

E-Commerce: An historical examination on the disruptive nature of technology and future implications for e-commerce firms

Rufus Lama

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Introduction

Inventions have been the foundation of change and progress for societies around the world. From the first paper productions to modern day smart phones, such inventions have promoted efficiencies and better ways to accomplish things. This is especially true for businesses and industries where cost structures as well as production efficiencies are absolutely necessary to sustain growth, maintain profits and pursue new ventures. For companies in today's global economy, state of change is the norm as it facilitates evolution and growth opportunities. One such innovation is the *e-commerce*, often associated with the likes of Amazon, EBay and Alibaba. E-commerce, also known as electronic commerce, can be described as buying and selling of goods using technologies such as the internet, inventory management systems, and online transaction processing, among others. While e-commerce is finally beginning to gain worldwide recognitions, like Alibaba's record setting IPO, it has been upending industries and changing the way people shop and do business for decades. It has created new opportunities while destroying some traditional ones.

Traditional retail industry in the U.S. consisted of small, independent owners or single establishment retailers which served their local population. As the U.S. economy shifted towards services from manufacturing in the 20th century, it paved the way for national discount chains that operated large stores and merchandised broad range of goods. The year 1962 marked the emergence of three big retail stores - Wal-Mart, Target and Kmart, who have dominated the retailing world and changed the course of business for many manufacturers and consumers. A recurring theme from the history of retail trade has been that the demands for many consumer goods are elastic. Knowing

this, companies like Wal-Mart, labeled as the 'face of 21st century capitalism, has been able to sell high volumes of goods at very low margins but nonetheless reap huge profits through the sheer quantity of goods it sells and managerial or organizational innovations. While dominant retailers like Wal-Mart still hold significant market share, they are beginning to lose their strong positions as the new wave of competition, brought forth by e-commerce, is continually changing the industry dynamics of retail industry. New entrants, like Alibaba from China, are highly leveraged and carry enormous capital, resources and hold significant foothold in important economies. Thus, the retail industry is approaching a new era of evolution that is in the process of bringing forth new players, discontinuing some incumbent firms and ultimately benefiting the consumers.

This paper aims to study the impact of e-commerce on retail industry through examination of similar changes in the past where technologies or innovations have disrupted industry norms. The first objective of the study will entail a thorough examination of Joseph Schumpeter's *creative destruction*, through examination of previous studies, which will serve as the theoretical framework for analysis. The second objective of this paper is to develop competitive strategies through adoption of existing theoretical models by Michael Porter and Edward Jerome McCarthy. These models were serve as the theoretical framework that will guide the development of competitive strategies in this paper.

Schumpeter's Gale

The paradoxical term 'Creative Destruction,' also known as Schumpeter's gale, was coined by the Austrian American Economist Joseph Schumpeter. Born in Triesch, Moravia, Schumpeter became an American Citizen in 1939 but nonetheless maintained a global presence as he taught economics throughout Europe, Asia and America. In his work *Capitalism, Socialism, and Democracy*, Schumpeter argued that Creative Destruction delivers progress as "it revolutionizes the economic structure from within, incessantly destroying the old one, incessantly creating a new one. This process of Creative Destruction is the essential fact about capitalism" (Schumpeter, 1942). Without innovation and risky entrepreneurial efforts, economies could not develop or grow more productive. He believed that progress brought forth by entrepreneurs reflected discontent in old ways of doing things and without such efforts there would be no progress; "no capitalist returns and no capitalist propulsion" (Schumpeter, 1939). In his view, capitalism is creative destruction and without innovations, businesses would not be able to make any profits: "stabilized capitalism is a contradiction in terms" (Schumpeter, 1939).

Schumpeter placed a great deal of importance in studying economic history as he believed that "nobody can hope to understand the economic phenomena of any, including the present, epoch who has not an enough adequate command of historical facts, an adequate sense or of what may be described as historical experience" (Schumpeter, 1954). In order to understand the present and potentially predict the future, one must pay a visit to the past. Schumpeter was disappointed with many of his contemporary economists who lacked interest in studying the past as he believed that

only through detailed historic knowledge, can one answer questions of causation and mechanism. In other words, one must first pay a visit to the past and be a student of the old in order to be a student of the new.

