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Identifying Effective Online Service Strategies: The Impact of Network Externalities and Organizational Lifecycle Stage

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ABSTRACT

This study presents a framework for identifying effective online transaction-based service strategies that incorporates network externalities and organizational life cycle theories. The framework considers changes in marginal costs, marginal revenues, and service value as the company moves through its initial three life cycle stages (start-up, growth, and maturity). Propositions describe potentially effective strategies for service sites in each lifecycle stage. Each of the propositions is supported by real-world strategy examples and research related findings from three industries – online auctions, online career services and online travel services. Start-up strategies must focus on increasing the number of service users, growth companies need to differentiate themselves from their competitors, and large mature service providers can take advantage of their financial resources and service value by raising entry barriers to maintain their dominant position. This study provides a multi-theory perspective that can be used as a basis for further study of strategies used in these industries.

Keywords: Online service strategy, network externalities, organizational life cycle stage

INTRODUCTION

Online transaction-based services are one of the fastest growing sectors in the global economy since they were introduced in the mid-1990s. In 2016, eBay had more than 160 million active users in the US, Fidelity Investments had about 6.9 million unique visitors each month, and online travel service revenues were more than $180 billion (Laudon and Traver, 2017). Add to this the amount of activity in other online financial services (banking, insurance and real estate), and resource sharing sites like Uber, and it is apparent that online services are having a major impact on consumers, industries, and the worldwide economy.

Sites that provide online services have several unique characteristics that differentiate them from their traditional competitors. They serve as an intermediary for a vast marketplace of several billion potential users, but this can also lead to increased competition from other firms around the world (Bakos, 1991). Online services also enjoy some cost advantages when compared with retail product industries because they do not deal with the production, inventory, and distribution costs associated with tangible goods (Strader and Shaw, 1997). These industry characteristics present several competitive benefits and challenges, but in some cases it is further complicated by the fact that the service value is directly impacted by the number of other service users.

The most successful online service sites have been able to quickly grow their user base through a variety of different strategies, but they also recognize that their strategies will evolve over time as they move through the stages in their organizational life cycle. For example, the strategies used for a start-up online auction site are very different than those employed today by eBay. A significant number of online sites provide transaction-based services where the value of the network is related to the number of potential trading or communicating partners. This phenomenon is referred to as the network effect or network externalities (Katz and Shapiro, 1985). These industries have been described as network industries (McIntyre and Subramaniam, 2009). For direct positive externalities, the value of a transaction-based online service site grows as the number of users grows. More users leads to more potential transactions and more utility. Successful online services will grow over time which leads to improvement in the value they offer to their current and future users. Coupling this with the benefits of not having to deal with physical goods, it is evident that online service firms will require different strategies to successfully compete at different points in their life cycle because their internal and external environments will be dramatically different.

The purpose of this study is to address the question of how the network effect impacts online service company strategy in the three initial stages of their organizational life cycle (start-up, growth, and maturity). Focus will be on three of the largest network industries – online auctions, online career services, and online travel services. This study contributes to our understanding of issues in one of the main avenues for network industry research – identifying effective strategies for leveraging network intensity (McIntyre and Subramaniam, 2009).

The paper is organized into the following sections. First, the network effect is described and examples given for the impact it has been shown to have on consumer decision making. Next, the unique attributes of each stage in the organizational life cycle will be discussed. Marginal costs, marginal revenues, service value, and life cycle stages are then integrated in a framework for identifying effective online service strategies across the life cycle of an online transaction-based service provider. Propositions are stated to describe potentially effective strategies and this is followed by real-world strategy case examples and research related findings that provide initial support for the propositions. The final section discusses the study's overall conclusions and directions for future research.

THE NETWORK EFFECT

The direct positive network effect, also referred to as network externalities, describes a situation where the utility a user receives from a product or service increases as the number of other users grows (Katz and Shapiro, 1985). For example, several online communication systems are impacted by the network effect. The value of telephones, fax machines, and e-mail were all impacted by the network effect at their introduction and as they grew in usage. It was difficult to sell the first telephone because there were no other telephone owners to call, but once the market was established it was easier to convince consumers to purchase the product. Numerous past studies have looked at how the network effect impacts consumer decision making. Examples include studies addressing adoption of social networks, social gaming, and electronic communication systems.

