Insurgent Strategies for Creating Inimitability within Mature Digital Ecosystems

By
John A. Baker

Submitted to the Systems Design and Management Program in Partial Fulfillment of the Requirements of the Degree of

Master of Science in Engineering and Management

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Abstract

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Rich software application functionality once constrained to the desktop is now available via the World Wide Web (WWW) with the introduction of emergent Web2.0 technologies. Leveraging the Software-as-a-service (SaaS) model, companies can build Web-native, Operating System (OS) independent, applications usable by customers over the internet in addition to those installed natively on their computer. Effectively this enables software development companies to redirect application work cycles away from OS-specific development and, among other things, into infrastructures which encourage participation by third-party WWW developers.

With these emergent technologies, and while embracing what is commonly referred to as the network-centric innovation model, companies are hoping to leverage enormous value and strategic significance by creating and protecting proprietary *platforms* while at the same time encouraging third-party open source development. In effect, through outward-facing Application Program Interfaces (APIs), these new models have led to the emergence and evolution of complex ecosystems within the WWW space; witness OpenSocial, Facebook, salesforce.com, Amazon, Firefox, eBay and others.

eBay for one realized early-on that forging relationships with developers can support and advance its business model. Not long afterwards, http://developer.ebay.com was created giving developers access to a myriad of information on all current and expired auctions. This move enabled companies to enter the ecosystem and provide specialized services to customers based on information mined from eBay's API. A few of these companies provide raw analytical data to *PowerSellers*—those customers doing serious business on eBay. Others use the data to up-sell by listing current eBay auctions on their own websites.

The goal of this thesis is to explore what constitutes an appropriate strategy for insurgents intending to enter WWW ecosystems in attempts to usurp competitors within them. This will be accomplished by looking at specific businesses, their strategic options, engineering challenges and general dilemmas while attempting to create inimitability. As well, a framework will be developed for assessing ecosystem players, their influence, understanding the dynamic interactions not only between those entities, but between them and the ecosystem host, as well.

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List of Figures

Figure 1, Strategic Roles of Business Ecosystem Members 12
Figure 2, eBay Ecosystem Breakdown 16
Figure 3, eBay Marketplaces Ecosystem Including Members 17
Figure 4, Technology adoption lifecycle superimposed over eBay 10-year stock performance. 18
Figure 5, % of revenue share for each division within eBay 20
Figure 6, YoY Trends for Amazon, eBay, the eBay Marketplaces division and the entire Retail Specialty Industry (Sources: eBay/Amazon 10Q's, and Dept. of Commerce Website) 21
Figure 7, YoY Growth Rates, eBay Marketplaces vs Amazon, plus growth differential between the two 21
Figure 8, Marketplaces Fixed Price vs Auctions GMV 22
Figure 9, eBay Sell Through Rate (STR) 22
Figure 10, eBay User Growth, All Segments 23
Figure 11, Q4 2008 Active eBay Users Across all Segments 24
Figure 12, Given the global economic recession, are you using eBay more often to buy items? If YES, are you buying used or new items? 25
Figure 13, How have your eBay buying habits changed now vs before the recession? 26
Figure 14, How important is knowing how far way the seller is? 27
Figure 15, 9x Switching Cost Effect 29
Figure 16, "For a typical ebay purchase, how much time do you spend determining a reasonable maximum bid price for the item?" 29
Figure 17, "How much would you pay to find a valid market price for an item you're bidding on?" Higher varied from %5-10% of item's cost. 30
Figure 18, "How much would you pay for an online application that will snipe-bid at the last few seconds to better your chances of winning?" Higher variation from %5-10% of item's cost. 30
Figure 19, "Imagine an application that will bid on all 5, and when one of them is won, the application cancels the bids on the other 4 items, ensuring you at least win one of them. How much would you pay for this type of service?" Price variation from %5-10% of item's cost. 31
Figure 20, eBay Marketplaces GMV over time 33
Figure 21, Marketplaces Segment Active Users 34
Figure 22, Cumulative Distribution of eBay bidders' last bids over time (Ockenfels and Roth, 2001) 35
Figure 23, Cartesian View of SmartBidder's Superior offerings 37
Figure 24, SmartBidder RapidFilter Technology 38
Figure 25, SmartBidder High-level Strategic Overview 39
Figure 26, Typical Consumer Decision-Making Process 39
Figure 27, SmartBidder v1 Release Strategy (Arbitragers) 41
Figure 28, SmartBidder v2 Release Strategy (Diffusing to Casual Buyers) 41
Figure 29, DataUnison Mentioned on eBay's Market Data Page 42
Figure 30, eBay Ecosystem Deconstruction, Phase 1 44
Figure 31, eBay Macro-level Value Chain 45

Figure 32, eBay Marketplaces Value Chain Process 45
Figure 33, eBay Marketplaces Ecosystem Network with Sub-categories 47
Figure 34, Seller Side eBay Ecosystem Deconstruction 48
Figure 35, eBay Ecosystem Deconstruction, both Sides of the Network 49
Figure 36, Strategic Entrepreneurship 51
Figure 37, SmartBidder Version 1 Niche Targeting 52
Figure 38, SmartBidder v1.0 53
Figure 39, SmartBidder v1.3, illustration of Potential Sell-side Competition 54
Figure 40, Gixen.com Number of Queued Snipes 54
Figure 41, SmartBidder User Needs of SmartBidders Competitors 57
Figure 42, Automated Market Price Analysis System 62
Figure 43, Method of Visually Showing Trading Volume 62
Figure 44, Market Based Price Optimization System 63

List of Tables

Table 1, Comparing eBay Sniper Offerings 36
Table 2, Seller's Needs vs eBay's Solution 46

Contents

1 Thesis Structure 9

2 Market Evolution 10

2.1 Business Ecosystems 11

2.2 Ecosystem Health 11

2.3 Ecosystem Roles 12

2.4 The Digital Ecosystem 12

3 Economic Evolution 14

3.1 History of Auctions 14

3.2 What is an auction? 14

3.2.1 Formats 14

3.2.2 Why eBay Chose its Format 15

4 eBay's Evolution 15

4.1 Ecosystem 16

4.1.1 Barriers to Entry 17

4.2 Historical Demand Opportunity 18

4.2.1 Innovators, 1995-2002 18

4.2.2 Early Adopters, 2002-2003 18

4.2.3 Early Majority, 2003-2005 19

4.2.4 Late Majority 19

4.2.5 Laggards 19

4.3 Divisions 20

4.3.1 Marketplaces 20

4.3.2 Payments 23

4.3.3 Communications 24

5 eBay Customer Needs 25

5.1 What benefits do Customers want? 25
5.1.1 Evaluating both Sides of the Ecosystem 28
5.1.2 Buy-side Needs Analysis 28
5.2 Building a Buying Platform (Version One) 31
6 Entering the Ecosystem 31
6.1 Synthesis 31
6.2 Network Effects 32
6.2.1 Power of the buyers 32
6.2.2 Power of suppliers 34
6.3 Competition 34
6.3.1 Rivalry Among Competitors 34
6.4 Barriers to Entry 37
6.5 Barriers to Exit 38
6.6 Availability of Substitutes 38
6.7 Resource Based View of the Firm 38
6.8 Customer Segmentation 39
6.9 SmartBidder 40
6.9.1 Affiliate Programs 40
7 Takeaway Strategies for Entering Mature Digital Ecosystems 41
7.1 Uniqueness 41
7.1.1 Why do it at all? 41
7.2 Top-Down 43
7.2.1 Deconstructing the Digital Ecosystem 43
7.3 Bottom Up 49
7.3.1 Attract customers, delight them, get their feedback, find your way forward 49
7.3.2 If that user group doesn't respond, leverage your technology, explore and exploit 50

8 Release Plan 52
8.1 v1, Service eBay Arbitragers 52
8.1.1 v1.1, Build/Integrate Inventory Section 53
8.1.2 v1.2, Finish/Integrate PriceBuilder v1.0 53
8.1.3 V1.3, Build/Integrate Sell Side 53
8.2 v2, Moving horizontally to Capture more Buyers 54
8.2.1 v2.1, Release sniper/group sniper to casual bidders 54
8.2.2 v2.2, Build/Integrate locality (language) functionality 55
8.2.3 v2.3, Build a Distributed Sniping System 55
8.2.4 v2.4, Build an iPhone App 55
8.2.5 v2.5, Build Import/Export Saved Searches 55
9 Lessons Learned 55
9.1 Ecosystem Keystone "Policies" 55
9.1.1 Strategic 56
9.1.2 Technical 56
9.1.3 Economic 56
9.2 Understand the bigger picture 56
9.2.1 Know by which fronts completion is likely to emerge 56
9.2.2 Find the exploration/exploitation balance 57
9.2.3 Understand the dimensions by which to grow 57
10 Conclusions, Further Work and SmartBidder Follow-up 58
10.1 Digital Ecosystems 58
10.2 Inimitability 58
10.3 Limitations of this Research 59
10.4 SmartBidder Follow-up 59
11 Appendix 61

11.1 Impact of Patents on Product 61

11.2 SmartBidder, Revision 1, Concept Selection Processes 64

11.3 SmartBidder, Revision 1 Gathered Needs 66

11.4 SmartBidder, Revision 1, Schedule of Work Process 67

11.5 eBay Sniper Companies 68

11.6 Original Thesis Proposal 70

1 Thesis Structure

With the emergence of and proliferation of digital ecosystems, online companies are altering the way they analyze, identify and enter mature markets. Ecosystem *keystones* provide a platform where upon other companies carve out niches to capture value and offer specialized services to capture it. Insurgents often find it difficult to orient themselves to an ecosystem's organization thus resulting in slower times to market for their products and services. In this thesis we will not only provide a general framework for analyzing ecosystems to find niches in which to compete, we will moreover detail a startup's efforts in attempting to create inimitability in such an environment. This thesis is the first of its kind to propose a general-purpose framework for segregating the overall ecosystem and identifying opportunity within it.

The thesis is structured as follows...

- Section 1 provides a history related to the emergence of business ecosystems particularly with respect to online—i.e. *digital*—ecosystems, given that we are following the efforts of an online product (*SmartBidder*) attempting to compete in the eBay ecommerce ecosystem.
- Section 3 provides a brief history of assigning value to items and its eventual progression toward auctions.
- Section 4 details the emergence and history of the most successful auction and e-commerce platform to-date, eBay. We then consider this our top-down analysis of the ecosystem's health and its potential impact on SmartBidder.
- Section 5 is where we start evaluating whether there are pressing needs that require solving for existing eBay customers in spite of the global economic recession and eBay's maturation.
- In section 6 we start diving down into the ecosystem, following SmartBidder's attempts at identifying and capturing value from a bottom-up approach, given the results from section 5.
- Based on our analysis in sections 5 , 6 and SmartBidder's empirical experiences gained in section 0 we start formulating the digital ecosystem framework for identifying value in response to an insurgent's competency. Within this section we start defining inimitability (e.g. the balancing of exploitation and exploration) in the context of online oriented companies.
- In section **Error! Reference source not found.** we detail SmartBidder's release plan in response to the information gleaned in the previous 4 sections.
- Section 9 provides an overview of the lessons learned from the analysis, synthesis and market response from SmartBidder's market introduction.

2 Market Evolution

Methods of value creation and capture have changed markedly over the past decade, and nowhere is that more apparent than in the digital economy. From a product development stand-point, the timeline from initial concept research to market introduction have been compressed almost in half. At the same time, with the emergence of the global economy, barriers to entry have been coming down while the number of potential competitors has been exploding. These and other competitive pressures have completely altered the ways in which companies innovate, or are attempting to innovate. In the past, they leveraged value created from their internal R&D departments. Organizations like IBM's Watson Research Center, Xerox's Palo Alto Research Center, and AT&T's Bell Labs, toiled endlessly to produce cutting edge mainframe computers, copiers and telephones. Companies considered their inventions proprietary and secret. The Not Invented Here (NIH) syndrome was pervasive throughout most large-scale R&D organizations as there was no need to collaborate with external entities; after all, the best and brightest people in the world work there.

Then, the Internet was created. Much to their surprise, this trusty method of value creation was disrupted almost overnight. Companies began realizing that this new communications medium could provide them access to talent outside their four walls. There could even be external lead users would be thrilled to recommend changes which could actually improve the product in ways their own R&D departments couldn't dream of. Soon this social approach to innovation started a whole new lexicon with adjectives such as *democratic, open, distributed, external, community-developed,* and others. Some, assuming this was just another development fad, ignored the obvious, and as a result suffered painstakingly slow times to market.

Today, digital companies attempting to compete on a global scale wouldn't think of not leveraging external innovation talent. Innovation, they recognize, is increasingly global and diffuses much faster into the marketplace than ever before. As such, and considering the increasing complexity involved, it requires a multidisciplinary, diversified skill set. Lastly it is open and collaborative. Companies are realizing there are more capabilities for innovation in the marketplace than can be created on their own. This realization has created yet another neologism, *co-opetition,* or cooperative competition: companies work together with competitors on their non-core-competency, where they assume they don't have a competitive advantage to, among other reasons, share common costs.[1]

In 2006 IBM launched a project called the Global Innovation Outlook (GIO) study. Its main purpose was to identify and act on emerging trends driven by input from hundreds of reputable thinkers in a variety of disciplines. One of the first exercises involved was to identify and quantify both the magnitude and scope of collaborative communities. Particularly, the GIO was curious from where companies derived their innovation. Interviewing over 800 CEO's representing companies varying along the dimensions of annual revenues, geographic areas and firm size, the GIO asked which sources they relied on to spawn innovative ideas. Customers, business partners and internal employees, in that order, rounded-out the top three. This meant that a significant amount of innovation was spawned externally to the

[1] http://en.wikipedia.org/wiki/Coopetition

corporation. Most surprisingly was that internal R&D departments were ranked next-to-last (Nambisan & Sawhney, 2008).

Open makes all this possible. It creates a common infrastructure—refined by great thinkers from around the world—allowing companies to concentrate solely on their core competencies. When people have shared innovation building blocks available to them, the creative process is enhanced and built upon by rich new perspectives born from diverse influences. By listening to and exchanging dialogs with constituents within their networks, companies are able to tear down barriers posed by geography, culture and organizational rigidities. In the end, these *ecosystems* have become an integral part of a company's value capture strategy.

2.1 Business Ecosystems

The Business Ecosystem was first introduced by James F. Moore in 1993 as a novel strategic planning concept. In his paper, "Predators and Prey: A New Ecology of Competition" he wrote that companies should define their strategic objectives on a higher conceptualized level where they are not simply a member of a single industry, but part of a larger ecosystem which crosses multiple industry boundaries. On this higher level, firms co-evolve around innovations, cooperate around non-core activities and compete for market share around their core competencies. In this paradigm a business ecosystem is better able to provide unique customized solutions to individual customers. In other words, crossing industrial boundaries, competing on core-competencies, and leverage network-centric innovation, companies are able to concentrate on providing benefits to needs much more efficiently.

In essence, communications networks have not only served to enhance innovation, it has likewise catalyzed the emergence of social structures. With the freedom of, and ability to, communicate to others outside our normal everyday exposures, social networks allow people with common interests, and uncommon geography, to connect like never before.

Not surprising then, the business ecosystem is analogous to the natural biological system. Ecosystems contain suppliers, outsourcers, manufacturers and freelancers. In that sense the success of products and services is not simply the result of, or affected by a single species, but the network as a whole. Granted, some of these firms fall out of the ecosystem and others replace them. But in the end, the ecosystem is a dynamic, equalizing, stabilizing system which in effect contributes toward (though doesn't guarantee) the long-term survival of all species therein (Iansiti & Levien, 2004).

2.2 Ecosystem Health

Keeping with the biological analogy, Iansiti and Levien postulate that there are three measures of ecosystem fitness in both the natural and business domains: productivity, robustness and niche creation. Productivity is the most important and within the business context, it essentially is the measure of how efficiently businesses transform raw materials into finished products; the best pragmatic measure is probably return on invested capital. Robustness is how well a sub-system within its ecosystem system can perform in the presence of noise; the greater the robustness, the greater the predictability. A good measure of robustness is the survival rate of the ecosystem members, either relative to one another, or over time. And finally, niche creation is important because networks need to be able to support variety and diversity and have, 1) the capability to absorb external shocks, and 2)

stimulate innovation. The measure of an ecosystem's niche creation capacity is its ability to meaningfully increase diversity while creating new functions.

2.3 Ecosystem Roles

As detailed in Figure 1, four strategic roles exist within an ecosystem: keystone, physical dominator, value dominator, and niche players. The keystone strategy attempts to ensure the survival and prosperity by improving the overall health of the ecosystem, and ensuring new members are able to create and share value. Typically this means the keystone player will create and operate a platform. The theory goes that as more and more members adopt this platform for development purposes, the quality and standards of the platform rises. The keystone essentially co-opts a systems-wide regulator role, and albeit in a small way, influences all contributing members. Physical dominators attempt to act as an evil keystone member, leaving no room for effective networks and damaging the overall health of the ecosystem. The value dominator, while it doesn't have real power, attempts to extract as much value from the ecosystem without providing anything in return. Niche players, when allowed to thrive, make up the bulk of the membership within an ecosystem and essentially work to maximize their narrow domain of expertise.

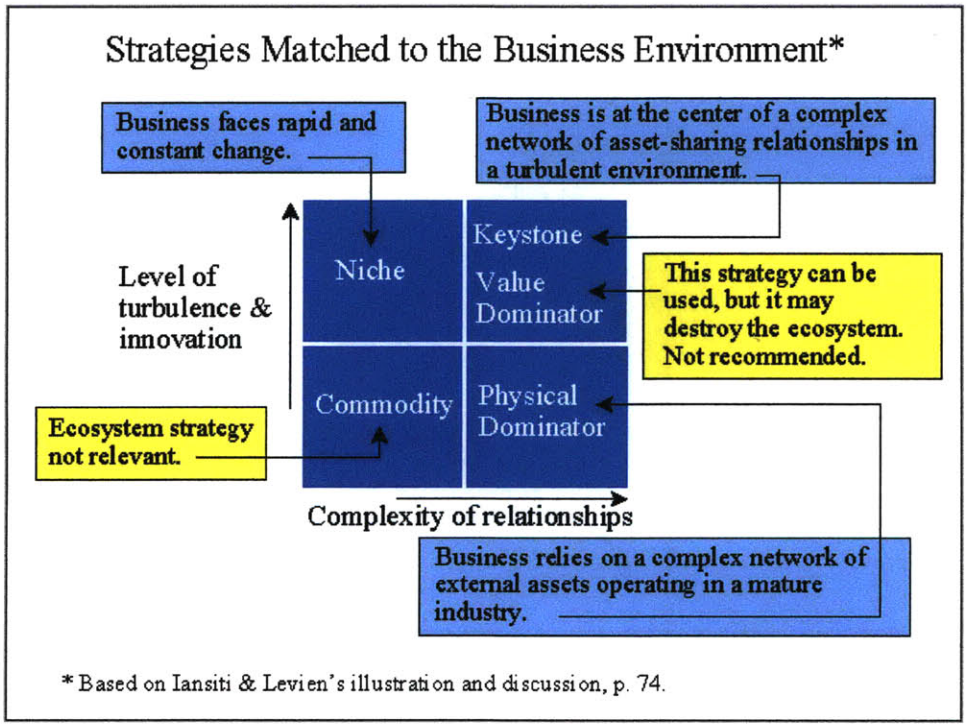

Figure 1, Strategic Roles of Business Ecosystem Members

2.4 The Digital Ecosystem

As detailed above, ecosystems cross traditional industry boundaries building networks to facilitate value creation and capture. In the online space, the Internet, open movements and social niches have created what is commonly referred to as the *digital ecosystem*. Corallo, Passiante and Prencipe define the digital ecosystem as

> ...the information and communication technology (ICT) enabling infrastructure that supports the cooperation, the knowledge sharing and the building of a digital business ecosystem. The digital ecosystem is the pervasive soft support infrastructure populated by the digital species able to evolve, adapt and mediate services and knowledge. In this metaphor the digital ecosystem is 'populated by digital species' exhibiting the structure and behavior of natural species as much as a business ecosystem is populated by business species.

While ecosystems in general have changed the way business is conducted, digital business ecosystems in particular are at the fore-front of leveraging this strategic thinking for rapid value creation. These organization structures loosely adhere to tenants based on enabling fluid, amorphous and often transitory infrastructures, partnerships, alliances, among smaller firms sharing knowledge through community building. All the familiar strategic roles found in the typical business ecosystem exist within the digital ecosystem, and particularly, social networks have evolved as a natural process allowing businesses to exploit the power of the niche member. Practically speaking, simple applications were created allowing simple person-to-person communication, enhanced with customizable profiles and a personal list of friends that each user could maintain. The natural successor to this type of software was built on the Web – these websites were designed with a purpose to allow users to meet and connect with other members of that community. Allowing users to specify people with whom they had a connection was always essential. Additional features utilizing the *social graph*[2], enhancing the user experience, and allowing more interactions within the community quickly grew from that foundation (Corallo, Passiante, & Prencipe, 2007).

On the macro level, the digital ecosystem has diffused to a greater degree into society particularly in the way it efficiently distributes and valuates goods and services. At the same time, unit production costs have fallen, productivity per man hour has risen and price construction for products have become much more transparent. Today, without too much effort, most consumers can find online a fairly accurate *equilibrium price*[3] of the product they are attempting to buy or sell. eBay is a good example of a keystone player which not only creates and shares value within its ecosystem, it likewise provides a platform where buyers can transparently valuate items. It has developed tools and Application Programming Interfaces (API's)[4] allowing its members to efficiently satisfy demand for niche consumers. It has likewise developed standards and procedures to ensure a level playing field and therefore promote stability. For instance, sellers who build a good reputation over time are awarded the PowerSeller title; disreputable sellers are banned from the ecosystem. In the end, this facilitates not only trust within the ecosystem, it essentially allows anyone to know how much to pay for most items item.