Schumpeter believed that creative destruction played an important role in capitalist economies but he was uncertain about its extrapolation or how to accurately predict its impact to an economic system. In *Business Cycles*, he states that it is unreasonable to expect an economist to accurately predict what would happen the next year just like it would be impossible for a doctor to infer when his or her patient will become a victim of a railroad accident (Schumpeter, 1939). He emphasized that predictions were not facts or certainties but only probabilities and tendencies. In his view, the purpose of analysis and extrapolation was to provide a statement of tendencies in an observable pattern. He underscored that it was important for economists or investigators to develop hypotheses because they provide a framework to base their work upon. And that without them, economists would not know what to expect. Further, Schumpeter placed a great deal of importance to 'vision' as he argued that it focuses the attention of investigators or economists and puts their actions into a pattern. With vision, one has a map to follow, giving him/her the ability to search for the right data at the right places. He believed in the functionality of belief systems (vision) as he states "though we proceed slowly because of our ideologies, we might not proceed at all without them" (Schumpeter, 1949).

Capitalism: A system that promotes change

In Schumpeter's view, capitalism is a system that never ceases to stop changing. He believed that the capitalist system is never in equilibrium but is always in the process

of change or evolution. In other words, capitalism is evolutionary (change) as its success and credibility is determined by its ability to grow and expand in some fashion. For successful firms in this system, the process of evolution guarantees little to no success of long life: “The fundamental impulse that sets and keeps the capitalist engine in motion comes from new consumer goods, the new methods of production or transportation, the new markets, the new forms of industrial organization that that capitalist enterprise creates” (Schumpeter, 1942). He believed that the system constantly reinvents itself revolutionizing its own economic structure from within. This change is carried forth by creative destruction, the ‘essence of capitalism’, in which “capitalism consists in and what every capitalist concern has got to live in” (Schumpeter, 1942).

Entrepreneur: The Agent of Change

“The function of entrepreneurs is to reform or revolutionize the pattern of production by exploiting an invention or, more generally, an untried technological possibility for producing a new commodity or producing a new commodity or producing an old one in a new way, by opening a new source of supply of materials or a new outlet for products, by reorganizing an industry and so on” (Schumpeter, 1942).

According to Schumpeter, an entrepreneur is a leader who has the confidence and determination to venture onto an untried path. In other words, this agent of change has the will power to lay out new roads and break tradition instead of following the same path that is already in place. In order to be successful, an entrepreneur must first have the ability to recognize unseen opportunities and second, the determination to get things done. He or she must steer away from traditional ways of doing business and instead

have a non rational or unconventional way to sense what will be important for consumers in the future as “the success of everything depends on intuition, the capacity of seeing things in a way which afterwards proves to be true...” (Schumpeter, 1951). Motivated and incentivized by potential wealth or profits, these agents are able to bring forth better products, technologies and inventions. The introduction of new or better products intensifies competition between incumbent firms and new entrants leading to a decline in consumer prices - increase in consumer welfare. The innovative force brought forth by entrepreneurs continues to sustain economic growth even if it destroys the existing ways of doing business and positions held by incumbent firms. Firms that cannot operate efficiently and provide goods to consumers at competitive prices are eventually replaced.

Assessing Creative Destruction

Tom Nicholas (2003), in his study *Why Schumpeter was right*, argued that Schumpeter’s creative destruction is understood best if analyzed through events unfolding during his time. The data for the study concerns early 20th century publicly traded firms (1919-1928) and their patent count, financial position and market share data. The innovative ability of the firms was strongly affected by their size, experience and access to external finance. During the 1920s, firms like General Electric Co. with their strong market power had the ability to further technological progress as evident by their desire to strengthen the quality and quantity of patents granted. Intense competition in the market and high market concentration had positive effects on innovation and progress. This, according to the author, was creative destruction in process as only innovative or dominant firms were able to survive and were also

rewarded in the financial markets. According to Nicholas' findings, a one percent increase in the firm's patent base led to a 0.056 percent increase in market value between 1908-1919, and 0.121 percent between 1919-1928. According to Schumpeter, the relationship between industry structure and innovation held true only when financial sector can allocate efficiently to areas of higher productivity, brought forth by innovation. This phenomenon was observed during the early 20th century when firms that were innovative survived whereas firms that were less efficient did not.

