In view of the company rather than letting managers in functional silos determine the interactions with customers and users.

Chief Digital Officer
A Chief Digital Office is often quite similar to a Chief Customer Officer. The difference is normally that the CDO has a stronger technical background.

Chief Information Officer
A CIO is traditionally the senior information management executive. The most successful CIOs often report directly to the CEO.

Chinese scale
One of the most important aspects of China's industrialization is the sheer scale of the country. For businesses where scale is important, rapid growth in China can change assumptions about the necessary

scale for successful operation. In a large market, more innovation may also occur, with many more niche strategies. Understanding what is occurring in China is a key task for most large companies.

Cloud-based

The term cloud is often used in a confusing way. With pervasive continuous networking and lowered networking costs, location of computing capacity is now more flexible. Cloud based computing is often used to describe private cloud computing (where the capacity is owned by the company using it), public cloud computing (where the capacity is rented from a third party), and hybrid cloud computing where the computing resources are a mix of company owned and third party capacity.

Co-creation of value with customers

An important insight about value creation is that some value creation in services is a created by the vendor and the customers. Customer ratings at e-retailers are one example where both are co-creating value. YouTube is another example, where facilities are provided by Google and content by both Google as a media company and by users uploading content. See C. K. Pralahad and Venkat Ramaswamy: *The Future of Competition: Co-Creating Unique Value with Customers.*

Competitive advantage

Competitive advantage seems like a simple concept. The challenge is dealing with the changing nature of competitive advantage. As discussed in the chapter on exponential modeling, competitive advantage generally revolves around the changing rate of value, the changing rate of cost drivers, and the targeting of customers.

Complexity or diseconomies of scope

Companies are faced with two choices around complexity. For some businesses, combining production of products allows the sharing of facilities and supply chains. For other businesses, attempting to manufacture, service or sell too many products increases the complexity of the business. The latter is a diseconomy of scope.

Content strategy

Content strategy can be thought of in two ways. One type of content strategy is the way in which a business bases its revenues upon entertainment products such as video, newspapers, magazines, books and music. The second type of content strategy describes the information about products and services, usage and benefits that helps a customer understand a product or service, appreciate its benefits, or understand how to use it.

Contingency planning

In an uncertain world, having a single plan is often insufficient. Scenario planning is a technique for painting a picture of different possible futures, e.g. a high energy price world, a low energy price world, a high energy cost, high renewable world. Business plans are evaluated against several scenarios to evaluate whether the proposed strategy will work under different assumptions. In many cases, significant alterations to plans is required. Identifying what events will trigger a need to alter a proposed plan leads to the creation of alternate plans, designed to enabled rapid reaction to shifts in the environment.

Co-opetition

The idea of simultaneously competing with and supplying a competitor. Sony provides camera sensors to Nikon, with whom it also competes. Samsung supplies components to Apple and also competes with Apple. See Adam Brandenburger and Barry Nalebuff's *Co-Opetition*.

CRM

Customer relationship management system is software for keeping track of prospects and customers, tracking contacts, potential sales, movement through a sales classification system, and other operational interactions with customers.

Chasm

An idea proposed by Geoffrey Moore (*Crossing the Chasm*) that when a market moves from early stage leading edge adopters to the mass market, the gap or chasm between the requirements of the early adopters and the mass market needs to be crossed.

CSF

Critical success factors or the things that a business needs to get right for a strategy to succeed.

Cycle of learning

The simple idea that human beings and organizations generally get better when they evaluate what they have done frequently. In traditional manufacturing, the goal was to minimize setup time for equipment, so long production runs were preferred. One could calculate the EOQ or economic order quantity, which was a sufficiently large production run to justify the setup costs. The idea behind a cycle of learning is that frequent improvement leads to superior value creation and cost reduction. One can model cycles of learning with an exponential growth model.

Cognitive psychology

A school of psychology that revolves around the idea that insights can occur and that pattern recognition is a core feature of perception. For example, both chess masters and regular people who are shown a chessboard for a fraction of a second can remember 6-8 pieces on a randomized chessboard. When shown a game, regular people's performance does not improve, but chess masters can remember 25-30 pieces. This result suggests that chess masters perceive patterns of 4-5 pieces rather than seeing individual pieces.

Compact digital camera

A digital camera with a small sensor, typically without an optical viewfinder. Small sensors have less square area per sensor element and as a result, are less good at picking up light, particularly in low light situations. Their dynamic range (ability to handle dark and bright areas of the picture) is always worse than large sensors.

Cross technology competition

A market where two or more different technologies can be used to solve a customer problem, e.g. a landline phone or a mobile phone.

Cross technology substitution
The situation where a customer substitutes one technology for another, e.g. using an Internet phone service such as Skype instead of a landline service.

Curated app store
An online store where listed applications have been evaluated to make sure that they are uninfected with malware and conform to store policies.

Customer agency strategy
The idea of acting on behalf of a customer, rather than trying to sell the customer more goods and services. See the chapter on *The Soapholder Effect*.

Customer innovation
Creating a new business based upon selecting a new class of customers.

Customer primacy strategy
The idea of acting on behalf of a customer, rather than trying to sell the customer more goods and services. See the chapter on *The Soapholder Effect*.

Cybercrime
A crime committed using a computer, e.g. stealing information off a computer or network, stealing passwords and account information for resale or withdrawal, taking control of a computer or network for nefarious purposes.

DanProd
A regression model that predicts the success of new products based upon the research work of Professor Bob Cooper and Danish innovation data. See *Winning at New Products*.

Demand creation
A piece of content, marketing material, program or other activity that indirectly creates demand for a product.

Denial umbrella
A new concept introduced in the book that is a parallel concept to a pricing umbrella. When a company maintains high prices, it holds a pricing umbrella over companies with lower prices, permitting them to gain market share. When a company denies the importance of an issue, it holds a denial umbrella over other companies that wish to address the issue.

Deviant user
A user that is using a product or service in an unanticipated way. Often deviant users are signaling opportunities or issues that will be important in the future. See *The Power of Positive Deviance: How Unlikely Innovators Solve the World's Toughest Problems* by Jeremy Sternin and Monique Sternin.