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[2] http://en.wikipedia.org/wiki/Social_network

[3] http://en.wikipedia.org/wiki/Equilibrium_price

[4] http://en.wikipedia.org/wiki/API

3 Economic Evolution

3.1 History of Auctions

For almost as long as mankind has traded commodities, auctions[5] have been used to establish their value. One of the earliest and most extreme examples occurred in 193 A.D. when the Praetorian Guard—angry for having only received half their pay—assassinated Emperor Pertinax and proceeded to auction off the entire Roman Empire. The winning bidder promised to pay 25,000 sesterces to each Praetorian Guard and was thereafter duly declared emperor. After having held office for only two months, Senator Didius Julianus was beheaded in perhaps in what could be considered the earliest recorded instance of *winners curse*.[6] Before that auctions served other purposes in society. For instance, the Babylonians auctioned off their daughters—this was the only legal way to marry in ancient Babylon.[7] Today they're used by governments to sell treasury bills. Traders use them to establish prices for agricultural produce, livestock, raw materials and other commodities. Takeover bids for a company are in essence an auction. Whereas in the past auctions only served a relative few, with the emergence and explosion of the e-commerce industry—as well as the advances in mobile technology—the auction format has evolved to efficiently meet the needs of everyday consumers.

3.2 What is an auction?

Definitions vary, but simply put, auctions elicit information about buyer's willingness to pay for a given item. From a purely theoretical econometric standpoint, an auction is a mechanism which in effect sets the trading rules for a commodity. Today's auctions are typically differentiated along three domains: the ascending vs. descending, first-price vs. second price, and sealed-bid vs. open. Ascending auctions start low and end with the highest bid. First price auctions are those where the winner will pay the amount of the highest bid; second price pays the next highest bid amount, plus, generally, a small incremental bid[8]. Sealed auctions are those where bidders don't know each others' bid amounts.

3.2.1 Formats

eBay is an ascending, open, second-price auction: bids start low and typically bid higher; everyone knows everyone else's bid; and the winner pays the next highest bid price (plus an incremental bid amount). Craigslist on the other hand is an example of a first-price, sealed-bid auction wherein bidders privately submit their bids to the seller via email or over the phone. The winner is typically judged to be the one which submits the highest bid.

While different, both formats share a common underlying principal: The *Revenue Equivalence Theorem*. Revenue Equivalence states that regardless of the auction type used (ascending vs. sealed-bid) the seller can expect equal profits from a sold item (Klemperer, 2004). More than a just theory, revenue equivalence has been used of late to model successful bidding strategies across all type of auction formats, particularly eBay. Bidders and sellers have realized that to derive any practical utility from

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[5] From the Latin *augere* meaning "to increase" or "to augment"

[6] Within the auction context, "winner's curse" generally means overpayment. More specifically, this happens when the winner fails to take into account others' signals regarding their perceived value.

[7] So writes Herodotus in 500 B.C

[8] The incremental bid amount on eBay ranges from $.05 to $100 depending on the ending high bid: http://pages.ebay.com/help/buy/bid-increments.html

auctions, they must know two basic pieces of information: the method by which an auction stops and the way in which the winner is determined. On Craigslist, an auction will probably stop after some arbitrary objective time set by the seller and he or she will likely choose the winner with the highest *sealed* (private) offer. eBay bidders on the other hand have a fixed end time and the highest open bid wins (despite the winner not paying that amount). The point of all this is that the type of auction selection depends on context and niche market; they have to be tailored to the situation and reflect the larger economic circumstances.

3.2.2 Why eBay Chose its Format

Each auction dimension has its strengths and weaknesses. Ascending style auctions are sensitive to pressures by auctioneers to collude to push prices up or down. When bidders collude it's usually to push prices down. When a bidder and seller collude—called *shill bidding*—it's usually meant to push up the final bid price. But while collusion to push down prices can be a severe problem, this is off-set by the fact that ascending auctions are really good at allocating the item to those who value them the most. This is true since the most motivated bidder has the opportunity to bid multiple times, ostensibly until he/she ultimately wins the item. And more importantly from eBay's perspective, open auctions make bidders feel more comfortable about their valuations and therefore more likely to continue bidding. In the end, this benefits eBay's revenues and helps it build and grow its digital ecosystem (Klemperer, 2004).

4 eBay's Evolution

eBay was born over Labor Day weekend 1995, when Pierre Omidyar, a computer programmer, wrote the code for an auction website (Wikipedia:eBay). Once only Omidyar's hobby, eBay has grown to become the world's largest online marketplace—where practically anyone can buy and sell practically anything at any time. BusinessWeek once called eBay "nothing less than a virtual, self-regulating global economy." (BusinessWeek Magazine, 2003)

eBay has presence in 39 markets, including the U.S., and there are approximately 84 million active users worldwide. In 2007, the total value of all items sold on eBay's trading platforms was nearly $60 billion. This means that eBay users worldwide trade more than $1,900 worth of goods on the site every second. The benefit to consumers is clear: eBay provides an open trading platform where the market determines the valuation of items. More than that, over the years eBay has become a cultural barometer of sorts, providing a view into what objects consumers want most at any time.

eBay made its initial public offering in 1998. Since then the company has continued to innovate and connect people—and not just through its marketplaces. PayPal, an EBay subsidiary, enables almost any individual or business with an email address to securely, easily and quickly send and receive payments online. PayPal has become the global leader of online payments (PayPal:About Us): It has 149 million registered users and is accepted by millions of merchants worldwide - on and off eBay.

Other key acquisitions have strengthened eBay Inc.'s portfolio of ecommerce companies, including shopping.com, a pioneer in online comparison shopping; Stubhub.com, a leading online marketplace for the resale of event tickets; rent.com, the most visited online apartment listing service in the U.S. (List of acquisitions by eBay, 2008).

4.1 Ecosystem

eBay's ecosystem is an example of a standard digital ecosystem as depicted in Figure 1. But in order to understand the competition and know where to place the product one must first dissect the ecosystem to evaluate the niche opportunities. Going forward, unless otherwise stated, when scrutinizing eBay's ecosystem I will be looking at developer niches instead of buyer and seller product niches. As can be seen in Figure 2, eBay's ecosystem can be broken-down roughly into two categories: the buy side and the sell side. This is not to say that eBay customers only buy or sell—some do both—but from an efficiency point of view, overwhelmingly niche players have organized on one side or the other. Each of those two sides can be broken down further into their degree of activity, occasional, frequent and I'll label the most extreme buyer or seller, *Power*. This is only a high-level view; we could drill down further into each, say within the Pay Solutions niche on the Sell side to better understand the market leaders and their relative growth, at least for the public companies.

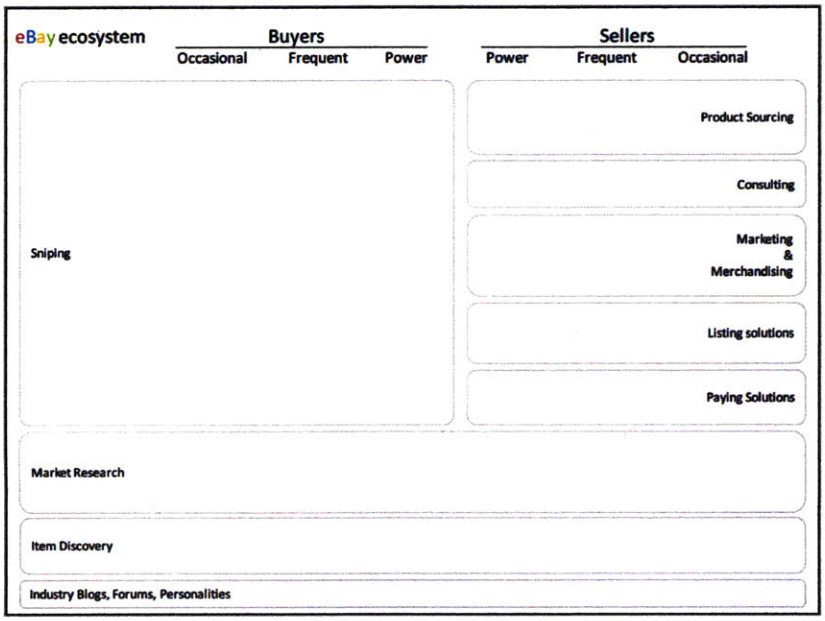

Figure 2, eBay Ecosystem Breakdown

Generally speaking there are large, well entrenched players on the sell side, assisting PowerSellers to research (Terapeak.com/DataUnison.com), source (Doba.com), and list (Vendio.com) their products.[9] On the buy side there are approximately 40 companies alone which assist buyers to *snipe*[10] auction items. Searching journals, auction sites, blogs, Google and eBay.com itself, I was able to construct the eBay ecosystem member chart as detailed in Figure 3.

[9] http://certifiedprovider.ebay.com/ns/CertifiedProviders.html

[10] http://en.wikipedia.org/wiki/Auction_sniping

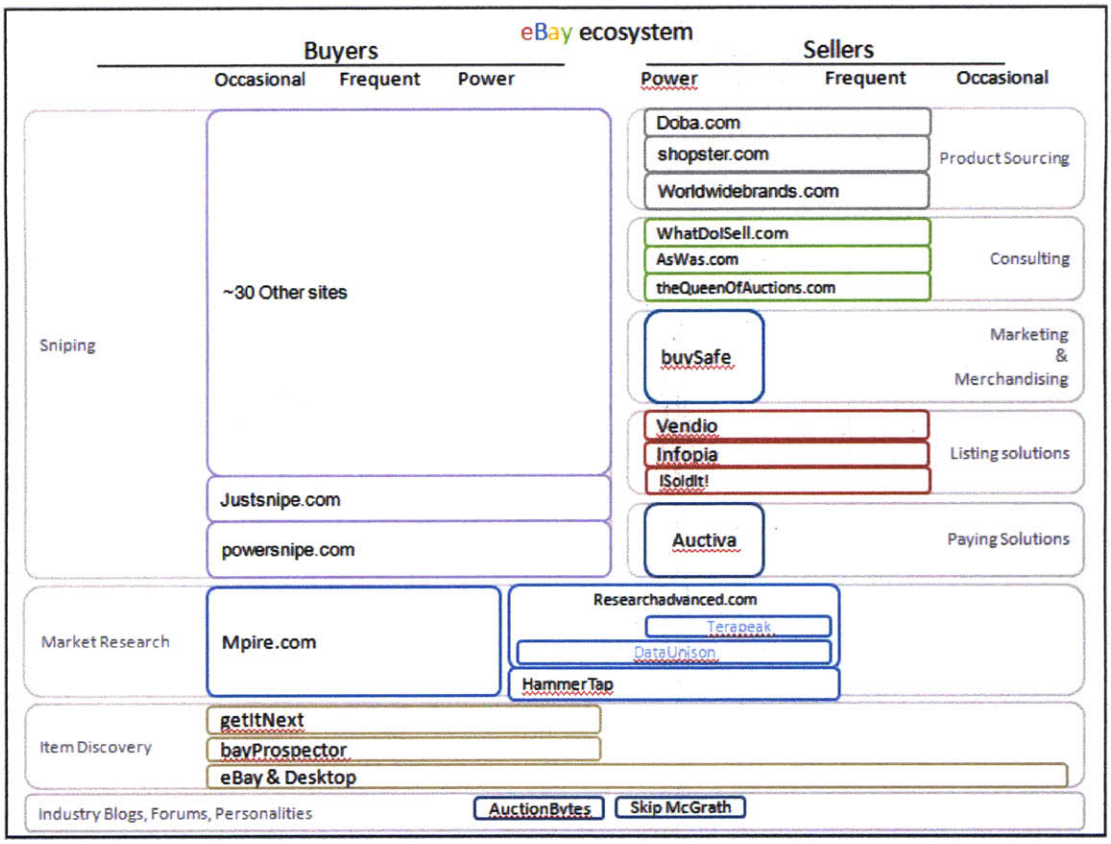

Figure 3, eBay Marketplaces Ecosystem Including Members

Now that we have a top-down understanding of the eBay market and ecosystem it's time we start trying to find user pain points. I will be focusing on both the buy and sell side initially, then I assume driving down into a niche from there. Section 0 will detail how to deconstruct digital ecosystems with the intent of devising an entry strategy into the ecosystem.

4.1.1 Barriers to Entry

On both sides of the value chain (Buyers vs Sellers) eBay's barriers to entry are quite low. Earlier I detailed how the emergence of business ecosystems has transformed the way companies create and capture value. While from a theoretical stand-point network-centric innovation is a reasonable concept, the question quickly becomes, "How are digital ecosystem keystones actually and practically building centers of gravity around themselves?" Keystones are responsible for stability of the overall ecosystem by building platforms and providing standardized ways of interacting with it. Increasingly data-intensive companies are providing standardized ways for third-party developers to access certain, authorized, sub-sets of data. This practice has become so commonplace that industry-wide usage and adoption rates have grown rapidly. Developers are increasingly using multiple API's within a single application, coining a new term *mashups*.[11] It's become so popular that BusinessWeek has named 2007 the "year of

[11] http://www.programmableweb.com/mashups/directory

the widget."[12] eBay realized this trend early on it its history and started offering API's to its developer customers as far back as 2005. <SOURCE> Since then it has released eight API's with functionality ranging from selling services to platform notifications.[13] Collectively over time these API's have led to the creation of almost 500 applications[14] most of which help companies serve small niches within eBay's overall ecosystem, thus helping niche members enter and operate within the ecosystem.

4.2 Historical Demand Opportunity

As evidenced in Figure 4, eBay's stock performance has followed the classic technology adoption lifecycle. Kenn Registe, specialty retail industry analyst, adds weight to the argument saying, "The auction business accounts for half of [eBay's] gross merchandise volume but matured two years ago and appears to be in the decline phase of its product cycle." (Registe, 2010) Going back in time, if we roughly correlate the lifecycle segments to eBay's history, we can better dissect the demand opportunity drivers within each.

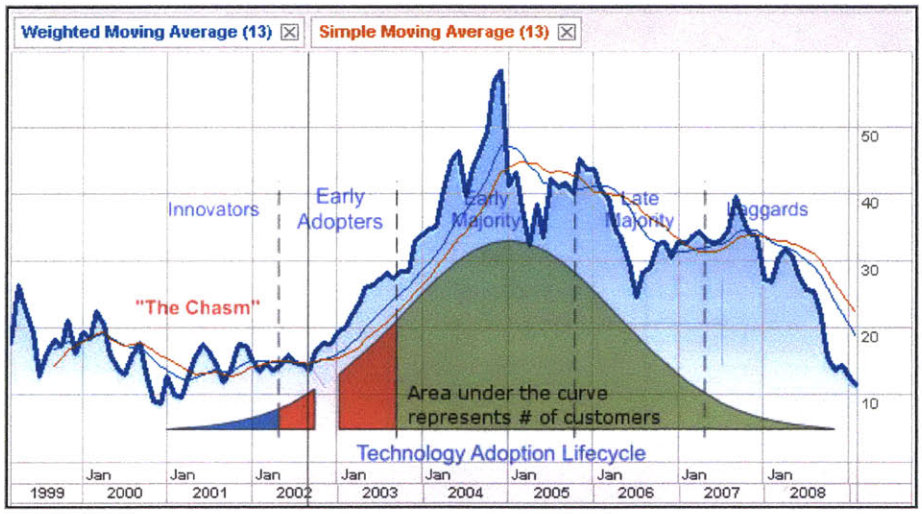

Figure 4, Technology adoption lifecycle superimposed over eBay 10-year stock performance.

4.2.1 Innovators, 1995-2002

During this initial segment, eBay not only provided a platform to facilitate the exchange of products between individuals and small-scale businesses, it more importantly established a system of trust. It seems completely commonplace now, but at the time no other retail analog existed to rate and provide feedback for buyers and sellers; it was a novel and lucrative concept, and it was global.

4.2.2 Early Adopters, 2002-2003

This segment saw increasing numbers of wholesalers migrating their businesses to this additional channel resource. At the same time, competitors attempted to cash-in on the online auction market.

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[12] http://nakedopensource.com/2007/03/21/three-trends-influencing-enterprise-20/

[13] http://developer.ebay.com/products/overview/

[14] http://www.programmableweb.com/api/ebay

Unfortunately for them both the eBay brand name and the 2001-2002 recession—and the lack of venture capital--stymied their plans. (Spiegel, 2003) For eBay on the other hand, the recession represented a successful chasm crossing; in the end, it emerged as a stronger company becoming the market leader in the online auction space. Once across the chasm, 2002 saw eBay's yearly *GMV*[15] of all goods sold reach $1.21 billion, up 62% year-over-year, and the first time the company exceeded the one billion dollar threshold. On a conference call that same year, CEO Meg Whitman called 2002 a pivotal point in the company's history, "EBay is poised to be one of those great companies that only come along once in a generation." (Regan, 2003)

4.2.3 Early Majority, 2003-2005

This period represented the most lucrative in the company's history. At its peak, net revenue totaled a record $751.7 million, a 51% increase from the $496.9 million reported in Q2-03. Aggregated GMV was $8.0 billion, representing a 42% year-over-year increase from the $5.6 billion reported in Q2-03 (eBay Inc. Announces...,2004). A record setting 12 categories delivered over $1 billion in GMV each, with eBay Motors ($10.7B), Consumer Electronics ($2.5B) and Computers ($2.5B) rounding out the top three. More broadly the synergies of eBay in the United States, PayPal and eBay International (primarily EachNet in China) represented the underlying drivers to growth (eBay, 2005).

As 2005 progressed its stock price dropped 20% after the company dropped its financialy performance expectations for the year. This move fueled speculation that its auction business was starting to maturize both domestically and internationally. Later in the year rumors of its purchase of Skype at $2.6 billion drove the stock price over 7% lower. Analysts were concerned that Skype didn't complement its core business and moreover it brought eBay into direct competition with Microsoft and Google in the personal communications market (Cantrell, 2005). Still others thought the synergies were a natural extention of the company's ability to facilitate better communication between buyers and sellers. In the end, eBay bought Skype for $4.1 billion.

4.2.4 Late Majority

Despite the impressive overall earnings from its Marketplaces business, analysts' skepticism regarding its purchase of Skype and raising its fees drove the stock price lower for the first part of 2006, despite the favorable macro-economic climate. As time went on though, Marketplace sellers were becoming more and more organized and large sellers started to dominate. Some 724,000 Americans reported eBay as their primary or secondary source of income (eBay Statistics, 2006). At the same time, alternate bidding sites started catering to lower price, niche sellers.

4.2.5 Laggards

eBay starts to diversify in this period as the company is de-emphasizing its Marketplace platform in lieu of the Payment platform potential. Marketplaces' revenue share relative to the company's overall revenue continues its downward trend as seen in Figure 5, % of revenue share for each division within eBay

[15] Gross Merchandise Value.

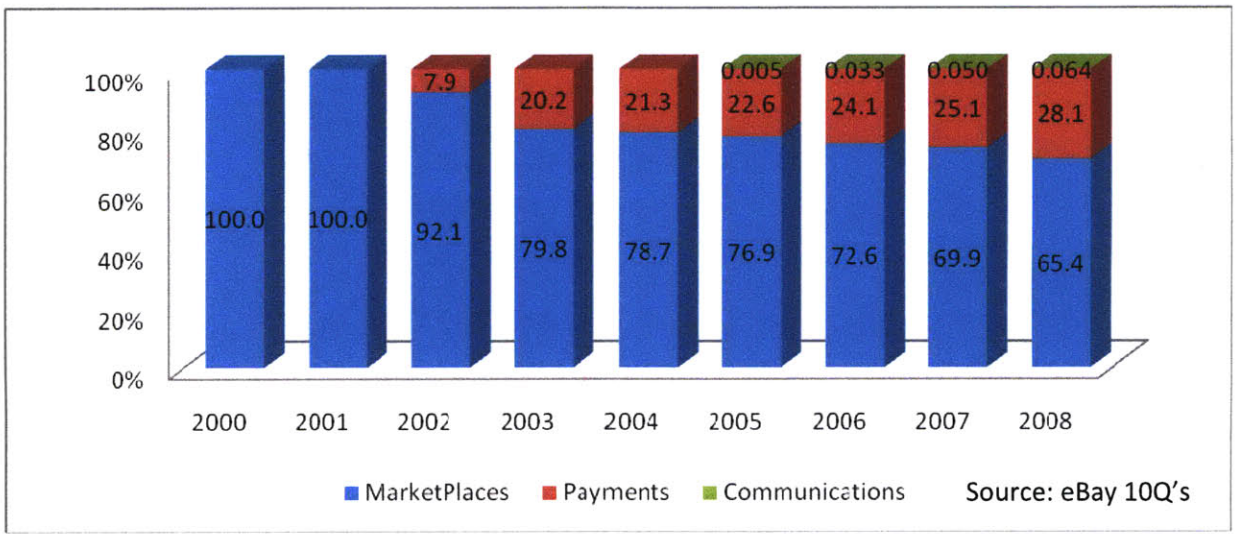


Figure 5, % of revenue share for each division within eBay

While decreasing, Marketplaces' long-tail effect continues to provide the company $1.2B in revenues. It is *the* reason why eBay can afford to leverage the upside potential of its Payments and Communications divisions—both of which have been growing over the past three years. Going forward, the company sees significant growth in its PayPal division as it attempts to diffuse it into new channels such as government and charitable payments (Burrows, 2009). In short, realizing that its core business is maturizing, eBay is attempting to both incrementally innovate key technologies within the Marketplaces division while at the same time introducing radical innovations in the form of the Payments division in order to increase shareholder value.

