Does competition have a relationship with efficiency and productivity?

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Abstract

This study includes three major sections, first one is efficiency and the latter one is productivity. The terms efficiency and productivity headlines are composed of subsections; according to their definitions, importances and specific properties. Subsections are provided to explain the topic called competition. Competition is the last main section of this study and evaluated in the perspective of the terms which are also handled in former two sections and those are pointed in methodology of the study. Consequently, competition is expressed to have a relationship with efficiency and productivity. The aim of the study is supported by literature reviews to find the answers to the two questions; former one, does competition and efficiency have a relationship; the latter one, if competition and productivity have a relationship. Thereby, the study has an aim to find one answer; does competition have a relationship with efficiency and productivity.

Keywords: Efficiency, Productivity, Competition

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INTRODUCTION

Considering the main sections, the first section of the study includes the definition, importance and analysis of efficiency, then contains the terms efficiency and effectiveness. This section ends with the literature review of efficiency. The second section of study includes the definition and importance of productivity and literature review of productivity. The third section works on competition in terms of efficiency and productivity which is also pointed in methodology of the study.

According to the all these explanations, the starting point is named as introduction which continues with literature review, methodology, above mentioned main sections, results and conclusion. Future researches and references are also handled at the end of the study. The literature review includes important researches about the main topics dealt in this study. In methodology, the aim of the study has been handled. This study aims to answer two questions to have a unique answer; does competition have a relationship with efficiency and productivity. In this way, whether competition have a relationship with efficiency and productivity or not can be explained as a main hypothesis and can be divided into sub-hypothesis. The first sub-hypothesis includes whether competition and efficiency have a relationship or not and the second sub-hypothesis includes whether competition and productivity have a relationship or not. Aboveasaid hypothesis and sub-hypotheses are solved via a literature review of related topics.

Moreover, the literature review and the methodology are combined with each other. The significance of the study has been defined via the relationship of one subject to two subjects, in other words competition’s relationship with efficiency and productivity which are not fully enhanced in the papers that are referred in literature review. In addition to these, research objectives also makes a contribution to resolve the aim of the study. The research objectives via main and sub-hypothesis have shown that rejection of H0 and acceptation of H1 are supported with literature review of efficiency; and rejection of H0 and acceptation of H1 are supported with literature review of productivity.

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Eventually, the question of whether competition have relationship with efficiency and productivity or not, has answers with positive meanings which also expressed in the results. In conclusion, it is denoted that this paper shows the relationship between these two terms (efficiency, productivity) and competition. In other words, the relationship between competition and efficiency; and the relationship between competition and productivity also have influences in positive way. Future researches can handle the presented relationship with actual literature review or negative ways of the relationship can also be embraced. The references are also itemized after future researches.

**LITERATURE REVIEW**

Balkan and Arıkan (2010), Çetin (2010), Dinç and Haynes (1999), N. Doğan and Ersoy (2017), Eroğlu and Atasoy (2006), Bakırçı (2006), Holmes, Hsu, and Lee (2014), Jacobs (2001), Yükçü and Atağan (2009), McGlynn et al. (2008), Özden (2008), Salant and Siegel (2016), Varian (1974), handled efficiency in related papers.

In compliance with the competition-efficiency hypothesis, increases in competition leads up to increases in (profit) efficiency. This hypothesis is derived from the efficient structure hypothesis proposed by Demsetz (1973), Schaeck and Čihák (2008).

Esirgen and Gültekin (2005), Göçer and Peker (2014), Güngör and Felekoğlu (2018), Lovell (2003), Lorcu (2010), Prokopenko and North (1996), Vergil and Abasz (2008), Yerlikaya (2010), addressed productivity in their studies.

If the competition works effectively, clear messages will be sent to firms from the market (for instance, in the shape of the prices they can charge and the profits they can earn) about which goods and services consumers want to buy. Efficient firms that offer the products that consumers want at low prices will get better, and inefficient ones will not (Competition and Markets Authority, 2015; Vickers, 1995).

Ö. İ. Doğan, Marangoz, and Topoyan (2003), Gökmenoğlu, Akal, and Altunışık (2012), Keskin, Kalaycıoğlu, and İnce (2017), Öngüt (2007), Seviçin (2009), concerned with productivity in their papers mentioned below.