Differentiation
Commodity products are typically relatively undifferentiated. Differentiation changes the perception of a product, often by branding that communicates the relative riskiness of purchase, particular features or value propositions. Differentiated high value products are the most likely innovations to succeed.

Differentiated high value product
The most like to succeed innovations, according the research of Bob Cooper.

Digital
Technically, the representation of data in binary (one and zeros), but more generally the use of digital technology in devices, often including a microprocessor or controller, flash memory or hard drive, and sometimes sensors (microphones, video and still camera), and networking.

Digital business transformation
The idea that digital technology changes the cost of innovation, product development, enterprise management, production, marketing and sales.

Digital photography
Cameras that store image information in digital format rather than analog chemical based film.

Digitizing
Scanning information and storing it in digital format.

Digital innovation
An improvement in digital technology or the increased use of digital technology in changing the way that an activity is offered or delivered.

Digital transformation
The use of digital technology to transform the economics, capabilities or innovation capabilities of the business.

Discontinuity
A dramatic change in the characteristic of an external environment, market, product performance or customer expectations and use.

Diseconomy of scope
The same idea as diseconomies due to complexity. Excessive product, manufacturing or servicing complexity results in reduced performance across the product family or service offering.

Disruption
Disruption is used in three ways. Most people use the term to describe some significant upset to a market. Clayton Christensen, author of *The Innovator's Dilemma*, has used the term to describe two types of innovations: sustaining innovations increase the performance of a product, e.g. speeding up the processor in a laptop, and disruptive innovation, where a new class of product, often lower priced and less featured offers sufficient performance to cannibalize existing vendors, whose performance levels have begun to overservice the needs of customers. *Innovation Zeitgeist* suggest that the combination of

a lower performing disruptive product with a useful new feature can create large new markets, e.g. a mobile phone, which is a bad but mobile computer with phone capabilities.

Disruptive innovation
The type of innovation that does not focus on increasing performance, but instead delivers less performance because customers are being overserviced.

Dominant design
An idea proposed by James Utterback and William Abernathy that over time, new markets hone in on a dominant design that becomes the standard. Examples would include the location of the steering wheel and pedals in cars, keyboard design and smartphones with soft keyboards.

Driver
A performance objective for a stakeholder where the stakeholder has pretty much unlimited desire for performance.

dSLR
A digital single lens reflex camera that can interchange lenses. Because each lens is different, the viewfinder looks through the currently mounted lens to show the photographer optically what the lens is capturing. The image transmitted is reflected by a mirror to the viewfinder. The mirror drops down to get out of the way, when the picture is taken. This approach is in contrast to Interchangeable Lens Cameras, where what is being seen by the lens is transmitted electronically to a screen or viewfinder.

DRM (digital rights management)
Copy protecting content in order to minimize theft.

DSP (digital signal processor)
Specialized semiconductors for processing sensor information, e.g. from a microphone.

E-commerce
A clever market term heavily promoted by IBM in the late 1990s and early 2000s as a wrap around term for promoting the use of online retailing.

E-retailer
An online store or ordering capability.

Economic geography
The study of how geography influences economics and marketing. For example, market studies for shopping malls or hotels will often be based upon primary and secondary draw areas for malls, and various types of traffic (business, tourism, event based) for hotels. More generally, customer reach and density often determines the types of businesses that can survive and thrive. Small countries typically have fewer competitors and companies have broader product offerings. Larger companies tend to have more competition and more varieties of competition. The Internet decreases the cost of reach and increases the reachable population of users, so like a major highway system it alters assumptions about reach and sustainable businesses.

Ecosystem

The idea that major product platforms are supported by businesses whose existence is fed by the existence of the platform. For example, an operating system such as Microsoft Windows will often have supporting magazines, web sites, software developers, value added resellers, value added consultants and products that integrate with the platform. Competition between platforms is often based upon the breadth of offering and support, e.g. between Apple iOS and Android.

Embedded device

A proprietary device, often with a small form factor, where size, performance and battery constraints require custom development. Increasingly, embedded devices are being replaced by custom software that runs upon more general platforms such as Android or Linux variants. Large companies such as GE increasingly see their large software activities migrating from device oriented development to share development that takes advantage of a platform for multiple products and machine to machine communication.

Exit event

The sale or initial public offering (IPO) for a startup company. Cynically, exit events sometimes are sometimes the death of the company.

Experience curve (learning curve)

The observation, first observed in the Second World War, that every time the number of airplane frames produced doubled, the cost of each individual frame dropped by 20%. This learning curve effect is frequently obtained in electronics as the efficiency of manufacturing, speed of devices, number of processors or transistors per square area increases. More generally, one can think about cycles of learning. The more that you learn about a process and the faster you learn, the faster production costs improves. See Chapter 22 on modeling exponential growth .

Experiment

A project where before the fact evaluation is difficult to do, and the purpose of the experiment is to learn something about a technology, production process, change to the business, customer groups, pricing sensitivity, etc. The challenge is that well managed companies are often reluctant to step into the unknown to learn about the new and unfamiliar

Expert system

A piece of software for representing and using knowledge about a topic. Expert systems typically fall into two types: knowledge specified by a human being or knowledge derived from machine learning.

Exponential growth

The idea that a series of improvements can be modeled to predict change is very useful for iterative improvement in production processes, viral marketing, and network economics. See Chapter 22.

Extreme Trust

After finishing the first edition of the book, I ran across Don Peppers and Martha Rogers' wonderful new book, Extreme Trust. It's a Zeitgeist book in that the pair of author have identified the same issue raised

in this one, the idea that in a transparent world, what you can do legally to customers may not be sufficient. You need to earn their trust.

First mover advantage

The concept that the first entrant into a market gains superior knowledge, more customer relationships, process learning and a lead in cumulative volume of production. However, as pointed out in Chapter 4, there are also situations where being first to market can be a disadvantage.

Fixed line

Traditional telephony using a wired phone or a wirelessly handset that communicates with a base station plugged into a traditional phone outlet. Generally, not used as a term for Internet-based telephony such as Skype or Google Voice.

