T.C.

ISTANBUL AYDIN UNIVERSITY

INSTITUTE OF GRADUATE STUDIES

THE IMPACT OF MARKETING EFFORTS ON FIRM FINANCIAL PERFORMANCE: A RESEARCH ON COMPANIES IN BIST SERVICES INDEX

MASTER'S THESIS

MOHANNAD T A GARBIAH

DEPARTMENT OF BUSINESS

BUSINESS MANAGEMENT PROGRAM

March, 2021

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(Y1812.130085)

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Advisor: Asst. Prof. Dr. Cüneyd Ebrar LEVENT

March, 2021

DECLARATION

I hereby declare with respect that the study “The Impact of Marketing Efforts on the Firm Financial Performance: A Research on Companies in BIST Services Index”, which I submitted as a Master thesis, is written without any assistance in violation of scientific ethics and traditions in all the processes from the Project phase to the conclusion of the thesis and that the works I have benefited are from those shown in the Bibliography. (25/01/2021)

Mohannad T A GARBIAH

FOREWORD

My heartfelt gratitude goes to Allah for his love, grace, and generosity for allowing me to do this research work.

First of all, I would thank my supervisor Asst. Prof. Dr. Cüneyd Ebrar LEVENT sincerely for allowing me, under his auspices, to conduct this research. I am incredibly grateful for the trust and freedom he gave me for doing this work.

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I would never finish this thesis without the support of all of my family members and would never have the courage to overcome all these difficulties during this work. I want to thank my mother, father and my sisters throughout all these years for their faith and love. In particular, I would like to thank my brother who always supported me and helped me to overcome difficulties.

January, 2021 Mohannad T A GARBIAH

THE IMPACT OF MARKETING EFFORTS ON FIRM FINANCIAL PERFORMANCE: A RESEARCH ON COMPANIES IN BIST SERVICES INDEX

ABSTRACT

From an accounting perspective, marketing expenses can be considered as a factor that reduces company profitability. From a financial point of view, funds allocated to marketing cause a decrease in the funds allocated to other investments. However, business management should be considered broadly, and on that point, spending on marketing efforts should be seen as investments that are expected to increase the value and profitability of the company. In this respect, the purpose of this study is to investigate the impact of marketing efforts on the financial performance of listed companies in Borsa Istanbul (BIST). The scope of the study consists of 66 companies included in the BIST Services Index (XUHIZ) between 2016-2019. To determine this effect, six econometric models were established, and panel data analysis method was chosen as the analysis method. Marketing expenditures to total sales (MTS) and Marketing expenditures to operating expenditures (MTOE) were used as proxies for marketing efforts. Return on Assets (ROA) as indicator of firm profitability and Tobin's Q as indicator of the firm market value were used as firm performance proxies based on previous academic research in this field. Consistent with the literature, various control variables were also included in the models. According to the research findings, it has been determined that the increase in the ratio of the financial value of marketing efforts to sales does not have a positive effect on the market value or profitability of the company. On the other hand, it was determined that the increase in the ratio of marketing expenses to total operating expenses positively affected both the profitability and market value of the company. These findings obtained in the study show that marketing expenses should not be considered separately from other operating expenses of the company, companies that can control other operating expenses and increase the share of marketing expenses in total expenses can achieve better financial performance.

Keywords: firm value, profitability, marketing, investment, financial performance

PAZARLAMA ÇABALARININ FİRMA FİNANSAL PERFORMANSI ÜZERİNDEKİ ETKİSİ: BİST HİZMETLER ENDEKSİNDEKİ ŞİRKETLER ÜZERİNE BİR ARAŞTIRMA

ÖZET

Muhasebe perspektifinden bakıldığında, pazarlama giderleri şirket karlılığını azaltan bir faktör olarak değerlendirilebilir. Finansal bakış açıdan ise pazarlamaya ayrılan fonlar, diğer yatırımlara ayrılan fonların azalmasına neden olur. Ancak işletme yönetimi geniş çerçevede düşünülmelidir, bu yönüyle pazarlama çabalarına yapılan harcamalar firma değerini ve karlılığını arttırması beklenen yatırımlar olarak görülmelidir. Bu bağlamda, bu çalışmanın amacı, pazarlama çabalarının Borsa İstanbul'da (BIST) işlem gören şirketlerin finansal performansına etkisini incelemektir. Çalışmanın kapsamını 2016-2019 yılları arasında BİST Hizmetler Endeksi'nde (XUHIZ) yer alan 66 şirket oluşturmaktadır. Bu etkinin belirlenmesi için altı ekonometrik model kurulmuş ve analiz yöntemi olarak panel veri analiz yöntemi seçilmiştir. Pazarlama çabaları, pazarlama harcamalarının toplam satışlara oranı (MTS) ve pazarlama harcamalarının faaliyet giderlerine oranı (MTOE) değişkenleri ile temsil edilmektedir. Bu alanda geçmişte yapılan akademik araştırmalara dayanarak firma performans indikatörleri olarak aktif karlılık oranı (ROA) ve firma piyasa değerinin göstergesi olarak Tobin Q oranı kullanılmıştır. Modellere literatürle tutarlı olarak çeşitli kontrol değişkenleri de eklenmiştir. Araştırma bulgularına göre, pazarlama çabalarının finansal değerinin satışlara oranındaki artışın şirketin piyasa değeri veya kârlılığı üzerinde olumlu bir etkiye sahip olmadığı tespit edilmiştir. Diğer taraftan pazarlama giderlerinin toplam faaliyet giderlerine oranındaki artışın şirketin hem kârlılığını hem de piyasa değerini olumlu etkilediği saptanmıştır. Çalışmada ulaşılan bu bulgular, pazarlama giderlerinin şirketin diğer faaliyet giderlerinden ayrı düşünülmemesi gerektiğini, diğer faaliyet giderlerini kontrol edebilen ve pazarlama harcamalarının toplam giderler içindeki payını artıran şirketlerin daha iyi finansal performans elde edebileceğini göstermektedir.

Anahtar Kelimeler: firma değeri, kârlılık, pazarlama, yatırım, finansal performans

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ABBREVIATIONS

BIST **:** Borsa İstanbul

DEBT **:** Total Debt to Total Assets Ratio

INSIZE **:** Natural Logarithm of Total Assets

MTOE **:** Marketing Expenditures to Operating Expenditures Ratio

MTS **:** Marketing Expenditures to Total Sales Ratio

ROA **:** Return on Assets

TOBIN **:** Tobin's Q

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I. INTRODUCTION

A. Introduction to the Problem

In order to satisfy consumer requirements and needs, the production of products or services and their marketing to consumers is a priority. The advantages of marketing for consumer needs; it is grouped under four main headings in terms of form, time, location and property. Marketing, it provides consumers with access wherever they want to, wherever they wish, to goods, services or ideas. In the context of strong competition, marketing plays a major role and consumers can easily pick from competitors. That is why business managers need to give marketing activities the necessary importance and should know that these activities are not just the job of the marketing department.

Marketing is one of the key components to business success. Every business owner must understand the extent to which a good marketing strategy can influence a company. Therefore, the companies have to do all in their power to develop the best strategy to achieve its goals. For all companies, marketing expenditures are important because marketing is a key business feature that creates a client for the business. The importance of marketing expenditures, its management and tax treatment are critical to business owners.

Nowadays, businesses must distinguish themselves from other businesses operating in the same sector, respond to existing market customers' requests and needs, and develop their goods and services to achieve success and competitive benefit. Marketing efforts are one of the main resources to do so. Businesses wishing to be successful in the markets, in which they operate, give greater attention to and invest more in marketing efforts (Çifci et al., 2010). Because the concept of assessing marketing expenses not as expenses but as investments that generate value for the business in the future has come to the fore in recent years in line with certain approaches in the field of financing (Topuz & Akşit, 2013).

Operating expenses are the main expenses of a company. Operating cost is "Research and Development," "General Management," and "Marketing, Sales and Distribution" respectively. There is no doubt that the marketing expenditures of the companies are their greatest expenditures. In accordance with generally accepted accounting procedures and principles, marketing expenditures are considered as a charge item. The fact that marketing spending is included in the operating cost of the company income statement is one of the key indices of this perspective. Some writers in theory have produced studies focused on countries and argue that marketing expenditure should be regarded as a value-creating future investment (Topuz & Akşit, 2013).

When marketing expenditures are considered in general, it is seen that these expenditures consist of wages of the people working in the marketing department, product promotion expenses, promotions, public relations expenses and of course advertising expenses (Liu, 2020). The appropriate levels of marketing expenses are constantly assessed by the businesses on the basis of their investment return and industry standards. In order to determine its effectiveness, marketing costs should be assessed and measured at common expenses to sales ratios (Liu, 2020). It emphasized that the objective of firms is the high market value of the business, not just profit or more, achieved by the sales revenues of firms. Firm value represents the expected future value that depends largely on the company's marketing efforts.

In the history of marketing, the functioning of marketing to explain the company's business success has received considerable attention. In the current global recession marketers had to defend the value of their businesses and budgets, marketing is increasingly essential to be connected to the business performance. Researchers have significantly improved conceptual insight into the role of marketing in allowing companies in the last two decades to develop and maintain competitive advantages. More recent developments on the marketing-financial interface have also begun to demonstrate more empirically the impact of marketing activities and marketing related assets on the business accounts and the financial market performance.

Marketing and advertising expenses shall be accepted as a factor that negatively affects short-term profitability. However, in the long-term period it will add value to the firms, Marketing has long been regarded as an investment rather than expense (Sheth & Sisodia, 2002; Slywotzky & Shapiro, 1993).

Marketers and academics have become increasingly pressurized in the business environment to confirm the value of marketing efforts clearly from a financial point of view (Lehmann, 2004; Madden, Fehle & Fournier, 2006). Sheth and Sisodia (1995a, 1995b) demonstrated that the cost of business related to marketing has increased to around 50% from 20% of total cost over the last 50 years.

In addition to increasing marketing expenses, the marketing sector is expected to show a direct connection between marketing expenses and the value of its shareholders. There have been many researches to find out whether or not relationship between marketing efforts and firm performance exists. Some researchers argue that marketing and business performance have no relationship, but others claimed that negative or positive relationships exist.

In this context, this study is conducted to examine the relationship between marketing efforts and firm performance in term of firm market value and profitability.

B. Purpose of the Study

The primary objective of this research is to investigate the impact of marketing efforts on firm financial performance in term of the market value of the firm and profitability in services companies. The study may be used in future by experts and professionals in the service companies' sector for decision making. This work enables them to examine the effect of marketing efforts on financial performance of the firm. To comply with the primary objectives the following supportive objectives also considered:

- Exploring the effect of marketing expenditures on firm market value
- Exploring the effect of marketing expenditures on profitability.