Given that this thesis is concerned with understanding where within the eBay ecosystem to properly position a product to maximize profitability, it makes sense to drill down into both divisions in more detail.

4.3 Divisions

4.3.1 Marketplaces

Marketplaces are to most people what eBay is. During the mid 1990's no other online auction application existed that simplified the process the way eBay did. As time progressed though, more competitors challenged eBay's dominance. At the same time the proliferation of established retail sites—Amazon et al.—made online shopping much easier.

During its infancy back in 2000, Amazon's auction business was in danger of collapsing. "I don't think they're putting a lot of effort into (auctions) right now, and I don't expect them to," said Jeetil Patel, Deutsche Bank Alex Brown financial analyst covering Amazon at the time. "If they're looking at areas to trim the fat, obviously this seems to be one of them," given that auction revenue is an "insignificant" piece of Amazon's business (Wolverton, 2001). Amazon Auctions evolved into zShops then ultimately into the Amazon Marketplace wherein sellers can offer their products alongside Amazon.com products (Wikipedia, 2009). And by 2008 Amazon Marketplaces—while not a pure auction business—began to challenging eBay's ecommerce industry domination.

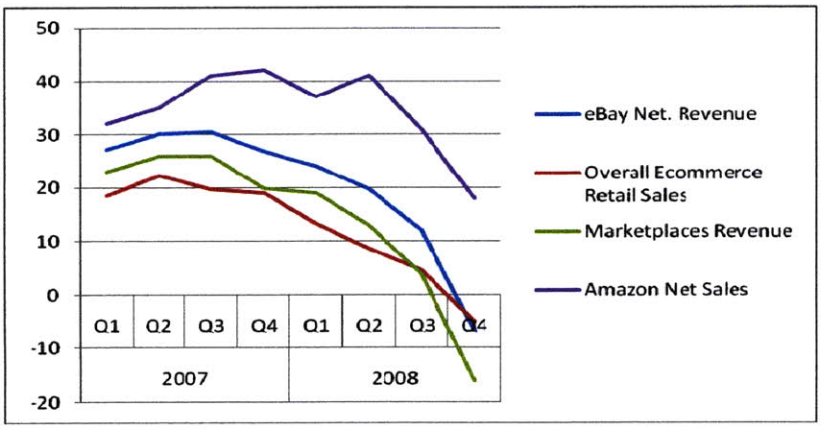
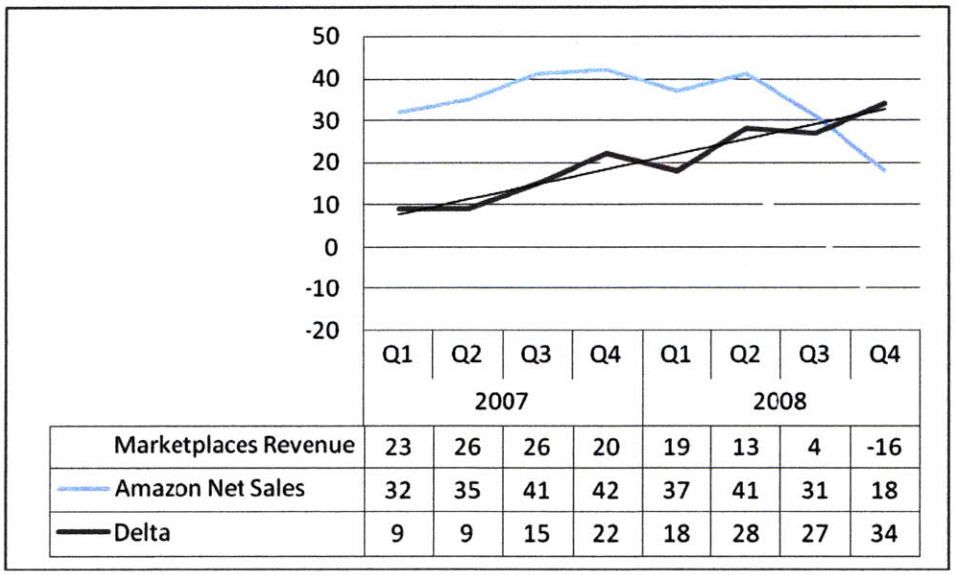


Figure 6, YoY Trends for Amazon, eBay, the eBay Marketplaces division and the entire Retail Specialty Industry (Sources: eBay/Amazon 10Q's, and Dept. of Commerce Website)

As can be seen in Figure 6 above, while the overall specialty retail industry is trending downward given the ongoing (2009) recession, eBay has lost market share to Amazon in every quarter of 2007 and 2008. In fact at the end of 2008 the company trended below the overall ecommerce retail sales YoY growth rate. Worse yet, eBay's Marketplaces, which competes directly with Amazon, has the worst growth rate of the four. Over the past two years, Amazon's growth rate vs. eBay has steadily increased. In Q4 2008, the growth differential between the two companies was 34% as detailed in Figure 7.



	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
	2007				2008			
Marketplaces Revenue	23	26	26	20	19	13	4	-16
Amazon Net Sales	32	35	41	42	37	41	31	18
Delta	9	9	15	22	18	28	27	34

Figure 7, YoY Growth Rates, eBay Marketplaces vs Amazon, plus growth differential between the two

So we can conclude by stating that Amazon has steadily outperformed eBay for the past two years despite the global recession. While both companies are affected, the marketplaces division in particular has lost considerable market share. The most obvious question that arises is, "Why?" If we break-down Marketplaces further along the lines of Buy It Now (BIN) and auctions items, as a percentage of

Marketplaces' Gross Merchandise Value (GMV), Figure 8 illustrates that auctions have been losing ground.

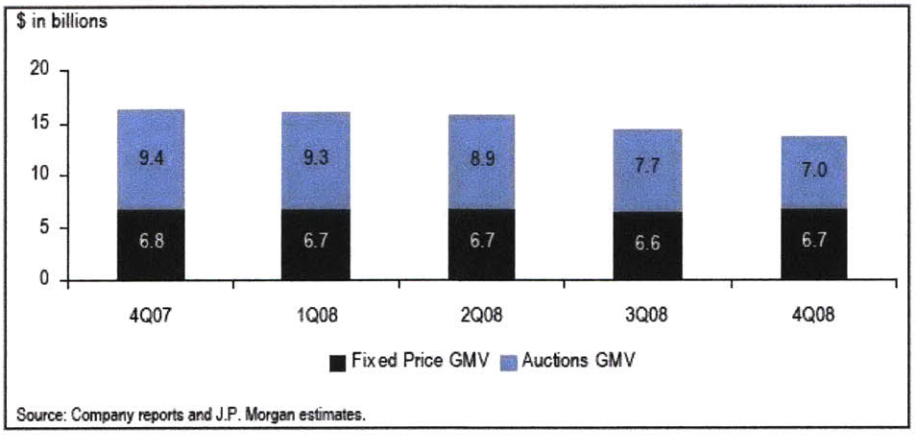


Figure 8, Marketplaces Fixed Price vs Auctions GMV

Given the macro-economic climate, why isn't eBay weathering the storm better? Why would consumers rather pay retail prices when wages and real prices for goods have been dropping? (Bureau of Labor Statistics, 2009) Why wouldn't eBay be benefitting from this climate given that almost all sales are tax-free? While Figure 8 shows that eBay.com GMV is declining for auctions and increasing for BIN items, the Sell Through Rate (STR) for each is actually reversed as shown in Figure 9. In other words, if a seller lists an item for auction rather than BIN, he/she has a better chance that it will sell; 48% vs 20%, respectively.

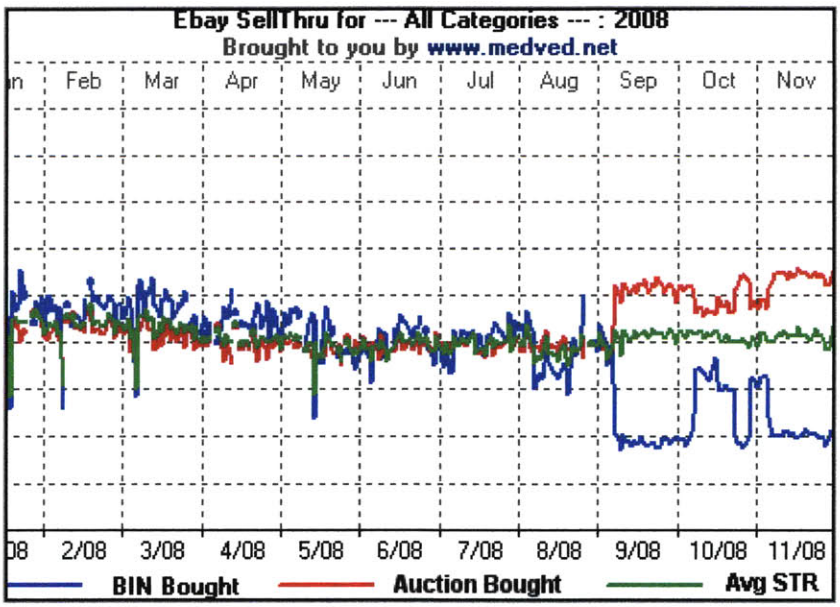


Figure 9, eBay Sell Through Rate (STR)

Drilling down further we find some bright spots trending higher within Marketplaces despite the recession. Basically, consumers are spending more time comparing prices to find the best value[16] for their money. As they attempt to maximize benefit—while at the same time decrease how much they pay—it stands to reason that high quality products are holding up quite well in the economy. By and large, consumers are ensconsing themselves in their homes and buying essential items like toys, clothing, food, etc. DVD technology, laptop parts, satellite radio hardware, and others are trending higher in both sales and listing numbers on eBay (Rodriguez, 2009). Conversely, demand for big-ticket items are trending downward significantly (Iwata, 2008).

4.3.2 Payments

As was discussed earlier, PayPal represents the bright spot within eBay's portfolio. Given that 50% of the globe still uses paper money and checks for transactions, and likewise since online transactions are increasing, eBay sees considerable upside market potential for its payment division. PayPal CEO Scot Thompson is bullish on the company's performance, "We will grow the business this year. And in every market we're in, we will grow at a multiple of e-commerce." The company will grow especially fast in Europe where the application simplifies cross-border transaction processes. As well, the company is attempting to position the product as an option for charitable donations, government payments (e.g., parking/speeding tickets, etc.) and rent (Burrows, 2009). An API is also scheduled for release late 2009 which will allow developers to create and manage PayPal centric applications.

Unlike the Marketplaces division, Payments is actually weathering the global economic storm well as more and more consumers move away from credit card payments to PayPal—which permits them to only spend the funds available in their account. In 2008, the company released the "top-up" card in Britain, which in essence is a debit card, without the need to open a banking account (PayPal Top Up Card, 2008).

While the recession is impacting the entire e-commerce industry, and further since marketplaces has been hit especially hard, looking at the active user numbers could give an idea of whether consumers are moving away from eBay.

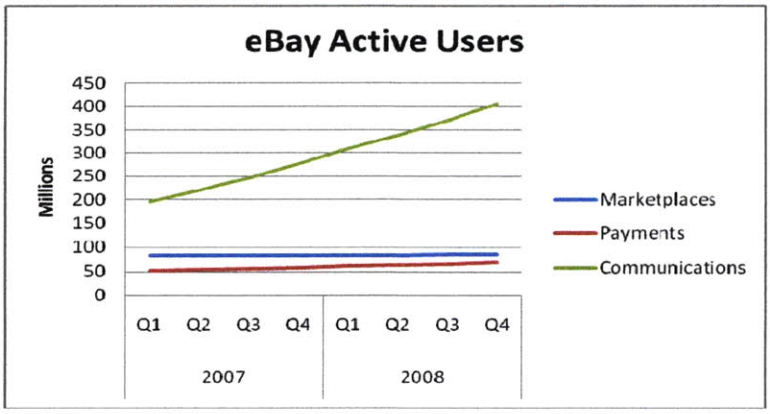


Figure 10, eBay User Growth, All Segments

[16] Value is defined as benefit at cost.

Active user counts are growing across all three segments, though Marketplaces' at the slowest pace. But despite the recession, users are still active at ever increasing numbers. Despite the flat active user growth over the past two years, Figure 11 shows that Marketplaces still has 86.3 million active users in the most recent financial quarter. But those figures include domestic and international across all auction platforms.

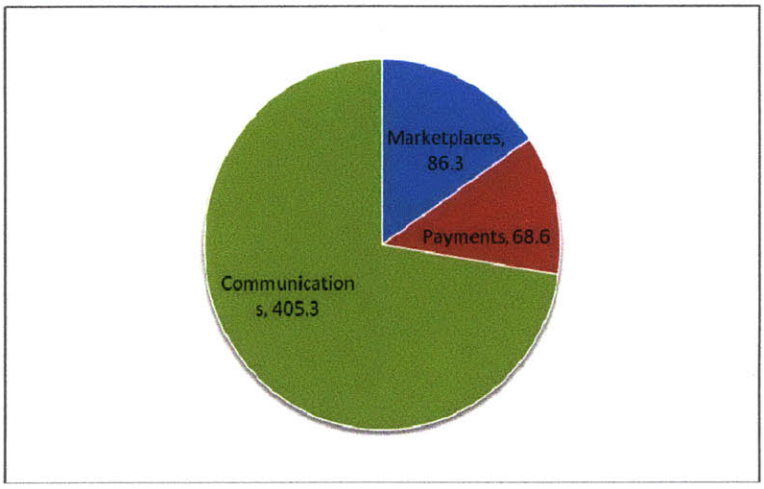


Figure 11, Q4 2008 Active eBay Users Across all Segments

To expand on the last point, just anecdotally Amazon's prices are very competitive compared to a lot of items found on eBay. And given that Amazon is perceived to be more trustworthy, it's not hard to see why potential eBay buyers would choose to purchase from them, instead.

4.3.3 Communications

The Communications division within eBay is essentially Skype. eBay bought Skype for $2.6B in September 2005 to, the company hoped, allow buyers and sellers to communicate during an auction.[17] This seemed like a great idea at the time, except that eBay didn't consult sellers before the purchase. If they had, sellers would have told them that they have no interest in speaking with buyers, who may or may not even speak the same language.

Since the acquisition eBay has done little to nothing with Skype, other than let it operate on its own. And while Communications represents the lion's share of eBay's overall customer base (Figure 11), the division only generates .064% of the company's overall yearly revenue (Figure 5). But while eBay hasn't done anything with the division, analysts on the other hand have been hard at work criticizing the acquisition. Among other criticism, was that idea that Skype became a distraction to eBay, and caused it to take its eye off the core business: Marketplaces and Payments.[18]

Realizing their mistake, eBay finally acquiesced and intends to spin-off Skype Q1 or 2 of 2010.[19]

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[17] http://www.pcworld.com/article/122516/ebay_buys_skype_for_26_billion.html

[18] http://www.businessinsider.com/2007/10/its-finally-off

[19] http://www.bloomberg.com/apps/news?pid=20601087&sid=aCWYwCYVyHx4&refer=home

5 eBay Customer Needs

5.1 What benefits do Customers want?

Remember that the primary narrative of this thesis is to detail both the technical and political challenges posed to ecosystem insurgents as they maneuver and occupy a particular niche role. Given that the author of this thesis is building an online niche-specific application within the eBay ecosystem, the remainder of the thesis will strategize building and marketing the product. We intend to deconstruct the eBay ecosystem first to find the best niche opportunity. We will then detail our attempts—through our company Performance Analytics—at finding/satisfying customer needs, building the application, researching the next release version of the product, and finally sharing lessons learned from operating in a keystone's ecosystem.

Given these realities, we wanted to determine just how people are using eBay these days. We designed a six question survey meant to test some of the constraints above as well as help us attempt to drill down into a niche. First we wanted to understand to what degree the global economic crisis is affecting their overall buying habits on eBay and if they're buying new items more so than used.

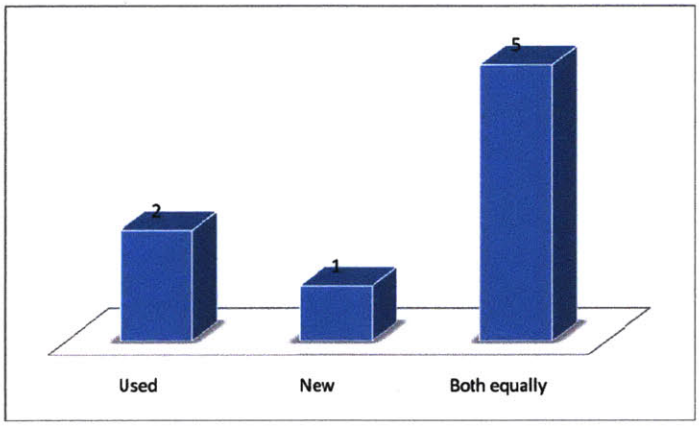


Figure 12, Given the global economic recession, are you using eBay more often to buy items? If YES, are you buying used or new items?

From this we can deduce that users are buying new items a bit less overall.

We then wanted to know why eBay customers weren't buying from eBay in as great a number as before the recession:

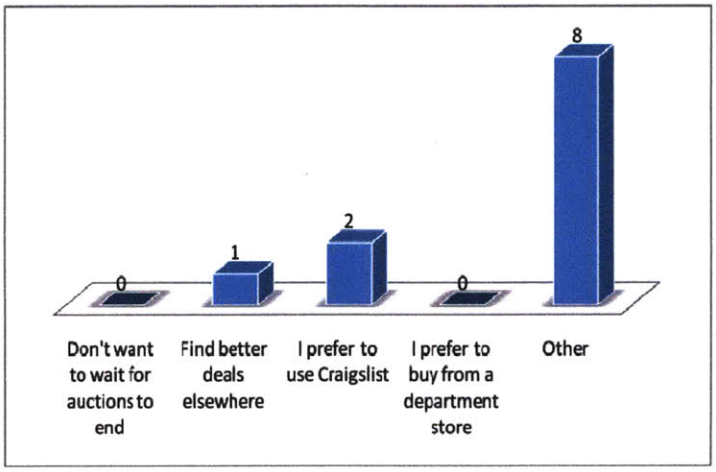


Figure 13, How have your eBay buying habits changed now vs before the recession?

Some of the Other comments we gathered included:

- "Haven't had the need recently."
- "Just not buying much in general"
- "Haven't really been spending money and when I do, I go to department stores"
- "I use Ebay as much as I used Ebay before the recession. By the way I user powersnipe.com so I do not worry about auctions ending times as much."
- "The economic recession doesn't change my eBay buying habits. generally I use eBay to buy new/good condition items that are cheaper than in craigslist/department store."
- "I use eBay for inexpensive stuff, and my consumption of suchs things hasn't really changed much with the recession."
- "Just as often as before the global economic recession."

So the common theme here is that, for users whose consumption habits haven't changed, they are tending toward buying local items (Craigslist, "department stores", etc.). So that piqued our interest. Why do eBayers want to buy locally? We asked the question, "For say, an item which weighs about 10 lbs, how important is knowing how far away the seller is from you before you bid on an eBay item? Assume 1) one day left for each auction, 2) two sellers, 3) one seller lives in New Hampshire, the other in San Francisco, and 4) you live in Boston:"

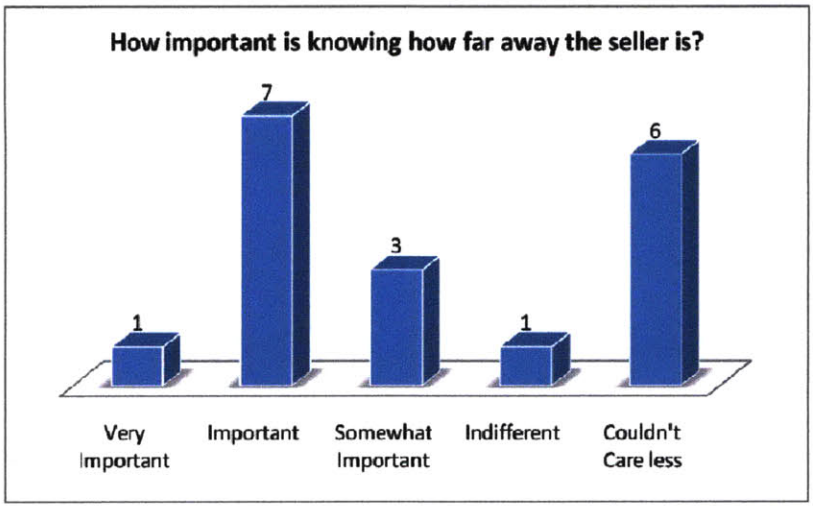
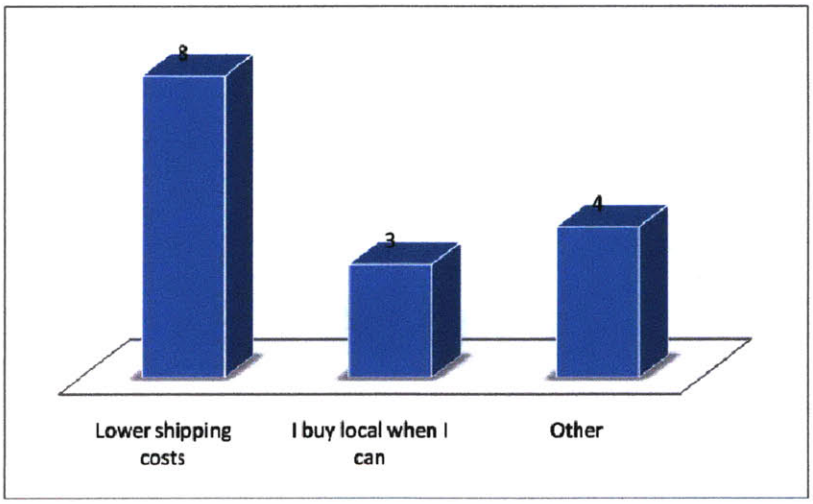


Figure 14, How important is knowing how far way the seller is?

