

Creating Comparative Advantages in the E-Commerce Industry

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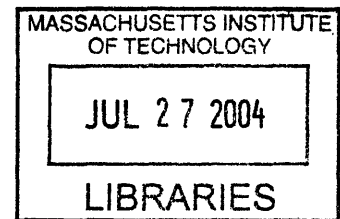
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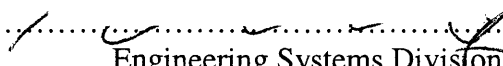
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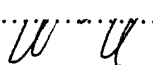


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Creating Competitive Advantages in the E-Commerce Industry

Abstract

A myriad of electronic retailers are contending in a battle to guard their established territories in cyberspace. Many of them are desperately searching for the key to sustainable growth and profitability as the struggle continues and intensifies. This study finds that one powerful way to attract customers in the e-commerce industry is to create “stickiness” through virtual communities and personalization. Virtual communities and personalization have become necessary elements for a successful e-business as they provide extended customer relations. The two cannot be easily imitated by rivals, creating sustainable competitive advantages.

This paper substantiates the above claims in many approaches. First, the literature review will provide information to understand the importance of virtual communities and personalization. A dynamic feedback model is then presented to show how the two factors interact to develop a solid loyal customer base. Next, results of multivariate regression analysis using *General Social Surveys 1972-2000* further justify the claim that virtual communities and personalization have significant positive effects on individuals’ online purchase behavior. This empirical work also show that demographic variables are not correlated with the probability of making online purchases. Finally, case studies of leading e-commerce firms are presented to confirm that electronic retailers effectively managing virtual communities and offering personalized services are rewarded with customer loyalty, impressive growth, and above industry-average profit returns.

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I. Introduction

A. Background & Problem Statement

All internet success stories tell a similar story: an innovative idea delivered with impeccable service. E-commerce is a business where if you set it up right, it will grow on its own. Word of mouth may be fast, but it is not nearly as fast as word on the web. Good, reliable, trustworthy customer service is exceedingly important for the online retailer since with the tap of a few keys, consumers can make or break the reputation of an online store. Low price and convenience are great, but when there's a plethora of stores all vying for the same customer pool, it's not good enough to keep customers coming back. So, how do you keep them coming back? A trend in most major e-businesses is their creation of interactive websites that provide platforms for virtual communities and personalization¹⁵. These are commodities that cannot be easily imitated by rivals, thus leading to a sustainable competitive advantage and a long-run economic value.

The Web is truly a global marketplace where every store is open 24-hours a day and 7-days a week. This being a novelty, in the early years of e-commerce development, entrepreneurs believed the Internet to be an ideal place to launch a new business. This belief created a web rush and electronic retailers (e-tailers) quickly marked their territories in the limited market space. What seemed to be an exponential growth path, however, quickly unraveled. Venture capitalists began to question the value of e-commerce firms in the late 1990s, closing off their funding pipeline and leading to the

failure of one e-tailer after another¹⁶. They became reluctant to provide cash to companies that were struggling to report even one year of profitability. The late 1990s burst of the IT bubble signaled the beginning of a brand new phase for the e-commerce industry⁶. Unsustainable growth was no longer a promising strategy, but rather, e-tailers had to develop competitive advantages that would reshape them as sustainable and profitable entities. Companies desperately sought and are still seeking to find prominent value-drivers to keep them afloat.

B. Question

In this paper, I will identify the key success factors in the e-commerce industry – the factors that are essential in winning customer satisfaction, and thus customer loyalty. The two main issues to be addressed are the following:

1. What factors create a competitive edge in the e-commerce industry? Having identified such success factors, how can a firm implement these into its business strategy?
2. Should an electronic retailer focus on targeting certain groups of people who may be more susceptible to shop online? If so, who are they?

The goal is to answer the above questions through literature review, empirical findings, as well as case studies of e-commerce firms.

C. Overview of Paper

This paper is structured in the following fashion: first, literature review will provide information to help understand the importance of virtual communities and

personalization. A dynamic feedback model is then presented to show how the two factors interact to attract loyal customers. Next, results of multivariate regression analysis using the *General Social Surveys 1972-2000* illustrate the influence of virtual communities and personalization on online purchase behaviors. This empirical work is taken a step further to test if there are certain groups of people who may be more inclined to take care of their shopping needs online. Finally, case studies of leading e-commerce firms are presented to confirm the above bindings as well as a brief overview of a failed attempt.

II. Literature Review: Competitive Advantages

A. Theories of Success

1. Virtual Community

The Virtual community is a special kind of social place technologically constructed to provide a platform for human interaction and communication. It is comparable to its real world counterpart, except for the fact that the virtual one is not constrained by time or geography. According to Rheingold²², virtual communities are social aggregations that emerge from the Net when enough people carry on public discussions long enough, with sufficient human feeling, to form webs of personal relationships in Cyberspace. They are online forums that include contributions from, and encourage discourse among, specific sets of like-minded netizens¹⁹. In the book *Net Gains*²⁸, virtual communities are defined to have the following five characteristics:

1. Distinctive focus as to membership.

2. Integration of content and communication.
3. Emphasis on member-generated content.
4. Choice among competing vendors.
5. Commercially motivated community organizers.

Today's electronic vendors work to win customer loyalty by operating virtual communities, which takes advantage of the fact that humans, by nature, derive pleasure from and seek to interact with one another.

Virtual communities have a massive impact on e-commerce companies as they have the power to reorder the relationship between companies and their customers. A review of successful e-tailers like eBay and Amazon highlights the importance of creating virtual communities around its merchandise. The intrinsic nature of virtual communities, requiring a history of business and a large customer base, does not allow it to be easily imitated. Member-generated contents are sole properties of the site owner, and thus, virtual communities are intangible assets that create significant value and can help differentiate a particular firm in a competitive industry.

Virtual communities are important to vendors at least in the following three ways:

- First, virtual communities increase traffic flow to the owner's site. This provides costless marketing by lowering customer acquisition or search costs. Virtual communities provide an environment for aggregating relevant participants and information about those participants. Therefore the process of identifying customers is easy and costless²⁸.

- Second, virtual communities create stickiness: the loyal customer base grows and customer retention costs are minimized.
- Third, virtual communities are great sources of information regarding current and potential customers. The information will increase the vendor's understanding of individual buyer needs and ability to better customize the presentation of information to its members. The usability of this information set will constantly lower the costs of increasing differentiation¹⁰.

The competitiveness of virtual communities is based on the size of the community because it benefits from a positive network effect. Network externalities are present since the value created for viewers increases with the size of the customer base¹³. With growth of membership, communities become progressively more valuable since the power of network increases exponentially by the number of “nodes” connected to it²⁷ – similarly explained by Metcalfe’s law of network economics. Because of the evident network effect, establishing a large member base where each individual can readily communicate with one another is fundamental to the success of the virtual community model. Once a solid virtual community base is established, virtual communities build upon themselves, amplifying the effect. The larger a virtual community becomes, the more interested new members become in joining as long as the growing membership continues to share the common interest around which the community was formed²⁷. By encouraging a strong sense of community, membership, and bonding, virtual communities can exert magnetic forces on Web-viewers who are otherwise equally as likely to be attracted to any other website offering the same product.

a. Free Information

Today's consumers must sort through and choose from a variety of options for every consumption decision they make. Differentiation is appreciated, but it has gotten to a point where too much variety is complicating the decision-making process. In fact, 37% of Americans express that shopping is undesirable because it is often confusing, time consuming, and simply annoying¹⁵. To find a pair of jeans, people go to the Gap and search through piles of jeans in different styles, colors, and cuts. Theoretically, consumers must travel to every clothing retailer and go through the same procedure to find the most desired pair of jeans. Realistically, however, this is expensive and impossible. One can only invest so much on searching for the product that is perfectly aligned with his or her set of requirements. This example emphasizes the fact that information does not come without a price. Information is, in fact, an invaluable economic resource, because better information can reduce uncertainty and therefore, lead to better decisions that provide increased levels of utility.

The main result of Hennig-Thurau and Walsh's paper⁹, *Electronic Word-of-Mouth: Motives for and Consequences of Reading Customer Articulations on the Internet*, illustrates that consumers read on-line articulations mainly to save decision-making time and to make better buying decisions. Many turn to the Web because it is a unique source of virtually free information that minimizes the searching cost every consumer must inevitably face and enhances the consumer's overall decision-making process. Since a

single click eliminates the necessity of having to travel to dozens of different brick-and-mortar stores, consumers can search comprehensively at a negligible cost.