C. Statement of the Problem

Intensive effort and time are needed for marketing. Marketing expenditures can be an important and significant portion of the total costs of the company. Therefore, control of marketing expenditures is very important for the company, which plays an important part in the success of the company. In order to adjust to market conditions and consumer needs, marketing efforts and expenditures should be directed. Marketing expenditures therefore is expected to have a positive effect on the

profitability of the company. In case of the lack of marketing expenditures, the profitability, value and business continuity are expected to be adversely affected. This study shows the main question: How does marketing efforts influence firm financial performance in term of it profitability and its market value?

Marketing efforts - financial performance relationship, has not been studied enough in Turkey, marketing research were examined mostly one-dimensional. In this research, financial performance is measured in term of market value of the firm and profitability. In this context, this study is expected to make an important contribution to the literature.

D. Significance of the Study

Today companies operate in a rapidly changing and competitive environment. Businesses must adapt to the environment conditions to increase their profitability and sustainability. Marketing efforts may play a very important role in this context. The main purpose of this study is to study how marketing efforts expenditures can influences the firm financial performance. Because nowadays we are living in a world where marketing is one of the important things a firm or any business can do because marketing not only increases brand awareness but also can increase sales, grow companies and it is important because it makes it possible for companies to maintain long and constant relations with their public. Many companies tend to spend less on marketing, thinking that they do not save by expenditure. However, they are missing a huge amount of business by not expending on marketing. The aim of this study is to assess whether or not this relationship is positive between the marketing efforts and the firm's financial performance.

E. Organization of the Study

This thesis is made up of five chapters that examine the impact of marketing efforts on firm performance. The thesis has detailed structure as follows:

- The first chapter is introduction. Introduces the problem, highlights the problem statement, purpose and importance of the study.
- The second chapter consists of a literature review, which examines the effects and relationships of the marketing efforts on firm performance.

- The third chapter consists of methodology that focuses on data collection descriptions, model variables measurements and regression.
- The fourth chapter discusses empirical results on the effects of marketing efforts on firm performance and summarizes main findings.
- Finally, the fifth and final chapter is the conclusion and provides a brief summary along with the study's recommendations and limitations.

The following Figure 1 shows the plan of the thesis:

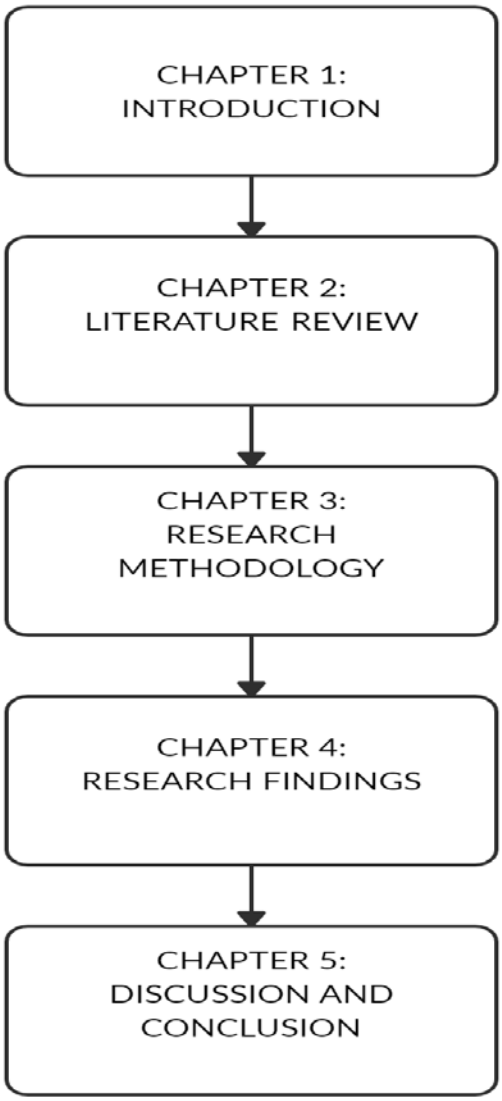

Figure 1 Plan of the Thesis

II. LITERATURE REVIEW

A. Marketing

1. Definition of Marketing and Marketing Management

In different ways, several authors have defined marketing. According to the Board of Directors of American Marketing Association (AMA, 2017), defines marketing as a planning and execution process for designing, pricing, promoting and distributing ideas, goods and services that meet individual and organizational goals.

Marketing is a social process by which people and groups achieve what they need and want through the creation, offer and freely exchange of goods and services (Kotler & Keller, 2006, p. 6).

Marketing also defined as a company's activities that promote the purchase or sale of a product or service. Marketing includes advertising, sales, and product delivery to consumers or other companies. In some companies, marketing is done by affiliates on behalf of a company. (Twin, 2020).

In addition, marketing defined as the way companies create value for their customers and create strong customer relationships to gain value in return from their customers (Kotler and Armstrong, 2016, p. 29).

Schiffman and Kanuk (1994), discuss the marketing concept that companies use to carry out their marketing strategy, which they insist is about a company that accurately identifies the needs and desires of the specific target markets and delivers better than competition the desired satisfactions. They also pointed out that marketers should focus on needs and desires that were not served before rather than selling what has been produced.

Marketing is an area that involves all the activities that firms put forward to promote the sales of their goods and services to new customers. Ensuring potential or previous customers meet other customers in person or over the phone is also part of business development services, and may include thank you emails, playing golf

with prospects, promptly responding to call and emails, and meeting them for coffee or food, etc. Marketing focuses on matching the products and services to customers and needs. Offering the appropriate products to meet the needs of customer's results in a profitable business model.

The Four “P”s of marketing (Marketing Mix); are “Product”, “Price”, “Place” and “Promotion”. Collectively, the Four “P”s make up the essential mix that a firm needs to market a product or service. Marketing mix was defined as the series of controllable tactical marketing instruments – product, price, place and promotion – that the company combines to provide the response they want to achieve on the target market (Armstrong & Kotler, 2007, p. 50).

Knowing a target market in the business world is very important to marketers because it gives you an idea as to what you want. However, it can keep you from your objectives if you don't. In 1960, Jerome McCarthy developed the concept of marketing 4ps. The 4Ps model offers different options for organizations to offer their products or services to the market (Farooq, 2018). According to Farooq (2018), these four Ps are:

- Product identification, selection and development,
- Price establishment,
- The channel selection to reach the customer's place, and
- Developing and applying a promotional strategy.

As the economy grew and more service-based businesses began to grow, Booms and Bitner in 1981 updated the 4Ps of the Marketing Mix. The 7Ps model was the result of the update (Singh, 2018). According to Singh (2018), the new 3Ps are people, processes and physical evidence:

- People: who contact customers in order to deliver the product
- Process: the steps required to provide the service to the customer are the processes
- Physical evidence: a combination of environment and branding where a service representative provides the service to a client

According to Philip Kotler (1997, p. 9), "Marketing management means the analyzes, planning, implementation and monitoring of programs designed to achieve

the organizational targets of desired exchanges with target markets. It relies heavily on the organization that provides information and motivation on the market in terms of target market requirements and desires, and on efficient pricing, communication and distribution".

Marketing management is a business process for managing marketing activities at different management levels in the profit and non-profit sectors. The decisions of the marketing management are based on strong marketing knowledge and a clear understanding and implementation of monitoring and management techniques.

Marketing management fully describes the level of market management required. Marketing management is designed to identify profitable opportunities within the market and develop strategies to profitably exploit these opportunities. The marketing program must be put in place and the effectiveness of the marketing strategy must be continually evaluated. In addition, the system must be thoroughly managed in order to assure that proper marketing policies and procedures are being used. When it comes to marketing, the marketing system is supervised by the management team.

Marketing management also defined a branch of business that deals with the practical application and management of marketing techniques, strategies and marketing resources and activities of a firm (Dongardive, 2013).

In summary, marketing management can be defined as the process by which marketing programs are managed, in order to achieve organizational objectives. It involves planning and implementing marketing programs or campaigns and monitoring them.

2. Important of Marketing Management for Companies

The marketing management has become important for successful competitiveness in order to reduce costs and increase profits, and for developing distribution strategies. Marketing is very useful for goods transfer and exchange. Any business owner who wants to succeed in a business needs an effective marketing strategy and management to enable this strategy to grow and reach the right targets. The marketing team is also the backbone of business success for any company, which is why marketing management is so important for a business.

The following are other factors, demonstrate the importance of market management ("The importance of marketing management for a business". 2018):

- *"It can help to introduce new products:*

  In order for a company to succeed, it must make sure that potential customers or partners are familiar with the product or service it provides. If potential customers and partners do not know your business, marketing management can help you create brand awareness that increases customers and potential partners' visibility to your business. It can help you understand customer needs, enabling you to introduce new products with a successful campaign that results in positive results. It also offers you the right instruments.
- *Marketing management helps business decisions:*

  As a company owner, you have daily decisions that can be hard to make. Your marketing team offers a wealth of useful insights to help you make some of these decisions.

  Deciding what, when, how and for whom your products or services can be responded to by reading the data collected by your marketing team and by making your decision. Your marketing manager can provide insights into your brand's customer behavior, helping you decide what to do next with which products your brand still sells or which services can be improved.
- *Your company reputation will remain safe:*

  The major marketing operations include the acquisition, sale, finance, transport, storage, risk management and reputation of the company. Often a strong reputation lies in a company's success. The image of the company is very significant! It is the company's soul. Only marketing strategies can help any company build a reputation by identifying the best opportunities and the threats to be prevented.
- *New Idea Source:*

  Marketing is a dynamic concept that distinguishes a company from competition by recognizing and supporting a niche in your industry. Your marketing team is a hub for creativity. Their ideas fuel your marketing strategies and campaigns. The same fatigued advertising method disadvantages your business, but a marketing management team can help to ease this problem by putting new, creative ideas in the forefront. These ideas raise your business

beyond your competition" (The importance of marketing management for a business. 2018).

3. Effective Marketing Strategies and its Role on Firm Performance

Successful companies are not only marked by well-designed marketing strategies to outline where, when and how the enterprise competes, but also by its ability to implement selected options for marketing strategy (Day & Wensley 1988; Varadarajan 2010). Adequate and effectively implemented marketing strategies are necessary to guide the deployment of resources through the marketing capabilities of the company in order to meet desired objectives (Black & Boal 1994).

A marketing strategy refers to the general plan of the company, which aims at reaching potential consumers and converting them into customers of its products or services. The company's value proposition, key brand messaging, target market data, customer demographics, and strategic planning are inspiring factors for a marketing strategy (Barone, 2020).

Marketing strategy is a marketing logic that is aimed at creating value for its customers and achieving profitable customers. The company must choose which customers they can serve and how they can be served. Four steps are required (Kotler and Armstrong, 2016, p. 75):

- Market segmentation is a technique for obtaining beneficial results in a competitive environment by separating it into groups of buyers with different needs. An effective market segment can be used by marketers as a proxy for predicting consumer buying behavior and so shall be promoted intensively in their respective market. A market segment is made up of people who react in a certain way to a particular kind of marketing effort.
- Market targeting: is the process of analyzing each sector of markets and reducing it into desirable range.
- Positioning: is designed to ensure that a product has a clear, distinctive and desirable place in the mind of consumers in relation to competing products.
- Differentiation: is a methodology that brings better product offer to obtain distinctive customer's value.

