

Economic relationships in the information economy

Abstract: This paper explores how the knowledge economy influences different market structures, specifically focusing on perfectly competitive, monopoly, and oligopoly markets. It examines the role of information and communication technologies (ICTs) in reducing costs and enhancing access to market information, thereby impacting market dynamics and economic activities. The study highlights that in a monopoly, price discrimination can lead to economic inefficiencies but also serves as a tool to enhance social welfare under certain conditions in the knowledge economy. In oligopoly markets, firms are highly interdependent, and their behavior regarding pricing and production can shift the market towards monopolistic tendencies if innovation is not matched by competitors. Furthermore, the paper discusses how the knowledge economy reshapes macroeconomic variables, such as economic growth, employment, and foreign trade, emphasizing the importance of human capital and ICTs in fostering innovation and international trade. The knowledge economy, therefore, has profound implications for market competition, economic development, and global trade, enabling greater innovation and efficiency.

Keywords: Knowledge Economy; Market Structures; Information and Communication Technologies (ICTs); Price Discrimination; Economic Growth and Development.

Összefoglalás: A jelen tanulmány azt vizsgálja, hogy a tudásgazdaság miként befolyásolja a különböző piaci struktúrákat, különös tekintettel a tökéletesen versenyképes, monopol és oligopol piacokra. Megvizsgálja az információs és kommunikációs technológiák (IKT) szerepét a költségek csökkentésében és a piaci információkhoz való hozzáférés javításában, ezáltal befolyásolva a piaci dinamikát és a gazdasági tevékenységeket. A tanulmány rávilágít arra, hogy monopólium esetén az árdiszkrimináció gazdasági eredménytelenséghez

* Lankaran State University Faculty
of Economics and Management,
Department of economics and in-
novative management/ Teacher
E-mail: baratmirzade24@gmail.
com

vezethet, de a tudásalapú gazdaságban bizonyos feltételek mellett ez a társadalmi jólét növelésének eszköze is. Az oligopol piacokon a cégek nagymértékben függnek egymástól, árképzési és termelési magatartásuk monopolisztikus tendenciák felé tolhatja el a piacot, ha az innovációhoz nem alkalmazkodnak a versenytársak. A cikk továbbá bemutatja azt is, hogy a tudásgazdaság hogyan alakítja át a makrogazdasági változókat, például a gazdasági növekedést, a foglalkoztatást és a külkereskedelmet, hangsúlyozva a humán tőke és az IKT-k jelentőségét az innováció és a nemzetközi kereskedelem előmozdításában. A tudásalapú gazdaságnak ezért mélyreható hatásai vannak a piaci versenyre, a gazdasági fejlődésre és a globális kereskedelemre, lehetővé téve a nagyobb innovációt és hatékonyságot.

Kulcsszavak: Tudásgazdaság; piaci struktúrák; információs és kommunikációs technológiák (IKT); árdiszkrimináció; gazdasági növekedés és fejlődés.

Introduction

With the transition to the information economy, significant changes and transformations took place in the economic production structures of countries, and information-based goods and services began to be produced. In this regard, because the production of goods and services requires a significant amount of technology and information production of technology-oriented knowledge is important. The society has greatly surpassed the industrial society with the knowledge economy. The information economy has been the source of many changes and transformations. Formation of the opportunity cost of the financial capital of the knowledge economy in the research work and the effects of communication and information technologies on societies and including the economy are mentioned. However, the micro and macroeconomics of the knowledge economy effects are highlighted. In terms of microeconomics, it was analyzed in terms of cost, production, consumption, and markets. Macroeconomics in terms of foreign trade, employment, income level, and economic growth were touched upon. All these have been extensively evaluated in the research work.

Microeconomic approaches with a knowledge economy perspective

First, let's analyze the microeconomic factors from the perspective of the knowledge economy.

PRODUCTION FUNCTION AND INCREASING PRODUCTIVITY FROM THE PERSPECTIVE OF THE KNOWLEDGE ECONOMY

The transformation of production factors into products and services within a certain period of time, represents production. Factors of production are variable in the short and long run and are evaluated as fixed factors. The law of increasing and diminishing returns requires that at least one of the factors of production in question be subject to constant conditions. In this sense, the law defines a short-term solution. Clark points out that due to the factors of production, the inclusion of information and the dominance of information in the production process continues to increase rapidly. Based on this, information in the context of the information economy when activated as a factor of production, seriously affects the increase in efficiency. However, like other economic constructs, the production in question in the knowledge economy for growth to occur must ensure that the quantities related to production factors are increased during the production period (Kandiller 2007).

In the classical economic approach, Fordism production line technology is in the foreground. Many standard products based on economies of scale in this production approach production is carried out. The knowledge economy is the basis of a rich social structure as an indicator, there is an agile manufacturing approach here. In this sense, it is flexible, taking into account the different choices of individuals on a social scale production is carried out by techniques and methods such as competence, which is of great importance [1].