Successful pure navigators like Bizrate and Zagat are evidence that people greatly appreciate the Web as a source of useful information. Pure navigators, in other words, are purely information-providing websites. They collect, compile, and distribute the information they own. Zagat's business model is simple – it is to provide netizens with ratings, reviews, and the latest news from great restaurant in cities around the world, based on the reviews of more than 200,000 connoisseurs²⁹. All of their \$20 million sales in 2002 were brought in from people seeking information.

b. Information Asymmetry and Biasness

The seller will usually know more about the limitations of a product than will a buyer, since the seller has a better grasp on the potential problems of the good. Travelocity's biased listing system, which displays itineraries of carriers with which they have special financial relationships first, is an excellent example of this problem⁷. It highlights the fact that information bias can lead to serious issues in the cyber marketplace. An asymmetry of information creates a significant disadvantage for the one with less information, or in this case, the consumer. However, virtual communities and similar opinion platforms, where consumers can obtain electronic word of mouth from other consumers, effectively eliminates this problem by allowing the sharing of information and by challenging the veracity of sellers' advertisements. The existence of virtual communities empowers consumers because it provides a place where shoppers can learn

from each other – not only from acquaintances, but also from strangers, who have had experience with relevant products²¹. Consumers appreciate virtual communities because they allow the consumers to be better armed with information that puts them “in the know.”

Through interpersonal communication among members of virtual communities, the power is shifted from the seller to the buyer. Buyers no longer have to rely on the embellished sales pitch of a certain product they are interested in, but instead, more accurate information can be collected from other members who have made the same or similar purchase and have used the product. Consequently, large-scale repeat buyers of a good are especially valuable sources of information since they can provide much more honest opinions regarding the good. The true value of these communities is that it does not merely provide the experience and knowledge of any one individual, but the comparative experiences and perspectives of many individuals²⁸. Consumers benefit from their ability to recognize in each other, “people like me” and to form genuine relationships with like-minded people¹⁸.

2. Personalization

Personalization, defined by Lee et al.¹⁵, is the matching of services, products, and advertising content to individuals. This is another major source of value creation for e-commerce firms. To emerge as the winner, vendors must differentiate themselves by understanding customer priorities as well as focusing on fulfilling customers’ wants and needs.

Web consumers desire meaningful content; many are becoming jaded and resistant to content they perceive as meaningless³⁰. With personalization, consumers can focus on information pertaining to their particular requirements without being bombarded with other irrelevant information. Personalization structures information according to the customers' information search processes and by increasing the amount of available information dealing with products relevant to customers' tastes⁹.

This is where the value of owning information kicks in. Since the matching process is based on what a company knows about the individual user, the firm's ability to offer personalized services correlates with the depth and size of its data base. As virtual communities grow, the customer base grows, and the vendor will naturally find out more about its customers' preferences. This explains why the information owned by the company becomes an invaluable asset. It is available only to its owner and allows more instant, personalized services to each user based on one's needs and desires. Vulkan, in *The Economics of E-Commerce*, calls this ability mass-customization, or the capability to tailor to suit individual customers with differing tastes at low costs³¹.

a. Hotelling Model explaining Personalization

The importance of personalization is nicely summarized by the Hotelling model³¹. The model is best understood by looking at an example where two hot dog stands compete for business along the horizontal beach line of distance $x = 1$. Assuming that the two stands sell completely identical hot dogs, sun-bathers and swimmers who are uniformly

distributed along the shore will purchase their hot dogs from the closest location. This explains why the two stands are expected to be found in the middle of the horizon, right next door to each other. Starting out from the two opposite ends, Stand A at $x = 0$ and Stand B at $x = 1$, both have incentives to move one step towards the middle to capture just one more customer. This logic will continue in a similar fashion until the two meet at the midpoint, or the equilibrium point, at $x = 0.5$.

Although the two competitors would like to open a stand right next to every customer out on the beach, it would never happen in the real world because the cost could never be justified. This is possible, however, on the Web. E-tailers can open up numerous hot dog stands adjacent to every potential customer in the world at a minimum cost, just as Amazon is providing shopping recommendations and Netflix is recommending movie titles based on one's preferences and browsing behavior. For example, Netflix customizes the merchandising of its inventory for each individual customer by displaying recommended titles in the "front" and the less-preferred genre titles in the "back." Customer can then easily pick out the title that best suits his or her preferences. Imagine a Blockbuster store shuffling the display of their titles each and every time a different customer walked into their store - essentially, this is what Netflix does for each of its members.

According to Professor Jonathan Byrnes at the Massachusetts Institute of Technology, the markets dominating today's business environments are the ones he labels "precision markets." The world's market development can be broken down into three different eras

as shown in Figure 1. Inchoate markets flourished before giving up their standings to newly emerging mass markets in the 20th century. Today, the world is seeing the emergence of yet another form of markets known as precision markets. Precision markets require the ability to offer differentiated goods, focused yet flexible, to satisfy consumers of various tastes and preferences. Precision markets are a sharp contrast to mass markets where consumers were allowed to, as Henry Ford quoted, “choose any color they wanted, as long as it was black.” One driver of this change is the intensified competitions in today’s markets. An increased number of competitors, both domestic and from abroad, are quickly filling the ecological niches. But more importantly, today’s mature, sophisticated buyers are pressuring to increase their utility. Thus, personalized services, tailored to provide the best customer experiences, is an important factor of success. One firm must be able to suit the tastes of thousands of customers.

Figure 1. From Professor J. Byrnes presentation to MIT’s 1.261 class on April 28, 2004.

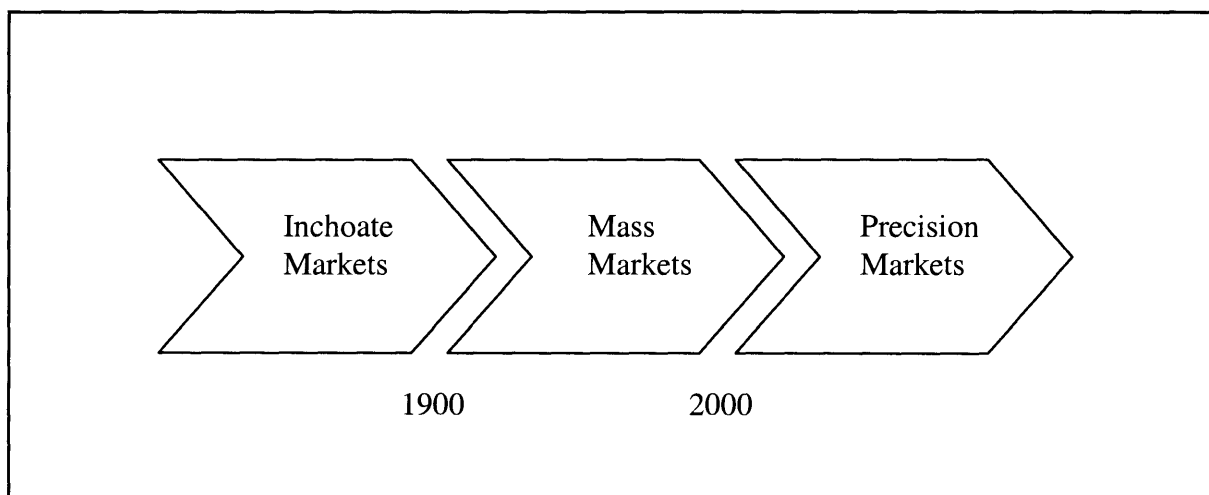


Table 1. From Professor J. Byrnes presentation to MIT's 1.261 class on April 28, 2004.

<u>Mass Markets</u>	<u>Precision Markets</u>
Stable, homogeneous markets	Dynamic, heterogeneous markets
Product driven	Account/Consumer driven
Broad-market targeting	Precision targeting
Average approach	Differentiated approach
Standardized, powerful, broad	Focused, aligned, flexible

b. Switching Cost

Lowering customer acquisition and retention costs is a key factor in e-tailing. Many e-tailers are averaging more than \$100 to acquire a new customer, and some are spending upwards of \$500¹⁰. Such actions are suicidal; their average customer acquisition cost is higher than the average lifetime value of their customers¹⁰. Web personalization is extremely valuable because it increases the customer retention rate by increasing the switching cost. After examining 59 public e-business firms, Amit and Zott's paper², *Value Creation in E-Business*, concluded that "locking in" customers through things such as personalization, is one of the most important ways to create value in e-business. Customer acquisition cost is expensive, especially in an online setting. According to Professor Philip Kotler at Northwestern's Kellogg School of Management, attracting a new customer can cost five times as much as retaining a current one and costs 16 times as much as bringing a new customer to the same level of profitability as a current one⁸. Meanwhile, Reichheld, in his book *Loyalty Rules*³², indicates that a 5 percent increase in

customer retention results in a 25 percent to 95 percent increase in profits for online businesses. Creating a compelling experience that encourages customers to come back is critical in an e-business environment.