Marketing strategy need to not only take external and internal factors into consideration, but should also be dynamically funded so as to have a better attractive product and efficient distribution channels and result in a better and trained sales team that supports the company effectively. Strong marketing strategies for industries can benefit company long-term profit outlook and brand reputation. Capability and performance are considered at the same time. (Barney, 1986; Peteraf, 1993; Makadok, 2001).

According to Kotler and Armstrong (2016, p. 34), There are five different concepts used by companies to implement their marketing strategies .

- The concept of production: illustrates that consumers will favor available products that are very affordable Therefore, the organization should maximize the efficiency of production and distribution of those products.
- The concept of the product: the idea that consumers favor products with the highest quality, efficiency and features and that thus their efforts should be devoted to continual improvements of the product.
- The concept of selling: the idea that consumers do not buy enough of the product of the company unless it does a large sales and promotional effort.
- The concept of marketing: the idea that the achievement of organizational goals requires a better knowledge of needs and desires of target markets and a better response from competitors.
- The concept of social marketing is the idea that companies should take consumers' requirements, long-term consumer interests, society's needs, and the long-term interests of society into consideration with their marketing decisions. Companies should provide some kind of value (perhaps by making society better off somehow) in a way that ensures the wellbeing of consumers and society.

The development of strategic marketing practices ensures that all marketing programs support the goals and objectives of the company and convey a consistent message to customers. It increases business efficiency in all sectors, contributes to growth in revenue and in market share and reduces expenses, all of which result in greater profitability. As a strategic marketing process, it is important to consider issues of a long-term view of the company, such as: the needs (or problems) that make

the clients consider buying from the company, the improvements that the company can enable (or improve on) the personal or business life of the customer. Furthermore, the success of the company will lie in its ability to satisfy those client needs or problems, the improvement enhancements that the company can provide, and the extent to which it can provide the enhancements that satisfy the needs of the client.

In order to establish distinctive market capability, the assessment of internal strength is necessary. Resource Based Value (RBV) is a concept that determines the need for an internal strength assessment for the company in order to meet market opportunities.

According to definition provided by Amit and Schoemaker (1993), resources "*Are a stock of available factors owned or controlled by the enterprise*". Barney (1986) argues that strategic marketing researchers use Resource-Based View (RBV) in order to explain why there are performance differences between companies within the same industry. The RBV theory suggests that each company in their unique resources and capabilities are more effective than the other companies (Song, Benedetto & Nason, 2007).

Resources are the assets that are controlled by the company and which provide input to the organizational capabilities (Miller & Shamsie 1996). Resources thus provide "raw materials" for the business and marketing strategies of companies (Black & Boal 1994). From a marketing point of view, marketing resources can be defined as those assets available to the marketer and other members of the organization. These assets are used to assist in the ability to transform or create output goods that will contribute to revenue and profits for the firm.

Market-oriented strategies have the benefit of accepting market change and creating new opportunities to achieve competitive advantages. In order to achieve superior performance, the firm identifies market gaps or demands that have not been satisfied by their distinctive abilities. With marketing capability, a strong brand image allows companies to produce higher performance (Ortega & Villaverde, 2008).

According to Wind (2005), the strategic marketing concept also sets out the possibility for departments involved in developing their own strategies before developing a strategy and then all of those strategies to be analyzed in their entirety for the development of an effective and positive strategy for the long term. Marketing is

financed in this context based on the strategy of marketing mix techniques for developing and generating new business opportunities.

In addition, the cost of the diversification strategies and their competitive advantage for an organization have been studied in the strategic marketing literature on a wide scale (Chakrabarti, Singh and Mahmood, 2007; Palich, Cradinal and Millier, 2000; Ramanujam & Varadarajan, 1989).

Rehman, Shaikh & Sattar's (2015) study focused on knowing how to use the marketing strategy and how the company's performance is affected, descriptive and econometric overall results indicated that companies are able to achieve financial performance through an appropriate marketing strategy. The research findings contributed to the theories of marketing by using the marketing costs as a variable to understand the financial performance of a business.

4. Managing Marketing Efforts

Besides good at marketing, a company must also create management to take care of marketing as well. The overall control of marketing plans requires the implementation of four marketing management functions, and these functions are (Kong, 2012):

- Analysis,
- Planning,
- Implementation,
- Control.

The following Figure 2 shows the process of marketing managements (Kotler & Armstrong, 2012, p.53):

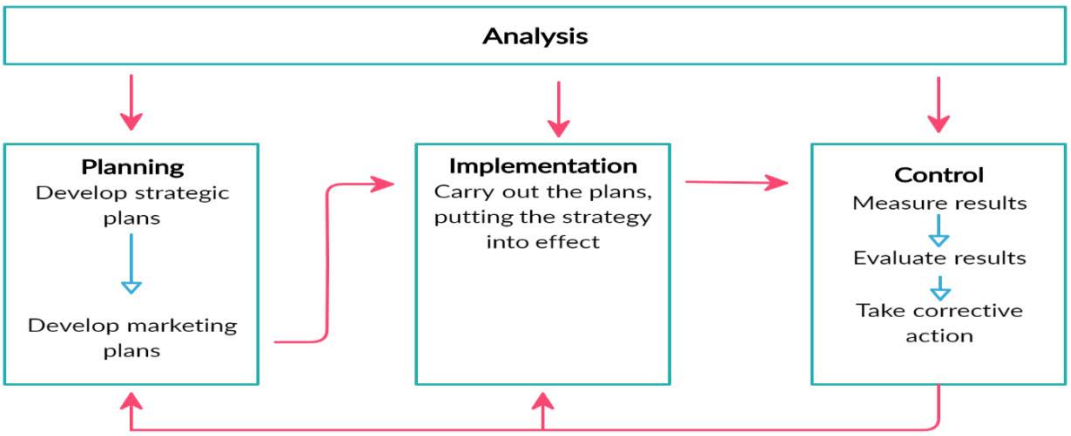

Figure 2 Managing Marketing: Analysis, Planning, Implementation and Control

Source: (Kotler & Armstrong, 2012, p.53)

- **Marketing Analysis**

  The focus of marketing function management is the comprehensive assessment of the company and its situation. To find attractive opportunity and avoid threats to the environment, the company must analyze its markets and marketing environment. A SWOT analysis shall be carried out by the marketer to assess the general strengths, weaknesses, opportunities and threats of the company. "*Strengths involve internal skills, resources, and factors of positive circumstance that could help the company meet its customers and achieve its goals. Weaknesses involve internal constraints and causes of adverse circumstances that could interfere with the success of the organization. Opportunities are favorable variables or developments in the external environment that the company can benefit from. Threats are adverse external variables or trends which can pose performance challenges*" (Kotler & Armstrong, 2012, p.53-4). The following Figure 3 shows the SWOT analysis (Kotler & Armstrong, 2012, p.54):

Figure 3 SWOT Analysis: Strengths (S), Weaknesses (W), Opportunities (O) and Threats (T).

Source: (Kotler & Armstrong, 2012, p.54)

- **Marketing Planning**

  Marketing planning includes selecting a defined set of marketing strategies designed to help the company reach its strategic overall goals. Each business unit, product and brand needs to have an original marketing plan that is detailed. Based upon the book, the author provides a brief overview of what a marketing plan looks like and what it contains. Marketing strategies for the company include deciding on the various marketing actions that will help achieve their long-term strategic goals. For each company, each product, each brand, a detailed map of marketing efforts is needed. A marketing plan must set out the marketing strategy and the action program with information on the marketing support budget (Kotler & Armstrong, 2012, p.54). A marketing strategy consists of specific marketing strategies such as market objectives, marketing mix, marketing spending levels and marketing's effective positioning.

- **Marketing Implementation**

Marketing implementation is the process by which the marketing strategy is carried out through the creation and implementation of specific measures to achieve the marketing goals of the firm (Ferrell & Hartline, 2007, p.311). Marketing implementation also defined as the process by which marketing plans are turned into marketing measures to achieve strategic marketing aims (Kotler & Armstrong, 2012, p.54). Implementation involves month-to month activities on a daily basis that effectively implement the marketing plan. In an increasingly interconnected world, people in the marketing system at all levels have to work together to develop marketing policies and plans. Successful marketing implementation depends on how the company combines staff, organizational structure, decision-making and reward systems and corporate culture to form a cohesive strategy. Finally, in order to be successfully implemented, the marketing strands of the company must illuminate the system of shared values and beliefs of the organization with its corporate culture.

- **Marketing Control**

Marketing control consists of the process of monitoring and adjusting the proposed plans as required. Measuring, evaluating and monitoring are part of control. Resources are scarce and costly, so marketing plans need to be monitored. Control requires the establishment of standards. The marketing manager compares actual progress to standards. Corrective measures are taken (if any). If corrective actions are taken, an inquiry must also be carried out to establish precisely why the difference has arisen (Friesner, 2014).

Marketing control includes evaluating and taking corrective action in order to ensure the achievable of objectives, the results of marketing strategies and plans. Operational control involves continuous performance control and corrective action if necessary against the annual plan (Kotler & Armstrong, 2012: p.57). The purpose of the company is to ensure that its annual plan fulfills sales, profits and other goals. Strategic control involves examining if the

basic strategies of the company are well aligned with its opportunities. Marketing managers have to make sure their marketing dollars are spent well. Marketers are developing better marketing investment return measures (Marketing ROI) – the net return on marketing investment divided by marketing costs. With regards to the company's ability to assess the company's marketing performance, such as brand awareness, sales or market share, a company can assess how high or low its return on marketing is.

In summary marketing management involves:

1. Establishing marketing objectives and goals,
2. Development of a marketing plan,
3. Organizing a marketing function,
4. Putting the Marketing Plan in Action
5. Controlling the marketing program.

5. Measurements of Marketing Effectiveness

Measuring market performance is a challenge for large and small businesses. Indeed, it is not unusual for an entrepreneur to not know what their marketing return really is.

Effectiveness of marketing can be defined as improving the process by which marketers enter the market to optimize the marketing resources, they have spent on in order to obtain even better results both for the short and long-term strategic objectives of marketing. The company's improved visibility to the potential range of market efficiency not only improves their own chances of choosing a new product to introduce but also means they have the best resource to offer the line of products they are selling. (Milichovsky & Simberova, 2015). The effectiveness of marketing is measured by how well a company increases its revenue and reduces the cost of customer acquisition. It just blindly goes through the marketing motions for any company not knowing marketing ROI and its effectiveness in marketing. Companies can understand the effectiveness of their marketing activities and make adjustments as needed to achieve their goals (Fitzpatrick, 2018).