One study addressed the impact of network externalities on social network site use and found that the number of peers using a site, along with enjoyment and perceived usefulness, influenced user's intention to continue using the site (Lin and Lu, 2011). In another study, four components of network externalities were identified: perceived network size, external prestige, compatibility, and complementarity and they were shown to affect user social networking site usage (Chiu et al., 2013). Network externalities have also been shown to affect individual intention to play social games on mobile devices (Wei and Lu, 2014).

Several studies have addressed the issue of network externalities and motivations to use instant messaging services. One study investigated the factors that impacted electronic communication system usage using an extended Technology Acceptance Model. They found that network externalities potentially had both a positive and negative impact on usage (Strader, Ramaswami and Houle, 2007). Another study found that local network size was a significant factor in predicting online messaging service usage (Yong Chun and Hahn, 2007). In similar studies, network size and perceived complementarity were found to be two reasons why users adopted instant messaging services (Lin and Bhattacherjee, 2008; Zhou and Lu, 2011).

A consistent finding across these studies is that network externalities affect user value perceptions, service adoption, and continued use of transaction-based services where value is related to the number of other users in a network. This is an important finding because online transaction-based service providers must understand their user decision making process when adjusting their overall business and marketing strategies. In past research studies, the consumer perspective has received more attention than the implications these findings have for organizations as they change their strategies to account for how their network size impacts their service value.

ORGANIZATIONAL LIFE CYCLE

The context in which a company operates evolves as they move through the stages in their organizational life cycle. Several studies have identified different sets of life cycle stages, or phases, but there appears to be consensus that the initial three phases are start-up, growth, and maturity (Jawahar and McLaughlin, 2001). It is important for all companies to recognize that their life cycle stages include different environmental factors, but it is particularly important for online service companies because the marginal costs, marginal revenues, and service value dramatically differ in each stage as their user numbers grow.

For online auctions, online career services, and online travel services, a start-up service site will spend a lot of money up-front to develop and implement their service so that it would be functional for even one user. In addition, they have almost no revenue and the network effect shows that their service has almost no value to attract new users. A growth stage company in these industries will have an established user base and marginal costs and revenues will be near a break-even point. The most successful companies will be in a maturity stage and will have very low marginal costs, high profit margins, and network sizes that inhibit competition from smaller and newer firms. The organizational life cycle stage concept has been used to analyze decision making and strategies for a variety of business functions including accounting, finance, and marketing. Life cycle stages have been shown to influence use of activity-based costing (Kallunki and Silvola, 2008), acquisitions and capital expenditures (Maksimovic and Phillips, 2008), and advertising effectiveness (Sethuraman, Tellis and Briesch, 2011). Less attention has been shown to the issue of how online transaction-based service sites should revise their strategies as they move through the initial stages in their life cycle.

A FRAMEWORK FOR IDENTIFYING EFFECTIVE ONLINE SERVICE STRATEGIES

Frameworks provide a useful tool for evaluating technology-based business models and strategies. For example, a study by Lee and Ho (2010) used this approach to analyze mobile commerce business model innovation strategies. To best understand the complex factors that impact online company strategies it may also be necessary to utilize a multi-theory approach. Strategies for knowledge intensive companies have been analyzed based on the convergence of transaction cost economics, social network theory, and the resource based view (RBV) of the firm (Bhatt, Gupta and Sharma, 2007). The following describes the multi-theory strategy evaluation framework developed in this study.

The environment that an online service firm operates throughout its lifecycle stages can be described by three factors: perceived service value associated with the network effect, marginal costs, and marginal revenues. Table 1 provides a summary of how these environmental factors can be defined in three different online transaction-based service industries. Figure 1 describes the changes in the factors across each of the three initial life cycle stages (start-up, growth, and maturity) for transaction-oriented online service companies.

Table 1: Online Service Company Marginal Cost, Marginal Revenue, and User Value

	Online Auction	Online Career Service Site	Online Travel Service Site
Marginal Cost	Additional cost to provide intermediary service to the next auction user (buyer or seller).	Additional cost to provide intermediary service to the next job advertiser or job seeker.	Additional cost to provide intermediary service to the next travel-related product supplier or traveler.
Marginal Revenue	The expected value of revenue received from the next user given the transaction fee charged for a completed auction transaction.	The expected value of revenue received from the next user given the transaction fee charged for a completed career service transaction.	The expected value of revenue received from the next user given the transaction fee charged for a completed travel service transaction.