Communication and by placing information indicators within the production factors of information indicators, the positive reflection of production information can be expressed in three directions [2].

– Introduction to communication and information technologies: Products and services of communication and information technologies are used as inputs in the

[1] Gale–Olmsted (2002): Skills, Flexible Manufacturing Technology, and Work Organization. *Industrial Relations*, pp. 48–79.

[2] Erkan (2013): Definition and Characteristics of Information Economy. *Information Economy. Open Education Publications*. Eskişehir.

[3] Dinler (2020):
Micro Economy.
Bursa: Ekin Basım
Publishing House.

[4] Kevuk (2010):
Knowledge Economy.
Turkey.

- production process to ensure continuous improvement of services and products.
- Added value reflection of communication and information technologies: Product and presence of a source of added value in services.
 - Innovative reflection of communication and information technologies: Novelty while influencing the formation of technologies, new information, and innovative products and provision of services.

As information is used as a factor of production in the knowledge economy, it has a more fluid structure along with other factors of production. In this sense, it is extremely important that knowledge can be divided, shared, and not exhausted by its production and dissemination. In other words, knowledge represents increasing value as it is moved [3].

CONSUMPTION AND THE PERFECTLY COMPETITIVE MARKET FROM THE PERSPECTIVE OF THE KNOWLEDGE ECONOMY

In the consumption theorem, the goal of consumers is to maximize the benefits they provide. It is the behavior of consumers who want to achieve this goal many factors influence the market and guide the behavior of consumers. At this point, consumer behavior experienced in the knowledge economy advancements play an important role. Developments in the knowledge economy, along with products and services available and used in production, information-oriented products and services have also come to the fore and increased in importance. Some changes have also occurred in the existing consumption approaches with the information economy. In this sense, mechanical devices are replaced by digital-based mp3, photo cars and innovative technologies such as laptops. On the other hand, individuals interact directly with companies to obtain the products and services they need and with the knowledge economy, this situation has been replaced by easier communication through e-commerce [4].

There are too many buyers and sellers to direct the market price alone, where both consumers and producers have complete information about the market along with free entry and exit from the market, and a system in which the product offered is homogeneous is described as a perfectly competitive market.

Although the market in question is not close to the real-life market, the other market plays an important role in explaining the meaning of styles.

1. *Mobility Status*: Capital owners, consumers, and producers to the market there are no licensing, legal, or patent barriers to entry and exit [5].
2. *Atomicity*: Along with having multiple sellers and buyers of a product describes a situation where sellers and buyers are too small to determine the price of the product on their own.
3. *Having complete information*: In a perfectly competitive market, consumers and producers are assumed to always have complete information.
4. *Product homogeneity*: Produced by a single producer in a perfectly competitive market the product cannot be distinguished from a product produced by other manufacturers.

The possibility of realizing the sale of products and services produced in the knowledge economy on the internet, as well as the information about the products desired by the said consumers gives them access to the websites they shop from, which is very important.

MONOPOLY AND OLIGOPOLY MARKET WITH KNOWLEDGE ECONOMY PERSPECTIVE

A monopoly is a market in which a single firm produces or sells a commodity or product that is difficult to substitute. A monopoly market has two characteristics:

- There is no substitute for the product for which the monopolist controls the supply.
- Other firms can't enter the market where the monopolist operates.

If it is impossible to substitute the product controlled by the monopolist, then a pure monopoly is created. However, in real economic life, pure monopoly is rare. Because there are certainly products that substitute for most goods to a greater or lesser extent. The fact that a monopolistic firm sells the same product at different prices in different markets in order to increase its profit is called price discrimination. Price discrimination is a way for monopolistic firms to increase their profits [6].

The use of price discrimination to increase monopolistic profits leads to distortions in the competitive market and causes economic losses for consumers. So, this situation is subject to change and transformation in the knowledge economy.

[5] Acar (2002):
Economic Growth and Growth Models. Bursa.

[6] Turkey (2003):
Introduction to Economic Theory Micro-economics. Ankara.

[7] Delong–Lawrence (2001): The New Economy: Background, Historical Perspective, Questions and Speculations. *Federal Reserve Bank of Kansas City Economic Review*, pp. 29–59.

Therefore, price discrimination from the point of view of information economy as an important function in increasing social welfare and economic activity is seen [7].

An oligopoly is a market in which a small number of producers influence each other and a market where the manufactured product is sold to a large number of consumers is the type. Oligopoly as a result of a limited number of companies in a monopoly market has emerged. Due to the small number of firms present in an oligopoly market, firms are influenced by each other's behavior in matters such as advertising, pricing, and production.

In an oligopoly there are barriers to market entry. In other words, in this market, the mobility of a perfectly competitive market is disturbed. Therefore, the number of sellers in an oligopoly is small. On the other hand, when examined in terms of goods produced in an oligopoly, firms produce both homogeneous products and they may also produce differentiated products. Produce a different product in this market sellers may charge different prices. However, the price charged by sellers producing a homogeneous product is the same.