Facilitation

Using a consultant to lead a planning session around topics such as innovation brainstorming, strategic planning or strategic IT planning.

Flash memory

The small card you stick in a camera to record images or video. Flash memory is also used in solid state hard drives and as storage in phones for storing information and content.

Freemium

A business model where the initial use of the product or service is free. Once a minimum threshold of usage or functionality is reached, a fee must be paid to migrate to a more full featured version.

Genetic algorithms

A process of software development that mimics Darwinian evolution. Variants of software are created and their results measured. The higher performing variants are combined and tested again. The approach has proving surprisingly useful, including in difficult to program areas such as spotting financial market trends. See for example, the book, *The Physics of Wall Street* by James Owen Weatherall, Houghton Mifflin Harcourt, 2013.

Genotype

The idea that organisms can be classified by their genetic structure. The idea is particularly interesting in drug development. Historically drugs were approved based upon the average effectiveness of patients with different genotypes. Today, with low cost processing of genotypes, it is now possible to distinguish between responders and non-responders in drug tests and characterize the genetic differences of the two types.

Gold Rush strategy

The simple idea that in a new market with many entrants, it may be easier to make money by supplying the new entrants rather than competing with them.

Hackathon

A Silicon Valley ritual, where teams of programmers create small programs in response to a competition. The existence of Hackathons demonstrates the lowered cost of software development and a tendency for young entrepreneurs to focus upon low barrier to entry businesses.

Hadoop

A popular non-SQL or NoSQL database used for processing large quantities of data, e.g. for large web sites.

House brand

A version of a product commissioned and sold by a retailer in order to increase their margins, or gain more control over their business.

Hybrid cloud

The use of privately owned and public cloud capacity as a way of efficiently managing costs and service levels.

Iconoclast

Managers bold enough to have their own opinion. Often such managers represent the few truth tellers in political organizations and can be unusually valuable as a result. Iconoclasts are often a potential source of innovation and creative thinking.

ILC interchangeable lens camera

Best exemplified by the Olympus/Panasonic Micro-Four-Thirds standard or the Sony NEX series, these cameras offer interchangeable lenses like traditional SLRs, but do not use a mechanical mirror that flips up and down to feed both the optical viewfinder and the camera sensor. ILCs generally have smaller camera bodies than digital SLRs.

Incremental innovation

The idea of small and often frequent improvements in performance. Incremental innovation can be seen in two ways: first, as a low risk way of improving performance, where over time exponential growth can produce dramatic changes in performance, or second, as a trap for companies that blinds them to leapfrogging technologies. James Utterback writes eloquently on this subject in his book, *Mastering the Dynamics of Innovation*.

Induction

The idea of extracting a pattern from raw data. The software product, KnowledgeSeeker is an interesting example of a statistical induction engine that not only extracts insights from data, but turns the results into an expert system.

Industry life cycle

The description of the growth of an industry. Often the shape of the curve is a similar curve to a product life cycle curve with an initial slow period of growth, a take-off phase, a plateau in demand, and then a gradual decline in demand.

Info mart
A small sub-set of an information warehouse, often broken out into a separate storage area for performance reasons. An information mart is often a good way of experimenting with a first phase of a longer term intent to build an information warehouse.

Informating
The idea, described by Shoshana Zuboff in her book, *In the Age of the Smart Machines*, that automation processes with computers changes the balance of power in organizations and creates information about processes that otherwise would not be available. Although not suggested at the time of the book, one can extrapolate the idea that information about business processes shared with customers also changes the balance of power between customers and company.

Information warehouse
A central location for the storage of integrated information about a company, its processes, finances and accounting, and customers.

Inheritance rights
Something lacking in most license agreements for the acquisition of content or software. Most license agreements are non transferable. See the article by Alistair Davidson and Laura Klemme: "What are your policies when your customers die? Putting the customer first, social networking and avoiding zombie marketing. http://www.eclicktick.com/zombie.pdf

Innovation
At its simplest doing something new or combining things in a new way. Traditionally, innovation has tended to focus on products and processes. In a Zeitgeist world, other forms of innovation become increasingly attractive, e.g. customer innovation, business model innovation, monetizing innovation, legal rights innovation, privacy features innovation, role innovation (e.g. acting on behalf of customers), solution and experiential innovation.

Installed base strategy
A classic marketing approach that designs and promotes offerings to existing owners of products or users of services, sometimes referred to as upgrade selling or cross selling.

Integrated marketing
The idea of managing all market channels and activities in a coordinated way. Channels might include traditional advertising, key word advertising, direct mail, conferences, sales activities and events, and on-line activities at the company site and at third party sites such as social networks..

Integrated customer tracking
Using information technology to track customer activities in many ways, e.g. through frequent purchaser and loyalty plans, family plans, company account management functional usable by customers, wish lists, referral tracking, Tweets, ratings, reviews and social networks. For businesses share of wallet metrics may also be included.

Intelligent Invisible technology
The idea introduced in Innovation Zeitgeist of simplifying user interactions so that they are not constantly bombarded with difficult decisions whose consequences are unclear.

Internet telephony
Delivering telephony services over the general purpose Internet at lower cost than land lines or mobile phones. Such services are often referred to as VoIP or voice over IP. They can also be delivered over dedicated leased lines for corporations to lower costs, increase control and improve over the quality available on the Internet. Skype is an example of Internet telephony.

Iterative development
Using agile development approaches to dynamically create software or content. The contrast is with waterfall approach, where the product specification is done up front and difficult to change. Agile tends to have higher success rates and deliver more successful software.

IT
Information technology

IT strategy facilitation
Development of an IT strategy with the help of a neutral and often external consultant, like the author.

Generational shift
A significant shift in product design or underlying technology.

Japanese school of product development
Developing a series of improving products to learn about the market and usage.

Jobsian
Launching a perfected product that delivers previously “unthought of” value propositions. The process normally requires extensive internal prototyping to substitute for the launch of a series of improving products, as in the Japanese school.

Knowledge management
Formal identification of, tracking and communication of knowledge around a topic.

Knowledge based system
Software that allows a user to take advantage of a software representation of knowledge for solving a problem, e.g. IBM Watson.

