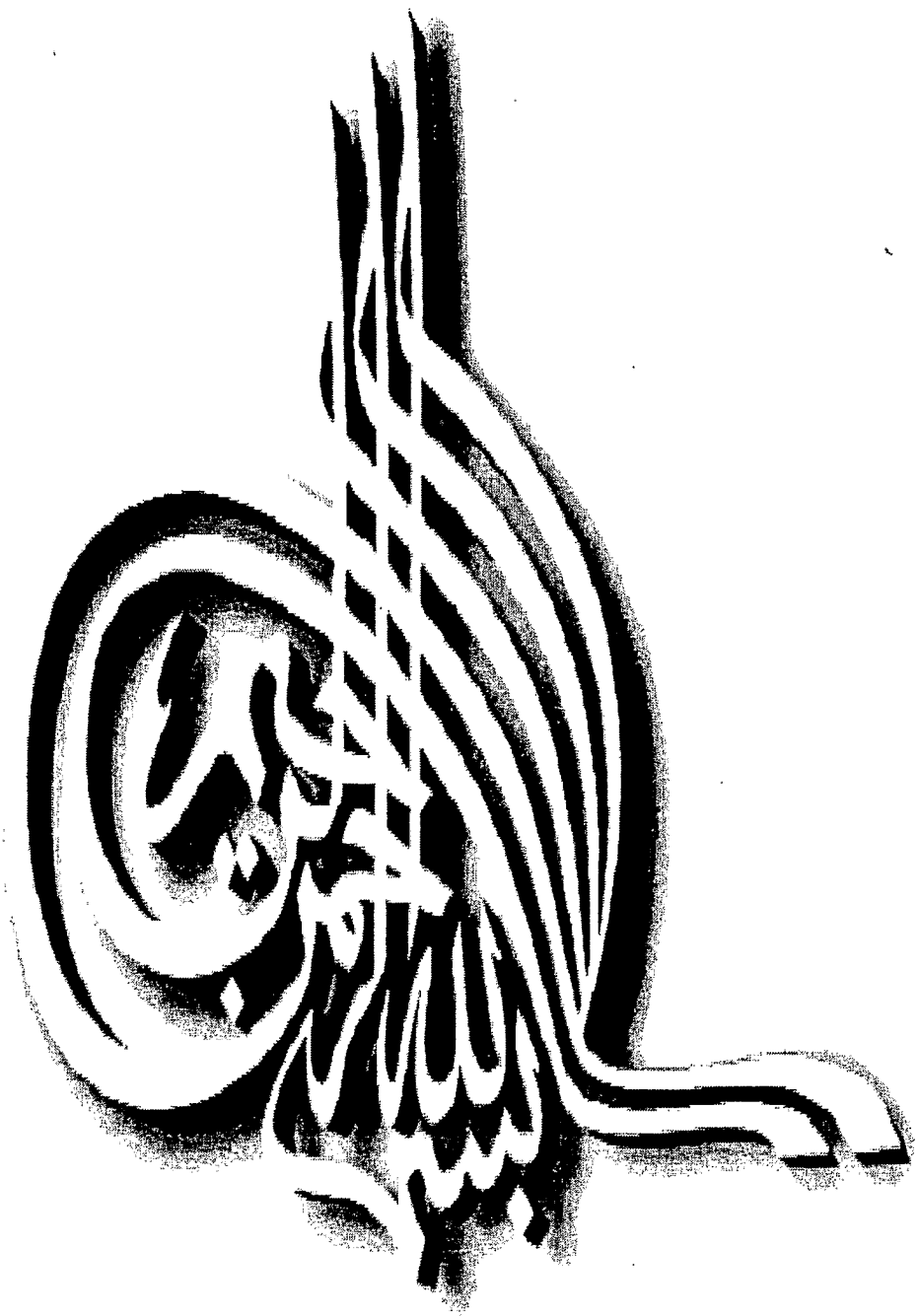

MASTER'S THESIS

Intermediation, aggregation and Internet Pricing

Comparison of online and offline homogenous retail markets in IRAN

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ABSTRACT

Several studies have shown that frictionless e-commerce is only fictional and that online price dispersion is persistent and high. There is very little evidence to show that prices on the Internet are converging over time to the law of one price. Studies show that online price dispersion decreased, but still is persistent. The research objective of this study is thus to extend prior research by comparing retailers and e-tailer (Intermediaries) prices to understand whether Internet will reduce the market friction of physical market transactions or not. The rapid growth of electronic commerce in Iran has provided a good opportunity for such a task.