When it's researched from the perspective of the knowledge economy, the oligopolistic style is also likely to turn into a monopoly style over a period of time. However, if companies adapt to the web, the monopoly position of the manufacturer offering innovative products to the market can be prevented. On the other hand, if a rival company does not adapt to web technology in front of a company that adopts an innovative style in the market, the leading company in the oligopoly will maintain its position and obtain a monopoly advantage, and it will become a monopolistic structure.

Macroeconomic approaches from the perspective of the knowledge economy

ECONOMIC DEVELOPMENT AND EMPLOYMENT
WITH A KNOWLEDGE ECONOMY PERSPECTIVE

The ultimate goal of modern societies is to raise the level of well-being by achieving social and economic development. The increase in prosperity provided by economic growth, which is one of the macroeconomic indicators of countries, is also real-

ized due to the growth of products and services produced within the country and technological progress. Based on this, the increase in production realized within a certain period reveals economic growth and growth. The increase in production is related to the increase in production factors [8].

Information and communication technologies, which are one of the indicators of the knowledge economy, not only provide ease of access to information but also reduce the costs of obtaining information. In particular, the activation of communication and information technologies in the production process, caused by the advantage provided by cost reduction, has led to changes in the production of products and services [9].

Another indicator of the knowledge economy is human capital. Information and relationships between communication technologies, knowledge-based skilled workers and human capital are mutually reinforcing indicators. Although the demand for skilled labor for the adoption of innovative technologies creates a need for qualified personnel, human capital plays an important role in these personnel. Based on this, the strong relationship between skilled labor, productivity, efficiency, and human capital is identified as a factor in increasing growth success in many countries [10].

Employment is the state of activation of the labor force related to production. With the inclusion of information as a value factor in production, the traditional business structure has undergone certain changes and transformations. The traditional work structure based on physical ability is giving way to an abstract structure focused on human capital and based on intelligence and information. In the knowledge economy, information exchange within an innovative business structure is possible with communication and information technologies compared to the traditional business process. Gaining competition in the knowledge economy through innovative skills by innovative information production and transfer methods is possible through well-equipped individuals [11].

Changes and developments in the fields of employment, and demand for the labor force have also created changes in its characteristics. With the knowledge economy, self-confidence, communication skills, skills such as analytical intelligence, responsibility, productivity, energy level, self-sacrifice, and team spirit began to be required from the workforce. In this sense, with the opening of new employment sectors, there is a need for trained personnel with technology knowledge [12].

[8] Dornbusch–Fischer (1998): *Macroeconomics*. Istanbul.

[9] OECD (2009): *The Impact of the Crisis on ICTs and Their Role in the Recovery*. London.

[10] Turan (2008): Introduction to Economic Growth Theory. *Lean publishing*. Istanbul.

[11] Dereli (2002): Technological Changes, Labor Relations and New Types of Employment. *İşgüç*, Online Magazine. pp. 2–9.

[12] Uchkan (2006): Information Policy and Information Economy: Productivity, Employment, Growth and Development. *World of Information*. pp. 23–48.

[13] Ozlem, Karaoğlu (2022): *Eurasian Academy of Sciences Social Sciences Journal*, pp. 45–63.

In economies dominated by the knowledge economy, the demand for highly qualified managers and technicians is increasing.

FOREIGN TRADE FROM A KNOWLEDGE ECONOMY PERSPECTIVE

In recent years, the significant entry of information into the production process has had a positive effect on personal life and also has a significant effect on foreign trade. Information-based factors, which were not initially emphasized, have become the main parameters of foreign trade theories within the process.

Although the factor of production in classical foreign trade theories is based on labor, it is argued that production costs are related to the seemingly homogeneous amount of labor. Neoclassical economists of another school believe that capital should be considered as a cost factor and a production factor.

Because natural resources are not distributed equally internationally, it may not be possible for another country or countries to own any of their natural resources. Even if the countries have abundant natural resources, they cannot carry out the production process with the existing resources or they have to import the products from abroad because they cannot meet the demand in the domestic market. With this move, sellers thanks to communication technologies, one of the indicators of the knowledge economy they can bring their products to market more quickly and effortlessly. Buyers can get information about the products they are interested in more quickly and easily [13].

In this sense, with the advantages provided by technology, manufacturers offer their goods to new markets in the international arena, allowing companies to create innovative products. Therefore, the knowledge economy goes beyond geographical locations through globalization, plays an active role in imports and exports, increases direct foreign capital investments, and increases the volume of foreign trade positively. This is an important issue.

Conclusion

The knowledge economy creates several advantages for production and consumers in the modern era. In addition, the knowledge economy has created changes in the quality of employment, and social and cultural life. In addition, it can be concluded from the above that the knowledge economy creates a favorable environment for healthy competition and paves the way for the development of other areas.

The influence of the knowledge economy on micro and macroeconomic relations continues to expand and has already become a requirement of this globalized world. From all these mentioned, we can conclude that the knowledge economy creates innovations in many field structures and allows for obtaining several advantages.