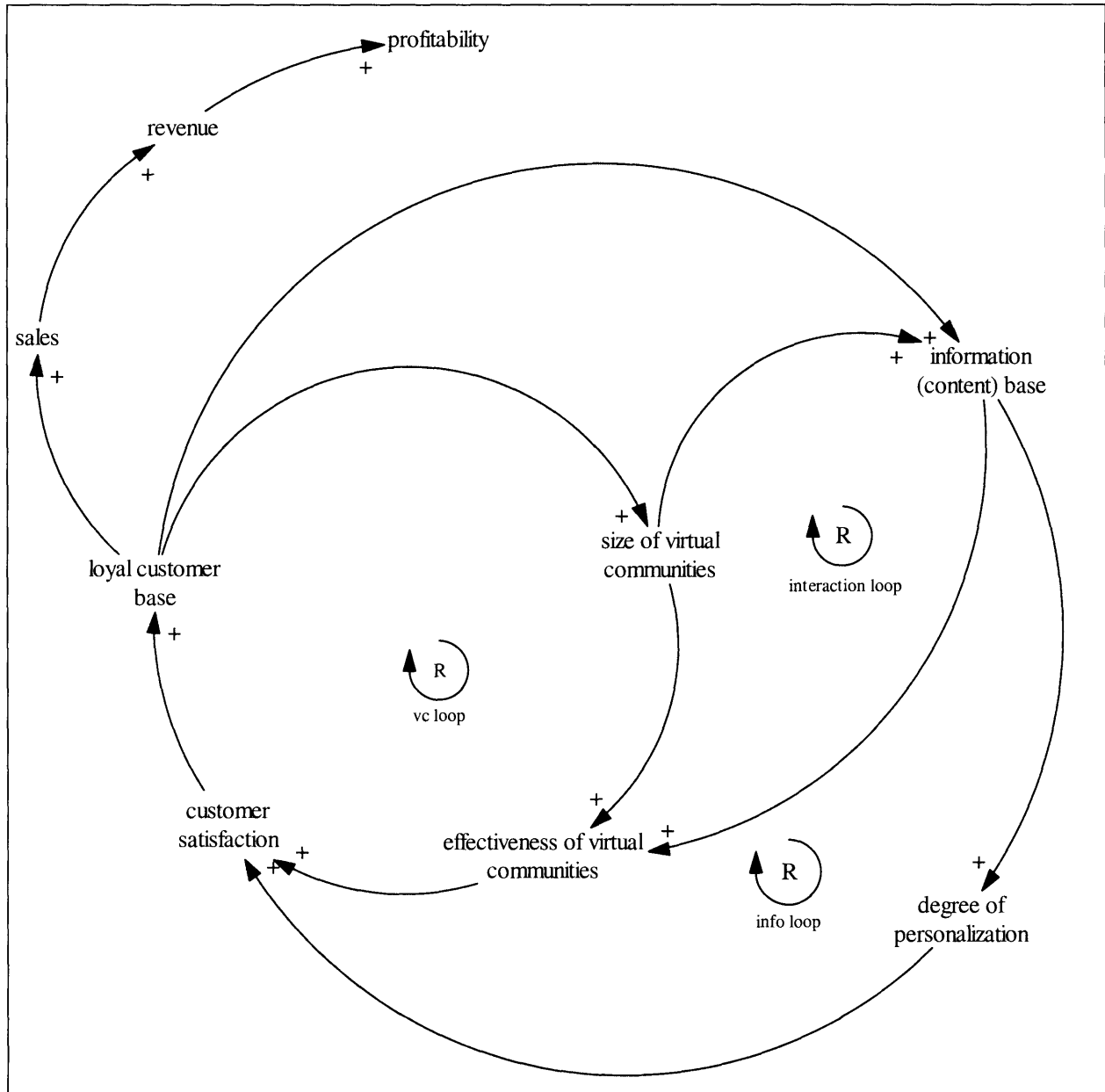
By creating stickiness through personalization, electronic retailers effectively increase the switching cost and consequently increase the customer retention rate. Experiences of many e-commerce firms indicate that savings in customer acquisition cost is important as customer acquisition costs are an enormous barrier to profit generation.

B. Explanation using Feedback Loops

As can be concluded from the above discussion, with the help of technology, e-businesses can create ways to recruit new customers in addition to retaining their already existing customers. Most websites encourage the input and feedback from their customers. To better serve their customers they ask them to share their experiences with the community: the information benefits both the vendor and other consumers. This interaction cultivates an online community that helps both parties in multiple ways. Through personalization efforts, online retailers have built extensive databases containing valuable information. Online communities will increase the quality and quantity of this information, which then increases the appeal of the supplier to other consumers. The virtual community and personalization are valuable commodities that cannot be replicated, and hence, they are what give an online retailer that is merely another fish in the sea a clear advantage.

Figure 2 is a feedback diagram that shows why providing virtual communities and personalization is important in the e-commerce industry. The three major loops, VC, Info, and Interact loops, explain the dynamics of causal relationships between variables. In every loop, all components are connected by a positive polarity, meaning that an increase in the independent variable causes the dependent variable to rise above what it would have been. These positive, self-reinforcing feedback loops suggest exponential growth: the larger the quantity, the greater its net increase, further augmenting the quantity and leading to ever-faster growth. This is the reason why firms must have a sustained growth for these loops to become important. Therefore, there is a strong incentive for e-tailers to be early movers and to establish a strong enough loyal customer base to positively feed its important loops.

Diagram 2. Dynamic Feedback Loop System.



The VC Loop shows that the larger a loyal customer base, the greater the effectiveness of being part of a virtual community, which would increase customer satisfaction only to lead to an even larger loyal customer base. The Info Loop follows a similar argument: with a larger loyal customer base, more valuable information can be collected to be

available to members, which will prompt a higher degree of personalized services, resulting in increased customer satisfaction. There is also the Interaction Loop, which interacts with the VC loop to result in an even more amplified overall effect on customer satisfaction. The Interaction loop says the following: with a more valuable information database, virtual communities become even more effective, which then allows e-tailers to provide even better virtual communities full of relevant content. This will further increase customer satisfaction and result in a larger and stronger customer base. All three feedback loops continue their cycles in an endless fashion.

III. Approach

This section of the paper considers the same underlying question using multiple regression analysis. The results obtained further support the hypothesis that virtual communities and the availability of appropriate information through personalization have positive effects on customer satisfaction, and consequently on the size of a loyal customer base.

A. Review of Past Studies

In recent years, many studies have been conducted to measure the effect of virtual communities on e-commerce firms' performances. In their paper, *The Role of Online Buying Experience as a Competitive Advantage*¹², Kotha, Rajgopal, and Venkatachalam found that relationship services including community building and site personalization represent a sustainable competitive advantage. Their study examined the relation

between ratings of the online buying experience (provided by Gomez Advisors) and firms' Tobin's q^* for a sample of 46 pure e-commerce firms for eight quarters during years 1999 and 2000. What is striking about their analysis is that dimensions of the buying experience, such as website usability, product selection, and prices do not have a significant influence on a firm's performance as they do not provide a long-run competitive edge.

Another study carried out by the same group of professors led to a similar conclusion. In their work, *The Value Relevance of Network Advantages: The Case of E-Commerce Firms*¹³, the quarterly average of unique monthly visitors was regressed on earnings forecasts provided by Wall Street equity analysts for a sample of 92 e-commerce firms. This result led the team to conclude that the stock market places high value on the network effect as measured by the number of visitors (hence, the size of the virtual community created by the firm).

B. Methods

This paper approaches the same problem from a slightly different angle. While the former studies aforementioned examine variables of e-commerce firms directly, this study works with variables pertaining to *online consumers*. Because vendors today operate in an increasingly competitive environment, finding and retaining customers is a critical success factor. A key component to building effective customer relationships is a sound understanding of consumers' characteristics and online behavior.