Braunerhjelm and Svensson (2010) examined Schumpeter's assertion or 'separation hypothesis' which argued that different agents should be involved in different stages of creative process. In other words, the authors studied the impact of different agents involved during the invention and innovation stages and whether it led to greater productivity and profitability. According to Schumpeter, there are three stages to economic development: 1) Invention/Discovery of things or new way of doing things 2) Innovation or successful commercialization of the invention and 3) Imitation or diffusion of ideas/innovation to the general market. The empirical analysis, based on the survey of Swedish patent owners (small firms and individuals), indicated that the commercialization process (innovation) is superior when the inventor is not involved. When invention and innovation were separated as two distinct stages, the probability of successful commercialization was 22 percentage points higher. This is in line with Schumpeter's assertion that the creative process is better when invention and innovation are undertaken as separate activities. The authors explain this finding, the poor performance in creative processes taken by inventors alone, by arguing that inventors tend to overly-optimistic behaviors in their ideas/inventions and have

overconfidence in their entrepreneurial abilities when undertaking commercialization process. Entrepreneurs can enhance the possibility of successful commercialization by integrating the inventive and innovative stages as it facilitates promotes customers customer specific adaptation.

Wengel and Rodriguez (2006) analyzed firm dynamics that brought forth creative destruction or evolution of industrial structure in the Indonesian manufacturing sector. The data, for years 1994 to 2000, was gathered from the annual manufacturing survey of firms with 20 or more employees and produced by the central statistics agency. To assess changes in industry dynamics, the authors examined labor productivity of firms and the level of entry and exit within the sector. The productivity of firms was defined as the ratio of value added to total employment. In every year from 1994-2000, about 10% of the manufacturing base or firms were renewed as new and more productive firms pushed out less productive enterprises. This led to an increase in the productivity of incumbent firms as they developed higher productivity to stay relevant and meet competitive pressures from entrant firms. Further, at the subsector level, the productivity of entrant firms was higher, by more than 60 percent, than those that were forced to quit in the following year. The implications then, according to the authors, is that policies must be aimed towards promoting entry of new firms that can facilitate the process of creative destruction in which less productive firms exit to make the way for new and more productive firms.

Aghion, Fedderke, Howitt & Viegli (2013), in a similar study where South Africa's manufacturing industry is examined, found a positive link between trade liberalization and economic growth or 'creative destruction.' The data for the study focused on three

digit manufacturing industries between 1988-2003 and the variables studied were: information on output by firms and their growth rates, value added, total wages, distribution of value added between factor inputs, among others. Since the focus of the study was to measure the impact of trade liberalization, effective rates of protection and nominal tariff rates were also studied. Their study indicated that a 10 percentage point decrease in nominal tariffs increased TFP (total factor productivity) growth by 12 percentage points and growth of output per worker by 0.5 and 1 percentage points. The impact of trade liberalization was positive whereas trade protection had negative impact on productivity and growth as the latter discourages competition and innovation. The study also indicated that sectors with the lowest product market competition benefited the most from liberalization. As liberalization increases competition, many firms lose their pricing power, market power and have to revert to being productive or efficient in order to thwart competition. Overall, the study found a positive correlation between the process of creative destruction and the process of technological adaptation because “only firms able to compete internationally would be able to survive in the new competitive environment.”

Literature Review

Researchers have conducted numerous studies to understand the implications of e-commerce to pre-existing market structure of the retail industry. Brynjolfsson and Smith (2000) found that the prices of goods sold online were 9-16% cheaper than those sold in conventional retail stores. They also found that price dispersion was lower in e-commerce channels than in conventional retail channels. A similar study conducted by Morton, Zettelmeyer, and Silva-Risso (2005) found that the goods sold online were

cheaper for two main reasons: first, the internet allows consumers to gain better access to information on prices. Second, the referral process of online buying services helped consumers' secure lower prices. Using transaction data from the automobile retailing industry in California, the researchers determined that the combined benefit of information and referral prices effects were 22% of dealers' mean gross vehicle profit.