So 11 out of 18 respondents said they'd prefer an item they are interested in to be nearby. Was it only because consumers wanted to save money on shipping costs?



Mostly because of that and buyers want to buy locally. Not surprisingly the decline in the world economy has affected e-commerce and eBay marketplaces overall. As such eBay consumers' behaviors have favored buying local given that there's a perception that sellers attempt to maximize profits using inflated shipping prices. At the same time, given that the Great Recession[20] has raised protectionist concerns world-wide and in the US[21], consumers are taking pause when considering whether to buy a locally vs. globally sourced product.

[20] http://www.nytimes.com/2009/03/01/opinion/01ferguson.html

[21] http://www.nytimes.com/2009/03/23/world/23trade.html?_r=1&hp

5.1.1 Evaluating both Sides of the Ecosystem

eBay is a complex e-commerce company whose business model is threatened both top-down from the Great Recession as well as bottom-up from other more effective and efficient e-commerce companies. While there are bright spots—particularly the Pay division (PayPal)—both the Communications (Skype) and Marketplaces (auctions) divisions are feeling the squeeze from global competitive pressures. Per Figure 5, Communications only generates .064% of eBay's total yearly revenue making it an unattractive niche to attack. As detailed in the Payments section above, eBay believes this division has a lot of promise and can diffuse the technology to other applications. It's working to release an API this year. While this looks to be an interesting opportunity, Performance Analytics can't wait that long to release and must look elsewhere. Marketplaces, while it is experiencing revenue declines, still presents opportunities; after all, the eBay auction platform is not going away[22].

So in order to understand where and how to enter the ecosystem, how do we determine where, and further, how to enter intelligently? Looking at the sell side first, from the ecosystem diagram in Figure 3 the sell side of the market appears very saturated and given that sellers' fees have pushed a lot of PowerSellers off eBay[22], any product we offer will be adding on top of eBay's fees. On top of that, to operate on the sell-side requires efficiently sourcing desirable products. Given the ongoing recession, where GMV and sell-through rates are down, with no established customer base, this may not be the right time to enter the sell-side.

As for the buy side, it's generally understood from players within the ecosystem that it is very difficult to monetize here because bidders are attempting to save money using eBay in the first place; they're typically not tolerant to paying premium prices. On top of that, the current economic crisis and Amazon's presence are seemingly putting additional downward pressure on prices. Or are they? More user surveys were in order.

5.1.2 Buy-side Needs Analysis

Generally speaking, while determining the best way develop a successful product and take it to market quickly, user needs must be satisfied as efficiently and early in a start-up's history as possible. Operating a company is a very resource intensive undertaking and start-ups need to grow and profit quickly in order to survive. Indeed, in the online software space where competitors abound, catching a prospective customer's attention and convincing them to buy from you is difficult, to say the least; particularly when you're attempting to convince a customer to switch from an existing competitor.

[22] http://www.businessweek.com/magazine/content/08_26/b4090052447314_page_2.htm

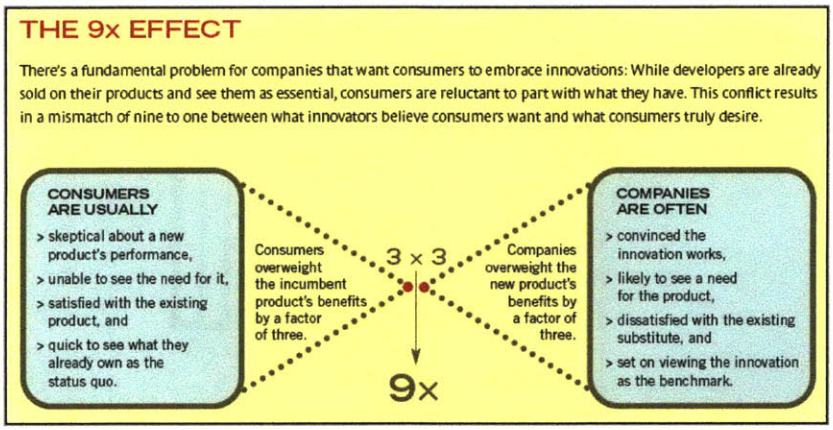


Figure 15, 9x Switching Cost Effect

In order to uncover eBay arbitrager needs, Performance Analytics conducted a variety of surveys. The first gauged the frequency in which casual eBay users bid on items and how they then established a valid market price for each item. As it happened, 88% of casual buyers spent about 15 minutes by comparing prices with other retail sites (froogle.com, amazon.com, etc.).

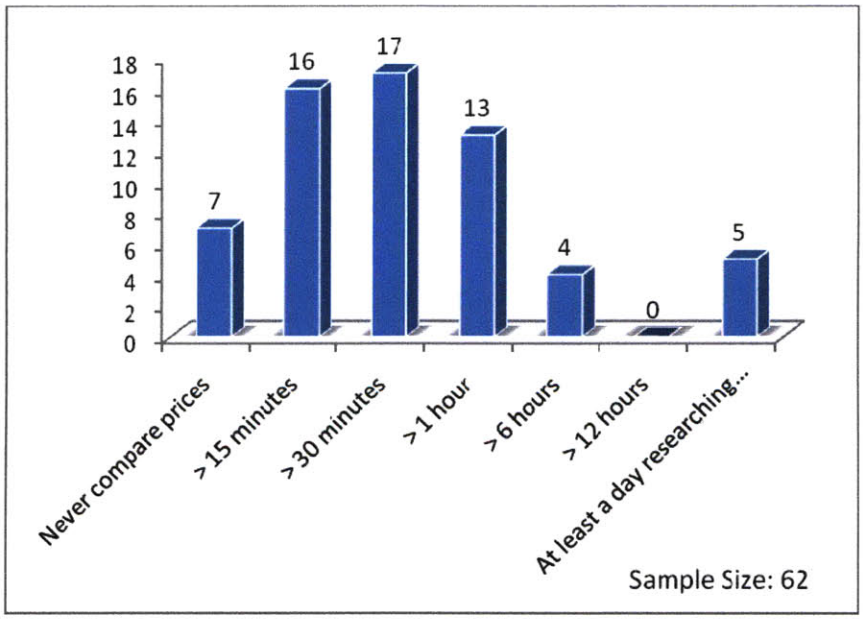


Figure 16, "For a typical ebay purchase, how much time do you spend determining a reasonable maximum bid price for the item?"

With this data in hand, and realizing that users would probably pay for functionality that would increase their chances of winning an auction by paying more to essentially save money—to a point of course—we sent out another survey attempting to better define that functionality. As it happened, 52.1% of users were willing to pay a few dollars for sniper functionality (bidding at the last few seconds)—Figure 18; automating the aggregation of identical items from other sites to determine valid market prices—

Figure 17; and chain bidding (bidding on a variety of items to ensure one of them is successfully won)—Figure 19.

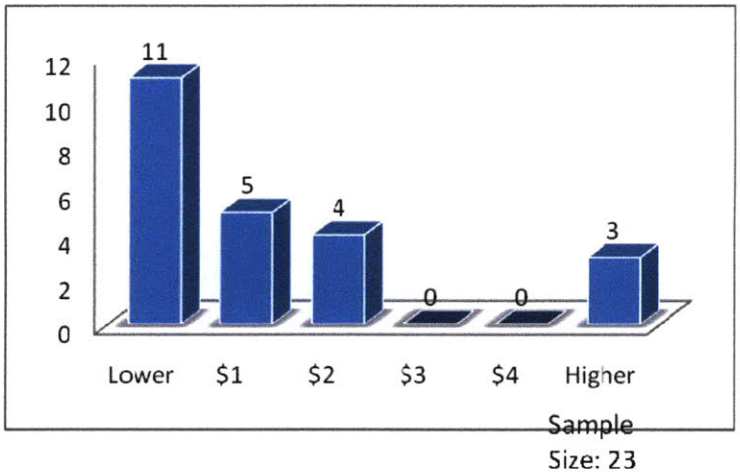


Figure 17, "How much would you pay to find a valid market price for an item you're bidding on?" Higher varied from %5-10% of item's cost.

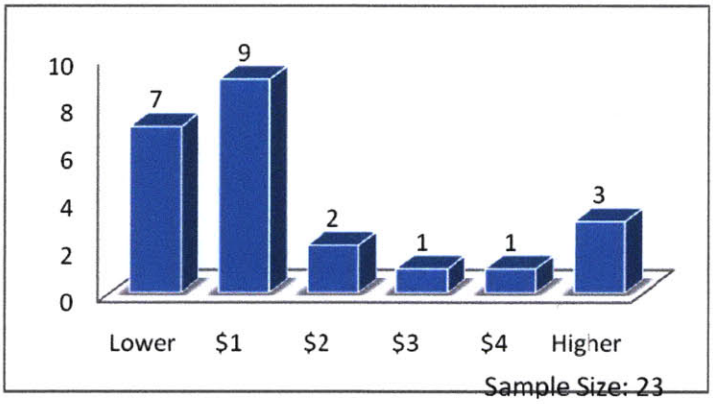


Figure 18, "How much would you pay for an online application that will snipe-bid at the last few seconds to better your chances of winning?" Higher variation from %5-10% of item's cost.

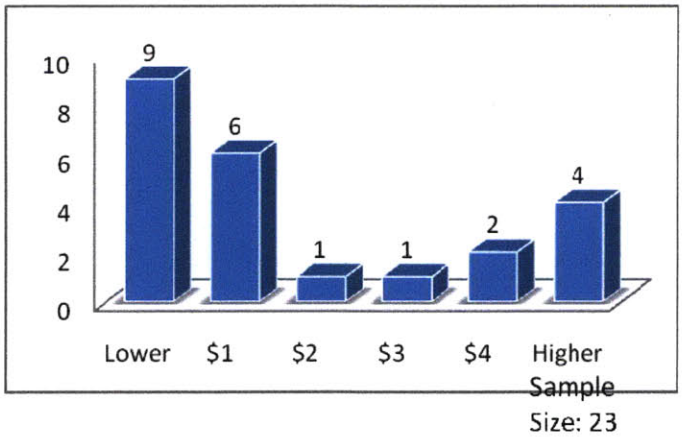


Figure 19, "Imagine an application that will bid on all 5, and when one of them is won, the application cancels the bids on the other 4 items, ensuring you at least win one of them. How much would you pay for this type of service?" Price variation from %5-10% of item's cost.

All in all, users said they'd spend about $3-$6 on an application that integrates all this functionality. This, to us, proved a valid set of general needs and a potential market to exploit. Before doing so though, we would first need to drill down to uncover users' principal needs in order to prioritize the product development process.

5.2 Building a Buying Platform (Version One)

Appendices A, B, and C detailed Performance Analytics' efforts at gathering user needs, researching potential patent infringements as well as creating a rough concept of a product. In the end we decided to go with a product which assists *PowerBidders* acquire under-valued items. They would then resell the items for a profit and pocket the difference. Among other things this potential product would allow them to quickly find undervalued items, track them during the auction process, recommend undervalued items to *snipe*[10] and *snipe* them at the last few seconds of the auction. We could likewise create an inventory section which will allow our clients to know, 1) which items are inbound to inventory, 2) which items are in inventory, and 3) which items are outbound to the buyer. See Appendix F for specific Inventory functionality. After all, consumers indicated they needed these problems solved and would be willing to pay for them, despite the macro economical climate. No other product on the market today incorporates all these efficiencies for eBay customers operating in this niche.

6 Entering the Ecosystem

6.1 Synthesis

Before starting to search for lucrative niches to occupy, we have to remember the eBay technology adoption curve. Arguably eBay is on the back-side of the maturation cycle and is facing competitive threats from below to its dominant keystone position. Remember from Figure 8 above that over the past year, GMV generated from auctions is decreasing relative to BIN items. Some have speculated that

given this trend, eBay will start emphasizing BIN items at the expense of auctions.[23] And because of both its place along the technology curve as well as the global economic crisis, sellers are moving higher in the value chain because of diminishing profits from low-end disruptions from Amazon and other e-commerce sites. eBay is taking steps to rectify this trend, but Performance Analytics' niche strategy has to consider this dynamic as it considers monetization of its products and/or services. After all, in order to survive eBay is altering its own pricing in the face of higher costs and diminishing margins. At the time of this writing (April 2009) a seller can incur fees up to 15%[24] of the total sale price, not counting the PayPal charges.[25] This has not only caused great angst amongst PowerSellers[26], but casual sellers are routinely seeking alternate auction sites. Given these realities, Performance Analytics has to realize the following before attempting to enter a niche:

- The global economic crisis is causing consumers to reduce spending
- Its entering a maturizing ecosystem which is experiencing decreasing revenues
- The keystone's fees are increasing
- The sell-through rate for auctions is increasing
- Insurgents (Amazon et al) are attacking profits of its new item sellers

More to the point so far in this thesis we have reviewed the 1) demand trajectories of businesses, particularly digital ecosystems over time; 2) looked at the evolution of pricing, and learned that the most efficient way to price an item when the starting valuations are unknown, eg., auctions; and 3) detailed eBay's evolution as it became one of the largest digital ecosystem keystones as well as its diffusion efforts using its eight API's.

We have also broken down the eBay ecosystem into a dual-sided network: buyers and sellers. Within each side we outlined each major niche and likewise detailed the members occupying them. We seen that the sell side is very competitive, and entering it would require among other things charging sellers, on top of eBay's seller fees. A particular aspect of the buy side of the ecosystem—affiliate fees—looks most promising as far as building and establishing a fairly reliable revenue stream. With this goal in mind we drilled down into eBay customers' needs using a simple survey and with those responses have a fairly good idea of the benefits to provide to customers, at least for the initial version of the product. Lastly, with another survey, we determined customers' sensitivity to various prices points for the functionality desired in the first survey.

6.2 Network Effects

6.2.1 Power of the buyers

Eventually all buyers on eBay are our customers. For now though we are focusing on underserved[27] *PowerBidders*[28]; after that, we'll target casual bidders. In order to efficiently satisfy needs, we'll look at

[23] http://www.businessweek.com/technology/content/jun2008/tc2008062_112762.htm

[24] On the eBay US platform.

[25] http://pages.ebay.com/help/sell/fees.html

[26] http://www.youtube.com/watch?v=0FOXbSJ82aA

[27] http://hbswk.hbs.edu/item/4300.html

[28] Our term for eBay arbitragers

the methods and tools PowerSellers use to efficiently offload their products. We still need to quantify the number of aspiring PowerSellers, but overall, there are approximately 500,000 people making a full-time living buying and selling on eBay. To attain the PowerSellers title, most sellers use advanced analytics to make buying/selling decisions provided through third-party companies such as Terapeak.com, Hammertap.com and Andale.com. Leveraging eBay's API, these companies provide analytical information to PowerSellers, helping them determine, among other things, extremely undervalued items, the best time of year to buy a product, and so on. As well, some PowerSellers interpret and make decisions based on this data using tools built either by other third-party entities or, as is the case of the most technically savvy bidder, they build their own. While this tool market is fragmented, the data extraction market is competitive. We believe there's an opportunity to enter the buy side of the market to join particular aspects of each. Ultimately this strategy is meant to help *PowerBidders* find undervalued items so they can be resold for a profit. The target market is a small niche within the overall eBay auction market.

There are 120m items listed at any one moment in time on eBay. Roughly $1900 worth of merchandise is transacted every second, totaling over $59.65B worth of items transacted over just eBay's Marketplaces (auction) segment last year. In total, this generated $4.7B in revenue for Marketplaces.[29] Overall though, just like the rest of the global economy, GMV has been down over the past five quarters:

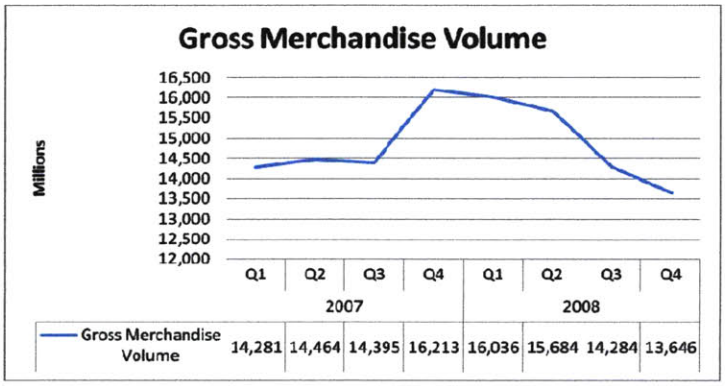


Figure 20, eBay Marketplaces GMV over time

As well, during any given quarter Marketplaces has roughly 83 million active[30] users. And over the past six quarters the number of active users has been rising steadily; see Figure 21. And from Figure 9, the Sell-Through Rate (STR) is actually trending upwards slightly.

[29] http://investing.businessweek.com/research/stocks/financials/drawFiling.asp?docKey=136-000095013409003306-4EKAAM6EQ6U9EV4O4M1E53IQB5&docFormat=HTM&formType=10-K

[30] An active user as any user who bid on, bought or listed an item during the preceding 12-month period.

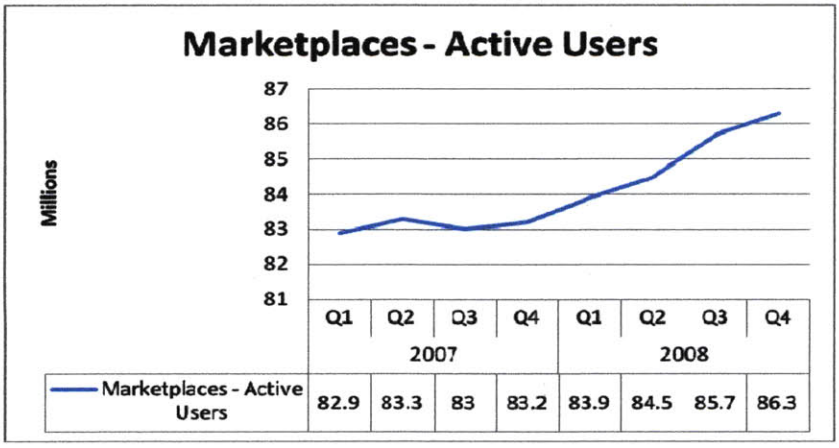


Figure 21, Marketplaces Segment Active Users

So this means that not only are users more active, sellers are more likely to sell more items they list and GMV is down; so users are buying more lower priced items. It's estimated that arbitragers represent 1% of this market. One of them, our principal lead user, and the author of the *eBay Arbitrage Manual*, is an active eBay trader whom we've been closely working with to understand eBay arbitrage user needs.

What follows is an attempt to define both the obstacles and opportunities which will affect growth of Performance Analytics. We will first look at the company's competitors, barriers to entry, substitutes and other factors to attempt to quantify the risk to the business model. With that known we will compare our offerings against our customers' along the relevant technological dimensions.

6.2.2 Power of suppliers

eBay acts as a platform provider for auction agents like SmartBidder. While there are other auction marketplaces like Google, Amazon etc., no other auction marketplace offers as much opportunity as eBay in terms of monetization. eBay is not a threat for *forward integration*[31], but while eBay wouldn't explicitly condone arbitrage, we believe they will implicitly encourage arbitrage to some point. When a PowerBidder buys and resells an item from/back to eBay, the company's profits are doubled for that item. There isn't much *backward integration*[32] as Performance Analytics doesn't have resources to build the huge infrastructure and brand required for building an auction site. On the other hand, Performance Analytics will start development of an open source platform allowing PowerSellers to build their own auctions, and ostensibly link to their store from eBay.

6.3 Competition

6.3.1 Rivalry Among Competitors

The 1st version of SmartBidder will target eBay arbitragers, who by their very nature, do a lot of buying and selling on eBay. One of their principal needs, as detailed in 11.3--SmartBidder, Revision 1 Gathered

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[31] "A business strategy that involves a form of vertical integration whereby activities are expanded to include control of the direct distribution of its products." -- http://www.investopedia.com/terms/f/forwardintegration.asp

[32] "A good example would be if a bakery business bought a wheat farm in order to reduce the risk associated with the dependency on flour." -- http://www.investopedia.com/terms/b/backwardintegration.asp

Needs—is to increase the likelihood of winning an item, which on eBay means *sniping* an item a few seconds before the auction expires; this is typically the most competitive phase of an auction as illustrated in Figure 22.

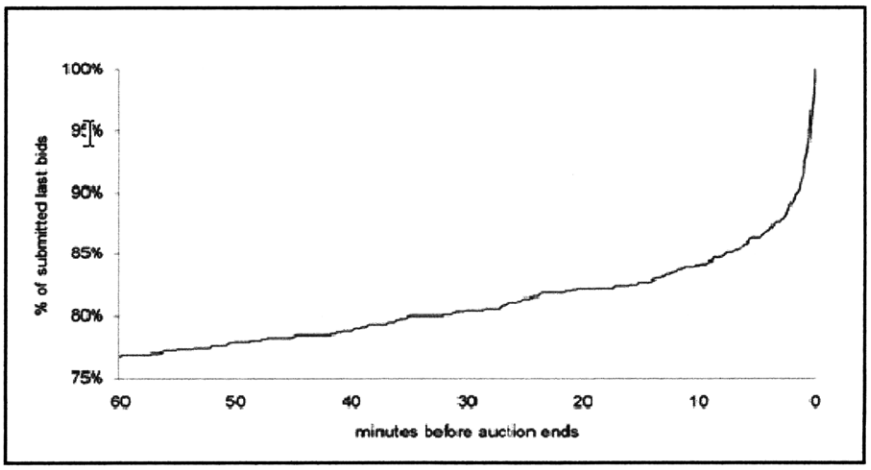

Figure 22, Cumulative Distribution of eBay bidders' last bids over time (Ockenfels and Roth, 2001)

This is one of the primary dimensions along which SmartBidder will compete with players within the buy-side eBay ecosystem.