* Tobin's $q = (\text{market value of debt} + \text{equity}) / (\text{replacement cost})$

C. Data Summary

The analyzed data were obtained from *General Social Surveys (GSS) 1972-2000*, interviews administered by the National Opinion Research Center to a random sample of respondents using a standard questionnaire. GSS are nationally representative surveys in the United States, administered to 1,500 to 2,500 households in most years since 1972. The survey repeatedly asks hundreds of questions in a variety of disciplines. Variables particularly pertinent to this paper were those pertaining to respondents' use of the Internet and e-commerce. For example, one question asks respondents to answer how many hours they spend in a typical week on online interaction with other Net users. Another relevant question asks if they have used the Web to actually buy something in the past 12 months. The data also contains a complete set of demographics variables which were valuable in determining whether certain characteristics of respondents make them more inclined to make online purchases. Although the aggregate number of observations of the GSS dataset is 40,933, it was reduced to 2,817 since the Internet-related questions are newly added variables for the year 2000 only. Appendix 1 shows the complete list of actual survey questions and their answer choices used for this paper and Table 2 below lists a statistical summary of the variables used for analysis.

Table 2. Statistical summary of variables.

Variable	Observations	Mean	Std. Dev.	Min	Max
<i>buyit12</i>	664	.50	.50	0	1
<i>percent</i>	223	.50	.46	.02	5
<i>buyinf12</i>	664	.20	.40	0	1
<i>seekinfo</i>	656	36.78	9.38	21	81
<i>wwwinter</i>	652	1.36	4.36	0	75
<i>rincome</i>	1815	10.05	2.92	1	12
<i>male</i>	2809	.44	.50	0	1
<i>xnorcsiz</i>	2809	4.08	2.69	1	10
<i>matburee</i>	1274	.51	.50	0	1
<i>hompop</i>	2809	2.54	1.43	1	10
<i>agesq</i>	2809	2419.53	1789.59	324	7921
<i>age</i>	2809	46.02	17.37	18	89

D. Data Manipulation

The two variables under consideration were the effects of virtual communities and personalization. Although the GSS dataset has a good number of variables relevant to one's usage of the Internet, no question inquires about the two dimensions directly, and a substantial amount of data manipulation had to be performed to create proxy variables (listed in Table 3) for the two unobserved explanatory measures. The details of data clean-up, manipulation, and dummy variables creation can be found in the STATA programming code in Appendix 2.

Table 3. Variables for the initial tests.

Dependent Variable	Proxy variables for “virtual community effect”	Proxy variables for “personalization effect”
<i>buyit12</i>	<i>wwwinter</i>	<i>seekinfo</i>
	<i>percent</i>	<i>buyinf12</i>

E. Hypotheses

Using multivariate regressions, the following two hypotheses were tested:

(Hypothesis 1) Virtual communities and personalization have positive effects on one’s probability of making an online purchase. Thus, variables *wwwinter*, *percent*, *seekinfo*, and *buyinf12* should have strong, positive coefficients.

(Hypothesis 2) Some demographics variables such as *xnorcsiz*, *matburee*, and *hompop* would explain the some of the differences in the probabilities. The variable *xnorcsiz*, which measures the size of respondent’s dwelling city, would test the hypothesis that individuals living in small, remote cities may be more willing to make internet transactions for convenience. The binary variable *matburee* (which equals 1 if both husband and spouse work) and the variable *hompop* (which indicates household size) will test to see if “busy families” are more willing to go online for their shopping needs. Thus, *xnorcsiz*, *matburee*, and *hompop* should have positive coefficients. The effects of *rincome*, *age*, and *male*, however, are somewhat ambiguous however.

Table 4 below organizes the predictions of the variable directions.

Table 4. Summary of the two hypotheses.

	Positive Coefficients	Negative Coefficients	Ambiguous Coefficients
Hypothesis 1	<i>wwwinter, percent, seekinfo, buyinf12</i>		
Hypothesis 2	<i>xnorcsiz, matburee, hompop</i>		<i>rincome, age, male</i>

F. Results & Analysis

The four different combinations of the variables in Table 4 follow the general form

$P(y=1|x) = \beta_0 + \beta_1 x_1 + \dots + \beta_k x_k$, and they are as below:

$$(1) \textit{buyit12} = \beta_0 + \beta_1 \textit{wwwinter} + \beta_2 \textit{seekinfo} + u$$

$$(2) \textit{buyit12} = \beta_0 + \beta_1 \textit{wwwinter} + \beta_2 \textit{buyinf12} + u$$

$$(3) \textit{buyit12} = \beta_0 + \beta_1 \textit{percent} + \beta_2 \textit{seekinfo} + u$$

$$(4) \textit{buyit12} = \beta_0 + \beta_1 \textit{percent} + \beta_2 \textit{buyinf12} + u$$

Since *buyit12* is a binary dependent variable, the regressions above are linear probability models explaining a qualitative event: the probability of a respondent making an online purchase.

The regression output of the four models above is listed in Table 5. The results of (1) and (2) show that *wwwinter* is both statistically and economically insignificant. Similarly, the

results of (1) and (3) show that *seekinfo* is economically insignificant. It is clear from the results of the four equations that *percent* is a better proxy variable for the virtual community effect and *buyinf12* is a better proxy variable for the information effect. Therefore, Equation 4 was chosen for further analysis. According to Equation 4, respondents who use the Web to look for information about a product they might want to buy have a 57% higher chance of making an online purchase than those who do not. Also, if one's percentage of hours spent using interactive Internet services (e.g. chat rooms, Usenet groups, discussion forums, bulletin boards, and the like) to the total hours spent using the Internet increases by 10%, the chance of making an online purchase increases by approximately 2.6%.

Table 5. Regression output for equations 1 - 4.

Dependent Variable: <i>buyit12</i>				
Independent Variable	Equation 1	Equation 2	Equation 3	Equation 4
<i>wwwinter</i>	.01	.01	---	---
<i>percent</i>	---	---	.28	.25
<i>seekinfo</i>	(.02)	---	(.01)	---
<i>buyinf12</i>	---	.41	---	.57
Intercept	1.07	.42	.74	.25
Observations	636	645	219	222
R-Squared	.09	.11	.12	.21

(**Bold** if statistically significant at the 5% level)

In addition to *percent* and *buyinf12*, demographic variables were added to Equation 4 to identify groups of people that may have higher tendencies to shop online. After trying many different combinations, *rincome* (respondent's income level), *male* (gender), *xnorcsiz* (dwelling city size), *matburee* (whether or not both the respondent and spouse work), *hompop* (household population), and *age* were chosen as new additions to the model.

- *rincome* - Tests whether respondent's income level influences his/her decision to make an online purchase. It can be argued that respondents with higher income have more money to spend online. However, a counterargument can be made based on the fact that online shopping is somewhat different in nature from physical shopping. A wealthy individual may prefer to travel to luxurious stores where he/she can be assisted by attentive and courteous salespeople. This may provide more satisfaction than clicking through web pages. Thus, the partial effect of *rincome* on the probability of online spending is ambiguous. A variable indicating the household income, *income*, was also available, but was missing for more observations. Thus *rincome* was used instead to increase the number of observations.
- *male* – Checks for any intercept shift due to gender differences. Again, the effect is ambiguous.

- *xnorcsiz* – Tests if the size of the respondent’s dwelling city has any effect on his/her online shopping behavior. This variable may be significant as people living in small, remote cities where retail stores are few and far between, would rather shop online for convenience.
- *matburee* – Tests the “busy family” effect. This binary variable equals 1 if the respondent and his/her spouse both work. Many households have been transformed from single to dual-income homes, which resulted in time deprivation. Time to conduct the more mundane aspects of life such as shopping for necessities no longer exists. The fact that most people are no longer full time consumers may have a great impact on their consumption behavior, or more generally, on their lifestyles. In order to carry out numerous tasks within a limited time period, people must do things most efficiently. This could mean that the working respondents whose spouses also hold either full-time or part-time occupations would be more inclined to do things more efficiently by shopping online. The variable *matburee* will precisely capture this effect.
- *hompop* – Represents the household population. The variable *hompop*, along with *matburee*, were added to see if “busy families” are more likely to make online purchases for the sake of convenience.
- To test effects of age on the probability of online purchase, a quadratic formula (with *age* and *agesq*) was used to captures diminishing effects. Peaking at the age

somewhere between 20 and 40, the partial effect of age is expected to diminish for the older, computer-illiterate generation.