LAN
Local area network. A LAN can be wireless or wired or both.

Lean product development
Agile processes applied to product development. Iterative development and frequent testing is used to shorten product development, develop the minimum viable product offering, and avoid having the momentum of the project or an initial waterfall method design cause the building of the wrong product.

Learning curve (experience curve)
See experience curve.

Learning organization
An organization that actively encourages acknowledging errors and celebrating learnings. Learning organizations punish inaction over action. They attempt many innovations on the assumption that poor performing organizations don't have enough failures and don't attempt enough innovations.

Legal innovation
Changing the legal rights and associated features associated with a product or transaction. See Chapter 8.

License agreement
Many people don't realize that most digital purchases are, in fact, license agreements. A license agreement covers the rights you obtain by "purchasing a product". See Chapter 8.

Local area network
A LAN or wireless/wired network for connecting devices.

Machine learning
Using software to identify patterns in data. Machine learning has been used successful, for example, to teach computers to recognize fonts, produce speech from text or translate languages.

Mainframe
A physically large computer most popular in the 1960s and 1970s. The market was dominated by IBM; the products were expensive and had high margins; as a result, expensive sales and support activities were affordable in contrast to today's lower priced and lower margin devices.

Magic, indistinguishable from
A reference to Arthur C. Clarke's idea that any technology that was sufficiently advanced is indistinguishable from magic.

Market life cycle
Similar to an industry life cycle, a market life cycle is typically thought of as having four stages: initial adoption, fast growth, saturation and decline. Sometimes rejuvenation is added as a fifth category when a new technology addressing the same need, rejuvenates the market.

Mass customization
Using information technology to customize information, services, products, sales and support activities down to a level smaller than a segment, typically to an individual customer. See Joe Pine's book, *Mass Customization*, Harvard Business School Press, 1993.

Medium format camera
A large camera sensor camera, typically with a large removable back that takes highly detailed, high dynamic range pictures. See Chapter 14.

Mega-scale
Scale can be a significant factor in determining corporate success and that the large or mega-scale of the Chinese market upsets many managers' assumptions about scale. The definitive book on the subject is Harvard historian, Alfred Chandler's *Scale and Scope*. See Chapter 25.

Meme
A best practice or rule of thumb that is passed along in culture. It's a parallel concept to the biological notion of genes.

Messaging strategy
A documented strategy for the purpose of a piece of content.

Meta-data
Data about data, often used in information warehouses.

Meta-information
Information about information, often generated in automation processes.

Mirrorless interchangeable lens camera
Essentially a dSLR without a mirror and often without an optical view finder. Typically smaller in size than a dSLR and with slightly lower image quality.

Mission critical
A process or piece of software that is critical to the operation of the business. The cost of downtime is measured in lost sales and profits for the company, and sometimes lost sales and profits for customers rather than the cost of fixing the problem.

Mitigation
Reducing, transferring or eliminating risk.

Mobile operating system
The operating system that runs software on a mobile device such as a phone, tablet or remote controller. Examples include iOS, Android, Windows Phone, Symbian, and Blackberry (QNX).

Mobile device
A shorthand for a microprocessor-based, battery-operated device. Typically the category includes phones, tablets, and less often music players and personal digital assistants. Most mobile devices include networking, so increasingly cameras can be thought of as mobile devices if they have 3G/4G or WiFi capability. With the availability of hotspots (portable 3G/4G WiFi routers), any WiFi enabled device can use a standalone hotspot (or a smartphone acting as a hotspot) to access the Internet. Cars can increasingly be thought of as large mobile devices.

Modeling innovation
See Chapters 21 and 22. Chapter 21 describes different types of modeling. Chapter 22 describes what the book calls Cascade or exponential modeling of viral marketing, value creation, business models, ecosystems and production processes.

Monetization
The way in which a business turns its activities into revenues. For digital content, six types of monetization are described in Chapter 8 – The Innovation Smorgasbord. They include sale, rental, subscription models, advertising, product placement and sponsorship.

MP3
The most popular, but not the highest quality encoding of music, used for playing music on digital devices. The top encoding rate is typically 320 kbits per second. Apple uses a coding scheme called AAC.

MVP
Minimum viable product or the minimum set of features that should be included in a product for rapid development and launch.

Net promoter score
A concept made popular by Fred Reicheld, Bain and Satmetrix that measures the number of customers recommending over a product less the number of customers not recommending a product. Customer can be classified into promoters, non-promoters and passives who take no action. Net promoter scores of greater than 50 are considered good.

NewProd
A regression based model that predicts the success of consumer and industrial new products developed by Bob Cooper at McMaster University. See his book, *Winning at New Products*.

Network economics
The idea that the biggest network offers superior performance to smaller networks and will grow faster than its smaller competition. Examples include Google Search, Amazon, fax machines and popular operating systems where size determines the attractiveness of using the product or service. Large web sites grow faster than smaller competitive web sites as a general rule.

Network theory
A set of theories and research around the common characteristics, growth and behavior of objects, businesses and people in a network.

Niche
A group of buyers with common characteristics in a large more diverse market.

NoSQL
A fourth generation of databases that are not optimized for small machines and expensive hard disks, but rather are designed for virtualized data centers and servicing extremely large volumes of data and transactions. Their category name is an implicit contrast with the most commonly used relational database approach, a SQL or standard query language database that has been the mainstay of business for years.

Ogival
An S-shaped curve such as the first part of a product life cycle.

Outside-In

An approach used by designers, Chief Customer Officers and Chief Digital Officers for looking at the company from an external (customer, supplier, user) perspective in order to create a friendlier or more effective interaction.

LEGO™

The trademark of the well known Danish building blocks company and its products. The brand is often used as a short hand for referring to technologies that are modular or can be easily combined, e.g. object oriented programming, software as a service.