Based on a series of studies on Nickell (1996)’s highly cited 1996 article, CEP - CentrePiece research concluded that increases in competition provided a large and persistent pressure to (firm) productivity (Van Reenen, 2011).

**METHODOLOGY**

This study aims to answer two questions to have a unique answer; does competition have a relationship with efficiency and productivity. In other words;

Main Hypothesis: Whether competition has a relationship with efficiency and productivity or not.

Sub-Hypothesis 1) Whether competition and efficiency have a relationship or not.

H0: Competition and efficiency don’t have a relationship with each other.

H1: Competition and efficiency have a relationship with each other.

Sub-Hypothesis 2) Whether competition and productivity have a relationship or not.

H0: Competition and productivity don’t have a relationship with each other.

H1: Competition and productivity have a relationship with each other.

Above said hypothesis and sub-hypotheses are solved via literature review of related topics.

**EFFICIENCY**

This section includes the definition and importance of the term and specific properties of it as presenting its use in literature.

**Definition of Efficiency**

Efficiency can be defined with two components as technical efficiency and allocative efficiency. If a firm is not obtaining maximal output from a set of inputs, technical inefficiency occurs and when a firm fails to choose the
Does competition have a relationship to the optimal balance of inputs at given input prices (even in case of obtaining maximal output from the inputs actually used), allocative inefficiency occurs (Rogers, 1998).

Rogers (1998) remarks about the essential constituents of efficiency as its technical and allocative properties, relating both with obtaining maximal input and choosing the optimal balance (Rogers, 1998).

Importance of Efficiency

Efficiency is a critical element of development in view of the fact that it can be more easily to be emphasized in the private sector than in the public sector, whose activities are directed, primarily, towards covering the needs of citizens, to a greater extent, as far as possible, the allocation of resources being related to supply of goods and services (Florina, 2017).

Analysis of efficiency

Analysis of efficiency can be classified into three categories as follows (Rogers, 1998):

- Data envelopment analysis
- Stochastic production frontier approach
- Panel data methods

Efficiency and effectiveness

In addition to efficiency, the concept of effectiveness can be shortly explained in this framework. Effectiveness can be explained with the relationship between inputs and the social states vector (Burkhead & Hennigan, 1978).

Specific Properties of Efficiency: Literature Review

- Varian (1974) examined the concept of equity together with two more concepts.
- Dinç and Haynes (1999) investigated the sources of regional inefficiency.
- Jacobs (2001) used two alternative methods to examine hospital efficiency.
- Eroğlu and Atasoy (2006) focused on efficiency measurement with data envelopment analysis and sensitivity analysis of efficient decision-making units.
- Bakırcı (2006) determined efficiencies on sectoral basis by using data envelopment analysis.
- Özđen (2008) studied on efficiency evaluation of foundation universities in Turkey by using data envelopment analysis.
- McGlynn et al. (2008) prepared a report on identifying, categorizing and evaluating health care efficiency measures.
- Yükçü and Atağan (2009) concentrated their paper on confusion on effectiveness, efficiency and productivity.
- Balkan and Arkan (2010) performed to determine secondary school education efficiencies of a province by data envelopment analysis that will help to identify the numbers of required classrooms and teachers for increasing the quality of education.
- Çetin (2010) presented an essay on economic efficiency in the context of the X-efficiency approach.
- Holmes et al. (2014) examined the welfare gains from trade with allocative efficiency and mark-ups.
- Salant and Siegel (2016) conducted a study on reallocation costs and efficiency.
- N. Doğan and Ersoy (2017) implemented an efficiency measurement via a case study of a firm in the textile sector.

PRODUCTIVITY

Definition and importance of the term productivity are presented in this section with specific properties of it showing its use in literature.

Definition of Productivity

Productivity can be considered as how effectively value (output) is produced from inputs which can be explained with people, capital equipment, land, energy, and so forth (Beatson & Zheltoukhova, 2015).
According to Beatson and Zheltoukhova (2015), productivity can be pointed out as how effectively output is produced from inputs, in short definition (Beatson & Zheltoukhova, 2015).