The resulting linear probabilistic regression model is as shown below:

$$(5) \textit{buyit12} = \beta_0 + \beta_1 \textit{percent} + \beta_2 \textit{buyinf12} + \beta_3 \textit{rincome} + \beta_4 \textit{male} + \beta_5 \textit{xnorcsiz} + \beta_6 \textit{matburee} + \beta_7 \textit{hompop} + \beta_8 \textit{age} + \beta_9 \textit{agesq} + u$$

The results of (5), listed in Table 6 tell the following: as expected, percent and buyinf12 have statistically and economically significant positive coefficients. Moreover, the magnitudes of the coefficients are close to the results obtained from (4). A 10% increase in the percentage of hours spent using virtual communities increases the chance of success by 5.0%. Also, the probability of shopping online differs by 45% between those who do and those who do not use the web as a source of product information. The results of demographics variables are not as expected. All demographic variables are statistically insignificant, and most of them are also economically insignificant. In addition, the F-test result shows that the seven demographic variables *rincome*, *male*, *xnorcsiz*, *matburee*, *hompop*, *age*, and *agesq* are jointly insignificant in the online purchase probability equation. In other words, it is safe to conclude that demographic variables do not explain much of one's online shopping behavior.

Table 6. Regression output for equations 4 & 5.

Dependent Variable: <i>buyit12</i>		
Independent Variable	Equation 4	Equation 5
<i>percent</i>	.26	.50
<i>buyinf12</i>	.57	.45
<i>rincome</i>	---	.00
<i>male</i>	---	(.14)
<i>xnorcsiz</i>	---	(.04)
<i>matburee</i>	---	(.19)
<i>hompop</i>	---	.01
<i>agesq</i>	---	.00
<i>age</i>	---	(.04)
Intercept	.25	1.28
Observations	222	82
R-Squared	.21	.34

(**Bold** if statistically significant at the 5% level)

G. Limitations of Analysis

Although (5) is useful in observing ceteris paribus relationship between dependent and independent variables, it should be kept in mind that linear probability models do have shortcomings. The equation can give predictions either less than zero or greater than one,

which is puzzling since the probability of an event should be in the range of zero and one. However, predicted probabilities outside the unit range can be overlooked as the main purpose of this analysis is to observe the direction, either positive or negative, and the magnitude of the ceteris paribus effect of independent variables on the dependent variable. Also, low R-squared values may seem disturbing. For example, the variables in (5) explain only 34% of variation in the probability, and the other 66% is left unexplained. Nonetheless, the results are still useful - note that in every regression, the influences of virtual communities and information show strong positive correlation with the probability of online shopping.

It is important to note that feedback diagram model in Figure 2 is not a comprehensive model. It shows the relationships and effects of only the key variables of this paper - virtual communities and personalization. There are influences not captured in this model that will balance the above three loops of exponential growth. For example, increasing cost of operating and maintaining numerous virtual communities can have a negative effect on profitability that will balance out the growth. Nevertheless, causal relationships included in Figure 2 do explain why vendors should focus on offering virtual communities and personalization to their customers.

For further studies, a different dependent variable can be used to obtain even more compelling results. Instead of a binary variable, variables such as the frequency of online shopping and the total purchase amount of online shopping can be substituted for *buyit12* for possibly more compelling results.

IV. Case Studies

A. Study of Successful Companies

1. eBay: the First P2P Auction Website

EBay, a household word to many, has revolutionized the online marketplace. Conceived in the living room of computer programmer, Pierre Omidyar, in 1995, it started as a website to allow the trading of Pez candy dispensers: in other words, anything and everything. That was almost nine years ago, and eBay is thriving; eBay is *the* place to shop online. A mere five years after its startup, there were 10 million registered users. By 2002, there were nearly 62 million registered users listing over 638 million items. This was a noticeable leap from the previous year by 46% and 51%, respectively. That same year, eBay passed the \$1 billion mark for the first time in eBay's history, with net revenues totaling \$1.21 billion ⁵.

EBay is an online market place where anyone, whether it be individuals or businesses small and large, can buy or sell anything. Despite its humble beginnings, eBay has grown leaps and bounds. Its marketplace offers an enormous variety of items, ranging from trinkets and collectibles to automobiles and real estate. Powered by a platform that is fully automated, eBay's online services are available to its customers 24 hours a day, 7 days a week. Customers are offered numerous services to enhance their trading experience: there are tools to help sell and buy as well as tutorials to learn how to use these tools. But these diverse tools are just the beginning. A major feature of eBay that has contributed to its growth is its virtual community.

Community building has become eBay's area of expertise. Fortunate for eBay, its founders recognized the importance of creating a sense of community within its members early on. The post-internet-boom had most internet-based companies were working hard to stay afloat, but eBay was just working on smoothing out the wrinkles in their seemingly perfect store. It turns out that most customers want more than just convenience. With such a hodgepodge of retailers on the web, customers are faced with the difficulty of having to discern the good from the bad. Thus, to the retailer, having a reputation of being reliable and trustworthy is a great and perhaps necessary advantage. It would not be an exaggeration to say that eBay's community has made eBay what it is today.

A numerous research findings show that companies with good customer relationships are more likely to be successful. Customer relationship management includes the hosting of virtual communities and personalization of websites. Luckily both of those things are what eBay does best. Both buyers and sellers have access to personalized homepages that track the status of items on auction as well as show their latest transactions. They have also incorporated a feedback forum that allows sellers and buyers to build their own reputations. After completing a transaction, both parties are encouraged to rate the other as "positive," "neutral," or "negative." One can also add brief comments supporting their ratings. This feedback loop is an invaluable source of information; it promotes a sense of community among its members similar to that of an off-line community. This keeps its

customers loyal so that they keep coming back to eBay. Public trading profiles advocate honesty and trust, so people can feel more secure in their transactions.

eBay's interactive website also sends out the message that the people who work at eBay.com care about the consumer. By hosting a wide array of online chats and forums, posting bulletins, and providing other interactive services, eBay can become an integral part of its members' experiences. In addition, all major and minor changes regarding eBay's website go through its customers³. eBay receives comments and suggestions to their planned changes before actually putting any changes into action. This gives the customers of eBay a tremendous amount of power since they can directly contribute and participate in the decision-making process at eBay. eBay also benefits from this since it allows them to cater to the specific needs of its members. Meanwhile, this aspect of eBay attracts even more customers, helping eBay to grow and expand. These new members of eBay also partake in the online communities at eBay, increasing the amount of feedback and information available, and the cycle continues.

Online communities have come to foster relationships and interactions that better accommodate the needs of the modern day consumer. In short, eBay's dedication to building communities is a benefit to everyone involved and an enormous barrier to its competitors. As eBay establishes a reputation as an efficient and safe online marketplace, the number of online communities formed amongst eBay members will increase. Online communities, in turn, help to establish a loyal customer base in addition

to attracting more new customers. Thus, online communities accrue value as their customer base expands.

eBay's virtual communities give it the true first mover's advantage. While one might be able to copy eBay's business model and strategy, its online communities cannot be replicated. The online communities have become a property of eBay through association of its service and members. Monetary investments as well as devoted maintenance may have helped spawn these communities, but to think like a Master Card commercial, virtual communities are priceless.

2. Amazon: More than Just Books

Amazon.com, which started as an online bookseller, has diversified its menu, but most of its revenues still come from the sales of books, CDs, and DVDs. Since it was started in 1995, Amazon.com has grown explosively; its customer base has steadily increased, with an impressive 35 million active customers ²³ and its revenues have been on a continuous rising streak as well. Amazon's revenues were estimated to total about \$5 million during its first year of business, which escalated to \$5 billion by year 2003 ³³. The year 2004 will hold special meaning for the company as it marks the company's first profit earnings.

Founder, Jeff Bezos, boasts that Amazon.com is much more than just an online bookstore. As a pure online retailer, Amazon can offer services that the traditional bricks and mortar version of the store cannot, and it has invested over \$1.1 billion in technology

alone to ensure these services are more than exemplary²⁶. Customers have the ability to browse through over 1 million titles, which is much more than what the largest bookstore carries. In addition, Amazon offers a variety of services to enhance the book-buying experience: members can sign up to receive information and recommendations via email about books by their favorite authors or on their favorite subjects; they can request to be informed when a book comes out in paperback; and once a customer selects a book, other books of similar titles are displayed on their personalized webpage.