The intermediaries who help reduce market friction in physical markets may be eliminated, when suppliers and consumers increasingly rely on the Internet as a transaction medium. An Intermediary in any market may reduce transaction costs by performing four roles: aggregation, pricing, search, and trust. The intermediary roles of aggregation and pricing may provide little or no value as the Internet becomes the medium for commerce because the technology, not the intermediary, reduces transaction costs.

To collect the data observation and questionnaire was used. The data gathered for a total of 106 identical products from 56 e-tailers and 948 price quotes in a variety of product categories including books, CDs, Laptops, Mobiles, Monitors, MP3s and digital Cameras for online and offline markets. We developed and gathered 140 questionnaires to evaluate e-tailers characteristics. The data analyzed by statistical methods that mainly includes factor analysis, cluster analysis and regression analysis.

The results of the drivers of online market show e-tailer services can be characterized by five underlying factors, namely, shopping experience, reliability in fulfillment, product information, shipping and handling and pricing policy. There are three clusters of e-tailers who target different consumer groups and position themselves differently along these five factors. Market characteristics drive a large portion of this e-tailer price dispersion. Specifically, price dispersion increases with involvement or average price level of items, albeit at a decreasing rate, and decreases with the number of competitors, but at a diminishing rate. The model explains over 86% of the variance in price dispersion. E-tailers charge prices in line with their characteristics, but do not necessarily command higher prices for superior services. The drivers of e-tailer prices also vary significantly by the cluster to which the e-tailers belong. The thesis shows that Internet commerce may not reduce market friction because prices are higher when consumers buy homogeneous products on the Internet, and price dispersion for homogenous products among internet retailers is greater than the price dispersion among physical retailers.

Keywords: Intermediary, E-Commerce, Information economics, E-tailing , Pricing

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Mahmoodreza Arefi
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Table of Contents

List of Tables

List of Figures

1. Introduction

The Chapter begins with a background concerning the research area which also shows the study's importance, followed by problem discussion, which guides the reader to the research purpose and the research questions. Finally the structure of the thesis is presented.

1.1 Background

Neoclassical economic analysis often assumes a friction less, that is, the ability for all consumers to have perfect information and zero transaction cost. In such a world, consumers could make perfect economic decisions because uncertainty is reduced as much as possible the uncertainty of knowing exactly what the good is, whom they are transacting with, and if this is the best possible price. In this world, economic theory would describe economic reality.

However, the world is far more complicated and much more uncertain than the world of frictionless economy. In the physical world, consumers are limited in their knowledge of what they want, where to buy, and who to buy from. The difference between the theory explaining the economy in practice indicates limitations in neoclassical economies to explain the subtleties of the market. These differences are supported by consumers' observation in everyday life. For example, the transaction cost of finding and purchasing a give item at a lower price may be high enough for a consumer to shop instead at a more convenient store, theater, or gasoline station.

Consumers may avoid a restaurant they have never been to because they are uncertain of the quality of food. This consumer may choose an inferior quality restaurant that they frequently patronize because they have imperfect information. The promise of a frictionless economy is a utopia that seems very far from the grasp of the consumer.

Imperfect information may lead to higher prices. Consumers with misleading or incomplete information often make decisions that do not maximize their utility from a transaction.

The intermediaries who help reduce market friction in physical markets may be eliminated, when suppliers and consumers increasingly rely on the Internet as a transaction medium. An intermediary in any market may reduce transaction costs by performing four roles: aggregation, pricing, search, and trust. The intermediary roles of aggregation and pricing may provide little or no value as the Internet becomes the medium for commerce because the technology, not the intermediary, reduces transaction costs. This research examines the possible elimination of aggregation and pricing intermediaries in Internet commerce. It does so by extending the theory of the economics of intermediation and electronic markets; developing a methodology for the analysis of Internet price competition; analyzing exploratory empirical data of homogenous goods markets to test a subset of this theory; and exploring the public policy implications of Internet price discrimination.

Rapid technological advances in information and communication technologies and their widespread diffusion have led to speculation about "frictionless" economies where transaction costs are nearly zero, barriers to entry and contestability disappear, and markets clear instantly (Gates, 1996). Some think that electronic commerce, with producers selling directly to consumers over computer networks such as the Internet, will eliminate existing intermediaries ("disintermediation"). Because it is easy to set up an e-shop, competition will force merchants to pass these lower costs on to consumers as lower prices. In addition, consumers will be able to search among thousands of merchants for the lowest prices, thereby increasing the downward pressure on prices and leading to a shift in market power from producer to consumer (Hagel, 1996). Indeed, some believe that electronic commerce will not only check inflation but will have a deflationary impact (Yardini, 1996; Crane, 1997).