E-commerce has significantly reduced search costs experienced by consumers in the traditional retail industry. While this may have been one of its most important contributions, E-commerce has also shifted power from suppliers and producers to the end consumers. Firms like Amazon and EBay provide platforms where smaller firms get to compete against their bigger counterparts in various industries. Consumers not only get more information on available offerings, they also enjoy lower priced goods. Brown and Goolsbee (2002) found that the usage of internet not only offered consumers more information on variety of insurance policies, it also lowered the overall price by 8-15%. Low costs, relative to traditional retailers, associated with establishing e-commerce firms have been evident as the benefits have been transferred to consumers in the form of lower priced goods.

While many researchers have found differences in prices set by traditional retailers and e-commerce firms, some researchers have reached a different conclusion. Clay, Krishnan and Wolf (2001), through their research on price dispersion in the online book industry, found no differences in the prices set by online book stores. They argue that the lack in price differentials may have been due to product differentiation of books that allowed the publishers to maintain control over prices. Baye, Morgan, and Scholten (2001) found that the level or range of price distribution varied systematically based on

the number of firms offering similar goods. In their study of over 4 million price observations, price dispersion for top 1000 consumer electronics remained relatively unchanged even during competitive conditions. In other words, the range of prices offered by online retailers did not vary significantly.

The importance of efficiency or economies of scale is quite prevalent across many traditional industries. Zhu, Singh, and Manusak (2009) investigated competition among three big box discount retailers - Wal-Mart, Kmart, and Target. The authors used game theory, or application of a discrete game, to understand the strategies employed by the players against the decisions made by their competitors. Due to heterogeneity or different positioning between firms, competitive effects exerted by bigger firms like Wal-Mart dominated the strategies of smaller firms.

While firms in traditional retail industries have generally always focused on economies of scale and being efficient, e-commerce firms have now followed a similar path. Goldmanis, Hortacsu, Syverson and Emre (2010), using theoretical and empirical models, determined that downward shifts (reduction) in consumer search costs led to lower prices and shifted market share from low-type producers to high-type producers in the industry. High type producers are firms with significant capital and resources that have achieved high economies of scale whereas low type producers are smaller firms with low economies of scale. The bigger firms or suppliers, due to their economies of scale, shifted market share away from low-type firms with higher marginal costs of production. Further, the researchers found that increase in overall online spending led to a decrease in the number of smaller firms while larger firms with better cost structure and resources became more dominant.

There have many complaints raised by businesses and the general public alike against the rapid growth of e-commerce. Many of these complaints have been geared towards unfair tax advantages enjoyed by online retailers and the lower prices they set. Goolsbee (2000) found that local tax rules played an influential part in overall e-commerce activity. Consumers in states or cities with higher tax rates were significantly more likely to shop online since they could avoid taxes by doing so. Further, the study also found that if existing sales tax were enforced on online shopping, e-commerce firms could have lost 24 percent or more of their shoppers. Mikesell (2004) determined that taxing internet administratively was difficult and that this could result in costing the government billions of dollars in revenue losses. Further, this may give more opportunities for e-commerce firms to avoid or evade taxes since these firms are engaged in trades and transactions without the need for a physical establishment. Due to a lack of physical presence, tax laws have been difficult to implement in many countries resulting in loss of tax revenue (Thomas, 1999).

The expansion of e-commerce over the last few decades has been tremendously successful as it has been able to operate across national boundaries and provide service to consumers and businesses worldwide. As more transactions and businesses are conducted online, it is imperative that e-commerce firms build credibility and gain trust from shoppers. Melnik and Alm (2002) argued that e-commerce seller's reputation affects the buyer's willingness to pay for online items. Further, the empirical results showed that good reputation had a positive, statistically significant impact on prices that consumers paid. This poses a few implications for potential new entrants as they may

find it difficult to compete against incumbent firms who have established trust and credibility of the market.

For the past several years, the e-commerce industry has been growing at an unprecedented rate as sales have been shifting from traditional retailers to e-commerce firms. While it is difficult to determine when these growth rates may stall and creative destruction will begin to take place, e-commerce firms must be prepared with appropriate competitive strategies if they want to remain relevant. In other words, the process of creative destruction can bring forth more innovative e-commerce firms and destroy incumbent firms that are not prepared for heightened competition. Therefore, in order to remain competitive and relevant in their respective industries, e-commerce firms should develop and employ effective competitive strategies.