As shown in Figure 3, there are about 45 competing sniper sites online, but only five of them are free and none of them are customized toward arbitragers. While the eBay search interface works fine for casual bidders, arbitragers will scrutinize every item within a given search result to determine if something's undervalued. When they do find an item, they need to snipe it and move on to the next one immediately. All other arbitrage sites require the user to cut and paste the item ID into a field on their respective website, thus wasting the arbitrager's time.

Generally speaking the following is a list of eBay sniper effectiveness parameters:

- Price
- Effectiveness
- Robustness
- Feedback
- Convenience

I will compare the five sniper sites I mentioned above and evaluate whether SmartBidder is more effective and useful to arbitragers along those parameters. I'll first define how each of these parameters benefits buyers, particularly PowerBidders. Along all parameters, we'll simply assign 5 to the most favorable rating, 1 to the worst.

6.3.1.1 Price

eBay buyers, especially PowerBidders are price conscience. Since they're attempting to resell items for a profit, they must keep costs down.

6.3.1.2 Effectiveness

PowerBidders want to be assured that they can obtain an undervalued item. A well-designed sniper will allow them to automatically bid on the item.

6.3.1.3 Ease in Acquiring an Auction Price, Convenience, Robustness, Effectiveness, Feedback

Robustness is the degree to which a sniper can allow a user to snipe multiple items, win one and cancel the snipe jobs on the other items. This parameter can be thought of as fallback insurance. E.g., if a PowerBidder wants to buy a standard Wii Nunchuck at a particular price point and they lose to someone else, ideally they'll win another one in a subsequent auction (at the same price point).

6.3.1.4 Feedback

Feedback refers to the explicitness and frequency of messages sent to buyers during the progression of an auction. For instance, if a PowerBidder set a snipe with a maximum bid price which is subsequently overbid, a good quality sniper will send a message indicating the change of state.

6.3.1.5 Convenience

Convenience is essentially the degree of ease-of-use. Cutting and pasting an auction id from eBay to another application scores lower. Providing an interface to users so they can search and snipe from one single integrated interface scores higher:

Sniper	Price	Effectiveness	Robustness	Feedback	Convenience	Total
Auctionstealer	2	5	1	5	3	16
Bidninja	5	5	1	5	3	19
Gixen	5	5	3	5	3	21
Jbidwatcher	5	5	1	5	3	19
Justsnipe	4	4	1	5	3	17
SmartBidder	5	4	5	5	5	24
Supersniperpro	5	5	1	5	3	19

Table 1, Comparing eBay Sniper Offerings

As we can see in Table 1, SmartBidder is approximately 20% more effective than the nearest competitor (Gixen), because of our Robustness score. In release 1.2 Performance Analytics is rolling out a *chain-sniping* feature which allows its customers to schedule backup snipes for multiple items of the same make, model and price range; thus increasing the probability of winning a particular item. While there are other features needed by PowerBidders, sniping is by far their greatest need as detailed in 11.3--SmartBidder, Revision 1 Gathered Needs.

Using a different layout, we can combine and label Effectiveness, Robustness and Convenience into a Ease of Use and put it on a Y-axis; we can likewise put Price on the X-axis. Doing this, we can see that SmartBidder's offerings are superior to all others, including its more direct competitor, Gixen. More specifically, we are differentiated on Ease of Use and competitive on Price. No one is differentiated on Feedback. This said, SmartBidder is well-positioned to move in and take market share from the other sniper sites.

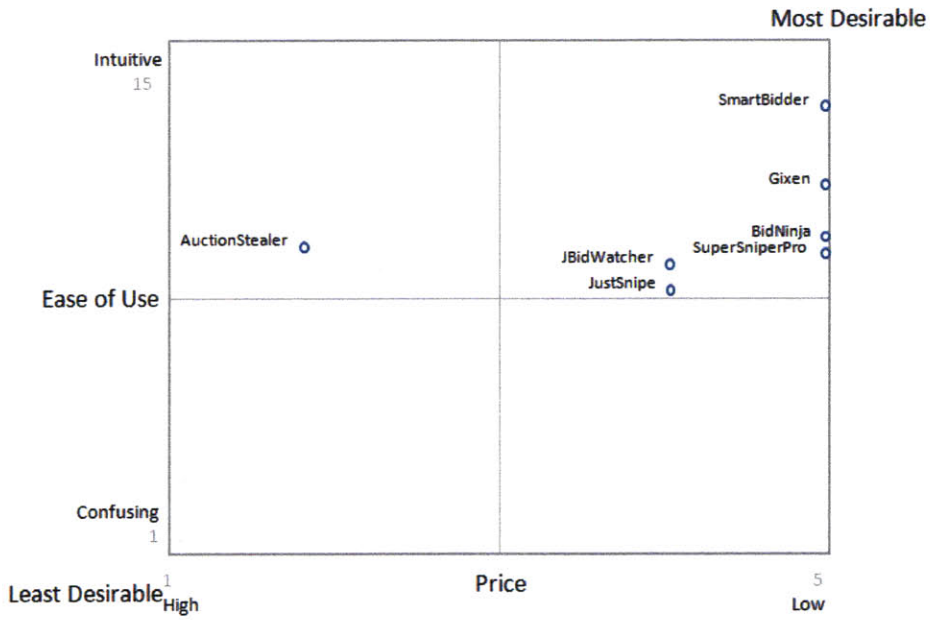

Figure 23, Cartesian View of SmartBidder's Superior offerings

6.3.1.6 Competitive Dynamics

As listed in Table 1, only five companies are indirect competitors for the version one product (arbitragers). For the version two product (frequent to casual bidders), those five companies become direct competitors, with Gixen being the most direct. They have an established following now[33] and will be the company to beat, as they're the only company to offer chain-sniping and they charge $6 per year. Performance Analytics' offerings are completely and totally free given that we're leveraging the affiliate kick-back from eBay.

6.4 Barriers to Entry

Capital requirements to enter into the industry aren't very intensive. And to access eBay API data for these auction agents is simple. However the differentiation lies in effective use of eBay API data and presenting it such that the data is valuable for the customer. This requires software developers who are have extensive experience in coding and data mining and user interface design.

[33] Looking on gixen.com's website, we see "Users with pending snipes: 3,472; Pending snipes: 10,472."

6.5 Barriers to Exit

There really aren't any barriers to exit. However there are some covenants around the use of eBay's data after exiting the business; e.g., eBay requires developers to retire their API keys.

6.6 Availability of Substitutes

There are no substitutes for the version one product, except for the eBay interface itself, which as we outlined previously, under-serves arbitragers. There are substitute's available for similar services for the version two products; mainly the sniper sites. But none of them offer free, unlimited single and chain-sniper functionality. SmartBidder also has a native search functionality allowing users to save these searches. Switching costs for users are not much except for learning a sniper site's interface layout. eBay saves searches for its customers and to encourage switching from eBay to SmartBidder, Performance Analytics would want to create functionality to facilitate moving saved searches.

6.7 Resource Based View of the Firm

Performance Analytics has few advantages over its competitors on resource and organizational capabilities. The company has free access to venturing service at MIT and its founder and developers are both MIT graduates with extensive experience in designing applications and building companies. Another big advantage for the version one is that a respected arbitrager is the lead user and a key employee. This creates quite a few organizational capabilities; the company is agile and doesn't need outside financing as none of the employees are doing it on full time basis. The only financing need for the company will be during marketing and promotion phase. As shown in Figure 38, SmartBidder offers many services, e.g., search, sniping, market discovery all within the same interface. Within search functionality particularly, there is functionality only unique to SmartBidder.

Customers have told us that they must quickly search and filter un-interesting items. To that end, as shown in Figure 24 we developed functionality that allows users to click and filter keywords (instead of requiring users to type keywords into a filter box):

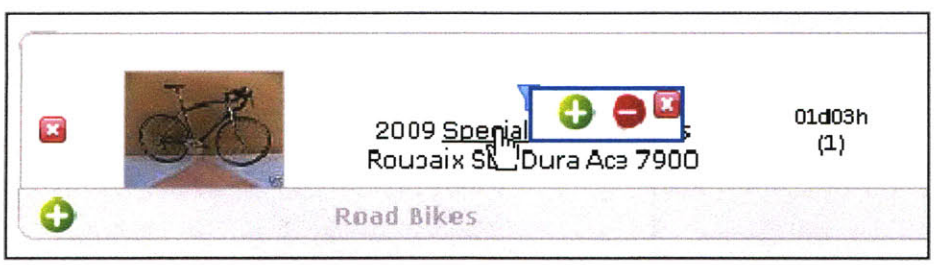

Figure 24, SmartBidder RapidFilter Technology

Here the user clicked on the word "Specialized" and when she did, a box popped-up allowing her to either filter in or filter out all items from the search results list having the word "Specialized" in its description. If the "-" button is clicked, all those items will immediately disappear. The user can then save a new search containing this filter condition or append an existing search.

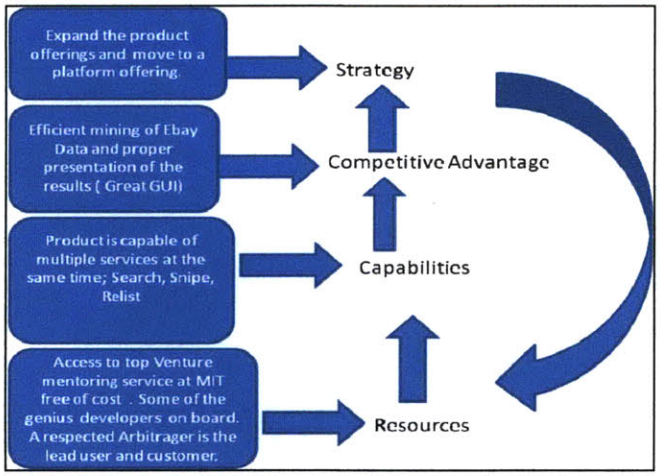

Figure 25, SmartBidder High-level Strategic Overview

6.8 Customer Segmentation

According to the model of Electronic Commerce (EC) as defined by Turban et al., consumer behavior as and purchasing decisions are based on consumer's reaction to stimuli (Turban, Lee, King, Judy, & Peter, 2008). Consumers' decision making process is influenced by many factors, such as, 1) the characteristics of sellers and buyers, 2) the environment, 3) the technology and 4) the EC logistic (detailed in Figure 26). On eBay specifically, a buyer can only find the id (identity) of the seller who he/she is contacting at the moment. This situation makes understanding each other's behavior very difficultly. However the rating and feedback system in auction sites as eBay gives buyers and sellers some assurance. These assurances can be guaranteed through both versions of SmartBidder and won't be an issue to its customers.

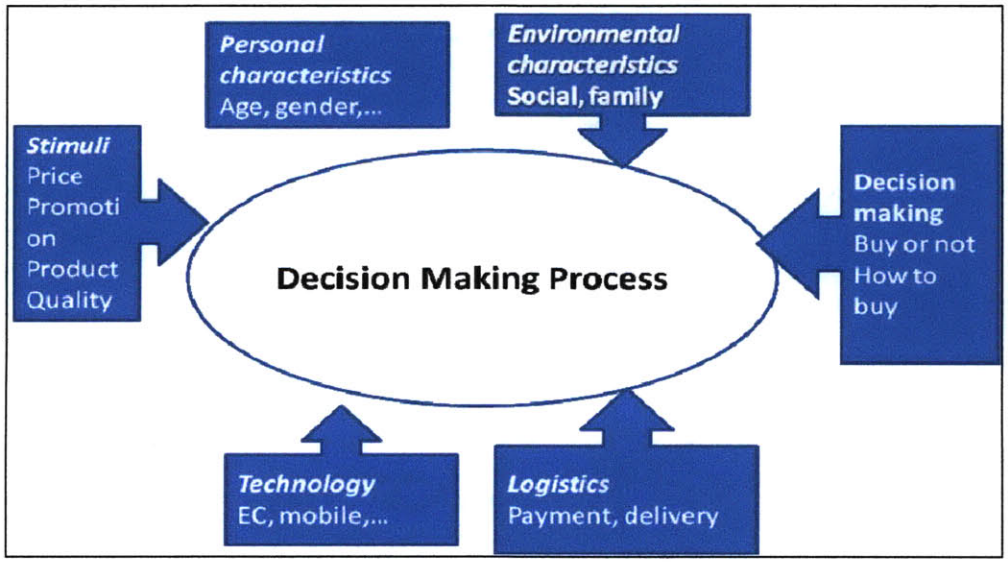

Figure 26, Typical Consumer Decision-Making Process

Based on Turban's findings customers are divided into three major types: "impulsive buyers", who want to sell or buy products quickly; "patient buyers", who want to sell or buy products for a longer period; and "analytic (or probative) buyers", who do substantial research before making the decision.

6.9 SmartBidder

6.9.1 Affiliate Programs

As was discussed briefly in the above section, SmartBidder is Performance Analytics' first online product which enables frequent "eBay traders" to become much more efficient at identifying and buying undervalued items (typically resulting from being poorly listed or having poor market timing) and relisting them in such a way as to maximize profit. More specifically, SmartBidder will help eBay arbitragers find, snipe and win items which are determined to be undervalued. After winning the item, SmartBidder will then recommend the best time of year to sell an item based on historical category trending data. With our customer's approval, SmartBidder will build a template for the item and re-list it on eBay, automatically. In addition, SmartBidder will provide users with inventory and reporting tools to help them manage items they are trading, as well as tools to track profit.

Performance Analytics will employ a three phase strategy to grow revenue. With the aforementioned in mind, we will capitalize on the eBay affiliate program, driving traffic to our site with the intent of buyers to bid on items through our interface. The eBay Affiliate Program pays Internet publishers, Web masters, online partners, and eBay sellers to drive new users and sales to eBay. Affiliates promote eBay with banners, text links, and other innovative tools, such as the Editor's Kit and the Flexible Destination Tool. In return, they receive commissions for driving new, active users as well as winning bids and "Buy It Now" purchases. Currently, the top 25 affiliates in the program average above $100,000 in monthly commissions. Developers have been very important part of the Affiliate program. Through APIs eBay made available for third-party affiliate developers a massive repository of product information to enhance and provide information and tools for buyers and sellers[34]. Smart Bidder is one such application that uses eBay's product and sales information and provides valuable insights to arbitragers on eBay.

We have decided to provide our services to arbitragers first; Figure 27. eBay arbitragers are a specialized niche of buyers who buy with the express intent of re-selling the item back on eBay for a profit. Needless to say, as referenced in Figure XXX they are both PowerBidders and PowerSellers, and we will provide them an interface which will streamline their current process. No other solution exists which targets arbitragers as they have special needs that need to be met, but they attempt to fulfill these needs with the standard eBay interface, which to them is less than optimal. We estimate there are roughly between 3,000 – 8,000 people arbitraging on eBay, world-wide. That being said they play a significant role within the overall ecosystem with demanding needs. They are classical lead users, and we believe that if we can solve their needs, we will have no problem solving the needs of the broader eBay buying community.

[34] http://blog.skipmcgrath.com/public/item/170709

Next, with those lessons learned and a robust back-end built to handle a huge volume of selling, we will create another front-end and target and capitalize on the affiliate kickback of casual buyers. While this demographic doesn't buy with the same frequency and intensity as arbitragers, if we advertise correctly, and leverage the power of social networking, we can make up for that with volume; e.g., there are 83 million eBay Marketplaces users world-wide. Again, we'll be building on top of technology created in the arbitrage product in phase one; see Figure 28.

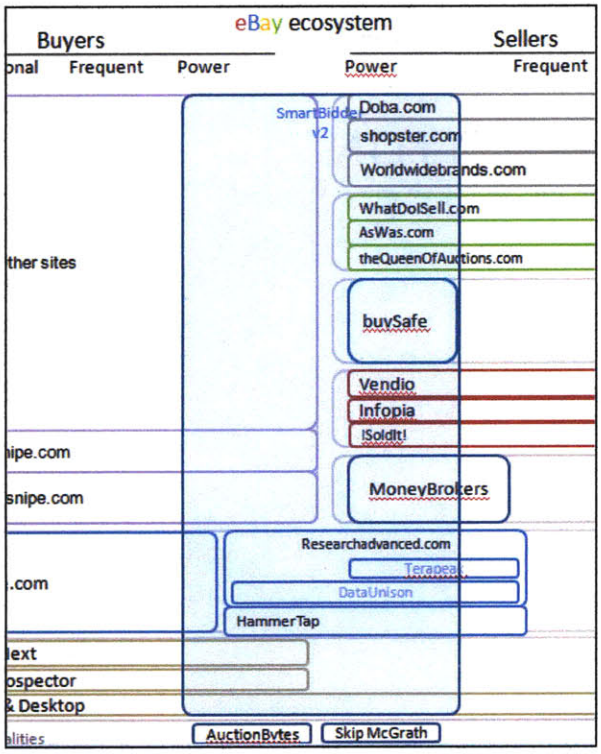

Figure 27, SmartBidder v1 Release Strategy (Arbitragers)

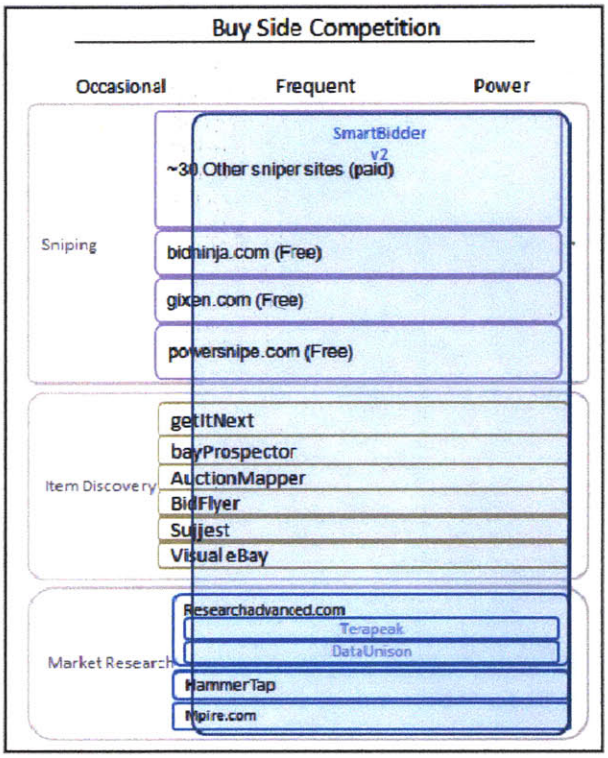

Figure 28, SmartBidder v2 Release Strategy (Diffusing to Casual Buyers)

7 Takeaway Strategies for Entering Mature Digital Ecosystems

7.1 Uniqueness

7.1.1 Why do it at all?

One might ask why a company would even attempt to enter, operate and compete in such a mature, established ecosystem with entrenched players. Particularly in light of Figure 4 which essentially shows the eBay ecosystem on the back-side of the technology adoption curve; this ecosystem has clearly tipped. In mature industries competition is much more intense and customers are far more demanding; effective customer segmentation is needed to compete effectively[35]. In one sense though, mature ecosystems help entrepreneurs find customers and allow them to better understand the various fronts

[35] http://www.achrnews.com/Articles/Business_Management/e1228bdd4516a010VgnVCM100000f932a8c0____

along which competitors will emerge. More importantly though, if mapped properly, pragmatic ecosystem modeling can reduce the time it takes companies to identify the drivers to value creation.

On the other hand new insurgents typically face stiff, entrenched, competition from ecosystem players who have operated in and, in some cases, have established relationships with the ecosystem keystone. For example, in the e-commerce space, DataUnison is a data analytics company who resells[36] eBay market data. The company provides PowerSellers an API feed to their data, which allows them to determine the best time to list an item, the best price to set, etc. DataUnison has been providing this service to their customers since 2004 and has built such a robust relationship with eBay they are even mentioned on the eBay Market Data page:

Figure 29, DataUnison Mentioned on eBay's Market Data Page

Relationships like that are hard to disrupt. From a top-down approach a long-term deliberate advertising strategy—mainly to keep the keystone aware of a company's presence—is required. But as we seen in the SmartBidder version two release, bottom-up, viral strategies and inbound marketing can grow the customer base and, if the strategy is executed properly, can heighten a company's exposure.

Another reason to enter a mature ecosystem is that from a deconstruction point of view, it offers a unique opportunity to create a thorough process of identifying the key players, their niches and how they fit into the ecosystem value chain. With this knowledge, companies can identify complimentary niches, evaluate potential substitute products, and better plan the drivers to entry and exit strategies, among other things.

Why SmartBidder did it

SmartBidder entered the ecosystem in 2007 at a time when eBay Marketplaces was not hemorrhaging as bad as it has been lately during the global recession. Given that it has found and serviced customers by satisfying their needs and adding additional features when request. The product is satisfying a niche of very savvy buyers, who communicate advanced buy-side needs which everyday casual buyers can benefit from. Our strategy is to take this technology and attack the complementary occasional buyer niche. There are other entrenched competitors there (Gixen, et. al), but from a price perspective we are able to compete give our low cost operating structure. Our funding plan will be to *bootstrap*[37]. Our

[36] Through eBay's Market Data certification.

[37] http://en.wikipedia.org/wiki/Bootstrapping_(business)

main expense will be to pursue a viral/inbound marketing strategy, diffusing the product out to consumers who need a more efficient way of buying items on eBay auctions. In short, with SmartBidder we are simply attempting to find over-served customers and build applications which solve their most pressing needs.