Most importantly, all this information is completely and readily accessible whenever desired. People can also read comments posted by other consumers as well as post their own reviews. Those who use Amazon more frequently may personalize the website so the displays show current books related to their interests. The numerous self service tools allow consumers to customize web pages and the interactive features increase awareness of new feature and products available. These are the kind of services that keep people coming back, and even better for Amazon, that in particular, self-service tools lower their customer service and fulfillment costs⁴. Amazon claims that approximately 44% of the books they sell are to repeat customers²³. So, one can see how important it is for Amazon to focus on keeping their customers happy by offering services that better their experience at the Amazon website.

One way that Amazon has utilized technology to enhance online human interaction is by implementing a feature that allows members to choose whether they would like to “visible” or “invisible.” When “visible,” other members who are online at the same time

can initiate conversation with that person. Amazon's book selection is categorized just like any bookstore, so those shopping around to find a good travel guide can chat with others who are in the same section and ask their opinion or for a recommendation. Notes Bezos, "the semi-anonymity of the on-line environment makes people less inhibited ²³." As this feature can be used at the discretion of the customer, it will not be considered bothersome or annoying. It is, however, an excellent way to provide a "venue" for customers to "meet" and share information. At this point, the customers are selling or inhibiting the selling of books on their own, and this marks the beginning of a potential virtual community.

Recognizing a good idea is not nearly as hard as thinking one up. Following Amazon in its footsteps are virtual bookstores galore, all trying to get a piece of the pie. So, while still finding ways to improve on the traditional bookstore, Amazon must also find ways to keep ahead of its competitors. Not surprisingly, Amazon has an enormous advantage in being the pioneer in the internet book selling industry. By the time BarnesandNoble.com rolled around, Amazon had been in business for two years and had rid itself of a lot of the kinks that Barnes & Noble had yet to work out. Most importantly, however, it already had a data base filled with loads of information about customer preferences, which led to the building of virtual communities. Although Barnes & Noble was known for its large chain of bookstores around the country, Amazon was the place people went to buy books on the internet.

The first mover's advantage is significant because, despite Barnes & Noble's widespread reputation as prominent booksellers, Amazon's customer database helps personalize and explicitly cater to the preferences of their customers, especially those who are returning. Members of Amazon are less likely to switch to other online retailers because they have already spent the time and energy "building" their own store according to their specific tastes. The information gained by Amazon increases the degree to which its store can be tailored for each customer, allowing a better experience for the consumer and a way to increase the services offered by Amazon. As this cycle continues, the gap between Amazon and its competitors will increase. The nature of their accumulating database is an ever-increasing value as long as old customers continue and new customers begin to shop at Amazon.

Virtual communities have become a crucial component of the internet experience. In fact, virtual communication is perhaps the main reason why the internet was invented. It is obvious that although the importance of convenience is very heavily weighted in the modern world, it does not account for everything. People still long for the companionship of others to share opinions and discuss matters in which they are interested. Early recognition of this by Amazon was critical to its success. The internet adds flexibility to this desire and people can satisfy their needs without the limitations of time or location. The emphasis on virtual communities clearly proves this and thus, more and more online retailers are finding that creating relevant virtual communities is vital.

3. Netflix: A Triumph for Innovation

Netflix, a company that has surpassed all expectations and has even giants like Blockbuster on its toes, started as your typical online DVD rental service. In 1997, Netflix started an online service, allowing its customers to rent DVDs online to be shipped by mail. This was soon changed to their current flat-fee subscription service of \$21.99 a month (price increase from \$19.95 starting June 15, 2004) for all the movies you can watch. For \$21.99 a month you can have up to three movies at a time with no late fees. The fact that there are no late fees may have been its initial selling point: Blockbuster's notoriety for its exorbitantly high late fees has been well-exploited by Netflix which has in turn flourished in this new business of online rentals.

Since Netflix has changed its business model to unlimited DVD rentals, it has witnessed rapid subscriber growth: attracting some 125,000 subscribers each month, it will soon have over 2 million subscribers ¹. Its success is further illuminated with statistics that show a 77% increase in revenue ²⁰.

In addition to being an online retailer, Netflix offers several services that differentiate it from the average DVD rental company. Netflix boasts an impressive library of 20,000 titles, which include a wide array of foreign and independent films. Their wide selection of obscure titles have won the hearts of many movie buffs and customers who are tired of going to stores like Blockbuster only to find that the film they wished to watch is unavailable. It also uses advanced software to offer a variety of services to enhance the consumer's experience through its website.

In the spotlight is CineMatch, a recommendation engine that Netflix uses to find the “right movie for the right person ²⁰.” The innovative web technology is based on the assumption that most customers watch big-budget and therefore, widely advertised, films. CineMatch provides a highly personalized service by recommending movie titles that have been rated by other subscribers. Similar titles that have been well-rated are suggested regardless of their popularity or lack thereof at the box office; foreign films, independent films, and blockbusters alike are of equal status at Netflix as all recommendations are based on ratings by customers. This has been highly successful proven by the fact that 70% of the movies rented by Netflix customers are titles that have been recommended to them through CineMatch ¹. So, unlike the traditional rental store, Netflix can cater to individual tastes effectively and immediately. Netflix is counting on this to pull them through the heavy competition to come: it is hoped that their unique recommendation system will not only increase the number of subscribers, but help to establish a loyal customer base.

CineMatch is a powerful program that can effectively organize and use an overwhelming amount of information. The value of the information, however, depends on the amount of customers that rate and review movies that are offered by Netflix. Thus, Netflix is offering personalization through a form of consumer empowerment; by encouraging consumer participation through the rating and reviewing of movies, it is allowing their website to be directed by customer satisfaction.

By encouraging its subscribers to be active by posting reviews and rating movies they have seen, Netflix is also promoting an online community that can share its opinions and experiences. In essence, the technological services that Netflix provides is a way for people to bond and enjoy a common experience without ever having to leave the comfort of their own home. This kind of online community can be valuable in many ways. Customers get the satisfaction of voicing their opinions that directly influence the popularity of a particular film while this information can then be used by Netflix to power their recommendation engine, CineMatch. By recommending a wide variety of films to its customers, Netflix can also benefit by minimizing the demand for new popular releases, which usually cost the company more due to revenue sharing agreements. This could have other implications further down the road. Netflix is quickly emerging as the Zagat of in-home entertainment: a bad review on Netflix could mean bad business. A positive review on Netflix could greatly influence the popularity of not only rentals, but also sales of a movie.

Excellent utilization of the internet and information technology is a strength that Netflix imitators seek to replicate. What cannot be replicated, however, is the Netflix database that has been steadily building since the founding of the company. Netflix's movie ratings have become addictive for many: "the average customer has rated more than 100 movies ²⁰." With a monthly subscription, one has access to a smorgasbord of information pertaining to movies current and old.

Heavy investment in technology may have been the best move Netflix ever made. Modeled to exploit many of the weaknesses of the traditional bricks and mortar rental store, Netflix is able to doubly utilize its investments in technology. Its investments serve as a protective barrier – at least for now – against competitors that are entering a market that has created by Netflix. Competitors are forced to mimic a primitive Netflix model which Netflix has now perfected through trial and error. It also recruits customers by offering novel services that add value to the customer experience through technology. One such service is the aforementioned CineMatch, the unique recommendation system of Netflix.

The ability to create a customized store for each individual by tailoring the display of its inventory to allow easy and convenient title selection is a service that cannot be offered by rental stores such as Blockbuster. Reviews and ratings are much more easily updated and circulated for the internet-based company, which is an added convenience and source of satisfaction for customers. These services have been well-received by customers and have proven detrimental to their competitors. Now, what remains to be seen is if this will allow Netflix to continue expanding while in direct competition with big name companies such as Wal-Mart and Blockbuster who have plans to offer similar services through their own websites.

Netflix's technological investments do not end at the software they use to recommend films. A key element of its success is in the efficient and speedy distribution of DVDs as well as inventory control. Although it started with a single warehouse based in San Jose,

it was clear that this would not be able to accommodate its growing audience. Now, with distribution centers at 24 different locations spread throughout the country, most customers are within a two day mailing range³⁴. With its highly automated state-of-the-art facilities, Netflix can effectively manage the shipping and receiving of millions of DVDs per month. This not only saves time, but also cuts costs: distribution centers that are capable of handling 50,000 DVDs a day are staffed with a mere 200 employees³⁴ and have a startup cost of approximately \$60,000.