Overall Value Provided to Service Users	Number of potential transactions measured by the product of the number of buyers times the number of sellers.	Number of potential transactions measured by the product of the number of companies advertising jobs times the number of job applicants.	Number of potential transactions measured by the product of the number of travel-related products offered in the site times the number of travelers.

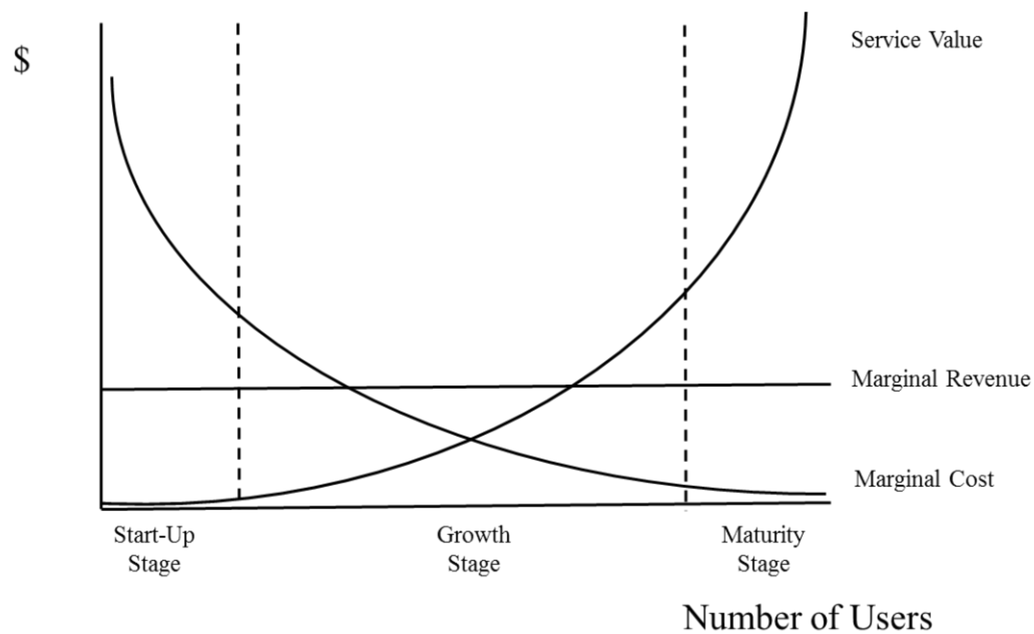

Figure 1: Service Value and Costs in Online Transaction-Based Service Lifecycle Stages

Given that the characteristics of the three stages vary quite dramatically, it is obvious that the strategies employed by online service companies must evolve over time to adapt to the varying competitive conditions. In the following section, propositions are stated that describe potentially effective strategies that focus on the most critical issues for online service companies in each stage of their life cycle. Support for the propositions is provided through real-world strategy case examples and research-based findings from online auctions, online career services and online travel services.

Methodology

Academic literature was reviewed to identify studies of network externalities, organizational life cycle, online auctions, online career services, and online travel services. Articles were considered relevant to this study if they addressed issues for online service company strategies or reasons why users would adopt or continue using an online service. In addition, news stories were reviewed to identify articles that described strategies used by online transaction-based service companies. The most relevant research studies and practice cases are presented in each of the following three sections that proposes effective strategies for companies in their start-up, growth and maturity phases.

Start-Up Stage Strategies

New online transaction-based service providers face a daunting task when trying to grow their user base and compete against existing firms. They have expended a large amount of capital to design and implement their service to make it fully functional, they have very little, or possibly no, revenue, and the value of their service is very low or nonexistent. For example, an online auction site with no users has no value to anyone considering selling an item on that site. The same would be true for a career service site that doesn't have any jobs to list or people looking for jobs. Therefore, the number of strategies available to start-up online services is limited and needs to be quickly and effectively implemented. They must either provide incentives to become a new user or partner with an organization that already has a large established user base. Finding an effective strategy is critical for survival and movement toward the growth stage. This leads to the first proposition.

P1. Quickly increasing the number of service users is an effective strategy for a start-up online transaction-based service company.

Another alternative is to move away from directly competing against growth or maturity stage sites by focusing on a less competitive market that is not currently served by other firms.

P2. Choosing a less competitive niche market is an effective strategy for a start-up online transaction-based service company.