The use of information to affect price is exacerbated by the fact that today's global economy is increasingly becoming more dependent on information Machlup (1962) and porat (1977) describes the U.S. economy as an information economy because most American workers gather, process , or create information.

The internet may lower the static market friction costs of transacting. As information becomes more widely available to consumers and suppliers alike, problems of imperfect information are reduced. Consumers may now be able to make decisions that maximize

their utility because information is inexpensive to find and process. These benefits result in lower transaction costs in a market exchange. Furthermore, suppliers may find it more difficult to conceal information from their competitors so that price is more likely.

The internet also increases the dynamic nature of the marketplace. Unlike physical markets where change occurs slowly because of printing and distributing information delays, change occurs very rapidly on the internet.

Information can be globally distributed electronically in seconds. For markets, the internet is a tool for almost instantaneous consumer feedback. Furthermore, this feedback can be processed and acted upon quickly and at a low cost relative to physical markets. For example, prices can be changed dynamically to meet demand because the cost of changing a price the menu cost may be lower on the internet than in physical markets. Dynamic pricing may lead to more price competition among internet retailers because they can respond to their competitor's actions more quickly. It may also lead to a strategy of internet price discrimination whereby internet retailers are able to single out individual consumers to charge them unique prices.

Market Structures may change if the internet reduces market friction. Intermediaries, market participants who enable transaction between suppliers and consumers, may be in an unsustainable position with the introduction of the Internet. Intermediaries exist to coordinate transactions and reduce the overall transaction costs in market exchanges. Unlike Adam Smith's theory that market existing with out coordination because of an invisible hand, Chandler (1977) describes why the visible hand of management is necessary to coordinate firms within markets. Even though intermediaries are important in physical markets where market friction is significant, their role of reducing transaction costs is threatened when suppliers and consumers use the Internet to transact. The intermediaries who aggregate products and set the prices on the internet may be threatened if they add minimal value to Internet transactions. The impact on market structure may be significant.

1.2 Problem Discussion

This research investigates intermediaries that participate in internet commerce to determine how the internet reduces market friction and reduces the role of the intermediary and drivers of online price dispersion.

There are many reasons to expect price dispersion to be lower online than off-line. Search costs are typically lower on the Internet than off-line, suggesting reduced price dispersion among e-tailers than among conventional retailers (Bakos, 1997). Online markets also involve significantly easier entry than off-line markets because the storefront is simplified to a Web site (Brynjolfsson & Smith, 2000). Because online retailing does not have some of the characteristics of traditional retailing such as high menu cost and thus staggered price setting, it is expected to have smaller price dispersion than off-line retailing. For example, Brynjolfsson and Smith (2000) observed that e-tailers have significantly more frequent but smaller price changes than conventional retailers. Thus, this line of reasoning predicts that online markets should be more competitive and witness less price dispersion than conventional markets.

It is important to remember that the Internet is still a changing communications infrastructure by design. Therefore, it is too early to predict what applications the internet will support in twenty years and who will use the Internet to conduct commerce. The businesses that are currently conducting commerce on the Internet will use consumer feedback to change their pricing, marketing, advertising, and product offerings in the future. By addressing the questions of market frictions in Internet commerce in an embryonic stage and examining drivers of online price dispersion in Iran, future analyses of Internet commerce are possible. Furthermore, the beginnings of empirical research can help identify strengths and weaknesses of the existing theory that describes how information technology such as the internet and intermediaries reduce market friction and investigate whether Internet brings about more efficient retail markets than traditional retail markets.

1.3 Purpose and Research Questions

This research investigates intermediaries that participate in Internet commerce to determine how the internet reduces market friction and reduces the role of intermediary. The approach of this research is interdisciplinary because it incorporates economics, technology, and policy analysis. This research analyzes price competition on the internet and drivers of online price dispersion, and uses an exploratory data set for empirical analysis to test the following hypothesis:

Internet commerce will reduce the market friction of physical market transactions.

Finding evidence to support or refute this hypothesis can help shape future development of Internet commerce. If Internet Commerce does reduce market friction, then there may be shifts in the global economy as consumers adopt the internet as a medium for commerce and intermediaries are removed from the value chain. The economic Theory, which describes changes in transaction and menu costs, will be supported by an Internet economy that has less friction than the physical economy. However, data might also indicate that the internet does not yet live up to the promise of promoting frictionless markets. Transaction costs and menu costs may still be significant enough to warrant the existence of intermediaries to coordinate transactions. The market participants must rely on strategies to make the best use of the Internet for commerce because economic forces may not work perfectly. For example, Internet market friction may change the shopping behavior of consumers who are trying to maximize their utility and the retailers who are trying to set a price.