7.2 Top-Down

To this point in the paper we have looked at the ecosystem from a bottom up perspective attempting to find and solve user needs. We have also analyzed the overall performance of the ecosystem to understand how it's responding to competitive pressures. In the next section we will start from the top of the ecosystem and work our way down, deconstructing along the way in order to attempt to find value in adjacent niches, not only for the present version of SmartBidder, but for future releases too. Performance Analytics performed this analysis as part of its market research and in doing so, derived a set of lessons-learned when deconstructing digital ecosystems.

7.2.1 Deconstructing the Digital Ecosystem

7.2.1.1 Deconstruct the Keystone's Segments

For publicly traded companies this is can be accomplished either by reading through a keystone's 10Q[38] or 10-K[39] statements, browsing their website, searching through Hoovers.com and/or reading through the various How-to books.[40] 10-K/Q's are the most convenient way to find segment information as one can also derive financial performance up to the last three years (for 10K's specifically). From a programming stand-point, a few websites offer API's which provide access to SEC company financial data.[41] Regardless of the method though, one must understand which division (segment) within the company supports the platform the insurgent will compete upon. For eBay, the Marketplaces segment contains the auction platform; for Amazon on the other hand, the *North American* segment houses amazon.com and amazon.ca.

7.2.1.2 Understand the Type of Network Effect

While there are many ways to deconstruct and understand digital ecosystems, one of the easiest ways is to follow the supply and demand within the ecosystem as a whole, then map out the value chain; the results of which will produce a simple architectural ecosystem map (Davies, 2007). Network effects arise on the demand side[42], so understanding the demand trajectory first will quicken our understanding of the ecosystem's construction. With this information we obviously know from where the products originate, how they're distributed and the way each interested party makes money along the way. While this is useful information, the principal benefit is that we are able to understand the ecosystem's inherent network effect[43] and thereby start to deconstruct and model it. eBay in particularly is an

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[38] http://en.wikipedia.org/wiki/10Q

[39] http://en.wikipedia.org/wiki/Form_10-K

[40] Eg, How to Buy and Sell on eBay; How to Sell Anything on Amazon, etc.

[41] http://secwatch.com/api.jsp

[42] http://en.wikipedia.org/wiki/Network_effects#Benefits

[43] "A product displays positive network effects when more usage of the product by any user increases the product's value for *other* users (and sometimes all users).", http://oz.stern.nyu.edu/io/network.html

example of a two-sided network[44]. Usage of one group of users (buyers) increases the value of users on the other side of the network (sellers). This gives us a reasonable place to start deconstructing the ecosystem, as can be seen in Figure 30.

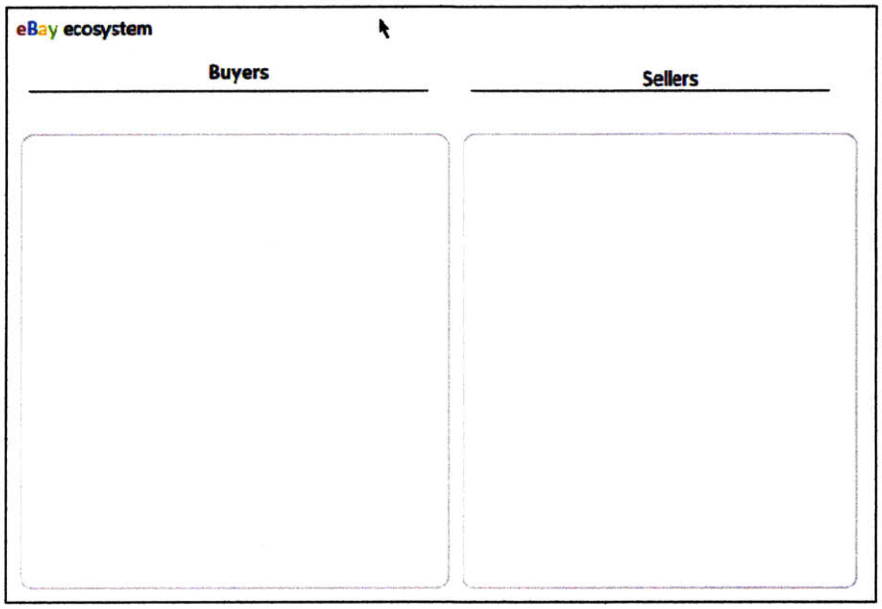

Figure 30, eBay Ecosystem Deconstruction, Phase 1

We are only interested in deconstructing (architecting) the ecosystem and not modeling the scale and dynamics. While it is prudent to create an architecture, map the scaling and measure the dynamics, for a startup—where resources are limited—it makes sense to architect first; then after the company determines where within the ecosystem to enter, model the scale and show dynamics for all adjacent niches.

7.2.1.3 Map the High-level Organization-wide Value Web

7.2.1.3.1 Where is value being created AND captured?

Now that we have an overall ecosystem architecture mapped, we need to start adding in players. This is accomplished by first understanding the value flow and mapping the constituent players along each component, or as in the case of eBay, along each of its segments (Communications, Marketplaces and Payments). Figure 31 shows the macro-level eBay value web. It is typically the case that multiple segments within a company are responsible for creating value; eBay is no different in this respect. Marketplaces, Payments and Communications each have their own unique value webs. Marketplaces is the e-commerce value web; Payments is essentially the PayPal value web; and Communications is the Skype value web. They are all very different value webs. But as in the case of the e-commerce platform, Marketplaces and Payments combine to form a larger integrated value web.

[44] http://hbswk.hbs.edu/item/5708.html

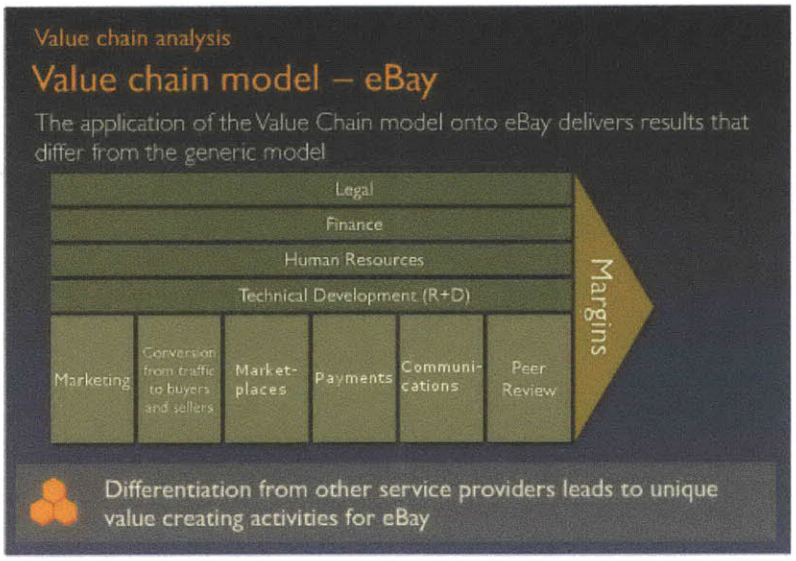

Figure 31, eBay Macro-level Value Chain

While it might seem reasonable to examine the company-wide organizational structure when attempting to deconstruct a value web, for large companies multiple divisions typically work in tandem contributing to a given value web. In the case of eBay's e-commerce platform, Marketplaces and Payments both work together to benefit both sides of the buyer/seller network, as shown in Figure 32.

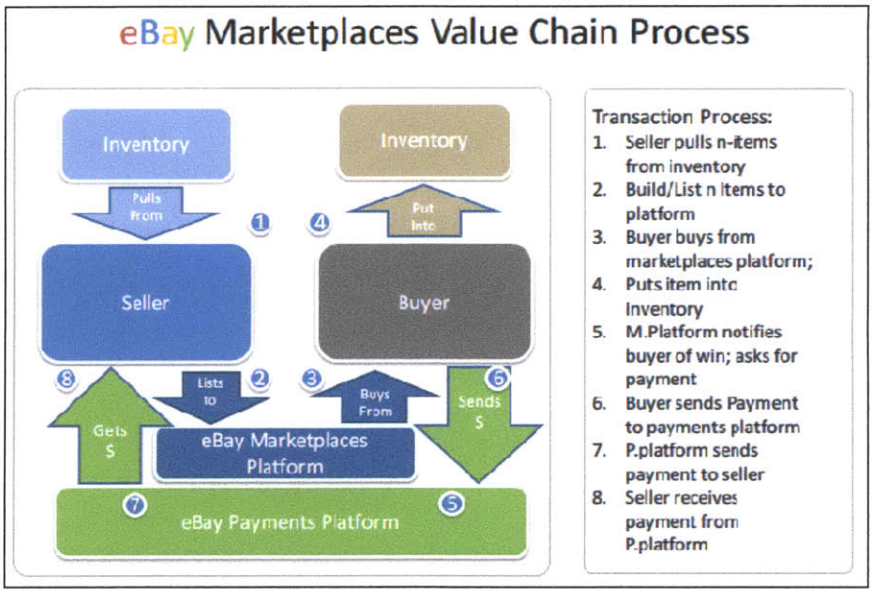

Figure 32, eBay Marketplaces Value Chain Process

We see there are eight high-level transaction processes, spanning two segments and value chains within eBay. From here we can start to deconstruct them and find common performance parameters. We will be using the Object Process Method (OPM)[45] in order to deconstruct each need into intent, process and object constituents. After that we will compare the needs on both sides of the network (two in the case of eBay) to the solutions provided by the keystone's platform. Any disparities will be analyzed to try to understand the needs served by a particular niche.

Need	Intent	Process	Object
Sellers			
Seller's listing needs	To list n-number of items for sale By deciding optimal time so as to maximize profit	By submitting n-number marked-up html page through eBay's seller API	Using Inventory in storage from n-number locations through eBay ShoppingAPI
eBay's need to list items and generate profit	To accept one item listing	By receiving one html page by manual construction	Using eBay seller API
Buyers			
Buyer's buying needs	To Bid on n-number of *interesting* items Which ideally are under-valued and exactly match user's search intent	By setting price Manually or ideally Automatically	Using the eBay Shopping API on Marketplaces platform
eBay's Buyer Solution	To Receive one open Bid Valuation	By Accepting Highest bid	Using evaluation engine as part of eBay Shopping API on Marketplaces platform

Table 2, Seller's Needs vs eBay's Solution

[45] http://portal.acm.org/citation.cfm?id=580816

No surprise, the results of the Intent column of Table 2 indicate that buyers are attempting to save money and sellers are attempting to maximize profit. But we realize that sellers can be categorized by their desire for profit, where some desire to maximize profit and other just want to make a few dollars selling things in the attic. Similarly for buyers: while most want to save money, some are more aggressive than others. This could be explained by some buyers wanting to find severely under-priced items in order to arbitrage them, and make a profit; or others watching their spending during a bad economy. Either way, we now have two performance parameters—one unique to sellers, the other to buyers—both of which categorize the respective intent of either profiting or saving money. We'll further sub-categorize both sides of the network as *Occasional*, *Frequent*, or *Power*. With this defined we can update our ecosystem diagram (Figure 33).

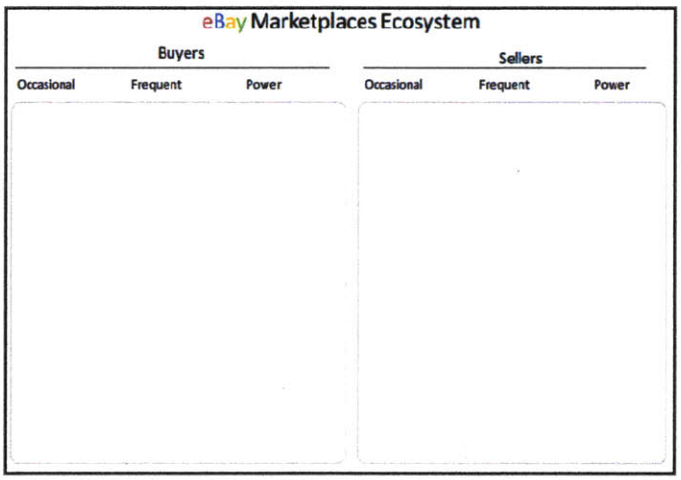

Figure 33, eBay Marketplaces Ecosystem Network with Sub-categories

7.2.1.4 Detail Consumer Needs on Each Side of the Network

Each set of constituents on either side of the network are in essence concerned with simply getting a job done. More often than not it is possible to define these jobs and their impact on the network by deconstructing their needs and comparing them against the solution provided by the keystone's platform. There is usually a wide disparity and this is one of the reasons why niches are formed to satisfy specialized demands. After all as described earlier, platform providers are more concerned with increasing the value of the overall ecosystem in order to ensure survival of all healthy niches. For the purposes of eBay in particular, we will analyze both sides of their two-sided network to determine the disparity between the buyers' and sellers' needs and the solutions provided by the platform.

It is reasonable to assume that given the disparities in process and object from Table 2 that some sellers will need to list n-number of items automatically and yet eBay only has functionality allowing one listing at a time, manually. Given that sellers make money from selling items (less the eBay sellers' fees), it is safe to say that this need is largely unmet and a niche will be formed here. We will call this niche the Listing Solutions niche. The same process was used all along the value web (sourcing, listing and

Payment) on the seller side and Figure 34 is the result of the deconstruction on the seller side of the network.

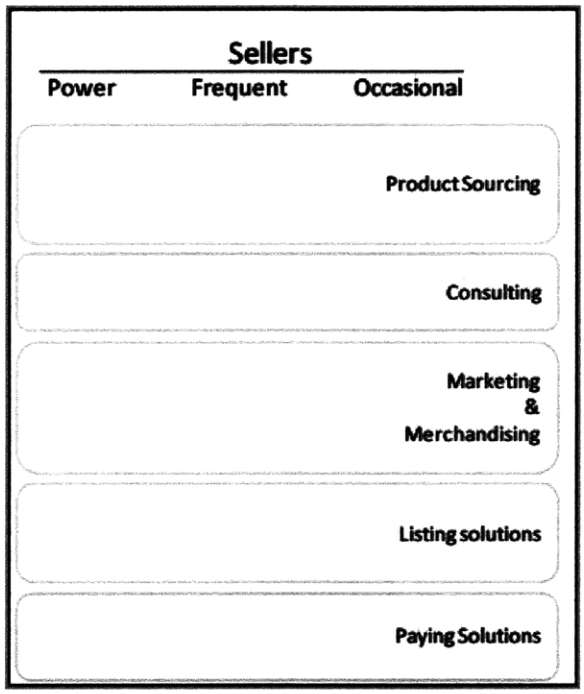

Figure 34, Seller Side eBay Ecosystem Deconstruction

Product Sourcing is defined as that niche which helps sellers find wholesale items to resale on eBay for retail; doba.com, shopster.com, worldwidebrands.com and iSoldIt are examples here. Consulting is defined as that service which helps sellers know what to sell and when to sell it in order to maximize profit. The Marketing and Merchandising niche provides services to sellers so that they can provide guarantees on high-end items they sell. Paying Solutions is the niche responsible for efficient payment of items bought off eBay, primarily those sellers who can't use PayPal.

Again from process column in Table 2 buyers are attempting to acquire items for as cheaply as possible, but with a twist in eBay's case. Given that eBay auctions are ascending with a time limit, this can create issues with timing of bids in order to win. Remember from Figure 22 that most bids for eBay auctions are sent within the last minute of the auction. And as we said earlier, this practice has come to be known as *Sniping* and it represents a large niche on the buy side of the network.

Other niches which span both sides of the network are Market Research, Item Discovery and Industry Blogging. The Market Research niche provides analytics to both buyers and sellers helping them make intelligent choices. Item Discovery helps buyers find *interesting* items. Industry blogging are those sites which contain the Connectors, Mavens and Salesmen[46] (Gladwell, 2002). These people provide guidance, help people buy and sell and otherwise report on trends within the eBay ecosystem; these are the sites to be on when broadcasting within the ecosystem.

[46] Chapter Two, The Law of the Few.

Figure 35 shows the final deconstruction of the eBay ecosystem.

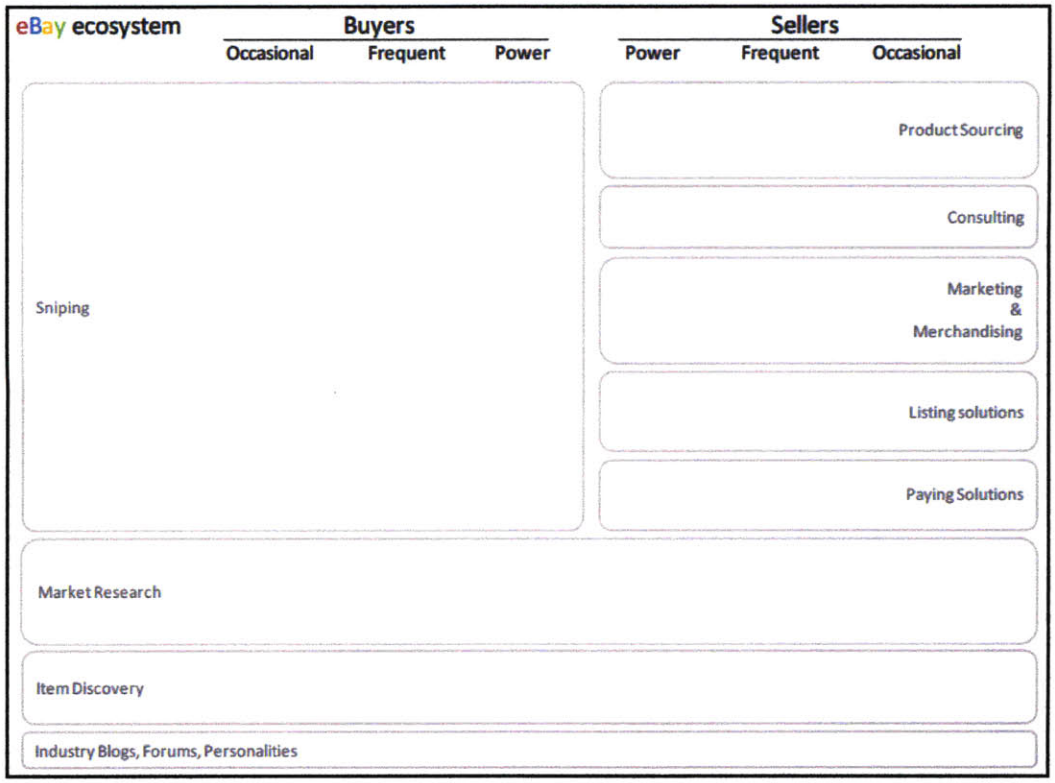

Figure 35, eBay Ecosystem Deconstruction, both Sides of the Network

7.3 Bottom Up

Our analysis to this point has provided us with considerable insight regarding the overall ecosystem architecture, its niches and competitive dynamics. Among other things, we now know our competitors, which niches they occupy, complementary and substitute product offerings as well as eBay's marketplace value web. In short, we've oriented ourselves toward our competitive environment. Often times though companies enter ecosystems because they have existing, relevant, skills which attract customers. They usually concentrate on building a solid customer base then decide to start analyzing the ecosystem. Some would argue that analyzing ecosystems is overkills for small startups. Whether it is more beneficial for online companies to perform ecosystem analysis before or after securing customers is debatable. If a company is dead-set on competing within a given ecosystem, it benefits them to know the architecture/layout as early as possible. If on the other hand the company isn't married to an ecosystem, it would make sense to fail early and exit thereby not wasting time orienting to the environment. If the latter, it is recommended to evaluate all the ways an ecosystem rewards its loyal niche members (eg., affiliate programs, special data rights, etc.), as this could present additional opportunities for monetization.

7.3.1 Attract customers, delight them, get their feedback, find your way forward

Regardless of the strategy, in the end start-ups survive by attracting and servicing customers. Specifically, as early as possible, start-up's need feedback from customers. As was mentioned in the section, anymore customers are the most significant source of innovation for companies and for start-

ups it is crucial they listen to the voice of the customer. Among other things customers can inform the product's concept and initial architecture, which could potentially lead to funding (Kawasaki, 2004).

The correct definition of a customer is someone who actually pays money for a product. Having people try a product is fine; for software products, if nothing else they can give immediate feedback and first impressions on usability. For SmartBidder we asked our customers to give us immediate feedback whenever we introduced a new feature in each subsequent release. Before that, for the initial build, we went through an extensive process of needs gathering, converting them to goals, goals to functions, and functions to form (architecture) through concepts. At each phase we iterated with customers and attempted to reduce the differential between expected and delivered results.

The type of customer is extremely important to success as well. Ideally customers with deep domain knowledge can drive success early, particularly if they themselves, in the online space anyway, are developers. While they may not have time to help development they could possibly help take your product to another customer. In the case of SmartBidder our first customer wrote the eBay Arbitrage Manual, distributed it online and had build his own social network arbitragers. He willingly provided the list and we were able to distribute the product right to customers who needed it. This is yet another example of how niches, when properly identified, can be leveraged to bring considerable value to start-ups. Our arbitrage customers are able to help us plan the next release for the version one product.

7.3.2 If that user group doesn't respond, leverage your technology, explore and exploit

In large digital ecosystems it is prudent to understand competitive landscape in and around your chosen niche; if for no other reason but to have options should a niche is either too competitive and/or is too difficult to reach customers in a cost-effective way. This is yet more evidence that deconstructing the ecosystem early on can provide companies with a breath of competitive choices. After all in the online space, no advantage is long-term because the only competitive advantage is having the ability to move quickly and be nimble (Eisenhardt, 1990).