Object oriented development

An advanced approach to programming originally developed at Xerox PARC (Palo Alto Research Center). PARC pioneered the ideas of windowing, graphic displays, the mouse and the idea that software could be modular in nature. Object oriented programming was a response to the problem of difficult to maintain messy code (sometimes referred to as spaghetti code). For example, the Y2K problem results from dates being handled in many places in a program or collection of programs. Maintenance was, as a result, very difficult. OO programming is a "LEGO" approach to coding. A concept such as a date is an object that exists only once in the program. Methods or little programs that can be called by other objects are stored neatly with the date data, providing a single point of maintenance. Cleverly, OO programming includes a feature called inheritance. One can, therefore, build a new object that inherits the characteristics of e.g. the date object, but perhaps changes the language of the date object or changes it in a different calendar scheme. Inheritance increases the reusability of code. Object oriented languages and databases come pre-packaged with libraries of objects to avoid having to reinvent the wheel and external third party object libraries can be added.

OODB

Object oriented database. A specialized third generation database designed as way of storing objects and data represented in objects. Gemstone is an example of a powerful OO database.

Open innovation

A concept made popular by Henry Chesbrough in his book, *Open Innovation*, that describes the process of soliciting innovations from outside a company and capturing value from company innovations by licensing them outside the company before they become obsolete.

Open source

Free software developed cooperatively by teams of programmers. Eric Raymond in his book, *The Cathedral and the Bazaar* makes the argument that open source software develops faster and is of higher quality than proprietary (Cathedral) software. Many of the Zeitgeist innovations being developed are developed with open source software because of its lower (typically free) upfront costs. Some business such as Red Hat offer and charge for support of open software.

Operating system

The software that runs programs on a microprocessor powered device such as a computer or phone.

Over-servicing

The idea that continual innovation with a rapidly improving technology can lead to overservicing of a customer need. Today, most people rarely use the computing power in their computers, except for highly demanding tasks such as voice recognition, image and video editing. As a result, the demand for faster and faster computers is radically different than in the early days of personal computing when speeds, memory and storage were always insufficient.

Paradigm

First raised as an issue by Thomas Kuhn in this book, *The Structure of Scientific Revolution*, a paradigm is a way of looking at and explaining the world, e.g. Newtonian or Einsteinian physics. Kuhn claimed that scientific fields undergo major shifts and the proponents of previous paradigm often have to retire or die off for the new paradigm to become mainstream. The parallels with business are irresistible. The concept of Innovation Zeitgeist suggests that we have a paradigm shift in innovation, because we have moved from technology innovation being rare to being exceptionally common.

Pareto

Vilfredo Pareto was a nineteenth century economist who discovered a general rule that 8-% of the land in Italy was owned by 20% of the population. In business culture, a Pareto Law is a short hand reference for this power law distribution. In many companies, activity based costing and modeling reveals that a small percentage of customers accounts for most of a company's profits, perhaps 20% of customers account for 200% of profits, producing the insight that many companies don't make money off most of their customers, unless they actively manage for profitability. Pareto functionality is a term I use for describing the key functionality that accounts for most of the benefit to customers. Innovations that focus upon this key functionality can be developed more quickly. My definition of Pareto functionality, which I used in my 1997 book, Riding the Tiger, is similar but not quite the same as minimum viable product or MVP. The difference is that Pareto functionality may be greater than MVP.

Perfected product

The Jobsian approach to product development, where a fully formed product is launched on the product. It exists in contrast to the Japanese model of introducing iterative generations of product to learn about the market and usage.

Personal area network

A shorter range network than WiFi, e.g. Bluetooth.

Pivot

A popular Silicon Valley term for a change in business concept while developing a startup.

Portfolio analysis

Ranking of markets, products, technologies, customers, business units, geographical regions, etc. using 2-3 dimensions in order communicate differences in current success and opportunity.

Patterns

Reuse in programming is an important productivity tool. However, reuse can occur on many levels. One level is actual reuse of the code, e.g. with object oriented programming. Another method of reuse is pattern reuse. Regular developers have realized that often, they cannot use the precise code developed on another project, but the structure or pattern of the code can be reused.

Pattern recognition

Humans do pattern recognition easily, sometimes too easily because we are wired to look for patterns. Software programs can also be designed to recognize patterns using neural nets, induction engines or statistical approaches to machine learning. See Chapter 27 for more details.

Personalization

General purpose devices can often be tailored to fit with the usage patterns and interests of the user. User interactions on the Internet or on mobile devices can also be tailored to reduce the amount of work and number of key strokes for a user to reach something relevant. E-retailers user personalization to recommend products and vary pricing based upon their data collected about the individual or similar consumers. Location and other contextual information can increase the likelihood of relevant information being served up.

Platform

A platform is a set of common technologies and/or engineering on top of which a product can be built (in the case of e.g. automobiles) or run (in the case of operating systems). Platforms are an attempt to make product development more robust, faster and less expensive. In many cases, a platform can make it easier for different pieces of functionality to be integrated. Multi-platform companies such as IBM decided in the 1990s to focus on fewer platforms to reduce their R&D costs. IBM switched to open source Linux in order to minimize the cost of maintaining multiple operating systems and to increase the availability of applications that could run on multiple types of hardware. Many high tech firms have high value engineered products with significant software used for running, reporting on and maintaining products. Cross family platform integration can reduce the cost of similar functionality on diverse equipment for diverse markets. See Chapter 2 for more details on platform strategy.

PMI

Project Management Institute is the leading North American organization for training and certifying project managers.

PMP

The Professional Project Manager or PMP designation is the most common project management certification in North America.

Price elasticity of demand

When prices go up, demand typically goes down. When prices go down, demand typically goes up. The relationship between the two changes is the price elasticity of the market. For example in one market, a one percent drop in price might trigger a 2% increase in demand. In another market, a one percent decrease might only trigger a 0.1% increase in demand. In some markets (sometimes referred to as a

Veblen or Giffen product), high price is interpreted by customers as signaling higher quality and can for brief periods of time increase demand.

Pricing

Pricing is, of course, what you charge for a product or service. But most managers underestimate the variety of pricing approaches that are available to a business. They also underestimate the opportunities for price testing to determine the optimum pricing level and model.

Pricing model

Pricing models vary widely. The can include: straight sales, sales with ongoing maintenance or upgrade fees, volume driven pricing, period based pricing, sample pricing, freemium models, all you can eat models, rebates for frequent purchase or referral to name just a few.