Here are the main reasons why the effectiveness of marketing is extremely important for companies:

- For ROI analysis: Do they have to double or completely reduce their investments?
- For future business decisions: Is their marketing sufficiently successful to launch a new location or extend to other product lines?
- For SWOT analysis, what are their marketing plans' strengths, weaknesses, opportunities and threats?

Measuring marketing effectiveness depends on a number of factors; measurements of marketing effectiveness for any company may also change over time. Their marketing campaigns and marketing channels really depend upon this. From there, they will be able to determine the relevant KPIs that are needed to be tracked. The numbers of their KPIs tell them how effective their marketing is and how effective their ROI looks. The following KPIs will provide a solid measure of how effective their marketing efforts are (Fitzpatrick, 2018).

- Customer Acquisition Cost (CAC)

  Customer acquisition costs are a number that really matters. If their costs are too high to acquire a new client, profitability and long-term success will become almost impossible. The cost of acquiring a new customer shall include the advertising, marketing and sales expenses of any company divided by it sales number in a given period.

- Customer Lifetime Value (CLV)

  Customer lifetime value (CLV) tells us how valuable a new customer is for our business, telling us the amount that we can spend in the acquisition of a new customer.

  Companies also have to track more detailed metrics on specific marketing campaigns in order to know how much their marketing is efficient. This metrics are (Fitzpatrick, 2018):

1. Return on Marketing Investment (ROMI)

   Return on investment is the reason that a company has great success or that a company declares bankruptcy. The gain or loss of an investment is measured

relative to the amount of money invested. An effective marketing campaign shows high investment returns or at least higher than the amount invested.

2. Cost per Sale

   Cost per Sale measures each sale cost based on your marketing expenditure. This is a great way to compare several marketing campaigns. It can also give you a good idea of the quality of the leads that a particular campaign generates. Higher lead quality will lead to greater sales and decrease your sales cost.

3. Cost per Lead

   Cost per lead is the same as the Cost per sale above, but it concentrates entirely on the generated campaign leads.

4. Engagement

   For every company shall ask this question "*Is our marketing effort engaged by people?*". The involvement of the social media marketing and content marketing is very relevant. If you track your engagement, it will tell you whether people respond to the information you publish and whether you have to continue to do more or go in another way. Tracking engagement is useful for companies, which are trying to build brand awareness.

B. Firm Performance

1. Financial Performance and Measurement Methods

The financial performance is a major issue for any business in the long run and most businesses use financial data to measure their success. This is a crucial question to business managers to ask themselves if they have indeed done everything they intended to do.

The degree to which the firm is successful or unsuccessful can be seen as firm performance. In that respect, the achievement of specific pre-determined goals can evaluate firm success. These goals constitute a firm's success or hence the performance criteria.

Performance measurement is budget or goal monitoring against real results to determine how well the company and its employees' function in their entirety and as individuals. Measures of performance may be linked to short-term (e.g. cost control) or long-term (e.g. customer satisfaction).

Several scholars have defined the concept of financial performance. Based on Fatihudin and Mochklas (2018) financial performance can be measured by the ability of the firm to manage its own resources and to control them. The balance sheet, cash flow, profit and loss and capital change are all important aspects of decision making among managers. Various resources are used to evaluate the financial strength of economy, including one's capital adequacy, liquidity, solvency, and profitability.

Financial performance is a subjective assessment of the way in which companies can utilize their assets and generate revenue from the main mode of business. The term also serves as a general measure of a company's financial health over a specific period of time (Kenton, 2020).

Performance measurement provides an opportunity for an organization to evaluate progress towards its planned and objectives, detect strengths and faults and to support efforts to improve efficiency for the future (Yasin & Gomes, 2010).

In all economic decision-making on public and private enterprises, financial performance measurement has been discussed as a major priority in the identification of difficult locations and areas. The measurement of financial performance is based on a wide range of decisions such as executive compensation, stock prices, stock risks and investment decisions. One of the managers' main tasks is making decisions, they should decide to plan, organize and manage. These decisions should be based on the performance criteria and indicators of the operations of the organization.

It is essential practice for any company or business to measure financial performance. The most important reason why some companies cannot grow is because they are unable to properly plan their finances. Therefore, companies are recommended to review their financial success and determine the feasibility of their business goals. Thus, effective plans can be implemented for the development and expansion of companies.

Nearly every company systematically and occasionally measures its performance. Performance constitutes a qualitative or quantitative assessment of all efforts

and planned results to achieve the objectives (Akman, Özkan, & Eriş, 2008, p.94). It is important for any company to have clarity regarding the aims and objectives of its business before it begins to consider the numbers and types of measurements it should take to ensure that appropriate measures are identified. In order to identify all trends, strengths, weaknesses and opportunities, it is important to take action to monitor a wide range of performance indicators in their business (Davidson Institute, 2016). These measures are often referred to as Key Performance Indicators (KPI's). KPIs are a series of measures that focus on those aspects of business performance, which are critical for a business' current and future success. Quantifiable measures, whether financial or non-financial, can be expressed (Davidson Institute, 2016).

- Financial Measurements

  In the profit and loss statement or balance sheet, financial measures are normally taken or related to the account charts such as inventories or cash on company hands.

- Non-Financial Measurements

  Any quantitative measure for corporate success and which are not in monetary units are non-financial measures. Customer / employee satisfaction measures, product quality, market share and changes in consumer confidence are common examples.

A variety of different measurements and ratios can be and have been used as a method for calculating and assessing firm financial performance. Different measurements and ratios that have a relationship with firm value, market value and profitability.

a. Firm Value Measurements

Firm Value (FE) is an economic concept that reflects the worth of a business, also called Enterprise Value (EV). It is the value a firm deserves at a specific date. In theory, it is an amount that must be paid to purchase / take over a corporation. The value of a company can be calculated based on either book value or market value like an asset. EV is a more complete replacement for market capitalization, and more than one approach can be used to calculate (Borad, 2018).

Evaluation of a firm is a key phase of investment policies that venture capitalists have put in place. This is important because the company's value gives entrepreneurs and venture capitalists the opportunity to negotiate the amount of money the entrepreneur needs and the number of shares the shareholders are able to give up for venture capitalist. If the subject matter for evaluation is a high-risk, high-tech company with no historic data and low economic and financial performance, the importance of the analysis of enterprise value can be evident (Caselli, 2010).

As mentioned above, the enterprise value (EV) or firm value can be calculated by following more than one approach (Borad, 2018):

EV = market value of common equity + market value of preferred equity + market value of debt + minority interest – cash and investments. **(2.1)**

A firm's value will be determined by taking into account its creditors' liabilities and its shareholders' equity. One way a company measures its overall value is by adding the value of its debt, equity and minority interest. Cash equivalents should be deducted from the other accounts to gain net value.

One of the more important explanations as to why enterprise value (EVA) is better than market capitalization (market cap) is that it is more inclusive. Along with equity, a company's debt value and short term and long-term accounts affect its valuation. When the buyer takes over the firm, it is important to restructure the firm's debt and expenses and net it from cash and cash equivalents. (Borad, 2018).

The present value of firm's future operating free cash flows (OFCF) is an additional approach to calculating the firm's value. The idea is to compare two similar firms. Similar in same size, the same industry. The firm that is better than the other with its present value of future operating cash flows is more likely to gain greater value from investors. The OFCF formula (2.2) is as follows (Borad, 2018):

OFCF = EBIT (1-T) + Depreciation – CAPEX – working capital – any other assets (2.2)

Where:

EBIT = earnings before interest and taxes,

T = tax rate

CAPEX = capital expenditure

In this way, the calculation of OFCF gives a better image of a firm's capacity to generate cash. Once OFCF is calculated, the actual value of OFCF can be obtained at the appropriate discount rate. Based on the sum of all current value of future cash flows, it is possible to decide whether to take over a firm or not.

b. Market Value Measurements

Market value (Which also known as "Open Market Valuation" or OMV) is the value that an asset will get when it's being sold on the market. Market value is also commonly used to determine the market capitalization of the publicly traded company. Market value indicates the value of a company's outstanding shares and is calculated by multiplying the current share price by the number of shares (Chen, 2020).

In addition, it can be defined, as an investment expectation of the future profits of a company. The market value of a company is a clear indicator of the expectations of the investors about their business prospects. The main purpose of market value extraction is to ensure a fair assessment of the valuation of the assets are fair.

The market value of a company can be calculated in several ways with a broad range of market value ratios available, with the most common being earnings per share, book value per share, and price-to-earnings ratio. Others include price / cash ratio, yield ratio of dividends, market value per share, Tobin’s Q and market -to- book ratio. Each of these indicators is used differently, but they provide a financial portrait of publicly traded firms when combined (Carlson, 2019). price-to-earnings ratio, book value per share, Tobin’s Q and market -to- book ratios are the four most common market ratios in stocks.

i. Price-Earnings Ratio

The P / E ratio is a common stock valuation tool, which is widely used. The price-earnings (P / E ratio) ratio is the ratio of value allocation for a company that measures its current share price in relative to the it's earning per share (Nicholson, 1960). In determining whether the share value accurately reflects the projected earn-

ings per share, analysts and investors review the P / E ratios of a company. The following formula (2.3) can be used to calculate the P / E ratio (Shen, 2000):

$$Price\ to\ Earning\ Ratio\ (P/E)\ = \frac{\text{Market Price per Share}}{\text{Earning per Share}} \quad \textbf{(2.3)}$$

Compared to ratios of similar companies in the same business sector, this ratio can produce significant results. A high P / E ratio could lead to the stock of a company being over-valued or investors expect high rates of growth in the future, while the low P / E ratio suggests that future earnings will grow lower (Hayes, 2020a).

ii. Market-to-Book Ratio

Market to book ratio, also called the price to book ratio, is a value ratio that is used in comparing the company market value "Market Capitalization" with its book value "Equity of Shareholders", by the investment consultants, fund managers and investors (Marangu & Jagongo, 2014). The current market value of all the company stock is what the share price is. Book value is the remaining amount when company sells off its assets and pays all its obligations. In sum, Book value represents the amount of assets owned by the firm, excluding mortgage. This ratio is calculated to show how the earnings of a company are compared to the value of the assets that it owns. The market value to book value ratio is calculated using this formula. (2.4) (Hayes, 2020b):

$$Market\ to\ Book\ Ration(M/B)\ = \frac{\text{Market Price per Share}}{\text{Book Value per Share}}$$

(2.4)

Where:

Book Value per Share = (total assets - total liabilities) / number of shares outstanding.