As we mentioned earlier, if a company does indeed intend to compete within an ecosystem, orientation isn't just recommended it is vital to survival. Tensions arising around product offerings, competition and risk are inherent to all firms; but for start-ups they are an especially large cause for concern given the trade-off of resources. Despite that realization start-ups must strike a balance between leveraging their competitive advantage (entrepreneurship) while at same time exploring further opportunities (strategy). Strategy in this context is concerned with outlining a company's long-term growth strategy; entrepreneurship is defined as the ability to create newness, refine organizational renewal and continually seek out new opportunities. Ireland and Webb define *strategic entrepreneurship* as the intersection between strategy and entrepreneurship as illustrated in Figure 36.

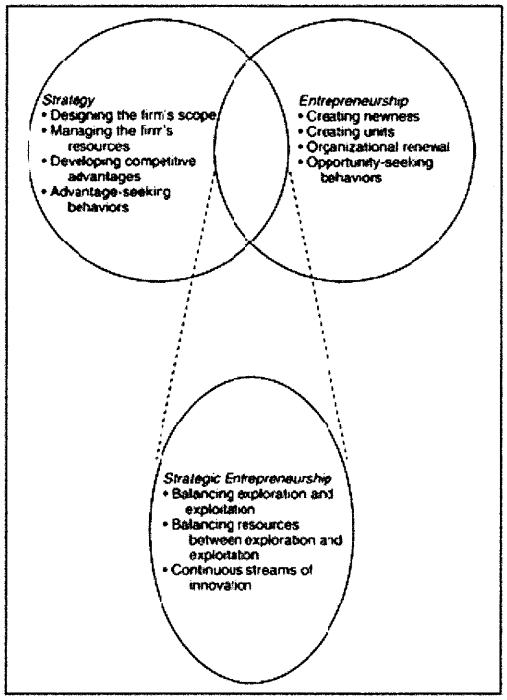

Figure 36, Strategic Entrepreneurship

In the authors' estimation start-ups need to continually balance exploration and exploitation, and achieving it is influenced primarily by the frequency and significance of changes taking place in the ecosystem and whether or not the start-up is in a fast- or slow-cycle market. They go on to explain exploration and exploitation as...

> Exploration: Benefiting from diverse investments
> Identifying ways to position a firm in one or more market spaces to deal with environmental change is a key outcome sought through exploration. Exploration's success depends on the firm's ability to acquire new, diverse knowledge and subsequently integrate it with existing knowledge. In other words, exploration represents a Learning process in which the firm attempts to significantly broaden and deepen its total stock of knowledge. Knowledge *breadth* is achieved by seeking diverse knowledge from external sources to add to internal knowledge. Knowledge *depth* is achieved as the firm seeks to increase its store of *both* internal and external knowledge in focal areas.
>
> Exploitation: Because incremental innovations represent minor extensions to established bases of knowledge, how the firm efficiently and effectively processes knowledge to exploit new market demands differs substantially from exploration-related behaviors. Two major variables, the heightened certainty regarding market trends and the shorter duration between market introductions of successive innovations, create the differences. Exploitation rests on knowledge of a proven innovation (i.e., product, process, or administrative), making it possible for firms to be aware of present needs and demands. Companies that are able to meet these market opportunities early with high-quality products and services enjoy competitive advantage by being able to gain market share and by forming entry barriers (Ireland & Webb, 2007)

Extrapolating this knowledge for SmartBidder would mean understanding where to look on the buy side for opportunities to exploit, and then be able to move quickly if some niche is identified. Figure 37 shows the market reach of the current version of the SmartBidder product. Arbitragers require a robust

sniper, an efficient interface laid-out in a particular way and market research to make informed buying decisions.

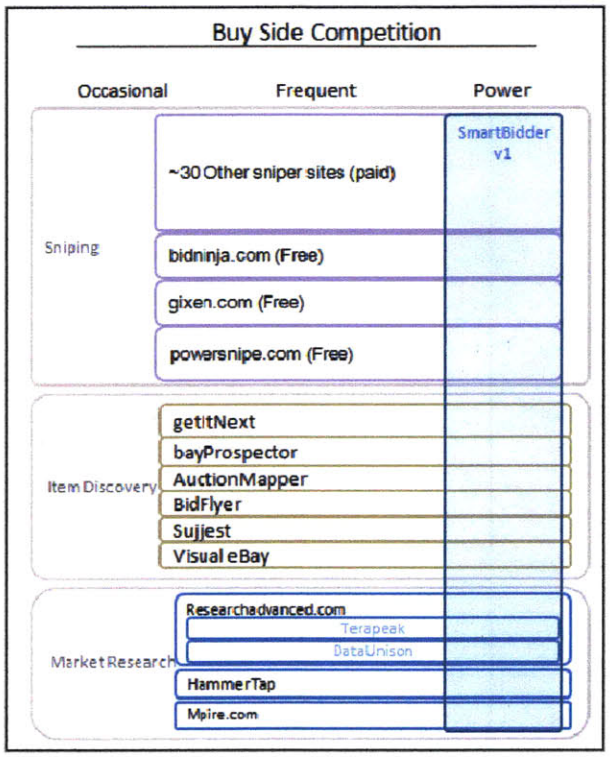

Figure 37, SmartBidder Version 1 Niche Targeting

For the next version of the product we could move horizontally (to the left) and capture the occasional and frequent buyers, to the right over on the sell side, or vertically and specialize within one or more of the Sniping, Item Discovery and/or Market Research niches. Alternatively, we could dive deep within the niche and concentrate on improving the functionality of her particular process. For example, for arbitragers to profit off of eBay, they must find undervalued items, turn around, and sell them for a higher price to realize a profit. SmartBidder provides a tool called PriceBuilder which aggregates and averages prices of similar items on expired auctions. The next version of SmartBidder could concentrate on building an extremely reliable price building function which could be used in different contexts (e.g., on other bidding or shopping sites, etc.).

8 Release Plan

8.1 v1, Service eBay Arbitragers

Throughout this thesis I've described in great detail our efforts to target SmartBidder toward high frequency eBay buyers. We intend to create three separate sections of the initial product—one to help identify undervalued items, one to display the customer's inventory, and the last one which will list multiple items very efficiently. At the time of this writing Performance Analytics has to finished development of only the buy-side section of SmartBidder version one, Figure 38.

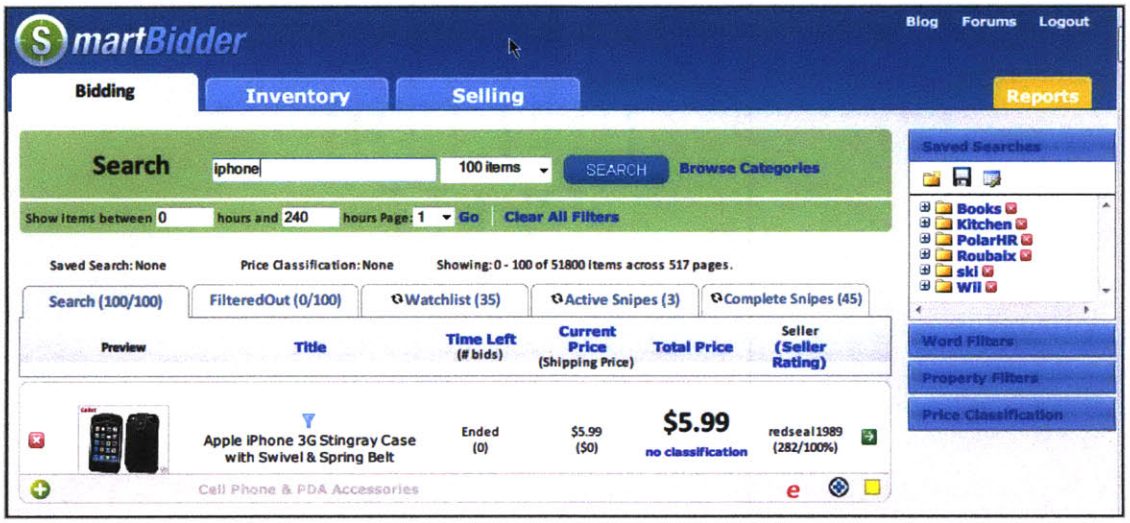

Figure 38, SmartBidder v1.0

But we do have paying customers and they are helping us prioritize our future releases. Aggregating their respective wish lists we intend to go forward with the following release schedule:

8.1.1 v1.1, Build/Integrate Inventory Section

The Inventory section will allow customers to view all incoming, outgoing and storage inventories.

8.1.2 v1.2, Finish/Integrate PriceBuilder v1.0

Customers told us they would like to be able to find the valuations of potentially undervalued items. In order to do this specifically on eBay we would have to look at all comparable items that have sold in the past and build average prices from them. Many variables contribute to item valuations like time of year of purchase, condition, color, and others; using regression we intend to build a robust valuation engine and integrate it into SmartBidder 1.2, 1.3, and 2.0 versions. If there's any piece of the SmartBidder architecture, it could be the PriceBuilder tool; but admittedly it is a very hard problem to solve and because of that it would require funding.

8.1.3 V1.3, Build/Integrate Sell Side

Lastly, after arbitragers acquire under-valued items they now have to sell back to eBay. The Selling section would allow customers to quickly relist items in their inventory. But development in this direction (crossing over to the sell side) could introduce Performance Analytics to an addition set of much larger competitors (Figure 39). And this introduces us to a new set of dilemmas: do we cannibalize our product offerings and provide only the sell-side offering to PowerSellers? And if we do that, our pricing model will change since we won't be benefitting from eBay's affiliate fee.

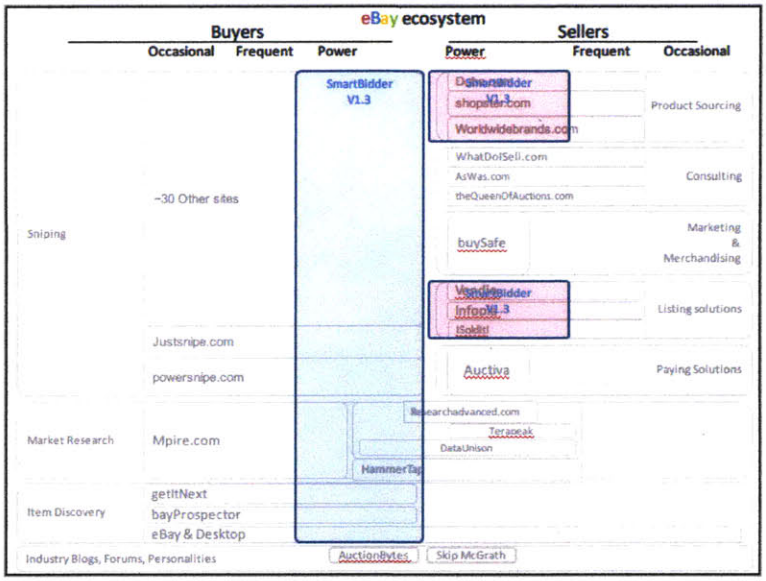

Figure 39, SmartBidder v1.3, illustration of Potential Sell-side Competition

8.2 v2, Moving horizontally to Capture more Buyers

With the technology built to satisfy the demanding eBay buyer, Performance Analytics can open up the product to more potential customers without too much cash or effort—with just a change to the GUI, the back-end will remain the same. Whereas the target market for arbitragers is limited to about 5000 total users, the market for Power and frequent buyers reaches into the millions. While the latter group of buyers is larger, admittedly their buying frequency is much less than arbitragers. We could construct a rigorous financial sensitivity model to determine approximate revenue by targeting casual and frequent buyers. Judging by the number of queued snipes on gixen.com, there is demand for sniping functionality:

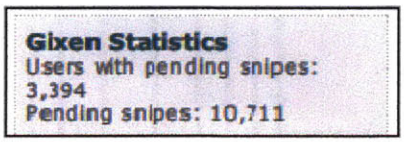

Figure 40, Gixen.com Number of Queued Snipes

Given that the SmartBidder product is competing in a mature ecosystem—and our product functionality is essentially complimentary to eBay's—as was said earlier, we are bootstrapping. This being the case, we are limited on how we expand the product.

8.2.1 v2.1, Release sniper/group sniper to casual bidders

Existing casual buying customers have requested functionality allowing them to snipe back-up items should they be outbid on their primary item. Called *group bidding* this functionality will allow customers to assign each snipe to a *container* as either a primary or secondary sniping items; a container can be one or more snipes in length. If n > 1, and the nth snipe is won, all secondary snipe jobs are cancelled.

8.2.2 v2.2, Build/Integrate locality (language) functionality

eBay Marketplaces in Germany and other places overseas are doing better than eBay domestically. This version will include locality support on our new search interface to capture those bidders as well.

8.2.3 v2.3, Build a Distributed Sniping System

This release will be responsible for distributing snipe jobs to n-number of servers in order to guarantee a particular service level (e.g., 99% fault-tolerance). Given that a particular snipe job is fairly CPU intensive, and likewise since we could have multiple snipe jobs going off simultaneously, we will need to distribute our jobs to multiple clouds.

8.2.4 v2.4, Build an iPhone App

This release will leverage the power of the computing platform to allow user to search, snipe and track items on their iPhone.

8.2.5 v2.5, Build Import/Export Saved Searches

Lastly, by watching customers' behavior they're using our saved searching functionality, we will build in functionality which will create functionality allowing them to import their saved searches from eBay and/or export from SmartBidder to eBay.

9 Lessons Learned

9.1 Ecosystem Keystone "Policies"

Operating as a non-keystone player in a large digital ecosystem poses a variety of challenges, risks and rewards. Remember from 2.3

> The keystone strategy attempts to ensure the survival and prosperity by improving the overall health of the ecosystem, and ensuring new members are able to create and share value. Typically this means the keystone player will create and operate a platform. The theory goes that as more and more members adopt this platform for development purposes, the quality and standards of the platform rises.

From a policy perspective, a keystone player can make changes along strategic, technical and economic fronts which will have a direct impact on a niche player's ability to compete and/or grow. For example, eBay raised its sellers' fees in February 2008 causing some of its sellers to boycott and/or quit the service altogether.[47] In some ways, operating in large digital ecosystems is analogous to operating on the civilian contractor side of the US Government. Level playing field competition allegedly exists when companies bid on government contracts; but in some respects, this is not the case—all else being equal, the possibility of persuasion increases. Establishing the right relationships with key personnel within the keystone company could provide a heightened competitive advantage for an ecosystem player against its rivals.

[47] http://money.cnn.com/2008/02/15/smbusiness/ebay_strike_update.fsb/index.htm

9.1.1 Strategic

In an attempt to provide stability to the platform, large keystones often make strategic decisions which reverberate throughout the entire ecosystem; whereas other more tactical decisions might only affect a given side of the network and/or a niche. eBay's fee increase in 2008, while it negatively affected all sellers—some more so than others—benefits niche players who rely on affiliate kickback revenue.[48] Those sellers who were directly affected started leaving the marketplaces platform to create their own retail sites. But in their defense eBay responded saying in effect, they have a responsibility to maintain a quality platform, "We're empathetic with our sellers and understand that they're concerned, and that some of them object to some of the changes we're implementing. On the other hand, we think we have very good reasons for what we're doing,"[49] said Usher Lieberman, eBay spokesman.

9.1.2 Technical

As a niche player, solving problems for customers within an ecosystem can be limited to the technical framework the keystone provides. eBay in particular provides a variety of APIs to help developers search eBay marketplaces, get eBay time, list items, etc. And while developers can create a variety of applications which bring value to their respective niches, technical keystone policies can at the same time limit a niche player's effectiveness. Special data rights--which in eBay's case could allow niche players to build analytical products—are restricted to players who have kissed the ring so to speak; they must have shown loyalty to eBay over time to have been selected to, effectively, provide more valuable services to their customers.

9.1.3 Economic

Niche players must also effectively pay the keystone to compete at certain levels. Going back to eBay data rights issue not only must a niche-player shown loyalty over time, they must also pay to access certain data. This in turn could be a risky proposition for some developers as they have effectively bought data inventory which must be built into something viable for their customers. eBay also has a certification program which developer products must through in order to be considered an eBay compatible application. While there is no cost associated with the certification, should eBay or any other digital ecosystem keystone object to a developer's product, they can quite quickly void the developer's API key.

9.2 Understand the bigger picture

9.2.1 Know by which fronts completion is likely to emerge

Mapping out the ecosystem, understanding the surrounding terrain and satisfying customers' needs there also allows niche providers to understand the fronts from which competition will emerge. Niche players must go one step further and understand platform functionality better than their competitors. With this knowledge, understanding the platform's capabilities will allow niche players to anticipate competitors' motives as well. For online digital ecosystems, practically speaking this means reading through all API documentation to anticipate how adjacent niches could use the keystone's data. But then again, as we seen in section 7.3.2 above, striking the right balance between exploitation and

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[48] eBay affiliate kickback is a % of the sellers fees

[49] http://money.cnn.com/2008/02/15/smbusiness/ebay_strike_update.fsb/index.htm

exploration is crucial for start-up success. Too much exploration and not enough exploitation and execution can result in a terrible product and/or support.

9.2.2 Find the exploration/exploitation balance

For online digital ecosystems this means considering the macro-economical climate, understanding the competitive dynamics of the ecosystem as a whole, understanding the ecosystem's various value webs, its network effects, the niche layout, competition and finally how well current niche players—both within and surrounding a chosen niche—are servicing their customers. Entering mature digital ecosystems often means attempting to usurp established competitors and determining how their customers are under- or over-served can provide a beach-head to an insurgent. Practically speaking this requires finding customers within a niche and working with them to extract needs, translate to goals and finally to a prototype architecture. One of the easiest ways to find a competitor's customers' needs is to mine any public facing bulletin boards or forums. At the time of this writing, a competitor of SmartBidder was providing a public forum and Performance Analytics was able to gleen under- and over-served needs:

> Greetings,
>
> In response to your email...
>
> - A columm that says the actual total price: Actual Bid + Shipping So I'll know how much It Could be my bid.
>
> - Enter Multiple bids in one single page. And Maybe could have the option: All bids Are for bidgroup: ******

Figure 41, SmartBidder User Needs of SmartBidders Competitors

9.2.3 Understand the dimensions by which to grow

Finally, entering digital ecosystem niches incentivizes specialization within an ecosystem. That being said, players are able to develop robust products and services which can then be leveraged to, among other things, move up the strategic value web (Figure 25) to become a platform provider itself. Niche players could more likely move to adjacent niches and, after the exploration and exploitation exercise above, start servicing under-/over-served customers.

10 Conclusions, Further Work and SmartBidder Follow-up

This section presents the conclusions of the research contained in this thesis, describes its limitations and recommends further work. Throughout this thesis we have detailed the evolution of both the business ecosystem and the valuations and pricing of items. Business ecosystems have evolved in response to enhanced communications which allows companies to leverage innovation external to the organization. This has been facilitated by heightened communications and the emergence of the internet. The Internet, particularly the emergence of the social graph, has helped spawn the digital business ecosystem. This, in turn, has redefined how companies partner and compete online; co-opetition has become commonplace. Companies cooperate along non-core-competency fronts and compete around their core-competencies.

10.1 Digital Ecosystems

The ecosystem structure has converged on four key roles: keystone, physical dominator, value dominator, and niche players. The keystone works to ensure the survival and prosperity by improving the overall health of the ecosystem. Typically this means the keystone player will create and operate a platform. Physical dominators attempt to act as an evil keystone member, leaving no room for effective networks and damaging the overall health of the ecosystem. The value dominator attempts to extract as much value from the ecosystem without providing anything in return. Niche players, when allowed to thrive, make up the bulk of the membership within an ecosystem and essentially work to maximize their narrow domain of expertise.

Understanding the ecosystem structure and role definitions are particularly important if a company intends to enter and compete. To properly understand these challenges this thesis follows the dilemmas faced by a start-up entering the buy-side of the eBay ecosystem. Structure is particularly important to this company as it must know demand trajectories and the dimensions along which to compete. This being the case, we present a framework for deconstructing maturing digital ecosystems which includes first deconstructing the keystone's segments, understanding its network effect structure, mapping the high-level organization-wide value web and detailing the customer needs on both sides of the network. SmartBidder did this within the eBay ecosystem and as well as understanding the competition and demand, it was able to leverage this information to strategize its next few releases.

10.2 Inimitability

On top of this, SmartBidder was attempting to create inimitability in the face of a maturizing, highly-competitive digital ecosystem. While often times it is very difficult to create Intellectual Property (IP) for online companies, in their paper[50], Kathleen Eisenhardt and Jeffrey Martin describe inimitability as...

> ... dynamic capabilities by which firm managers 'integrate, build, and reconfigure internal and external competencies to address rapidly changing environments [which] become the source of sustained competitive advantage. Dynamic capabilities consist of specific strategic and organizational processes like product development, alliancing, and strategic decision making that create value for firms... by manipulating resources into new value-creating strategies.

[50] "Dynamic Capabilities: What are They", Strategic Management Journal, Volume 21, pages 1105 to 1121 (2000)

> [Dynamic capabilities] are [therefore]... very frequently used to build new resource configurations in the pursuit of temporary advantages (logic of opportunity).

SmartBidder adopted a strategic entrepreneur (SE) strategy which called for balancing exploitation and exploration when attempting to create and capture value. We concluded that in fast-moving industries companies must adopt a strategy with the scales tipped more toward the exploration side of the balance. To that end we provided an in-depth release schedule for SmartBidder in response to the SE strategy, relying mostly on exploration of opportunities in adjacent niches. The architecture is modular and reconfigurable and ready address the rapidly changing competitive landscape.