Customer service is another aspect that Netflix takes seriously. Keeping in mind that customer satisfaction is crucial to retaining subscribers, its customer service center in San Jose is staffed with twenty representatives 24 hours a day, 7 days a week. Most inquiries are received via email and are responded to within one hour. They offer customer support through the phone as well although they try to eliminate such needs by automating many of the necessary services on the website¹.

Netflix is looking to turn around its losses to profit, and if their current trend continues, perhaps this will be the year. Netflix, as the creator of this market, has the advantage of being the first mover. However, now that they have created this new market, the increasingly imminent question is whether they will be able to survive heavy competition with giants such as Blockbuster and Wal-Mart.

Wal-Mart has already begun a program identical to Netflix at a lower price. Wal-Mart's main drawback is that it operates out of a single location on the east coast. The amount

of attention they will allocate to this new sector of business is also questionable. DVD rentals are obviously not Wal-Mart's main business. Online or offline, Wal-Mart's reputation for low prices will precede them, not their wide selection of DVDs.

Blockbuster, however, with an already established name in the rental business may pose a more serious threat. The entertainment rental veteran has already introduced the Freedom Pass, which is to be launched nationally by the end of 2004. The Freedom Pass is a program similar to Netflix's no late fees, flat-fee subscription service, with the added benefits of being able to pick-up and return at any of Blockbuster's store locations. Blockbuster's plan answers some of the obvious limitations to Netflix. A major setback for a company based on the internet is its inability to respond to customer spontaneity. By giving customers the option of in-store pick-up or ordering on the internet, Blockbuster will provide greater flexibility. In addition, while Blockbuster's new plan may compete for all potential and existing Netflix customers, Netflix, with its current business model cannot do the same to Blockbuster. In other words, customers who do not rent enough movies to make the \$19.95 monthly subscription fee worthwhile or those who simply feel that \$19.95 a month is too big of an upfront cost will not be tempted to switch from Blockbuster to Netflix. Considering that Blockbuster reports that 16% of its revenue comes from late fees, however, for many customers, \$19.95 a month may surprisingly prove to be much more economical and the Freedom Pass will have its share of repercussions on Blockbuster's finances.

B. Case Study of a Failed Company: CDNow

CDnow started out in 1994 as the first online music store, eventually building a reputation as a giant in the music business. Despite the acclaim it received for its wide selection of music, it failed to live up to its “giant” status. After several years of losses the online retailer was forced to merge several times, and in the end wound up under the umbrella of Amazon, its former competitor. CDnow had all the same advantages as did Amazon: it was a pioneer in its market niche, which meant that it held the power to steer and mold the market as well. Unfortunately, success was not to be had. Although there are numerous factors which led the company to partner and eventually fold, its business strategy was not sufficient for its survival.

According to a research study comparing Amazon.com, Barnesandnoble.com and CDnow.com, CDnow did not effectively utilize the necessary marketing tools. Whereas Amazon had spent millions on advertising and brand-name building, CDnow had only spent \$50,000 on advertising during its first two years. Only after those two years did they begin to launch more intense advertising campaigns. Also, in the category of competitive pricing, CDnow’s lack of discounts was met with criticism. Most online retailers built their reputation around several themes, a prominent one being low pricing. This came into play, especially when a formidable competitor entered the market. Amazon offered further discounts when Barnes & Noble became its direct competitor in the online book market. CDNow’s prices, however, were undercut by Amazon after it added music to their online store, and CDNow soon relinquished its leading position to Amazon²³.

The charm of CDNow is similar to that of Amazon and Netflix. Its wide selection especially attracts customers who are tired of going to look for that obscure album that is simply not on the shelf. The founder of CDNow, Jeff Olim, is said to have started CDNow after failing to find a Miles Davis CD at a local music store. In addition, the recommendation system, like that of Netflix or Amazon, can broaden the music experience by exposing consumers to less mainstream music or albums that have been popular to other customers of similar tastes. Not surprisingly, CDNow did employ personalization features such as “My CDNow,” which was an individually tailored music store for each registered customer displaying relevant information about specific albums, artists, and related events, but this also was a late addition to their website – much later than eBay’s and Amazon’s efforts to integrate personalization into their businesses.

So, what is it that CDNow did not do? Beyond their inability to match the prices of their competitors, they also “rejected the idea of building a community on its own, and sought to participate as a retail partner in communities created by others, such as Tripod²³.” The successful web community certainly proved to be an invaluable asset to Amazon as it did to eBay. Virtual communities became a springboard for information exchange among consumers and between the consumer and the retailer. In a place where word spreads at the click of a mouse, the consumer had the power to direct traffic and they were doing just that. Through its online communities, these online retailers had been placed in a spotlight that increased the awareness of their newly created brand-name. Hence, the refusal of CDNow to create a virtual community may have hurt the company more than it anticipated.

V. Conclusion

Small time store owners often emphasize the importance of customer relations. What they cannot offer in terms of monetary value is compensated by their personal attention; their prices may not be competitive, but they know who you are, where you live, and what you like. Wal-Mart and the like offer the exact opposite. The absence of personal relationships is counterbalanced by convenience; they offer lower prices, longer store hours, and a wider selection of merchandise. Nowadays, however, a new kind of service is emerging that might make a more modern version of the mom and pop store appealing to the market-savvy customer who would rather shop at discounted prices. Electronic retailers have entered the global market place with a new business model that integrates the conveniences of a giant retail chain with the individual attention of a small local store.

Satisfying your customers has never been as important as it is now. Online retailers are constantly being challenged by competitors in every aspect of their business: prices, selection, availability, convenience, customer service, personalization, and virtual communities. Of these, personalization and virtual communities are the hardest to replicate since much of what makes them valuable is intangible. An excellent example is the website that is highly personalized, and therefore, increases the switching costs for the consumer. Given that all else remains the same, the consumer is much less likely to use another provider since they have already put in the initial effort and time to receive their individually tailored information.

The same can be said about virtual communities. Virtual communities were founded on the premise of the advantages of information sharing. By sharing information on a product or experience, consumers can shift the balance from the seller to the buyer. When the buyer can directly influence the sale of a product by posting comments about the product or services rendered, pleasing each individual buyer becomes more important. This shift, however, creates a motive for the seller, as well, because it provides valuable information on the detailed interests of the consumer. Direct feedback from the consumers helps minimize the time and money spent on trial and error. As the community flourishes, the value of this information increases and both parties benefit: the consumer benefits from better services and the retailers benefit from increased spending.

E-commerce has created new conveniences and benefits that consumers may not have expected. These services, however, have now become established as a norm; these components are necessary in establishing Web brand loyalty and competitiveness. How well an individual web brand meets these customer expectations will determine the outcome of their business; the struggle to acquire and retain customers will define the e-marketplace of the future. Expanded consumer services, including virtual communication and personalization, will help create a good consumer experience – a crucial factor to success.