When the market value -to- book value ratio of value is less than one, the stock is inexpensive and the purchase of stock can produce a profitable return. However, if the ratio is higher than one, the stock is seen as costly and better to sell it. The stock might be undervalued with a lower P / B ratio. Nevertheless, it could also mean that something with the company is fundamentally wrong (Hayes, 2020b).

iii. Tobin's Q

The market-based ratio, first established by Nobel laureate James Tobin in 1969, represents the value of a company as a whole, in contrast to many accounting measures. Tobin's Q ratio is widely utilized as a proxy for future investment opportunities in financial literature. The Q ratio is defined as a company's market value divided by a company's assets replacement cost (Fu, Singhal & Parkash, 2016). Tobin's Q is a good measure to assess company performance as it reflects the company's past, present and future performance. The idea behind such a ratio lies in creating greater economic value for a given amount of assets by well-performing firms (Dezsö & Ross, 2012). James Tobin assumed that all stock-market's companies should have a combined market value equal to their replacement cost. Although Tobin is frequently referred to as its creator, this ratio was first proposed by economist Nicholas Kaldor in 1966 in an academic publication. Sometimes in earlier texts, the ratio is called "Kaldor's v." (Hayes, 2019).

For the calculation of Tobin's Q, there are different methods. However, the most convenient method is the Chung and Pruitt (1994) calculation method of Tobin's Q. This opinion is based on the fact that the cost of replacement assets in Turkey is very difficult to calculate (Canbaş et al., 2005). Given that Chung and Pruitt consider the sum of the book value of all assets as their alternative measure, the ratio can be easily calculated. Approximate Tobin's Q is determined using below formula (2.5) (Chung & Pruitt, 1994):

$$Approximate\ q\ = \frac{\text{MVE+PS+DEBT}}{\text{TA}}$$

(2.5)

Where:

MVE = (Closing price of share at the end of the financial year) * (Number of common stock shares outstanding)

PS = Outstanding preferred stock of the firm

DEBT = (Current liabilities - Current assets) + (Book value of inventories) + (Long term debt), and

TA = Book value of total assets

If the ratio of Tobin's Q is less than one, then the marginal return on investment is less than the cost of capital. The company has a highly competitive advantage if he ratio of Tobin's Q more than one. Equity investors prefer these companies. The Tobin's Q ratio informs investors about the growth potential of the company. The investment opportunity of a company is equal to its cost of capital, with a ratio equal to one (Canbaş et al., 2005).

According to Fu, Singhal and Parkash (2016), in their research, they have been tried to find if there is a direct relationship between the Tobin's q ratio and future firm's performance to be a valid proxy for the firm's future investment opportunities. By studying the relationship between the ratio of Tobin's Q and performance by utilizing a sample of companies registered in the U.S. stock market, researchers found that this metric showed a positive link with firm's operating earnings going forward.

iv. Book Value per Share

Book value per share is a useful tool to express the book value of a share by the amount of money allocated to it for an account. A company's book value tells us what it owns and owes. It gives us information about asset values and debt levels. It is not what people pay for stocks and is more meaningful than market share ratio (Hayes, 2020c). If the company has dissolved, then its book value in USD per common shares will be its value after liabilities have been paid. The book value per share is derived from the shareholders' equity statement available in a company's annual report. It can be calculated as set out below (2.6):

$$Book\ Value\ per\ Share\ (BVPS) = \frac{\text{Total Shareholder Equity} - \text{Preferred Equity}}{\text{Total Outstanding Shares}}$$

(2.6)

The common equity's book value in the numerator reflects an original revenue from the issuance of common equity, which is increased by earnings or decreased by losses, and reduced by the payment of dividends. If a BVPS company exceeds its market value per share, its stock is considered to be quite undervalued (Hayes, 2020c).

c. Profitability Measurements

Profit is the goal any company wants to achieve; profit is frequently used to measure the performance of the company. To investors, profit-making businesses mean that the business will boost investors' welfare.

The profitability of businesses is an important area regarding the financial situation that needs to be reviewed. A profitable company can generate revenue exceeding all expenses. Businesses that focus on growth tend to generate higher profits. It is important to know how to analyze the profitability ratios of your business.

Profitability ratios are the first measurement of the company performance to be taken by stakeholders. In reality, the most frequently mentioned performance measures are Return on Assets (ROA) and Return on Equity (ROE) (Peterson and Fabozzi, 2006, p. 203). Measure of profitability ratios allow analysts to assess profits of the company in relation to the sales level, a certain asset level or investment of the owners. Because the market places great importance on revenues, owners, creditors , investors and management and shareholders pay close attention to boost profit (Ichsani & Surhardi, 2015). The profitability refers to the ability of the company to produce profits as a return on its invested money; the profitability ratios are referring not only to the quality of management but also to the competitive situation of the company. It shows the company's success or failure. The ratios of profitability include:

i. Return on Assets

Return on an asset (ROA) is a metric used to compare a company's profitability, in comparison to its total value of assets. A Return on Assets tells investors how efficient a company's management is by gauging its ability to generate profits in an amount that's proportional to the company's assets. The most straightforward way to determine ROA is by dividing the reported net income by total assets for a period of time (2.7). Calculate the average starting and ending asset values for the same time period to get total assets (Mcclure, 2020).

$$Return\ on\ Assets\ (ROA)\ = \frac{\text{Net income after taxes}}{\text{Total Assets}} \quad \textbf{(2.7)}$$

According to Lestari and Sugiharto (2007), the good rate return for the Return on Assets (ROA) if it more than 2%. A high ROA is always desirable and is essential in terms of performance measurement because it demonstrates that the company can use available assets for added value. The higher the ROA factor, the more likely it is that the assets of the company are successful in generating profits (Hassan, 2019). In this study, ROA is preferred as proxy of the firm profitability.

ii. Return on Equity

Return on Equity (ROE) is one of the most significant metrics. ROE indicates how much profit a firm gained relative to the overall shareholders ' equity reported on the balance sheet. It is an accounting measure representing a company's ability to make a return on their capital invested (Nuhu, 2014). According to Mardiyanto (2009, p.196) Return on Equity (ROE) is the rate used to measure the company's achievement in generating profit for shareholders. According to Monea (2009), this ratio is determined by dividing the net profit after tax derived from the company's income statement by equity value derived from balance sheet. Return on Equity is calculated as follows (2.8):

$$Return\ on\ Equity\ (ROE)\ = \frac{\text{Net Profit After Taxes}}{\text{Shareholder's Equity}}$$

(2.8)

Return on equity compares the efficiency of using the capital of the shareholder to generate revenue and profits between different companies. The higher the return on equity, the more efficient the operation of the company is to make use of the funds of the shareholders. A high ROE company is more beneficial to investors than a low ROE company is because investors are more likely to obtain a high return on investment (Chong, 2018). A company which over time is able to produce a high and consistent ROE is like a money-making machine. The bigger the ROE, the greater the effect of composition.

iii. Net Profit Margin

One of the main indicators of the financial health of a company is its net profit margin. In following up and decreasing its net income margin, a company is able to evaluate whether current practices works. The net profit margin, or Net Margin, refers to the extent to which a company generates net income with its total sales. If the profit margin increases, the business operates in a more efficient manner because it should convert its sales into profit. (Wilkinson, 2013). Also it defined as a percentage or decimal value that reflects the total revenue of a company after all costs and expenses have been paid (Rehayem, 2019). The following formula (2.9) can be used to express the profit margin (Moyer, McGuigan, & Rao, 2007):

$$Net\ Profit\ Margin\ = \frac{\text{Net Profit After Taxes}}{\text{Net Sales}}$$

(2.9)

The overall success of the company is measured by its net profit margin. The high net profit margin suggests that the company is keeping its price in check by controlling costs properly. Comparing the results from two companies within the same industry is helpful in determining which company provides the best results. It also allows investors to evaluate whether the operation of a company is producing enough profit from its sales and whether the overall cost of the operation and the overall operations are contained.

iv. Earnings per Share

Earnings per share (EPS) are a widely monitored measure of performance that shows the financial health of a company. EPS is the portion of a company's net income that would be given to each outstanding share if all profits were settled through payback to shareholders. EPS is usually used by analysts and traders to measure a company's financial strength and is often considered one of the major variables for determining the value of a stock (Folger, 2020). According to Kashmir and Abdul Rahman (2012), EPS is the ratio used to measure the management's success in achieving shareholder profit. EPS is calculated as follows (2.10):

$$Earning\ Per\ Share\ (EPS) = \frac{\text{Net Income} - \text{Preferred Dividends}}{\text{Average Outstanding Common Shares}}$$

(2.10)

An increased Earnings Per Share (EPS) means that the company can pay a higher dividend to its shareholders. This can give a company the possible to increase dividends over time by growing earnings. Investors base their decision of investing on the comparison of the EPS that two businesses have with each other in the same industry. Tracking the growth in EPS could provide a greater insight on a company's profitability in the past and future (Folger, 2020).

C. Previous Studies on Marketing Efforts and Firm Value

Several studies have been carried out in different countries to assess the impact of marketing efforts on company performance. However, the relationship between marketing efforts and firm value as a tool to assess the firm financial performance hasn't been discussed widely.

Jose, Nichols and Stevens (1986) investigates the relationship between investment in diversification, promotion and R&D, and the value of the firm. A number of improvements over the methodology and data have been undertaken in other studies**,** including use of relevant Q variables, a reduced regression approach and data from the Business Line of the Federal Trade commission. They argued that the

high level of marketing expenses and R&D intensity would reduce a firm's value statistically significantly by analyzing the relationships between the selected variables.

Doğan and Mecek (2015) study investigated the effects of marketing expenses in respect of firm value between 2009 and 2012 by 120 companies in the BIST Manufacturing Industry Index and found the link between marketing costs and firm value to be positive and statistically significant.

Coşkun et al. (2010) have examined the effect on the long-term and short-term firm value of the marketing activities of 99 companies operating in the Istanbul Stock Exchange (IMKB) between 1996 and 2005. Based on the research findings, the increase of marketing expenditure increased the firm value to a certain extent but decreased the firm value after that point.

On the other hand, Anindita, Prashant and Anantha's (2008) study examined the effect of marketing expenditures on firm value on companies operating in India. Data of their study were obtained by CMIE-Prowess "The Prowess database is made up of Indian companies" financial performance. This database provides information on all listed companies and a wider range of unlisted companies. The database is based on audited annual companies reports and information submitted by the "Department of Corporate Affairs". In the research, the data of 172 companies operating between 2000-2007 were used. Which they used "*Marketing Expenditures*" as independent variable, "*Firm Value*" as dependent variable measured by Tobin's Q as indicator of it. Multiple regression, ANOVA and correlation methods were used in empirical analysis. As a result of the study, they found a statistically insignificant relationship between marketing expenditures and firm value.

In addition, Srinivasan and Hanssens (2009) study aimed at integrating the existing knowledge about marketing's impact on the value of the firm. They framed the important marketing and firm's value research questions, and reviewed key marketing response metrics and relevant analytical models. During their study, they evaluated basic marketing and firm value relationships. They found that a negative relationship exists between the marketing costs of price promotions and the value of the firm because of their impact on the long-term profitability.