Importance of Productivity

In the framework of most common measures of productivity which are widely used by economists and business analysts, one can start with the most basic concept of labor productivity and then proceed with the total factor productivity (Steindel & Stiroh, 2001):

- Labor productivity (a simple definition is real output per hour of work)
- Total factor productivity (a simple definition is real output per unit of all inputs and is a more difficult concept than the first one).

In another perspective, the types of productivity can be examined in three subheadings; partial productivity, multi-factor productivity and total productivity (Yükçü & Atağan, 2009).

Specific Properties of Productivity: Literature Review

- Prokopenko and North (1996) published a modular programme on productivity and quality management.
- Lovell (2003), evaluated the decomposition of Malmquist productivity indexes.
- Esirgen and Gültekin (2005) focused on the evaluation of reinforced concrete and structural steel construction technologies by productivity criteria.
- Vergil and Abasz (2008) studied total factor productivity, estimation and relationship between growth and productivity.
- Yerlikaya (2010), presented a study on technical effectiveness as a component of total factor productivity.
- Lorcu (2010) analyzed total factor productivities with the Malmquist productivity index in an application of Turkish automotive industry.
- Göçer and Peker (2014) analyzed the productivity effects of foreign direct investment.
- Güngör and Felekoğlu (2018) conducted a study on the concept, development and implementation process of eco-efficiency.

COMPETITION

In this section, competition is handled from the perspective of efficiency and productivity with a literature review.

- Ö. I. Doğan et al. (2003) executed a sectoral study on factors affecting competitive advantage of businesses in domestic and foreign markets.
- Öngüt (2007) handled the Turkish textile and clothing industry about adaptation to the changing worldwide competitive conditions.
- Seviçin (2009) presented an investigation on sustainable competitive advantage concept.
- Gökmenoğlu et al. (2012), had a study of review on factors determining national competitiveness.
- Keskin et al. (2017) examined the relationship between export capabilities and competitive advantage with an investigation on Turkish exporters.

RESULTS

In compliance with the competition-efficiency hypothesis, increases in competition leads up to increases in (profit) efficiency. This hypothesis is derived from the efficient structure hypothesis proposed by Demsetz (1973) (Schaeck & Čihák, 2008).

Having the sub-hypothesis of whether competition and efficiency have a relationship or not;

H0: Competition and efficiency don’t have a relationship with each other.

H1: Competition and efficiency have a relationship with each other.

Rejection of H0 and acceptation of H1 are supported with a literature review of efficiency.

If the competition works effectively, clear messages will be sent to firms from the market (for instance, in the shape of the prices they can charge and the profits they can earn) about which goods and services consumers want to buy. Efficient firms that offer the products that consumers want at low prices will get better, and inefficient
Does competition have a relationship ones will not (Competition and Markets Authority, 2015; Vickers, 1995).

Based on a series of studies on Nickell’s highly cited 1996 article, CEP - CentrePiece research concluded that increases in competition provided a large and persistent pressure to (firm) productivity (Van Reenen, 2011).

Having the sub-hypothesis of whether competition and productivity have a relationship or not;

**H0**: Competition and productivity don’t have a relationship with each other.

**H1**: Competition and productivity have a relationship with each other.

Rejection of H0 and acception of H1 are supported with a literature review of productivity.

Herewith; the question of whether competition has a relationship with efficiency and productivity or not, has answered with positive meanings.

**CONCLUSION**

This paper, with three main topics brought up; firstly comprises efficiency section which consists of the definition and importance of the term and specific properties of it as its use in literature and subsequently it places emphasis on productivity in following section. The aforementioned section also contains the definition and importance of productivity in addition to its literature review of its specific properties. The last section of three main topics supported these two terms as a result of effects of it in positive way which was also pointed in the methodology and literature review of study.

Finally, this paper shows the relationship between these two terms (efficiency, productivity) and competition. In other words, the relationship between competition and efficiency; and the relationship between competition and productivity also have influences positively.

**FUTURE RESEARCHES**

Future researches can handle the presented relationship with actual literature review or negative ways of the relationship can also be embraced.

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