Focusing on the problem of quickly building a user network, one start-up stage option is to provide free services to potential users. This strategy was employed by Monster.com when they started their business in 1993 (Rayport, 2000). The value of a career service site is the product of the number of companies offering jobs and the number of job seekers. If either number is zero, then no jobs will be filled and the service value is zero. Monster.com initially convinced 30 clients to let them use their job information on their site. This did not prove sufficient so they then added an additional 50 companies to their site without charging any fee. With this job advertisement information in place, people looking for jobs would receive some value from using the site. The risk in this strategy is that no revenue will be received for an initial period, but in the case of Monster.com it worked. By fall of 1994 there were about 400 jobs listed and about 100 visitors came to the site each day (Rayport, 2000). In this career service example, it may be sufficient to provide free service to companies advertising jobs, but in other service industries a more radical strategy may be needed where a site actually pays people to use the service to jump start the business and increase its value.

A second strategy for a start-up online service site would be to partner with, or be acquired by, another online service that already has a large number of users. This increases the service value more quickly and makes it easier to convince users to choose their site. In many acquisition scenarios there is little increase in overall value when combining the resources of two firms, but this may not be the case when combining a functioning online service with another online company that has a large established user base (Uhlenbruck, Hitt and Semadeni, 2006). For example, a portal could horizontally integrate by acquiring a new career service provider that complements its existing content and services. A portal that provides information to travelers would not have to develop their own online travel service site, but they could acquire one to provide this service to their existing users. If done right, this can increase site value with less cost and less risk. These examples provide initial support for Proposition 1.

Instead of focusing on growing a user base to compete against existing large general service sites, another strategic alternative would be to side step existing competitors by choosing a very specific niche market. For a new auction site, instead of competing directly with eBay in the general online auction market, they could choose to focus on a narrow specialized market that is not currently served. Whether a marketplace prices items through an auction process or fixed pricing, there are examples where the niche strategy has been successful. One example is Etsy.com, a site for selling handmade items, vintage goods, and craft supplies (Halsender, 2017). According to the Etsy.com website, in 2017 they had 45 million items for sale, 1.9 million active sellers, 31.7 active buyers, and their gross merchandise sales in 2016 was $2.84 billion. Other examples are Newegg, an alternative to eBay that focuses solely on electronics products, and RubyLane, a market for vintage items and antiques (Halsender, 2017).

Providing niche online career services has also been a successful business model. It is estimated that about 62% of jobs are listed on niche job boards (Thomas, 2017). Some example niche career service sites include Allretailjobs.com (retail jobs), Dice.com (technology-related jobs), Financial Job Bank (jobs in accounting and finance), Healthcare Jobsite (healthcare jobs), and SalesHeads (sales jobs) (Smooke, 2017). Niche sites are useful for some people not because they have the largest network of users, but because the service is specifically focused on their needs and can reduce information overload found in the largest online sites. These examples provide support for Proposition 2.

Growth Stage Strategies

Growth stage online service companies have acceptable levels of service value arising from an established user base, and marginal costs and marginal revenues that are near break-even. A common online service industry environment may include several growth stage firms that have reached some level of success, but are now focusing on moving toward even more success and higher profit margins as a larger mature stage company. The key to success at this point in their life cycle is differentiation. How does one site get a user to choose their service when there are several other similar alternatives? There are several differentiation strategies that may allow sites to continue to grow their network size and move toward the maturity stage where service value is very high and profit margins are large. The differentiation strategies focus on expanding their online presence through personalized advertising, enhanced privacy protection, improved customer service, making the service easier to use, and incentives to increase use. These propositions are described in the following.

P3. Differentiation through personalized advertising is an effective strategy for a growth stage online transaction-based service company.

P4. Differentiation through enhanced privacy protection is an effective strategy for a growth stage online transaction-based service company.

P5. Differentiation through improved customer service is an effective strategy for a growth stage online transaction-based service company.

P6. Differentiation through improved ease-of-use is an effective strategy for a growth stage online transaction-based service company.

P7. Differentiation through incentives to increase use is an effective strategy for a growth stage online transaction-based service company.

One strategy used to differentiate an online service from its competitors is to increase exposure through advertising. Customers may choose one service site over another because they are more aware of its existence and capabilities. Online advertising provides a low cost method for providing information about a service provider to potentially billions of Internet users. Effective online advertising may involve ad placement in sites that complement a particular service. For example, Expedia could advertise on a travel related portal such as TravBuddy rather than on general portals like Yahoo or the Microsoft Network (MSN) because it enables them to more efficiently reach their relevant target market. Online ads can also be personalized for a specific user or market segment. One study found that personalized travel service ads were effective when users began to narrow their travel preferences after an initial search of alternatives (Lambrecht and Tucker, 2013). This supports Proposition 3.