D. Previous Studies on Marketing Efforts and Firm Market Value

One of the main purposes of managers of companies is to maximize the shareholders' present value (Demir, 2005). Here it was stressed that the objective of businesses is to achieve high market value for company rather than simply profits or more through the sales of company. A number of studies were conducted to identify the relationship between marketing efforts and market value of the firms.

Hirschey and Weygandt (1985) study investigated the extent to which advertising and R&D have the long-lived benefits on the market value of firms by the size of market value effects. They concluded that advertising and R&D had a positive effect on the company's market value and suggested that those expenses should be funded and amortized instead of being treated as expensive incurred.

Ayriçay and Kiliç (2018) study examines the effect of marketing intensity on firm performance and the differentiation of this impact between food and metal industries. To this purpose, 462 observations of the annual data from the Stock Exchange Istanbul (BIST) 100 index between 2006 and 2015 on 21 food and 21 metal products, equipment and machinery companies have been used. As an indicator for company performance, the market-to-book ratio was used. The study analyzed models of panel data regression with the use of constant method of regression. The marketing intensity has a positive and statistically meaningful effect on the market-to - book ratio based on the results obtained. However, this effect is positive to some extent and negative afterwards. Marketing intensity differentiated in market-to-book ratios in the food and metal products, machinery and equipment sectors. The ratio of operating expenses to sales in the metal products, machines and equipment sector is shown to have a positive effect on the market-to - book ratio, which is higher than the food sector.

Akyüz and Berberoğlu (2016) examined the relationship between advertising expenditures and company market value, as well as the moderation of R&D expenditures in this relationship. Data for this study were derived from the consolidated financial statements for the years between 2007-2011 of 46 companies listed in the

Istanbul Stock Exchange relating to advertising and R&D costs. In this study, the method of panel data analysis is used. The analysis concluded that both advertising and R&D costs had a positive impact on the market value of companies. However, the moderate impact of research and development expenditure on the relation between advertising and market value was found negative.

Shah and Stark (2004) examined in their study covering the years between 1990-1998 on companies operating in the UK whether marketing costs have an impact on the future profits and market value of firms. The analysis showed that marketing expenditure has a significant impact on the market value and the company's future earnings.

Similar to other studies in the literature, Shah, Mirza and Abbas (2013), in their study, the effects of advertising on firm economic performance were examined using companies' "*Sales*," "*Profitability*" and "*Market Values*" as criteria for firm performance. A sample was selected from the listed companies in Pakistan from the consumer goods sector. They were using a pooled sample of Karachi Stock Exchange (KSE) consumer goods companies for 2004–2007. Data for their study were gathered from published annual reports, except for share price information collected from the business recorder, market value was expressed in their study as a linear function of earnings, book value and net dividends. This study has used the techniques of the ordinary least squares (OLS) in order to evaluate the coefficient of their regression equations for testing the impact of the independent variables on the dependent variables. They came to the conclusion, that advertising expenses has a consistently positive effect on the market value of firms.

In addition, Joshi and Hanssens (2004) study examines how advertising spending and market capitalizations have an impact and a long-term relationship. They have hypothesized that advertising can have a direct impact on valuation, and their empirical tests are based on 10 years of monthly data of several PC manufacturers. Multivariate time series methods have been used, which dissociate long-term effects and short-term effects, and the effect on firm assessment of direct and indirect publicity. Their results are categorized as customer response (impacts on sales and profit of advertising and R&D) and investor response (net impact on the company's value). The empirical results support their assumption that advertising expenditures have a positive and long-term effect on the market capitalization of firms

On the other hand, Konak's (2015) study examines the effect of marketing, distribution and selling expenses on the market value of firms and if there is a significant relationship between them. Data from his study such as the book and market information have been collected from the following sites: www.imkb.gov.tr, www.kap.gov.tr, and from the web sites of the 22 companies listed in the BIST Textile, Leather Index from 2009 to 2013. Which he used "*Change in Marketing Expenditures*" as independent variables and "*Tobins'q as a tool to examine the firm's market value*" as dependent variables. This study employed cross-sectional time series analysis method and the regression model to detect the relationship between the marketing expenses and the firm's market value to evaluate the influence of the independent variable on the dependent variable. He concluded that the market performance indicator, which is Tobin's Q, has a negative relationship that was not statistically significant.

In addition, Han and Manry (2004), examined the value-relevance of Korean firms' R&D and advertising expenditure. The sample consists of 625 companies listed on the Korean stock exchange between 2012 and 2016.The accounting data for their research have been retrieved from the Korea Investors Service database, and stock price and returns data are from the Korea Securities Research Institute database. By using regression model tests to analyze the data, they found that the advertising expenditure was negatively linked to stock price.

E. Previous Studies on Marketing Efforts and Firm Profitability

Marketing efforts are an integral part of the deployment of names and profits of companies. A number of studies were conducted to identify the relationship between marketing efforts such as sales promotion, advertising, sponsorship and marketing strategy with firm profitability.

Sharma and Husain (2015), they concluded that in the profitability of companies, sales and marketing expenditures hold great importance. Moreover, efficient expenditure on sales and marketing can make a huge contribution to profitability. The data were obtained from annual reports and financial statements for four telecommunications firms listed on the Saudi stock exchange., which they used "*Selling & Marketing Expense Ratio (SME), Dealers Commission Expense Ratio (DCE), Advertising Expense Ratio and Salary*" as independent variables, "*Wages & Employee*

Benefits Expense Ratio (SWEBE) and the Gross Operating Profitability (GOP)" as dependent variables. Multiple Correlation analysis between these variables was used in determining the relationships between them and to test the effectiveness of the variables by using regression analysis and concluded that all of the variables are positively correlated: sales and marketing, commission for dealers, advertising expenditures and salary, wages and employee benefits paid to those Telecom companies' sales and marketing staff.

Geyikçi and Mucan (2016) study examined the effects of advertising expenditure on the financial position of companies. Data for this study, such as advertising spending, profitability and total assets of 10 companies listed in the BIST services sector between 2009 and 2016 disclosing advertising spending on their financial statements. A 29 quarterly data obtained from kap.gov.tr for those companies. As company coefficients for the quarterly data from 2009 to 2016 do not change in relation to the period or company, this research used dynamic panel data analysis. The findings indicated that advertising expenses have a significant impact on net sales and profitability.

Hacıhasanoğlu et al. (2017) examined how marketing expenditures have an impact on sales revenues and whether this effect differs in the manufacturing and service sectors. To this end, 1816 firm-year observation data for the 2005-2016 period have been used for companies operating in the manufacturing and service sectors of BIST. The analysis was done using the pooled data regression method. Based on the conclusions, marketing expenditure has been determined to have significant positive effects on sales revenues, while the impact of marketing expenditure on sales revenues vary from sector to sector. The conclusion is that the marketing expenditure in the service sector has a higher positive impact on revenues from sales compared with that in manufacturing.

Nimer et al. (2015) study examined how advertising and marketing expenses affect the profitability of the companies and determined how advertising and marketing expenses are used to increase the profitability of the companies. Data of their study were collected from the audited annual reports of 68 Medical Jordanian companies between 2009-2013. Which they used "*Advertising and Marketing Expenses*" as independent variables, "*Companies Profitability*" as dependent variables. For the purpose of testing the impact from the independent variable on the dependent varia-

ble, this research used a simple regression model. They concluded that there is an impact between advertising and marketing expenses and net profit on medical companies on the Amman Stock Exchange. They believed that the rationale of this has a direct effect on improving reputation of the company and increasing market value and competitiveness due to the nature of advertising expenses. Thus, their profits are increased and their place among competitors improved.

Aykut and Yanık (2019), in their study, they examined the effects of marketing, distribution and sales expenses of the companies on firm profitability. The study examined Turkcell and Türk Telekom, one of the mobile telecommunications companies in the Borsa Istanbul communications sector. Based upon secondary data, regression and two dependent t-tests were carried out to investigate the effect of marketing, sales, and distribution costs of mobile telecommunication companies traded in the Borsa Istanbul communication index on the firm profitability. According to research results, marketing, distributing and selling costs at Turkcell had no effect on the profitability of the firm and marketing, distribution and selling costs at Türk Telekom had an effect on the profitability of the firm.

Çifci, Doganay and Gülşen (2010), in their study, the relationship between marketing expenditures and performance of companies has been investigated. Data for this study have been analyzed with panel data that have been analyzed by using a net profit / loss as an indicator of firm performance, which includes 2664 observational data from 82 companies with active stock in the Istanbul Stock Exchange, to model the factors that influence the company performance. According to the results of the study, marketing expenditure has a significant positive impact on company performance.

Agbeja, Adelakun & Akinyemi (2015), in their research, they examined the effect of advertising on the company's sales and profits. Data of their study were collected from the audited annual reports of following companies (Nigeria Bottling Company Lagos, UAC Lagos, PZ Lagos, May & Baker Lagos and Unilever Group Lagos). A regression analysis was used for the analysis of the hypothesis of the variables involved in their study. Which they used "*Marketing Expenses*" as independent variable, "*Companies Profitability*" as dependent variable. By analyzing the data, they found that the company's marketing expenditures and profitability are significantly correlated.

On the other hand, Ciawi and Hatane (2015) study looked at the relationship between marketing expenditure and firm profitability, which was carried out between 2008-2013 by 35 companies operating in Indonesia. The analysis has shown that marketing expenditures have no impact on firm profitability.

F. Summary of Previous Studies

Table 1 Summary of Previous Studies

Authors	Country	No of firms	Independent variables	Dependent variables	Findings
Doğan and Mecek (2015)	Turkey	120	Marketing expenses	Firm value	The link between marketing costs and firm values to be positive and statistically significant.
Coşkun et al. (2010)	Turkey	99	Marketing activities	Firm value	The increase of marketing expenditure increased the firm value to a certain extent but decreased the firm value after that point
Anindita, Prashant and Anantha's (2008)	India	172	Marketing expenditures	Firm value	A statistically insignificant relationship between marketing expenditures and firm value.
Ayriçay and Kiliç (2018)	Turkey	42	Marketing intensity	As an indicator for company performance, the market-to - book ratio was used	The marketing intensity has a positive statistically effect on the market-to - book ratio. This effect, however, is positive to some extent and negative afterwards

Table 1 (continued)

Authors	Country	No of firms	Independent variables	Dependent variables	Findings
Akyüz and Berberoğlu (2016)	Turkey	46	Advertising expenditures	Company market value and the moderation of R&D expenditures in this relationship.	Both advertising and R&D costs had a positive impact on the market value of companies. However, the moderate impact of research and development expenditure on the relation between advertising and market value is negative
Shah, Mirza and Abbas (2013)	Pakistan	-	Advertising expenses	Market value of firms	Advertising expenses has a consistently positive effect on the market value of firms
Konak (2015)	Turkey	22	Change in Marketing Expenditures	Tabins'q as a tool to examine the firm's market value	The market performance indicator, which is Tobins' q, has a negative relationship that was not statistically significant.
Han and Manry (2004)	Korea	625	Advertising expenditure	Stock Price	The advertising expenditure was negatively linked to stock price

Table 1 (continued).