Privacy

An increasingly important product/service feature that can contribute to customer loyalty and product differentiation. See Chapter 19.

Privacy Bill of Rights

US privacy rights proposed by the Obama administration, see Chapter 19. Privacy legislation is currently undergoing major debate in the European Union as of 2013.

Private cloud

Company owned cloud based computing capabilities.

Product development

The role or activity of getting a product designed, built and tested.

Process innovation

Improvement in the process of production or delivery.

Product innovation

Improvement in product value proposition so that it appeals to customers.

Product interpolation

Constructing a proposed product and pricing based upon data from existing products in the market or from customer interviews using a statistical technique such as conjoint analysis.

Product management

The general concept of developing and marketing a product. The role is often divided into product development and product marketing.

Product marketing

The task or role of bringing a product to market, promoting it, and learning what improvements are required for the next generation.

Product life cycle

Similar to a market life cycle, a product life cycle has four phases: initial slow growth, fast take off, saturation and decline. Sometimes, two product life cycles are mapped on each other to show how a second generation is introduced and replaces the first generation.

Product placement

Incorporation of a product into a video in return for use of the product or a product placement fee. Product placement is one of six potential monetization approaches in entertainment and content.

Product-service-solution-experience value migration

An increasing sequence of value added choices that can help to differentiate a higher value added offering from less complete offerings. If a high value differentiated product offering has a higher chance of market success, then moving along this value adding migration can help some businesses succeed, as long as they do not over-service customer needs or become too high priced as a result. See Chapter 8.

Programmable analog semiconductor

A specialized form of semiconductors that are difficult to build, less flexible than digital alternative but offer the advantage of lower power consumption and faster reaction to signal inputs.

Prototyping

Development of test versions of products and services. Prototyping can be done internally in the Jobsian manner, or externally via launches of early generation products and services in the Japanese or Google style. Prototyping can be done with screen and interaction design, CAD and simulation tools, or with short run production techniques such as 3-D printing and prototyping studios.

Persona

A persona is a description of a category of user. It specifies their goals interacting, their background, knowledge, skills, expectations and interests. The Persona description is used to design a targeted user interaction that will allow the specific type of Persona to meet their goals with the minimum amount of work and confusion. See Alan Cooper's book, *The Inmates Are Running the Asylum: Why High Tech Products Drive Us Crazy and How to Restore the Sanity*, 2004.

Public cloud

A public computing resource such as Amazon Elastic Computing Services that can be rented as needed. Public clouds can reduce the cost of innovation by converting what would normally be a capital expense into a contingent operating expense.

QOS

The Internet was designed for resilience in the event of a nuclear attack upon the United States. As a result, network traffic on the Internet is sent in packets, which may travel over different routes to their common destination. For traffic such as email, the reassembly of the decomposed message from its packets has no significant effect. But voice traffic needs to have no long interruptions. QOS or quality of service is a feature in networks that makes it possible for voice conversations to have less jitter or interruptions and echos.

Queuing theory
The most familiar example of the application of queuing theory is the bank teller line. If a bank uses separate teller lines, you may end up getting stuck behind a customer with a lengthy transaction. A single queue allows the person at the head of the queue to be served by the first available teller, reducing the frustration of waiting and speeding up overall processing of the queue. Similar operations research techniques can affect the economics of businesses.

Rating
An increasingly important piece of meta-information about a product or service that has a powerful impact upon customer choice and resulting satisfaction. Large retailers gain a network effect from their customer ratings because their site become more useful than smaller sites with fewer ratings.

Re-badging
The strategy of reselling another company's product or service under your own brand in order to learn about a market or fill a temporary hole in a product line.

Recovery
The time taken for a business to recover from a disaster.

Redundancy
The availability of capacity or capability to replace some aspect of the business when it is damaged.

Referral
A recommendation from a contact or customer for the use of a product or service.

Reference citation model
Academic articles are often rated on the basis of how many times they are referred to in other articles. Google's initial algorithm was cleverly based upon a similar idea. A web site which was pointed at by many web sites was likely to be more important than a web site with similar words but fewer sites pointing at it. Google's algorithms for search are secret, but we do know that Google also tracks whether a user returns quickly to the search results page to try a different link. The assumption is that if the dwell time was short, it was probably not relevant or useful.

Regression model
A statistical analysis of which factors predict an outcome, e.g. the DanProd model predicts new product success.

Reinforcement
In behavioral psychology, rewarding an organism by providing it with reinforcement after emitting some behavior. Rats and pigeons are typically rewarded with pellets of food.

Responder (pharmaceutical)
A patient with a particular genotype that responds particularly well to a drug.

Revelation
In Chapter 13, we use the idea of TCO or total cost of ownership revelation as an idea for clearly communicating value propositions to customers.

Review
Feedback from a professional reviewer, knowledgeable user or regular user about a product or service.

Resilience
The robustness of a business process, technology or business in the face of difficulties. For example, in the Japanese Tsunami of 2011, some companies discovered that they were dependent upon suppliers for whom there was little alternative. Companies with global strategies and common platforms were, in contrast, able to shift production to unharmed factories.

Rights innovation
Bundling or unbundling of features and legal rights with digital products or services.

Risk analysis
Explicit consideration of sources of risk and potential impact in a business. Identification of mitigation strategies.

Risk modeling
Often use of stochastic or Monte Carlo modeling to look at distributions of risk for an activity.

Romantic entrepreneur
An entrepreneur in love with the idea of entrepreneurship, often one who has not yet failed.

Ruthless competitor exercise
An exercise, developed by A.T. Kearney and sometimes used by facilitators, that involves designing a competitor strategy that could put you out of business in order to increase your understanding of where you are exposed.

Sales model
A representation of the stages a purchaser goes through and the resulting needs for the sales process.

Sales types
Complex, distribution, integrated, direct, company owned, freemium, indirect, co-op, event driven, location based.

Satisfier
A concern of a stakeholder that can be adequately met by delivering some minimum threshold of performance.

Saturated market
A market where usage or purchases have peaked.

SBU
Strategic business unit

Scale
The impact of volume on creating business success and reducing cost per unit.