Competitive Strategies for E-Commerce Firms

Using e-commerce, firms have been able to find different ways to reach new markets while offering tailored experiences to their existing customers. At the same time, e-commerce has forced companies to restructure their business model and processes in order to operate more efficiently and effectively. According to Zwass (1998), many e-commerce firms, despite their rapid growth, have been unable to make profits because they make heavy investments and are in the process of building their brand image. The focus of these firms has been on improving their web contents such as visual attractiveness in order to increase and maintain their customer base. Firms like Amazon still make heavy investments in their warehouses and are in the process of building their brand image and awareness. However, when industry matures and the rapid growth rates come to a halt, e-commerce firms must be in a competitive position

to thwart off pressures and remain competitive in their peculiar businesses. Using Michael Porter's *five forces model* and Edward Jerome McCarthy's *marketing mix* (The 4 P's), competitive strategies are developed below that can help e-commerce firms achieve a competitive advantage and respond to competitive pressures of the industry.

Overview of Porter's Five Forces Model and McCarthy's Marketing Mix Model

In order to increase profits, firms formulate strategies to gain competitive advantage over their competitors (Porter 1980, 1985). Porter (2001) argued that "analyzing the forces illuminates an industry's fundamental attractiveness, exposes the underlying drivers of average industry profitability, and provides insight into how profitability will evolve in the future (p.66)." Although the rapid pace of technological developments can make it impossible to accurately determine the future of an industry, Porter argued that it was imperative for firms to understand the fundamentals of their respective industries so that they can formulate competitive strategies to remain sound in their businesses. According to Porter, there are five primary forces firms must respond to: 1) threat of new entrants/competitors 2) rivalry among existing firms 3) threat of substitutes 4) bargaining power of suppliers 5) bargaining power of buyers. A careful and correct assessment of these forces can give a firm the ability to develop strategies that maximizes its strengths. As an example, a firm with an established customer base can lower threats of substitutes by differentiating its products and services. In other words, firms must position themselves so that they are least vulnerable from competitive forces as they maintain and further their competitive advantage.

McCarthy's Marketing Mix Model

Firms develop their marketing strategies (marketing mix) after they identify their target population or market. According to McCarthy (1960), a marketing mix is a combination of product, price, promotion and place (location) also known as the 4Ps of marketing. An appropriate mix of these 4Ps give firms the ability to compete against other firms and ensure business growth and profitability. Through coordination of various products (product offerings) with promotions (deals or sales promotions) and place (effective logistics or distribution), firms can reach customers more effectively and increase their sales and profits.

Strategies

While making purchases online, consumers can have access to information on products without incurring much expenses related to search costs. Compared to traditional shopping methods, which are time consuming and expensive, the internet allows consumers to easily access information on things or products that they are interested in. As a result of this, consumers can compare prices and find substitutes to existing products that put pressure on producers to be more competitive and lower prices. Since information is so easily obtainable and exploiting consumers' search costs is almost impossible, firms must focus on product or service differentiation. When products and services are differentiated or unique, making comparison can be much more difficult for consumers as other products do not share similar features. A viable competitive strategy to achieve differentiation is through product bundling. According to Schiesel (2001), product bundling is financially appealing as it is cheaper to sell additional services to existing customers. For example, Amazon *Prime* offers free

shipping, movies, and music, among others for only \$99 a year. Such strategies not only create product differentiation, they also give firms the ability to control prices for their bundled offerings. Gateway Inc bundled their computers with internet services to counter declining prices in computers (Sinha 2000). Through product bundling, firms can distinguish themselves, reach new customers, maintain existing customers while lowering threats from substitutes or competing firms.