To fulfill this purpose the following research questions shall be addressed,

RQ1: Is the price for an item sold on the internet lower than the price for the same item sold in the physical market place?

RQ2: Is the price dispersion among internet retailers, for a given homogenous product, will be smaller than the price dispersion among physical retailers?

RQ 3: Are Prices changing more rapidly on the internet than in the physical marketplace?

RQ4: What are the some key dimensions of e-tailer heterogeneity?

RQ5: How product, market characteristics and e-tailer characteristics effect on the prices of homogeneous goods sold on the Internet? (Drivers of online dispersion)

RQ6: How heterogeneity among e-tailers is related to their prices?

1.4. Structure of the Thesis

In the first chapter a broader problem has been narrowed down to a research problem and research questions. The literature review in chapter two will give the reader an overall review of different contributions in literature related to research problem and research questions. Review and discussion of the potential drivers of online price will be presented.

The chapter two defines market friction, describes the economics of the Internet and describes market friction in a static environment by describing the effect of transaction costs for intermediated and disintermediated market structures. It explores the dynamics of market friction by describing how menu costs may prohibit changes over time to reach the competitive equilibrium. It describes the economics of the Internet and describes why the Internet may reduce market friction. It explores intermediation in Internet Commerce and describes the aggregation and pricing roles of the intermediary. It explores and describes the drivers of online dispersion. Based on literature review a frame of references is showed in this chapter.

In chapter three the methodology of this study will be presented. In This Chapter first, The average price and price dispersion for each category of product for physical market and e-tailers will be measured. Second, to construct measures of variability in retail services across the products survey from e-tailers customers will be conducted then analyzing these ratings to identify the major underlying dimensions of e-tail service will

be done; factor scores based on these ratings provide the service measures used as independent variables in analysis of price dispersion. Third, A cluster analysis of these factor scores will be done to identify the competitive positioning of e-tailers on these service dimensions. Fourth, a set of regressions linking price dispersion measures to variation in e-tailer and in market characteristics to investigate the drivers of price dispersion will be used. Finally, through regression analyses by product category and by cluster to investigate the relationship between prices charged by e-tailers and e-tailer characteristics will be done.

In Chapter four, analysis of data and the results will be brought. The detail analysis of Factor analysis, cluster analysis and set of regressions will be mentioned in this chapter. Also the results of analysis in association with answering the research questions will be presented in this chapter.

Chapter five will present the findings and conclusions drawn from the study. It also will include limitations and implications as well as suggesting concerning further research.

2. Literature Review

This chapter examines the economics of market friction and market structure, and explains them within the context of the Internet. The introduction of a new technology does not mean that markets depart from their economic principles. Rather, the markets adjust to absorb the new technology to a new equilibrium. The purpose of this chapter is to provide the economic foundation and motivation for examination of the hypothesis of this thesis:

Internet commerce will reduce the market friction of physical market transactions.

The chapter defines market friction and describes the economics of the Internet. Market friction is a general economic concept that describes the forces that shift the equilibrium of the market away from the intersection of supply and demand (i.e. the competitive equilibrium). Section 2.1 describes market friction in a static environment by describing the effect of transaction costs for intermediated and disintermediated market structures. Section 2.2 explores the dynamics of market friction by describing how menu costs may prohibit changes over time to reach the competitive equilibrium. Section 2.3 describes the economics of the Internet and describes why the Internet may reduce market friction. Section 2.4 explores intermediation in Internet Commerce and describes the aggregation and pricing roles of the intermediary. Section 2.5 explores and describes the drivers of online dispersion. Section 2.6 refers to frame of references that are the main things to be studied.

2.1. Transaction Costs and Intermediation

A static examination of markets indicates that some transactions do not occur at competitive market equilibrium because of transaction costs. Because the exchange of goods or services and monetary wealth is not free, the price of a good that is transacted often reflects costs involved with coordination of the transaction and not the creation of the good. For example, it may only cost $5 to manufacturer a shirt in China, but it costs money to advertise, package, and distribute the product. None of these additional costs change the physical product, but these costs aid in finding a consumer for the shirts and receiving money for the purchase.