The downside to increased personalization is the potential loss of privacy. In one study it was found that privacy protection is one factor that may influence an individual’s loyalty and intention to use an online auction site (Yen and Lu, 2008). One recommendation arising from this study was that auctioneers should focus on protecting the buyer's privacy as a way of differentiating their site from competitors. In (Lee, Ahn and Bang, 2011) it was found that one approach to reducing consumers’ perceived privacy loss was use of fair information practices which showed that a service provider took this issue seriously. These examples support Proposition 4.

Providing enhanced customer service is another differentiation strategy. One travel service provider may be preferred because they offer additional services before and during a customer’s trip. For example, Expedia offers a hurricane promise where they offer support for updating travel plans if someone is going to a location where there is a hurricane watch or warning. The importance of online customer service has also been found in the online banking industry (Setia, Venkatesh and Joglekar, 2013). Monitoring and responding to customer needs are an important differentiator across each of the online service industries as described in Proposition 5.

One of the most common models used to predict adoption of technologies is the Technology Acceptance Model (TAM). One of the factors included in the model is perceived ease of use (Davis, 1989). If individuals feel that a system or service is easy to use then it is more likely they will choose it instead of the harder to use alternatives. This concept provides another example for a method of differentiating online services. If it is easier to post items for sale on one auction site than another, then that site may be more likely to be chosen by an online seller. This is also true in online career services where the level of effort needed to post a job online, or upload a resume, may differentiate one site from another. In one study it was found that customers preferred to use mobile devices to access travel services because it was an easy to use and useful method for accessing services anywhere and anytime (Kim, Park and Morrison, 2008). Online travel service providers that do not offer mobile access would be at a disadvantage because their site would be harder to use for accessing information and completing purchases. In addition, a study of consumer acceptance of online auctions found that the original TAM model construct perceived ease-of-use did influence user acceptance of online auctions (Stern et al., 2008). These examples support Proposition 6.

Growth in users and number of transactions can also be the result of providing incentives to increase service usage. A person wishing to sell items through online auctions may choose one site over another because there are monetary incentives. A seller who has used a site to sell one item can be offered a reduced transaction fee is they sell a larger number of items. Also, because the auction service value is related to the number of users on the site, monetary incentives can be given to existing users that get someone else to sign up as a new user on the site. This is a very effective strategy for another company impacted by the network effect – Airbnb, a company in the online accommodation sharing industry. In Airbnb's referral program they invited current users to refer friends with the incentive that they would receive a $25 travel credit when new members took their first trip. The result is that Airbnb has almost doubled their number of users each year since 2012 (Edwards, 2015). The importance of referral marketing is also supported by research findings. Various forms of referral marketing are effective strategies for growing a company's user base for both weak and strong brands (Ryu and Feick, 2007). These incentive-related strategies are particularly useful because marginal costs are low when adding new users, but it can also lead to more revenue, higher profit margins, and increased service value to attract the next user. These examples support Proposition 7.

The examples above describe a wide range of potential differentiation strategies for growth stage online service sites. If these strategies are effective, the service provider may reach their ultimate goal of being an industry leader with the largest user network and profitability.

Maturity Stage Strategies

Mature online services are in a very strong competitive position. Their marginal costs are near zero as they add new users, their revenue and profit margins are strong, and their service value is higher than their smaller competitors. At this point many firms have significant financial resources to utilize to enhance their strategic position. They are in a position to make it even more difficult for growth stage service sites to continue growing. Entry barriers can be created that make it difficult for smaller firms to compete against them in the future. Two potential entry barrier strategies involve reducing transaction fees and using financial resources to acquire complementary and/or competing sites. These strategies are encompassed in the following proposition.

P8. Raising entry barriers is an effective strategy for a maturity stage online transaction-based service company.

The largest service sites are in a position where they can use their financial strength to reduce their transaction fees in the short term and still maintain a very strong profit margin. It is very difficult for a smaller online auction site to compete with eBay if they have a smaller number of users and their fee is higher. Buyers and sellers would choose eBay because it provides more potential trading partners at a lower cost. If this strategy is effective, the inevitable result would be the failure of many of the smaller sites and less industry competition in the future.