Authors	Country	No of firms	Independent variables	Dependent variables	Findings
Shah and Stark (2004)	UK	-	Marketing costs	Market value of the firm	They found that marketing expenditure has a significant impact on the market value and the company's future earnings
Shah, Mirza and Abbas (2013)	Pakistan	-	Advertising expenses	Market value	They found that advertising expenses has a consistently positive effect on the market value of firms
Sharma and Husain (2015)	Saudi	4	Selling & Marketing Expense Ratio (SME), Dealers Commission Expense Ratio (DCE) and Advertising Expense Ratio and Salary	Wages & Employee Benefits Expense Ratio (SWEBE) and the Gross Operating Profitability (GOP)	All of the variables are positively correlated: sales and marketing, commission for dealers, advertising expenditures and salary, wages and employee benefits paid to those Telecom companies' sales and marketing staff.
Geyikçi and Mucan (2016)	Turkey	10	Advertising expenses	Net sales and profitability	Advertising expenses have a significant impact on net sales and profitability

Table 1 (continued)

Authors	Country	No of firms	Independent variables	Dependent variables	Findings
Nimer et al. (2015)	Jordan	68	Advertising and Marketing Expenses	Firm Profitability	There is an impact on medical industrial companies listed on the Amman Stock Exchange between advertising and marketing expenses and net profit
Hacıhasanoğlu et al. (2017)	Turkey	151	Marketing expenditures	Firm profitability	Marketing expenditure has been determined to have significant positive effects on sales revenues
Aykut and Yanık (2019)	Turkey	2	Marketing, distribution and sales expenses	Firm profitability	Marketing, distributing and selling costs at Turkcell had no effect on the profitability of the firm and marketing, distribution and selling costs at Türk Telekom had an effect on the profitability of the firm.
Çifci, Doganay and Gülşen (2010)	Turkey	82	Marketing expenditures	a net profit / loss as an indicator of firm performance	Marketing expenditure has a significant positive impact on company performance

Table 1 (continued).

Authors	Country	No of firms	Independent variables	Dependent variables	Findings
Agbeja, Adelakun & Akinyemi (2015)	Nigeria	5	Marketing expenditures	Firm profitability	The company's marketing expenditures and profitability are significantly linked
Ciawi and Hatane (2015)	Indonesia	35	Marketing expenditures	Firm profitability	Marketing expenditures have no impact on firm profitability.

G. Proposed Conceptual Model

After examination of literature and since the purpose of this research is to examine the effect of marketing efforts on the firm financial performance of 66 companies where listed on the Borsa Istanbul (BIST) Service Index. Marketing efforts have been chosen as the independent variable, whereas the dependent variable firm performance is represented by performance measures such as firm's market value and profitability. Marketing efforts - financial performance relationship, has not been studied enough in Turkey, marketing researches were examined mostly in one-dimensional. In this context, this study is expected to make an important contribution to the literature.

In this context, the main hypothesis has been developed as follows, based on the literature review and the purpose of this study:

Marketing efforts and firm performance

H0: There is no relationship between marketing efforts and firm performance

HA: There is a relationship between marketing efforts and firm performance

The literature reviewed shows that various models are used for measuring firm performance as proxies. The most commonly used models in literature are ROA and Tobin's Q and are also used in this study. Furthermore, marketing intensity, which is a marketing control measure used to establish whether the costs incurred by marketing efforts to produce sales levels in a given period were excessive (the marketing expenditures to total sales ratio). In addition, since marketing expenditures one of the operating expenditure, the marketing expenditures to total operating expenditures ratio, were selected as independents variables that most likely affects the firm performance. On the basis of the identified two models of firm performance and the two independent variables as indicator of marketing efforts. A proposed conceptual model is presented in Figure 2.1 for the development of sub hypotheses:

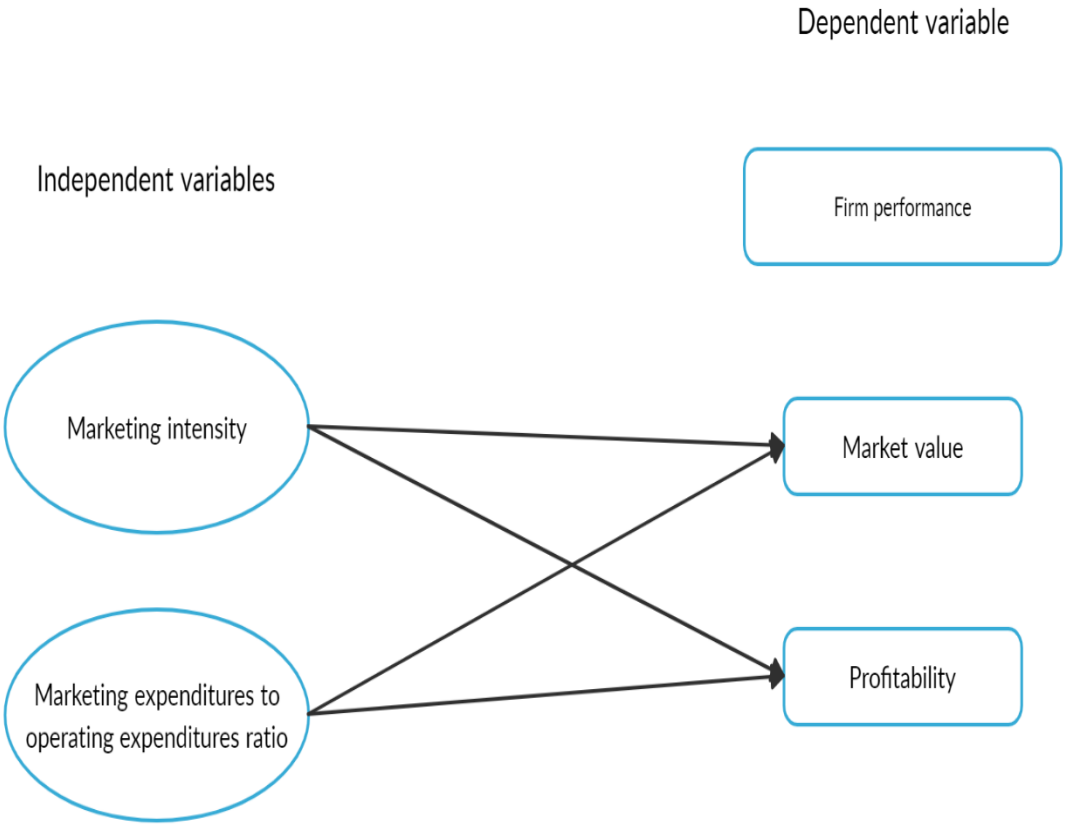

Figure 4 Proposed Conceptual Model

Since firm performance has been analyzed based on two different models, with dependent variables ROA and Tobin's Q, the main hypothesis is divided into four sub hypotheses:

Marketing efforts and market value

H_{10}: There is no relationship between marketing intensity and firm market value (Tobin's Q)

H_{1A}: There is a relationship between marketing intensity and firm market value (Tobin's Q)

H_{20}: There is no relationship between marketing *expenditures to operating expenditures ratio and firm market value* (*Tobin's Q)*

H_{2A}: There is a relationship between marketing *expenditures to operating expenditures ratio and firm market value (Tobin's Q)*

Marketing efforts and firm profitability

H_{30}: There is no relationship between marketing *intensity and firm profitability (ROA)*

H_{3A}: There is a relationship between marketing *intensity and firm profitability (ROA)*

H_{40}: There is no relationship between expenditures to operating expenditures ratio and firm profitability (ROA)

H_{4A}: There is a relationship between expenditures to operating expenditures ratio and firm profitability (ROA)

III. RESEARCH METHODOLOGY

A. Research Method

Capon et al. (1990) examined up to this day about 320 scientific studies addressing the factors affecting companies' financial performance. Models used as the basis for determining business performance in literature; regression, chi square, t test, correlation, separation analyzes, cluster analyses, factor analyses were determined. They found that regression was the most frequently used method (189 studies). Since our study combines cross-section and time series observations with a higher number of observations, the panel data analysis method is employed to determine the relationships between variables and thus enables more reliable estimates.

Panel data analysis is used to examine the relationships between marketing intensity (marketing expenditures to total sales ratio) and marketing expenditures to operating expenditures ratio as independent variables, and ROA and Tobin's Q as dependent variables. The needed data are obtained from audited annual financial reports of companies traded in the BIST Service Index to test the research hypothesis created in this study. These reports are like a reading of blood pressure for its owners that shows whether a company is financially healthy or not. This section presents the selection of samples, data collection, and models for the assessment of hypotheses. Data is analyzed using EViews and Stata 14 programs.

1. Sample Selection

The sample of this study is a total of 66 public companies where regularly listed in the Borsa Istanbul BIST Services Index (XUHIZ) and traded on the BİST. The time dimension of the study covers the years from 2016 to 2019. The initial search was based on 66 companies, but because of there is 6 companies (BSKAS, FENER, GSRAY, TSPOR, DOCO and MARTI) most of them are football clubs, which their accounting periods are different, and 8 companies (CEOEM, ENJSA, IHGLM, MAVI, MPARK, NATEN, SOKM and TLMAN), which they are listed in

Borsa Istanbul after 2016, and another 3 companies (MIPAZ, TURGG and ULAS), which their sales in some years are zero, these companies have been eliminated and a total sample of 49 remaining companies were selected. The list of the companies sampled in this study is provided in Appendix 1.

2. Data Collection

In this study, audited annual financial statement reports data of 49 firms operating and listed in Borsa Istanbul (BIST) service index between 2016 and 2019 were used. The annual data of the companies published on the Public Disclosure Platform (KAP) (www.kap.gov.tr) have been examined. Therefore, the sample of the study includes 196 firm-year observations.

3. Model Specification

In order to test hypotheses, the following six econometric models were developed for analysis of the relationship between marketing efforts and firm financial performance using panel data. The models contain three independent variables and two dependent variables. Measures of firm financial performance are Return on Assets (ROA) and Tobin's Q. Indicators of marketing efforts include the independent variables of marketing intensity and marketing expenditures to operating expenditures ratio. The last control variables of the variable are firm size and debt ratio.