10.3 Limitations of this Research

This research has focused on deconstructing digital business ecosystem with the intent of intelligently entering to find and capture value. While the framework that was created is useful to larger, maturizing ecosystems, it remains to be seen whether the framework would be useful in emerging digital ecosystems. In theory it will be useful as we first deconstruct keystone along its segments, then along its network effects, and finally comparing the services of the keystone's platform offerings against customers' needs. The effects of this deconstruction will provide an overall structure to the ecosystem and individual niches. This research is also limited to individual niche core-competency but does not make any suggestions regarding the demand trajectories of each. Nor does the research include any metrics related to health of any given niche. Subsequent research could include creating metrics to understand how niches form, change over time and dies.

Further research could also categorize proper exploitation/exploration balances given the type of company and the industry it is operating in. SmartBidder is operating in the online industry and given that competition is constant and ever increasing, companies must continually explore other avenues of value creation. In other industries, such as healthcare where competition is slowed by, among other things, trials and FDA approval, exploitation of industry related niche knowledge could dominate. Regardless of the balance, domain knowledge and localized competition would likely play a very important role in putting the balance in perspective.

10.4 SmartBidder Follow-up

Throughout this thesis we have looked at the dilemmas faced by Performance Analytics and its first product SmartBidder. We seen that it is facing a lot of competition in its chosen niche and has many strategic options ahead of it. At the time of this writing while the version one product is being used by eBay arbitragers, demand is lower than Performance Analytics assumed. The company has the option of going forward and completing the remaining version 1 releases or it can change gears immediately and attempt to act as a robust sniping platform to Power and frequent buyers. Figure 40 shows considerable demand for sniping services on eBay so we know there is demand there. What should Performance Analytics do?

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11 Appendix

11.1 Impact of Patents on Product

The first patent, Figure 42, automated price analysis system, is related to the user need "whether the item is under or overvalued". By using such a system, the user could determine the market price and therefore, determine whether the item is under or overvalued. This patent works with classified advertisements and our concept is for closed bids (which are used to determine market price) on eBay. But the patent claims use the word "relevant" classified advertisements, therefore closed bids would fall under the umbrella of relevant classified advertisements. Therefore, we will have to be careful in devising our algorithm for average market price and come up with different strategy to compute average market price. Alternatively, we can take permission from the inventor in using this invention.

The second patent, Figure 43, method for providing a visual for current trading volume, is related to user need "when is the best time to buy or sell an item". The technique in patent goes one step higher to predict the price movements by based on the trading volume data. Our need is to show which is the best time to buy or sell– which can be done by combining trading volume data with price. This can be shown simply by displaying trading volume and price. The price predictive information in the current patent graphs is hidden, which is the deviation of the trading volume from average trading volume. Therefore, our need is much simpler but this predictive price ability of patent could be an attractive need for the customers. It actually ties with the first need of determining over-valued or under priced items. Because by studying the relation between trading volume and average trading volume one can predict where the price movement be and therefore whether the item is over or under valued. This technique is primarily used in equity or fixed income markets in finance. But in case of eBay, there are many issues with using this technique to predict price movement. The very simple issue could be your historic data is not representative of all cycles i.e. it doesn't show sales during Christmas. So average trading volume could be skewed and wrong predictions can be made based on such technique. In conclusion, this patent is related and interesting but we would just like to show the historic market price and trading volume data to users in a simple format such as line or bar graphs.

The third patent, Figure 44, market based price optimization system, provide pricing recommendations based on sales data and is related to the user need "whether an item is under or overvalued". This patent is actually a software application for retail-users to manage price and inventories more effectively. This system comprises of an analytic pricing module. This analytic works by collecting product prices of product brands from representative competitors and calculates the average by simply taking weighted average. In our case, the representative competitors are close bids, but there is no easy way to combine bids into product groups. This is because the bids don't have product ID and one has to do natural language processing on description to form them into subsets (a similar technique is done in patent 1). In conclusion, this patent looks interesting, but our needs are much more complicated as the main challenging is to group data from closed bids into subsets or groups or products.

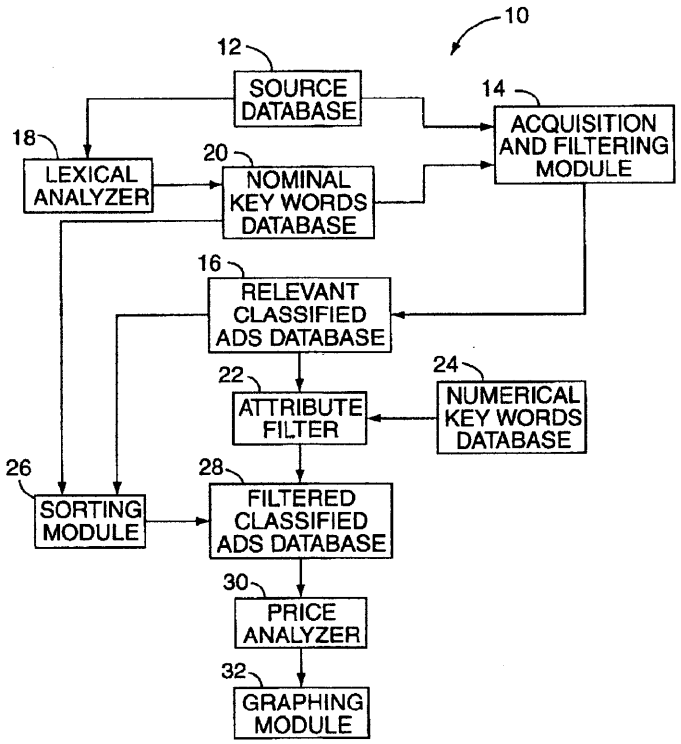

Figure 42, Automated Market Price Analysis System

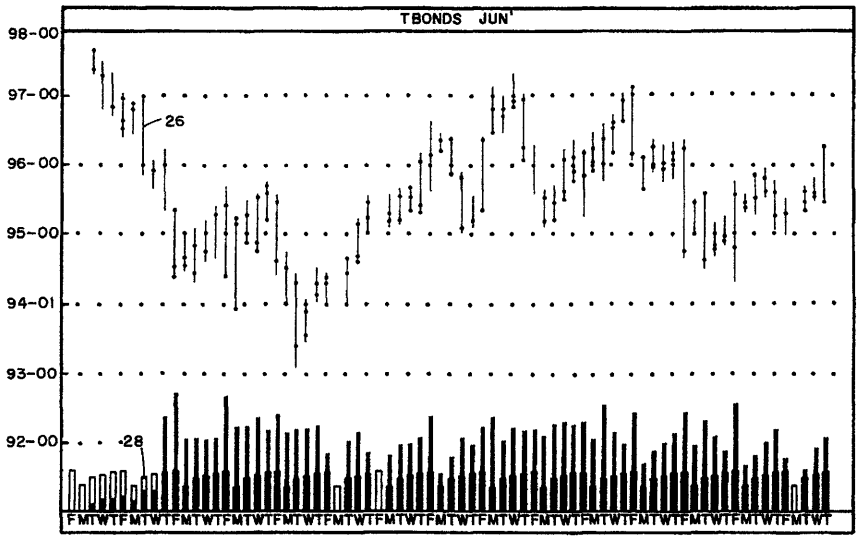

Figure 43, Method of Visually Showing Trading Volume

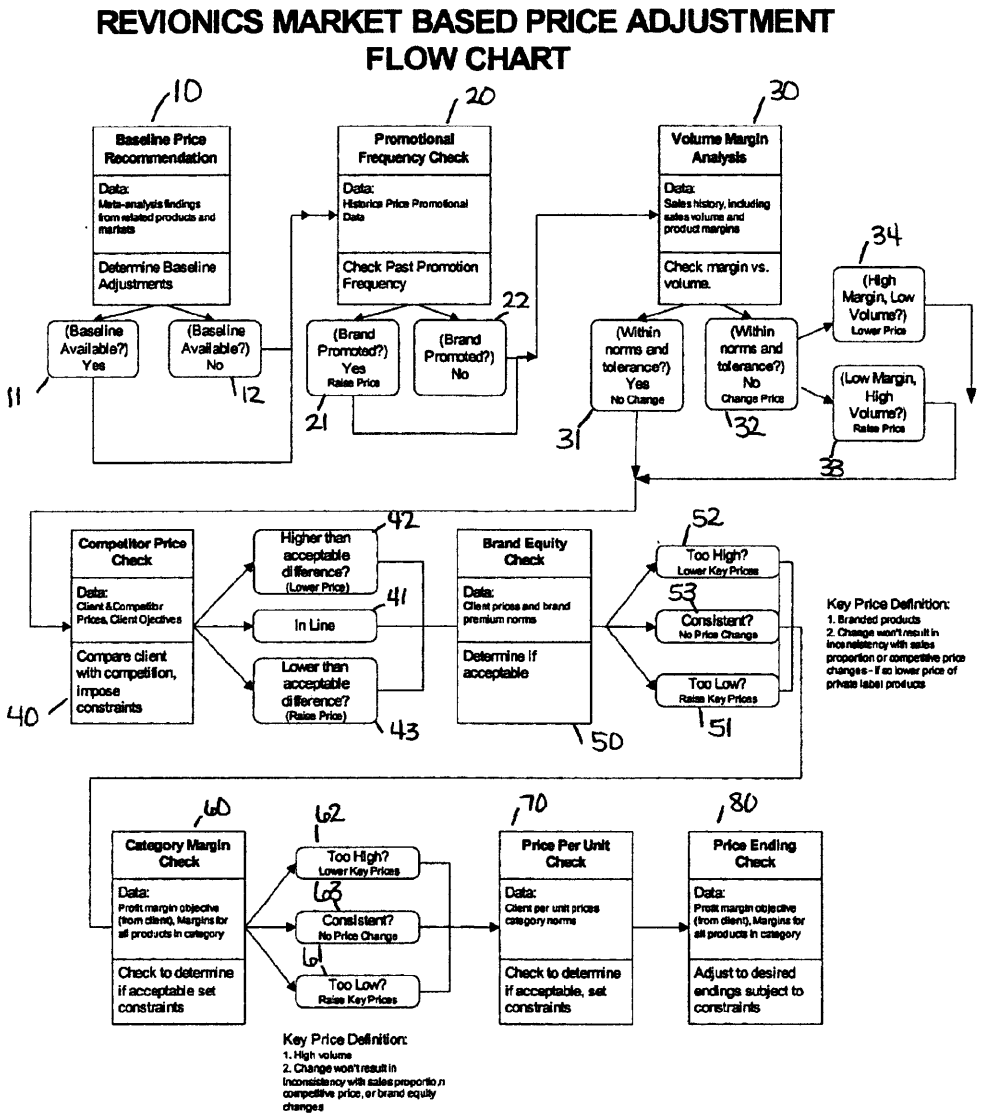

Figure 44, Market Based Price Optimization System

11.2 SmartBidder, Revision 1, Concept Selection Processes

Our goal at this phase was to narrow our focus from the three concepts that we presented earlier to one single concept. Our three initial concepts were:

1) eBay Arbitrage Trading System
2) eBay Aribitrage Trading System with API
3) eBay Buying Platform

Although these concepts (in Appendix C) all revolve around eBay, we found that they are pretty difficult to fit into a Pugh Matrix with the competitors because they fulfill different user groups. In particular, #3 is targeted specifically at Buyers, where #1 and #2 are targeted at people that are both buyers and sellers. #2 also adds in another user group, which are developers that want to use this platform to sell their own services. The competitors that we were investigating do not compete directly with all of the concepts that we are considering, although they do compete with portions of them. So our biggest problem was to look at the concept selection at a high enough level so that we could compare all of our options together.

Given this, we first took a simple approach by using a "Pros and Cons" to help us understand which concept makes the most sense for us to pursue. Factors we took into account included market size, level of need within the market, accessibility of potential users to us, technical feasibility, estimated development time, estimated profitability, number of direct competitors, etc.

We found that this very simple method was a good way for us to discuss all of the benefits and disadvantages of going with any given concept. Although each team member already had some idea of these, it was good to put them in front of the group so that they could be discussed. Once this was done, we found that it was pretty obvious that we should go with the first concept.

We did also attempt to use the Pugh Matrix, despite knowing the difficulties we would have figuring out how to compare specific features at this time amongst the three different concepts and the three competitors. In order to make it work, we had to view this at a very high level, which caused it to lose much of its value. We ended up spending most of the time trying to determine the datum, which had to be a combination of many different competitors, because not one competitor's products provided enough features to compare to ours. In fact, a given competitor only really provided 1 /3rd the solution provided by concepts #1 and #2. In addition, since concept #3 provided only a portion of the total solution provided by #1 and #2, we found that it was hard to compare in a fair method.

Now that we have committed to our concept, we believe that using the Pugh Method will help us further refine this concept in the future. For example, as soon as we decided that we would be building the arbitrage platform, disagreements began occurring regarding the amount of functionality that we would want to provide the end user. One group within our team wanted to provide a very granular level of functionality to the user because they assumed that the user would want that level of control. Another group believed that the user would want a much simpler interface and have our software do all

of the work. These types of high level design decisions are well suited for use within the Pugh Matrix and we will use them in the future.

11.3 SmartBidder, Revision 1 Gathered Needs

Customer Needs:

- List items, starting with those 24 hours old and work toward the present.
- A way to keep track of where the user left off in the auction list when manually searching for opportunities
- To give the user an idea of which items are selling, eg, "hot." We're doing this in case a user is trying to determine which category to start arbitraging in.
- Very easy help infrastructure.
- To build a valid market price by entering a variety of search strings to find the most appropriate and related items.
- Save search strings and/or items previously viewed
- Incorporate alternate spellings into cronned searches.
- Categorize Buy-It-Now opportunities
- Sniping auctions
- Give the user the ability to change fields (eg, max bid price) of items which we intend to be sniped.
- To show the customer how far away he is from the item. Or if we, as the company, have someone near-by.
- Seller's feed-back score over time.
- When an item was won, and we had it on our WL, we need a way to go back and enter the ending (winning) bid. Do we want to dbase all this info anyway? Or do we simply want to give our customer a way to save it on his/her own within their personal space in the application? Do we want prompt the user to give us this state information? Eg, condition, features etc and we dbase it along with the rest of the product's info?
- Accounting Page:
- A way to pay for n-number of items from PayPal that were sniped.
- An accounting page that will list all this information
- Force paypal to use your credit card (frequent flyer miles, etc).
- Affiliate Paypal credit card
- Anything you promote before, during and use for the product can be affiliated.
- For their secondary account, we could make $25
- Commission junction (ebay), go to it and get links, cloak link
- We can make money from sniping?!
- How much I was willing to snipe and how much I won the bid.
- Tax (only if you buy within your state). State tax??
- A page that wraps the user's MyMessages communications page, allowing them to track their email correspondence (go to email instead).
- To ensure that items arrive **TO** our facility from the customer's buyers safely.
- Full refund to our customer's buyers for 30 days.

11.4 SmartBidder, Revision 1, Schedule of Work Process

- Research the history of automated stock trading
    - Are there parallels to be learned from funneling "stocks" (e.g., auction items) along our "trading platform"?
    - What are the challenges with trading a physical product rather than a company stock?
- Build/Integrate auto-buying recommendation module
    - This component will go out and attempt to find items to be resold for a profit based on a specially created algorithms
    - It will then list these items on a given page such that the user can verify and make decisions whether to buy the product
- Auto-buying functionality
    - Sniper
- Build/Integrate Market Price construction ("stock" valuation)
    - This piece of the application will recommend to the user the valid market price of the product based on comparable items that have sold on eBay in the past, and/or items that are currently for sale on retail sites
    - We will have to aggregate identical items from disparate sources and display them in a way such that users can filter out all *uninteresting* items
    - With the *interesting* items remaining, the application will attempt to derive a valid market price from them using a weighted average summation
- Explore/establish relationships with storage facilities
    - Once an item is won, users will now have the burden of receiving/re-shipping items once they're resold. We're going to explore partnerships with shipping/receiving facilities to determine if we can have products shipped right to these facilities rather than to a user's home/office. This will save them considerable time and effort, allowing them to concentrate on finding/buying more undervalued products
- Build/Integrate selling templates, auto-listing technology
    - As much as is feasible, we want to automate the relisting process for the user. That is, we would rather they concentrate most of their time on finding/buying potentially profitable items.
- Build/Integrate a Profit Awareness infrastructure
    - This gives the user the ability to gauge profits and hence assess the value we are providing

11.5 eBay Sniper Companies

Site Name	Site Address	Free Trial/Version	Cost After Trial	Integrated?
acesniper / prospector			$10/mo	
auctionnavigator			$29.95	Yes
auctionraptor			$4.95/mo $52.95/yr	
auctionsentry			$9.65/yr	yes
auctionsniper			1%; 25c <x< $9.95	
auctionstealer	hammersnipe.auctionstealer.com	Free	79.95/yr	No
baygenie		Free, not integrated	Pro $19.95 1st yr, $9.95/yr thereafter	No; Yes
bidball			$25/100 snipes	Yes
bidburglar			$7.95/mo $49.95/yr	
bidnapper			59.99/yr	No
bidninja		Free	n/a	No
bidnip			24c - 35c /snipe	No
bidrobot			69/yr	
bidslammer			1%; 25c <x< $5	No
cricketsniper			$24.99	
ebgo			$14.95	Yes
esnipe			1% pp; 25c < x <$10	Yes
ezsniper			1%; 10c <x< $10	
gixen		Free	None	
harvEX	xellsoft.com/harvex.html		$19.90-$39.90	No
hidbid		Free : 5 snipes / week		Yes
iamthewinner			$8/mo $50/yr	Yes
jbidwatcher		Free		No
justsnipe		Free	$5/mo	
myibay		Free for web-based	$12.95 Windows application	No
mynabber			$7.95/mo	

powersnipe			$45.99	
snip			19c/snipe	
snipeswipe			$5/mo, $50/yr	No
stealthbid			1%; 5c <x< $5	
supersniperpro	www.codingcentre.com/supersniperpro.php	Free		No

11.6 Original Thesis Proposal

SDM Thesis
Proposal Form

Student Name: John Baker MIT I.D. Number: 924072020

Student's E-Mail Address: jabaker@mit.edu

Today's Date: Feb 22, 2008 Thesis Completion Date: May 2008

Thesis Supervisor 1: Michael Davies e-mail Address: mamd@mit.edu

Thesis Supervisor 2: e-mail Address: _____

(if more than one)

Thesis Title: Insurgent Strategies for Creating Inimitability within World Wide Web Ecosystems

Motivation:

Rich software application functionality once constrained to the desktop is now available via the World Wide Web (WWW) with the introduction of emergent Web2.0 technologies. Leveraging the Software-as-a-service (SaaS) model, companies can build Web-native, Operating System (OS) independent, applications usable by customers over the internet in addition to those installed natively on their computer. Effectively this enables software development companies to redirect application work cycles away from OS-specific development and, among other things, into infrastructures which encourage participation by third-party WWW developers.

With these emergent technologies, and while embracing what is commonly referred to as the network-centric innovation model, companies are hoping to leverage enormous value and strategic significance by creating and protecting proprietary *platforms* while at the same time encouraging third-party open source development. In effect, through outward-facing Application Program Interfaces (APIs), these

new models have led to the emergence and evolution of complex ecosystems within the WWW space; witness OpenSocial, Facebook, salesforce.com, Amazon, Firefox, eBay and others.

eBay for one realized early-on that forging relationships with developers can support and advance its business model. Not long afterwards, http://developer.ebay.com was created giving developers access to a myriad of information on all current and expired auctions. This move enabled companies to enter the ecosystem and provide specialized services to customers based on information mined from eBay's API. A few of these companies provide raw analytical data to *PowerSellers*—those customers doing serious business on eBay. Others use the data to up-sell by listing current eBay auctions on their own websites.

Thesis Statement & Primary Research Objectives:

The goal of this thesis is to explore what constitutes an appropriate strategy for insurgents intending to enter WWW ecosystems in attempts to usurp competitors within them. This will be accomplished by looking at specific businesses, their strategic options, engineering challenges and general dilemmas while attempting to create inimitability. As well, a framework will be developed for assessing ecosystem players, their influence, understanding the dynamic interactions not only between those entities, but between them and the ecosystem host, as well.

Engineering and Management Content:

In support of this thesis, we will likewise aggregate, detail, categorize and analyze the various methods WWW companies are employing in order to capture value leveraging network-centric innovation. For example, Salesforce.com leverages AppExchange. Facebook.com leverages its propriety platform. In both cases these companies have looked outside their organizations in attempting to create value by using an API.

Through analyzing these offerings, and the technology supporting them, from a systems perspective, we want to explore whether there are general strategies that insurgents could adopt in order to build a competitive advantage, faster. In short, we want to determine how technology (engineering) is augmenting strategy (management) decisions within the highly-competitive, fast-moving WWW industry.

Research Methods & Approaches:

We intend to approach researching this thesis by comprehending how these ecosystem players, leveraging technology, attempt to augment strategic management decisions. To the degree possible, we will interview players within various WWW ecosystems and ask them to comment on existing strategies, and/or give feedback on suggestions as per our findings. We will no

doubt want to know how they create a competitive advantage by, perhaps, leveraging relationships with the ecosystem host.

As well, we intend to follow an early-stage start-up to detail its engineering and management challenges. We will attempt to derive strategies from its efforts that could be adopted by others when attempting to enter these types of ecosystems.

Timeline:

Research will begin early Spring 2008 with data collection starting immediately thereafter. Data analysis and conclusion will be made by the end of the Spring term and the thesis will be completed by June of 2008.

Signatures:

SDM Fellow: _____ Date: _____

Thesis Supervisor 1: _____ Date: _____

Thesis Supervisor 2: _____ Date: _____
(if more than one)

Company Sponsor: _____ Date: _____
(if any)