Appendix 1. STATA program for replication purposes..

```
*****
*****
***** STATA dictionary file *****
***** Brian Y. Um *****
***** General Social Surveys ****
*****
*****

log using h:/thesis/thesislog.log, replace
set memory 800000
use h:/thesis/thesisdata.dta, clear
drop if age == .
***** total web browsing and interacting hours per week
***** virtual community variable
***** wwwtotal, wwwinter
gen wwwtotal = .
gen wwwinter = .
gen temptota = 0
gen tempinte = 0
replace temptota = 1 if (wwwwhr == 0 & wwwmin > 0 & wwwmin < 60)
replace tempinte = 1 if (chathr == 0 & chatmin > 0 & chatmin < 60)
replace wwwtotal = wwwwhr + temptota
replace wwwinter = chathr + tempinte
gen percent = .
replace percent = wwwinter / wwwtotal if (wwwinter > 0 & wwwtotal > 0 & wwwinter <
998 & wwwtotal < 998)
***** fix age variable
gen age20 = 0
gen age30 = 0
gen age40 = 0
gen age50p = 0
gen age1050 = 0
gen age5090 = 0
gen agesq = age * age
replace age20 = 1 if age < 30
replace age30 = 1 if (age >= 30 & age < 40)
replace age40 = 1 if (age >= 40 & age < 50)
replace age50p = 1 if age >= 50
replace age1050 = 1 if age < 50
replace age5090 = 1 if age >= 50
***** fixing online shopping hours
***** temporary variables
***** wwwshop
gen shophome = .
```



```

gen hhtemp = 0
gen hmtemp = 0
gen shopwork = .
gen whtemp = 0
gen wmtemp = 0
gen shopothe = .
gen ohtemp = 0
gen omtemp = 0
gen wwwshop = .
***** rounded < 1 hr to 1 hour
replace hmtemp = 1 if (ecomhrh == 0 & ecomminh > 0 & ecomminh < 60)
replace wmtemp = 1 if (ecomhrw == 0 & ecomminw > 0 & ecomminw < 60)
replace omtemp = 1 if (ecomhro == 0 & ecommino > 0 & ecommino < 60)
replace hhtemp = ecomhrh if ecomhrh < 998
replace whtemp = ecomhrw if ecomhrw < 998
replace ohtemp = ecomhro if ecomhro < 998
replace shophome = hhtemp + hmtemp
replace shopwork = whtemp + wmtemp
replace shopothe = ohtemp + omtemp
***** making total online shopping hours per week
replace wwwshop = shophome + shopwork + shopothe
***** another virtual community variable
gen vc = .
gen temp1 = 0
gen temp2 = 0
gen temp3 = 0
gen temp4 = 0
gen temp5 = 0
replace temp1 = 1 if artschat == 1
replace temp2 = 1 if wwwmusic == 1
replace temp3 = 1 if wwwart == 1
replace temp4 = 1 if wwwlit == 1
replace temp5 = 1 if litsite == 1
replace vc = temp1 + temp2 + temp3 + temp4 + temp5
***** information seeker
***** seekinfo
gen temp101 = .
gen temp102 = .
gen temp103 = .
gen temp104 = .
gen temp105 = .
gen temp106 = .
gen temp107 = .
gen temp108 = .
gen temp109 = .
gen temp110 = .

```

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gen temp111 = .
gen temp112 = .
gen temp113 = .
gen temp114 = .
gen temp115 = .
gen temp116 = .
gen temp117 = .
gen temp118 = .
gen temp119 = .
gen temp120 = .
gen temp121 = .
gen seekinfo = .
replace temp101 = fin30 if fin30 < 8
replace temp102 = schl30 if schl30 < 8
replace temp103 = educ30 if educ30 < 8
replace temp104 = work30 if work30 < 8
replace temp105 = news30 if news30 < 8
replace temp106 = govt30 if govt30 < 8
replace temp107 = pol30 if pol30 < 8
replace temp108 = travel30 if travel30 < 8
replace temp109 = sports30 if sports30 < 8
replace temp110 = music30 if music30 < 8
replace temp111 = art30 if art30 < 8
replace temp112 = tvmov30 if tvmov30 < 8
replace temp113 = health30 if health30 < 8
replace temp114 = relig30 if relig30 < 8
replace temp115 = games30 if games30 < 8
replace temp116 = humor30 if humor30 < 8
replace temp117 = porn30 if porn30 < 8
replace temp118 = person30 if person30 < 8
replace temp119 = sci30 if sci30 < 8
replace temp120 = hobby30 if hobby30 < 8
replace temp121 = cook30 if cook30 < 8
replace seekinfo = temp101 + temp102 + temp103 + temp104 + temp105 + temp106 +
temp107 + temp108 + temp109 + temp110 + temp111 + temp112 + temp113 + temp114
+ temp115 + temp116 + temp117 + temp118 + temp119 + temp120 + temp121
***** SOCIABILITY scale smaller the more sociable
***** combining variables in question 173
gen temp201 = 0
gen temp202 = 0
gen temp203 = 0
gen temp204 = 0
gen sociable = .
replace temp201 = socrel if socrel < 8
replace temp202 = soccommun if soccommun < 8
replace temp203 = socfrend if socfrend < 8

```

```

replace temp204 = socbar if socbar < 8
replace sociable = temp201 + temp202 + temp203 + temp204
replace sociable = . if sociable == 0
***** Degree of Group Commitment variable
***** combining variables in question 328
gen temp271 = 0
gen temp272 = 0
gen temp273 = 0
gen temp274 = 0
gen temp275 = 0
gen temp276 = 0
gen temp277 = 0
gen temp278 = 0
gen temp279 = 0
gen temp280 = 0
gen temp281 = 0
gen temp282 = 0
gen temp283 = 0
gen temp284 = 0
gen temp285 = 0
gen temp286 = 0
gen commit = .
replace temp271 = memfrat if memfrat < 3
replace temp272 = memserv if memserv < 3
replace temp273 = memvet if memvet < 3
replace temp274 = mempolit if mempolit < 3
replace temp275 = memunion if memunion < 3
replace temp276 = memsport if memsport < 3
replace temp277 = memyouth if memyouth < 3
replace temp278 = memschl if memschl < 3
replace temp279 = memhobby if memhobby < 3
replace temp280 = memgreek if memgreek < 3
replace temp281 = memnat if memnat < 3
replace temp282 = memfarm if memfarm < 3
replace temp283 = memlit if memlit < 3
replace temp284 = memprof if memprof < 3
replace temp285 = memchurh if memchurh < 3
replace temp286 = memother if memother < 3
replace commit = temp271 + temp272 + temp273 + temp274 + temp275 + temp276 +
temp277 + temp278 + temp279 + temp280 + temp281 + temp282 + temp283 + temp284
+ temp285 + temp286
replace commit = . if commit == 0
***** cleaning up the data
replace income = . if income > 12
replace rincome = . if rincome > 12
replace hompop = . if hompop == 99

```

```

***** generating kids variable
gen kids = .
replace babies = 0 if babies == 9
replace preteen = 0 if preteen == 9
replace teens = 0 if teens == 9
replace kids = babies + preteen + teens
replace kids = . if kids == 0
***** generating marital status dummy variables
gen married = .
replace married = 1 if marital == 1
replace married = 0 if (marital > 1 & marital < 9)
***** husband & wife works dummy
gen matburee = .
replace matburee = 1 if (wrkstat < 3 & spwrksta < 3)
replace matburee = 0 if (married == 1 & spwrksta > 2)
replace matburee = 0 if (married == 1 & wrkstat > 2)
***** matburee with kids dummy
gen matwkid = .
replace matwkid = 1 if (matburee == 1 & kids >= 1)
replace matwkid = 0 if (matburee == 1 & kids == 0)
replace matwkid = 0 if (matburee == 0)
***** turn into binary
replace buyinf12 = 0 if buyinf12 == 1
replace buyinf12 = 1 if buyinf12 == 2
replace buyit12 = 0 if buyit12 == 1
replace buyit12 = 1 if buyit12 == 2
***** sex dummy variable
gen male = 0
replace male = 1 if sex == 1
gen rincome2 = .
replace rincome2 = rincome * rincome
save h:/thesis/temprun.dta, replace
keep if year == 2000
save h:/thesis/temprun2000.dta, replace

```

Appendix 2. General Social Survey Variable.

769. Not counting e-mail, about how many minutes or hours per week do you use the Web? (Include time you spend visiting regular web sites and time spent using interactive Internet services like chat rooms, Usenet groups, discussion forums, bulletin boards, and the like.) (WWWHR, WWWMIN)

770. Earlier you mentioned that you spend [number in answer to Q769] (minutes/hours) using the World Wide Web in a typical week. About how many of those do you spend using chat rooms, news groups, bulletin boards, discussion forums, and other forms of on-line interaction with other Net users – not just browsing on your own? (CHATHR, CHATMIN)

774 C. In the past 12 months, have you used the Web to look for information about a product that you might want to buy? (BUYINF12)

774 D. In the past 12 months, have you used the Web to actually buy something? (BUYIT12)

787 A. Do you ever use the Web to learn about, read, or discuss topics related to literature-novels, poetry, or plays?

787 B. Visited the Web site of a book publisher, magazine, or on-line book store to learn about a novel, play, or book of poems?

796 A. NOT WEB In the last 12 months, have you looked for information about a product you might want to buy? (BUYINFGN)

801 A. About how many minutes or hours a week do you use your home computer for shopping, paying bills, and other household management? (ECOMMINH, ECOMHRH)

803 C. For about how many minutes or hours a week do you use your work computer for shopping, paying bills, and other household management? (ECOMMINW, ECOMHRW)

806 A. For about how many minutes or hours a week do you use (this other computer/these other computers? For shopping, paying bills, and other household management? (ECOMMINO, ECOMHRO)

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