Sinha (2000) argues that firms can charge higher prices or maintain greater control over competition if they can create products or services that meet the needs of consumers in niche markets. E-commerce firms collect significant information from users online regarding their specific needs and interests. This information can be used to identify target customers and introduce products/services that are catered to meet their specific needs. The focus can shift from a product-centric strategy to a customer-centric strategy in which information is gathered from consumers to improve and customize products that meet the specific needs of a niche market (Viehland, 2000). For instance, Zulily Inc., an online retailer based in Seattle, offer products and services to meet the specific needs of 'stay home moms'. Rather than focusing on women in general, the firm's target market is much more specific: mothers who stay home and are purchasing for their children, themselves and their homes. Through innovation and/or introduction of niche products to specific target consumers, firms can counter the threat of substitutes, new entrants, and competition from existing firms.

According to Elliott and Rutenberg (2000), many e-commerce firms do not see profits because they spend significant amount of their capital in promoting their brands to consumers. Although investments in creating brand image is important to create

awareness and loyalty among consumers, companies can create more effective promotion strategies that maximize their strengths while meeting the needs of their customers. In other words, firms must find more innovative ways to reach or promote their goods to consumers. Many e-commerce firms still tend to employ strategies that are rather traditional. For examples, firms offer sales promotions, coupons, and discounts that do not really build customer loyalty (Sinha, 2000). Since traditional marketing strategies are not very efficient, firms must find better promotion strategies to remain competitive in their market. Instead of a mass marketing strategy, where same promotions are directed towards everyone, e-commerce firms should seek to build direct relationships (micromanage) with their customers. One of the biggest assets e-commerce firms have is their ability to track and collect data from their customers. By using the information they collect, these firms can create products or services that meet the specific needs of individual customers. Allan and Fjermestad (2000) and Sealey (2000) claim that customized services coupled with personalized promotions is the best way to build loyal customer base which in turn allows firms to realize profits. If e-commerce firms are to remain competitive, their promotion strategies must be focused on creating experiences or memories for customers that are aligned with the overall brand image.

While e-commerce firms do not require as much infrastructures and assets compared to traditional retailers, they are heavily reliant on their supply or distribution systems. In other words, these firms need effective and efficient distribution channels so that they can deliver products and services in time. As more and more shoppers buy online, firms must find more efficient ways to deliver their products and services.

Through efficient delivery systems, a firm can also differentiate itself from its competitors and it can gain trust from customers in its ability to serve at a reasonable time. For example, Amazon's free one day shipping allows customers to get what they want the very next day without leaving their homes. Amazon has even considered plans to deliver packages through *Prime Air*, which ships products to consumers' homes using high tech drones. Since efficient delivery of goods is vital for any e-commerce firms, they should partner with third-party providers such as UPS, FedEx and USPS that specialize in logistics and have achieved economies of scale in delivery systems (Bakos, 1998). Firms such as Amazon and other successful e-commerce firms are known for their efficient distribution of products to their customers. Amazon heavily invested in its automated distribution warehouses so that that it can deliver products more efficiently to customers and compete against other retailers effectively. Therefore, if e-commerce firms are to remain relevant in their very competitive industry, they must invest in efficient distribution systems so that they can gain trust from their customers and differentiate themselves from competing firms.

Conclusion

This paper examined the potential impact of e-commerce through the theoretical framework of Joseph Schumpeter. Creative destruction, according to Schumpeter, delivers progress as new innovations or ways of doing things brought forth by new firms and entrepreneurs destroys incompetent firms. Creative Destruction has been observed in several industries such as the South African and Indonesian Manufacturing industries where inefficient firms were replaced by entrant firms that were entrepreneurial and

more efficient. In other words, new firms with better methods of production and innovative ways of doing business replaced incumbent firms.

The internet has allowed consumers to gain easy access to information on companies and their products which has given them the power to compare and find substitutes. It has also lowered search costs associated with shopping. This has put pressure on e-commerce firms to be more efficient at producing and delivering products and services. Through the adoption of Michael Porter's *Five Forces Model* and E. Jerome McCarthy's *Marketing Mix Model*, e-commerce firms can better position themselves to thwart competition and also be profitable. Product bundling, efficient distribution systems are a few of the competitive strategies that firms can employ to differentiate themselves and remain relevant in their respective markets.

While it is impossible to predict when creative destruction will fully start taking place in e-commerce industry, since sales through e-commerce firms increase each year, e-commerce firms must be ready to combat future competitive pressures through development and employment of competitive strategies.

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