Scenario analysis
The painting of alternative futures for the purpose of dealing with a difficult to predict world. (E.g. Liam Fahey and Robert Randall, Learning from the Future.

Schedule of reinforcement
The pattern of reinforcement provided to an organism when doing a certain type of behavior. Different schedules produce different effects, different emotional reactions and have different long term effects.

Scrum
An iterative and agile framework for managing software products, projects or applications that provides for a highly motivated development team, working as a unit in a self-organizing fashion to manage the stages of development of a project and its changing scope. See Mike Cohn's *Succeeding with Agile: Software Development Using Scrum*.

Search engine
Google is the most commonly used search engine. But people often underestimate the importance of more specific search tools, e.g. the search functionality in an e-commerce site such as Amazon.

Sensor
One of the new growth areas of the digital age. Each new generation – mainframe, mini, workstation, PC, laptop, tablet, phone and sensor – is smaller. The volume of each type goes up as the size goes down.

Sensor network
Typically a wireless network, sometimes self-configuring.

Scope
Economies of scope represent the cost advantages of combining activities.

Scoping
Estimating the size of a project.

Scrum master
A project leader who manages the agile development of a product or project. See Kenneth Rubin's Essential Scrum: A Practical Guide to the Most Popular Agile Process.

Self-service business model
A method of reducing costs by automating a task and making the customer do self service.

Secular shift
A cyclical change is the result of fluctuation. A secular shift is a major change in a market, e.g. the change from vinyl to CDs or from CDs to MP3s.

Segment
A group of customers with common needs.

Segmentation
The identification of customers with common needs.

SEI Software Engineering Institute at Carnegie-Mellon University
Developers of the Capability Maturity Model for the Department of Defence.

Selective extravagance
A idea proposed by Tom Bonoma that companies need to be extravagant in developing a key capability that drives their strategy and business success. See his book, *The Marketing Edge*, Free Press, 1985. For Google it is the breadth, depth and recency of their search results.

Share of wallet
A measurement of how much of the customer spending a business is capturing.

Shareholder value
The key issue for one of the two religious extremes in business. One group believes that business only exists to increase shareholder value. The other group believes that maximizing shareholder value at the cost of building capabilities and innovation may cause declining business capabilities, weakening companies in the long term. Shareholder value maximization may also cause initially unreported external costs that later come back unexpectedly to hurt the business, e.g. product liability, environmental damage, social consequences that hurt brand value and make the company a less attractive employer.

Shelf space
Literally, the space on the shelf available for a product category. Metaphorically, shelf space represents the mindshare that a company may occupy, discouraging a customer from looking elsewhere.

Shine the light law, California
California privacy legislation

Silo
A term used to describe a narrowly focused department in a functionally organized organization. The implication is that superior performance often requires looking or interacting across silos. An Outside-In perspective attempts to spot where the company does a bad job of presenting a clean and simple interface to clients and conceals the internal organizational structure.

SLR (dSLR)
Single lens reflex camera or digital single lens reflex camera. A camera with removable lenses that allows the user to look through the lens.

Smart phone
Typically a phone with portable computer-like capabilities and the ability to easily install apps.

Social network
Most typically referring to Facebook, Linkedin, Twitter, Tumblr and Google+.

Social marketing
Use of third party and company owned web sites and services where customer comments, ratings and feedback influence other prospects and customers.

Solution stack
A technology buzz phrase that describes the extent to which a company controls all the elements required for solving a customer problem. Oracle has an explicit strategy of controlling all the elements in the solutions it sells to customers, based on the rationale that it can provide superior robustness, and presumably obtain higher profits.

SaaS
Software as a service

SaaP
Software as a platform

SaaBP
Software as a business process

Sponsorship
A method of monetizing content and events.

Sprint
A term used in agile development and Scrum to describe a phase in a project with a clear deliverable.

SQL Database
The most popular type of relational database available from branded vendors such as IBM or Oracle or from open source.

SSD
Solid state drive

Stage-gate new product development model
An evaluation process that forces review of innovations as they progress through stages of development from idea, to market evaluation, to prototype, test launch and full launch. The objective is to make sure that innovations that appear decreasingly attractive are killed off quickly before the divert resources from innovations whose assessment is stronger or improving.

Storage virtualization
The introduction of a layer of indirection between where the data is referred to and where it is physically stored.

Strategic cost drivers
Scale, scope, complexity, capacity utilization, experience curves, cycles of learning.

Strategic drivers
The key factors that influence the growth and profitability of your business, e.g. in banking, services per household.

Strategic facilitation
Use of a neutral or outside facilitator to run a planning retreat for the brainstorming of innovations, strategies and IT strategies.

Strategic importance of suppliers
See Chapter 16.

Strong product manager
See Chapter 3.

Stakeholder analysis
Formal analysis of the people and groups that can aid or hinder your strategy. See Chapter 3.

Streaming
A technology that feeds video or music from the cloud as opposed to downloading the video or music.

Subscription model
Generally associated with either a subscription to a regular publication or a subscription to a library of music and video, often with an “all you can eat” feature.

Supply chain
The umbrella description for the selection of, negotiating with, partnering with and purchasing from suppliers. See Chapter 16.

Sustainable success
Building a competitive position that is sustainable.

Sustaining innovation
Improvement in performance of a product. In some cases, sustaining innovations are overservicing customers needs and leave room in the market for lower performing, less expensive products. See Chapter 18.

SWOT
Strengths, weaknesses, opportunities and threats. A useful strategic planning acronym.

Tablet
A defeatured laptop with a high quality screen.

Tacit knowledge
Knowledge that is difficult to articulate or transfer to another user, e.g. knowledge of a foreign language, observational skills involved in a ill specified cooking or production process.

TCO, TVO
Total cost of ownership, total value of opportunity. See Chapter 13.

TCR, TVR
Total cost of relationship, total value of relationship. See Chapter 13.

Technology enabling
A use of technology that enhances or develops employees or employee knowledge. See Chapter 17.

Technology de-skilling
A use of technology that results in devaluing of employees. See Chapter 17.