Another strategy employed by the largest online service companies is to use their financial resources to acquire other service sites. This can be done to eliminate an up-and-coming competitor, or it can be used to enhance their site value by adding a complementary service. eBay is a company that has used its resources to require a number of other service and retail sites. They acquired StubHub in 2007 and more recently they continued their international expansion in the online ticket market with an acquisition of the Spanish company Ticketbis (Steele, 2016). The acquisitions provide a number of advantages for eBay. It enabled eBay to invest excess capital in businesses that provide new revenue sources. It also allowed them to expand the overall value to their users by offering complementary services, gain more control over how these sites operate, and prevent them from being acquired by a competitor.

In the career services industry, Randstad, a Dutch recruitment firm, acquired Monster Worldwide in 2016 (Walker and Simmons, 2016). This illustrates that even when the most well-known online service firms falter they may become a target for acquisition by another firm as part of a strategy to grow in new geographic markets. Randstad is a large human resource services provider worldwide, but not as well established in the US. This acquisition enables them to have a larger presence in the US career services industry.

These examples support the idea described in Proposition 8 that the largest mature online transaction-based service firms can effectively compete by a variety of methods that raise entry barriers that may inhibit growth of smaller competitors.

CONCLUSIONS AND IMPLICATIONS

The overall conclusion from this study is that identifying effective online transaction-based service strategies requires an understanding of how marginal costs, marginal revenues, and service value evolve through the stages in an online service provider's life cycle. Start-up strategies must focus on increasing the number of service users or finding a niche market, growth companies need to differentiate themselves from their competitors, and large mature service providers can take advantage of their financial resources and service value by raising entry barriers to maintain their dominant position. Table 2 provides a summary.

Table 2: Summary of Life Cycle Stage Competitive Environments and Effective Strategies

	Start-Up Stage	Growth Stage	Maturity Stage
Service Value	Very low	Moderate	Very high
Service Cost	Very high up-front fixed costs	Low marginal costs	Very low marginal costs
Life Cycle Stage Competitive Environment	Large number of small start-up service providers with small user bases	Moderate number of growing service providers	Small number of service providers with large user bases and extensive financial resources

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Strategic Focus	Increasing number of users or choosing a less competitive market	Differentiation	Raising barriers
Strategic Alternatives	Pay service users or provide free service Partner with a firm that has a large user base Choose a niche market	Personalization Privacy protection Improved customer service Improved ease-of-use Incentives to increase use and bring in new users	Reduce fees to increase service usage Use financial resources to acquire complementary service firms

A limitation of this study is that the list of strategies in each lifecycle stage is not exhaustive, but examples that support this framework are found in practice and related research across a wide range of online transaction-based service industries. From a practice perspective, it is imperative that online service managers recognize the stage at which they exist in their lifecycle and the environmental factors that affect their strategy choices. From an educational perspective, this study provides background for e-business strategy class discussion to illustrate some of the complex interrelated issues that online service companies face in today's global marketplace.

The findings from this study provide directions for future research related to network externalities, online service strategy, and online industry competition. The first option would be to test this study's propositions using an in-depth longitudinal study in one industry. One example would be to address these issues in one of the resource sharing industries, such as car sharing, to see which strategies lead to success for companies in each life cycle stage. How would a new start-up ride sharing site compete against Uber? And how do established growth stage ride sharing sites differentiate themselves to continue their growth? Case studies may also provide a unique perspective on strategy formulation for online service companies in each of their life cycle stages.

Another issue to consider is to identify strategies that are not effective. Why does a start-up online service company fail? Why do some growth stage service companies begin to lose their users? And finally, under what circumstances does a large mature online service company fail? Abuse of monopoly power or mistreatment of users and their private information may be one component of mature online service company decline.

Additionally, it is important to also examine the negative impacts of network externalities on consumers, industries, and the global economy. In what situations do online service providers move to a stage where they begin to fail because they have misused their dominant market position? Does the network effect lead to monopolies in some online service industries? And under what circumstances does a mature online service continue to innovate to better serve its users?

Another perspective to consider is whether effective strategies vary across different countries and cultures. The stated propositions can be tested in countries like China, or economic regions like the European Union, to see if different strategies are effective for start-up, growth, and maturity stage companies in other economic climates when compared with the strategies used in the United States.

Each of these future research directions is important because online transaction-based services will continue to be a major component of the global economy and identifying effective strategies is a complex problem.

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