The examination of transaction costs began with efforts to understand why firms are created to organize economic activity. Coase (1937) argued that firms organize themselves to minimize transaction costs so that they can be more economically efficient. Others have used transaction costs to extend Coase's work to describe why firms are created and what distinguishes the boundary of one firm from the boundary of another (Alchian and Demsetz 1972; Demsetz 1968; Williamson 1979). As argued by Demsetz (1968) and Williamson (1979), procuring a product can be done within the boundary of the firm or done as a market transaction between firms. Whichever organizational model has lower transaction costs is preferred. Transaction costs are the costs incurred when goods or services are exchanged and not the costs associated with creating the good or service. Defining what is a firm and what is the boundary of the firm are on going issues in economics. The exploration of transaction costs is only one of many theories. For example, Hart (1989), Varian (1992), and Pindyck and Rubinfeld (1995) describes differences in the methodologies used in neoclassical economics, transaction cost economics, and by economists analyzing the firm as a nexus of contracts or owners of property. While some theories of the firm can give insight into choices of labor versus technology or the cost savings of introducing one technology over another, transaction cost economics is a more appropriate theory for understanding market friction than the alternative approaches.

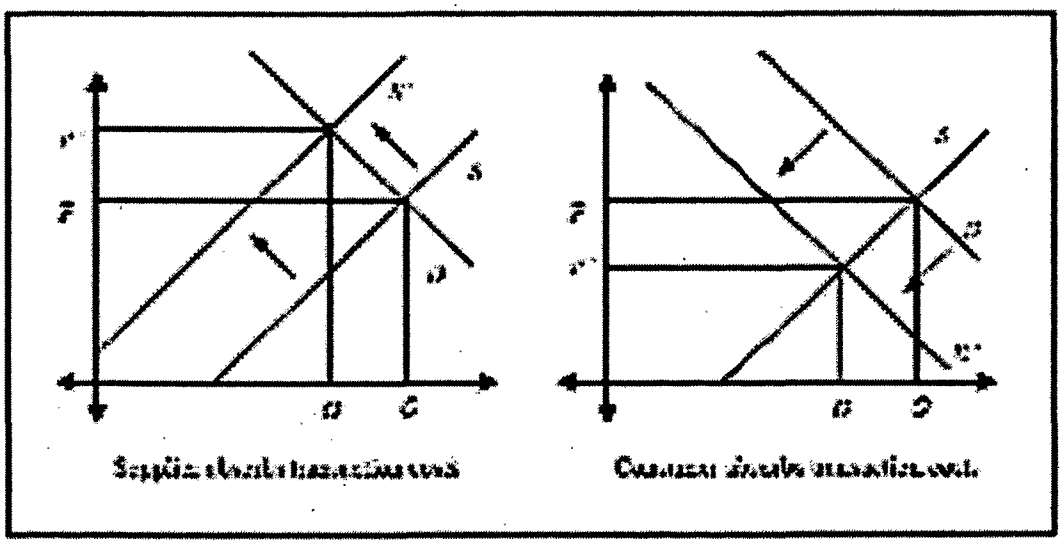
Transaction costs may decrease when information technology is used to facilitate market exchanges. As transactions become electronic, they may cost less than physical world transactions. Some argue that information technology may lower transaction costs because of lower 1) search costs (Bakos 1997), 2) coordination costs (Malone, Yates, and Benjamin 1987), and 3) payment processing costs (Sirbu and Tyger 1995). If transaction costs decrease within the firm more than they decrease between firms, then there will be an organizational shift from market transactions to intra-firm transactions. If the reverse is true, there will be more market transactions and fewer intra-firm transactions. Because the effect of information technology on transaction costs is far from certain, the further information technology research can explain the factors influencing the increase or

reduction of transaction costs. This section investigates the foundation of transaction costs in two market structures: disintermediated and intermediated.

2.1.1. Transaction Costs in a Disintermediated Market

The simplest transaction costs incurred in a direct transaction between a supplier and a consumer. The *supplier* is the firm that produces a product or service being exchanged and competes with other firms whose product can be a substitute. The *consumer* is the end user who derives value from possessing or consuming the product. This direct transaction does not require an outside participant (i.e. an intermediary) to coordinate the exchange between the supplier and consumer. Therefore, this direct exchange is "disintermediated."The supplier, consumer, or both may incur the transaction costs. Figure 2.1 shows the affect of transaction costs absorbed by the supplier (on the left) and by the consumer (on the right). The effect of the transaction cost is to shift the supply or demand curves, respectively, to the left because of higher transaction costs. Because the market is not frictionless, either party must pay an additional amount to transact the good.

Figure 2.1: Transaction Costs with Disintermediation



Source: Demsetz (1968)