Thought leadership
Thought leadership is the process of developing, publishing and communicating ideas and practices in order to gain the attention of customers and prospects, educate them about novel ideas, product usage and benefits, and indirectly to create sales. See Chapter 14.

Three laws of robotics (Isaac Asimov)
In Chapter 19, we draw a parallel between the governance required to ensure that autonomous robots don't harm humans and the obligation of companies not to harm their customers.

Time based strategy
Innovation and product development strategies such as agile development that explicitly manage projects to achieve rapid development and launch.

Time based cost advantage
Faster iterations can often lead to superior value offerings. Faster learning can lead to more effective marketing and sales activities. Shorter production evaluation cycles can increase the number of cycles of learning. See Chapter 22 for more details on modeling cycles of learning.

Time to…
Sales models are often based upon the time it takes to reach a new stage with a customers. See Chapter 15.

Transaction economics
The study of how different types of relationships and transactions offer different incentives for doing the activity in house or externally.

Transaction types

Historically, many computer transactions were classified as short transactions e.g. a quick update to an account or a small order or long transactions where the user spent a long time interacting with the data, e.g. when creating massive analyses.

Tribe

Schools of agile software development are often referred to as tribes. See http://www.slideshare.net/lklemme/what-product-managers-need-to-know-about-agile-development-with-scrum slide 8. In Innovation Zeitgeist, we speculate that increased cybercrime may lead to a new layer of authentication based upon the people who know you and the organization you are associated with. We call this group authentication a tribe. It is at this stage still ill defined.

Trigger

In scenario analysis, contingency plans need a set of criteria or triggers that will be sufficient to initiate the contingent plan.

Umbrella (price and denial)

A price umbrella is when a company keeps its pricing higher than the competition. A denial umbrella is when a company denies the importance of an issue or feature and lets competitors develop their brands and expertise in this unacknowledged area. See Chapter 20 for more discussion on the new idea of the Denial Umbrella.

Unified communications

An integrated approach to communication that combines email, phone, video conferencing, instant messaging and tracking of user location.

UNIX

An early operating system developed at Bell Labs, which over the years has become the foundation for the Macintosh operating system, the iPhone, the iPad, Blackberry, Android and LINUX.

User interface design

Interface design on a digital product such as a camera, phone or tablet.

User interaction design

The design of interactions at a web site and sometimes used to describe product interfaces. See Persona.

Value chain

The series of activities that a company undertakes in order to deliver value to a customer. Competitive advantage is normally derived by selecting a combination of activities, a business model and a type of customer that will be a combination difficult for a competitor to match easily.

Value migration

The movement of value in an industry from one aspect of the business to another.

VAC (Value Added Consultant)
Similar to a value added reseller, a value added consultant may help a client determine its needs, perhaps formulate a request for information or a request for proposal, evaluates proposals and may help with project installation and training.

VAR (Value added reseller)
A reseller of a product or services, who incremental services are important in creating a successful installation or project. In effect, a distributor that does more than take orders or sell.

Value capture
The extent to which a company captures value out of an innovation, a relationship with a customer, or a share of customer spending.

Value proposition
A marketing term that describes the type of values created for the customer.

Variable ratio of reinforcement
A term in behavioral psychology to describe a random reinforcement pattern that mimics addictive gambling behavior.

Venture capital
Equity investment in startup or early stage businesses that are too small to go public. Generally a follow-on to a self-funding stage or angel investors.

Vertical integration
The act of acquiring suppliers (backward vertical integration) or distributors/wholesalers/retailers/consultants (forward vertical integration). Vertical integration is more common in markets with extreme profit pressure as the vertically integrated company can lock in business and obtain two margins.

Viral marketing
Epidemics spread through contact. So can referrals and recommendation. Viral marketing is the description of exponential sales growth due to recommendations. See Chapter 22.

Virtualization
The use of indirection to make software and storage more flexible. Instead of activities being associated with a physical computer or hard drive, the virtualization software allows a data center to move the task and storage from one physical device to another without creating extra work or interfering with task and storage. The task and the storage are virtual not physical.

VoIP
Voice over IP or telephony over data lines and the Internet.

Waterfall method
A traditional approach to software development that is considered generally less likely to be successful particularly in large projects and fast moving markets.

Weak coordinating product manager
A generally unsuccessful approach to product management described in Chapter 3. See the book: Clark, Kim and Fujimoto, Takahiro: *Product development performance: strategy, organization and management in the world auto industry*, Harvard Business Press Books, 1991

White box
See white label strategy.

White label strategy
A white label strategy involves offering a product or service than another business can brand and resell.

Wide area network
A regional or national network that is larger than a Local Area Network.

WiFi
The most commonly used wireless network protocol for computer-like devices.

Wiki
Wikipedia is the most well known example of a multi-author publishing tool for aggregating knowledge.

Workstation
A powerful UNIX based computer that was predominantly used for computationally intensive tasks beyond the capabilities of mass market personal computers.

Worst way of implementing
A useful strategic exercise is to ask the question what would be the worst way of implementing a digital strategy. Often the current approach is surprisingly similar to the worst approach.

Zeitgeist
Certain ideas and philosophies are common and “in the air” of the times. The same is true for innovation.

Zeitgeist market
A market in which many people are having similar insights at the same time and pursuing similar innovations independently.

Zeitgeist paradigm 1
Incremental relatively common insights about implementation leading to many similar innovations.

Zeitgeist paradigm 2
Intelligent innovation design pursuing differentiation and high value in order to maximize commercial success.

Zeitgeist paradigm 3
Developing a breakthrough innovation as opposed to a small incremental innovation.

Zeitgeist paradigm 4

Creating a new industry and regional cluster of business around a breakthrough innovation.

Zombie marketing

Marketing to dead people. Because most digital assets are licensed as non-transferable rights, when a customer dies, heirs may be tempted to keep up the account of the deceased in order to retain access to significant and valuable collections of software, digital and audio books, and music. Marketing efforts are likely to be less productive as the age of the content consumer will likely be lower than the individual who has died. There likely exist opportunities to convert the heirs to loyal customers with the right transfer programs. See the Kindle short article by Alistair Davidson and Laura Klemme: Zombie Marketing.