Model 1:

$$TOBIN_{it} = \beta_{it} + \beta_1 \,\mathrm{MTS}_{it} + \beta_2 \,\mathrm{LNSIZE}_{it} + \beta_3 \,\mathrm{DEBT}_{it} + \varepsilon_{it}$$

Model 2:

$$TOBIN_{it} = \beta_{it} + \beta_1 \,\mathrm{MTOE}_{it} + \beta_2 \,\mathrm{LNSIZE}_{it} + \beta_3 \,\mathrm{DEBT}_{it} + \varepsilon_{it}$$

Model 3:

$$TOBIN_{it} = \beta_{it} + \beta_1 \,\mathrm{MTS}_{it} + \beta_2 \mathrm{MTOE}_{it} + \beta_3 \,\mathrm{LNSIZE}_{it} + \beta_4 \,\mathrm{DEBT}_{it} + \varepsilon_{it}$$

Model 4:

$$ROA_{it} = \beta_{it} + \beta_1 \,\mathrm{MTS}_{it} + \beta_2 \,\mathrm{LNSIZE}_{it} + \beta_3 \,\mathrm{DEBT}_{it} + \varepsilon_{it}$$

Model 5:

$$ROA_{it} = \beta_{it} + \beta_1 \,\mathrm{MTOE}_{it} + \beta_2 \,\mathrm{LNSIZE}_{it} + \beta_3 \,\mathrm{DEBT}_{it} + \varepsilon_{it}$$

Model 6:

$$ROA_{it} = \beta_{it} + \beta_1 \,\mathrm{MTS}_{it} + \beta_2 \mathrm{MTOE}_{it} + \beta_3 \,\mathrm{LNSIZE}_{it} + \beta_4 \,\mathrm{DEBT}_{it} + \varepsilon_{it}$$

To get started, the dependent variable ROA is measured as the net profit after taxes divided by total assets. However, TOBIN is the market capitalization plus total debt divided by the total assets. As mentioned before, there are two independent variables in the model. MTS signifies the marketing intensity, which is marketing, sales and distribution expenditures divided by total sales. However, MTOE signifies the marketing expenditures to operating expenditures ratio, which is marketing, sales and distribution expenditures divided by operating expenditures. MTOE is an unusually used variable in associated research, which makes this study different from other studies. The two control variables employed in this study are LNSIZE, and DEBT. LNSIZE refers to the size of the firm and is measured using the natural logarithm of total assets of the company. DEBT, or Debt ratio, is the proportion of total debts to total assets. The following Table 2 presents a summary of all variables used in the study:

Table 2 Descriptions of Variables Used in Analysis

Dependent Variables (Tobin'q, ROA)		
Variables	Definition	Measurement
Tobin'q	Firm Market Value	(Total Debt + Market Capitalization) /Total Assets
ROA	Return on Assets	Net Profit /Total Assets
Independent Variables (MTS, MTOE)		
Variables	Definition	Measurement
MTS	Marketing Intensity	Marketing, Sales and Distribution Expenses/Total Sales

Table 2 (continued)

Independent Variables (MTS, MTOE)		
Variables	Definition	Measurement
MTOE	Marketing Expense-To-Total Operating Expenses	Marketing, Sales and Distribution Expenses/Total Operating Expenses
Control Variables (LNSIZE, DEBT)		
Variables	Definition	Measurement
LNSIZE	Firm size	Natural Logarithm of Total Assets
DEBT	Debt Ratio	Total Debts/ Total Assets

B. Panel Data Analysis

Panel data analysis, short defined as a cross-sectional time-series data set, is a dimension that ideally provides repeated measurements on the units, such as individuals, households, firms, towns, and countries, of a certain number of variables over a period of time. (An example of a cross-sectional data set is one where you spot something interesting on a sheet of paper, like a giant worm). The time-series data set is the data that shows the growth and changes in one variable or how the different factors of a system affect one variable over a course of time. (Xu, Lee, & Eom, 2007).

A panel data can be easily understood as a three-dimensional structure for every variable: the vertical dimension as time and horizontal dimension as multiple observations for each variable. Observations in samples usually remain the same over all periods, whereas observations in samples from one period in some cases do not match those of other samples, in particular in random surveys. (Xu, Lee, & Eom, 2007).

Advantages of using panel data:

1. One of the biggest benefits to using panel data is the increase in the number of observations you make. Despite the fact that the standard errors are smaller than the estimated ones from the cross-sectional data, the results are still statistically significant. When there are two pieces of data from different slices (such as from one patient and from a different patient), the pieces must be strung together to have the best chance of statistically significant estimates. (Baltagi, 2001, p. 5-6).
2. It allows the heterogeneity of individual, family, and countries units to be monitored. For example, internal differences such as a business' size, age and structure, or time-based external influences, like technological change, change in government, can influence the business' performance. While such differences between units in time series and cross-sectional data analysis are not considered, these differences can be calculated by including these in the model in the regression model estimated by panel data analyses (Baltagi, 2001, p. 5-6).
3. With more observations, the degree of freedom and effectiveness are increased. The panel data series, which corresponds to the time change in the same cross-section unit, is shown with two subscripts as "loss, I = 1, ……., N, t = 1, ……, T". N is a cross-sectional unit, T is a time period. N x T number of observations is provided for the panel data. More variability is provided with the increasing number of observations, and the correlation between independent variables decreases (Khajeh, 2014).
4. Cross-section and time series data are best illustrated for simple undetectable measurement effects and definitions. Panel data methods may be more appropriate to understand the dynamics of change for some complex behavioral issues (Baltagi, 2001, p. 5-6).
5. With the panel data method, there is less multi-linearity between variables and more efficient panel data results (Baltagi, 2001, p. 5-6).
6. Another important motivation in the analysis of panel data is to reduce the missing variable bias (Wooldridge, 2006).

1. Estimation Methods

In this section, it is explained the most frequently used panel data analysis models in literature. Panel data contain time and spatial dimension information. The time dimension is time during which repeated measurements are carried out like month, quarter or year and a unit of observations is the spatial aspect, including individuals, companies and countries. The general panel data regression model (3.1) is as follows (Xu, Lee, & Eom, 2007):

$$y_{it} = \beta_0 + \beta_1 x_{it.1} + \beta_2 x_{it.2} + \cdots + \beta_k x_{it.k} + w_{it},\ i = 1, \ldots, N;\ t = 1, \ldots, T;\ k = 1, \ldots, K$$

(3.1)

Where,

y shows the dependent variable

x explanatory variable

$i = 1, \ldots, N$ is the unit of observation

$t = 1, \ldots, T$ is the period of time

k indicates the kth explanatory variable

β_0 is the intercept

β_K is the coefficient of each explanatory variable

w_{it} is the error term.

The error term w_{it} can be divided into two components in Equation (3.2): a cross-sectional ε_i, and an idiosyncratic error u_{it}.

$$w_{it} = \varepsilon_i + u_{it}$$

(3.2)

Cross-section-specific error ε_i does not change over time, and the idiosyncratic error u_{it} varies across cross-section units and time (Baltagi, 2001; Greene, 2003; Gujarati, 2003; Wooldridge, 2006).

The model show that each unit has its own specific response coefficient for each individual period. As the number of parameters to be estimated exceeds the number of observations, it is therefore not possible to estimate the model in this case.

This makes it possible therefore to get various models by making various assumptions on the properties of the error terms and the variability of coefficients in panel data (Greene, 2003, p. 229).

These models had three methods, which could be used as the estimation method in both the time and cross-section data adaptation during the estimation phase with pooled regression (Xu, Lee, & Eom, 2007). The following methods are:

1. Common Constant Method (Ordinary Least Squares Model (OLS))
2. Fixed Effects Method (Single Factor (LSDV), which is the Least Squares Dummy Variables Method).
3. Random Effects Method (Single Factor (REM1))

These methods differ mainly from one another because of fixed terms. For elements of pooled regression, the common constant method has the same constant term. There is a separate fixed term for each section in the fixed effect method. The coefficients of the slope however are the same. The difference between the units is modelled within the error term in the random effect method (Khajeh, 2014).

a. Ordinary Least Squares Model (OLS)

One of the most essential and simplest way of evaluating Equation 3.1 is to pool the data and use the OLS. To estimate Equation (3.1) using pooled OLS, it must be assumed that the explanatory variable $\mathrm{x}_{it.k}$ does not correlate the composite error term w_{it}. This means that we can pool data and execute OLS regression models only when there are no cross-sectional or temporal effects (Greene, 2003; Gujarati, 2003; Wooldridge, 2006). The pooled OLS Equation (3.3) can be expressed as follows:

$$\mathrm{y} = \beta_0 + \beta_1 \mathrm{x}_1 + \beta_2 \mathrm{x}_2 + \cdots + \beta_k \mathrm{x}_k + w, \ \mathrm{k} = 1, \ldots, \mathrm{K} \qquad \textbf{(3.3)}$$

Where,

y shows the dependent variable

x explanatory variable

β_0 is the constant intercept coefficient

β_K is the coefficient of each explanatory variable

w is the error term.

Subscripts i and t disappear due to the above assumption in Equation (3.3). The OLS method pooled has certain disadvantages. Time and cross-sectional dimensional information are presented in the panel data. However, pooled OLS does not take into account this panel data information. Furthermore, the hypothesis of pooled OLS is unrealistic, as all time-constant and unit-specific effects ε_i, cannot be measured and included in the model. Thus, the assumption is normally infringed when we use OLS to analyze panel data. The OLS estimator is biased and inconsistent in this case (Gujarati, 2003; Wooldridge, 2006).

b. Fixed Effects Method

The model of fixed effects is used extensively when controlling missing variables which are constant over time and which vary across units called unobserved or unnoticed heterogeneity ε_i. When evaluating Equation 3.1 with the model of fixed effects, the unnoticed heterogeneity ε_i is presumed to correlate with the explanatory variable $x_{it.k}$. A further significant assumption is that the idiosyncratic error u_{it} is not related to the explanatory variable $x_{it.k}$. We can achieve more robust estimates by eliminating the unobserved effect, which means reducing the missing variables (Baltagi, 2001; Wooldridge, 2006). The least squares dummy variables (LSDV) model is one of the fixed effects model and one of the methods for eliminating the unobserved effect ε_i in panel data analysis.

i. Least Squares Dummy Variables (LSDV) Model

One way of taking the "individualities" of each cross section into consideration is to allow for a different constant coefficient for each group whereas the coefficients for slope are the same (Balı & Cinel, 2011). The main objective of the model is to predict the unobserved effect ε_i, known as the least squares dummy variable model, which expresses the most particular effects of the group on the data set. The term constant effects comes from the fact that the constant for each section does not change over time, although for each section it is different. In this model, both time and cross-sectional slope coefficients are the same.

A dummy variable is a binary variable that holds either a value of 1 or a value of 0. The index is often used to simulate group and time effects in linear regression. (Baltagi, 2001; Greene, 2003; Gujarati, 2003; Griffiths et al., 1993; Kmenta, 1997). The general model of LSDV is:

$$y_{it} = \beta_0 + (\delta_1 D_1 + \cdots + \delta_{i-1} D_{i-1}) + (\theta_1 T_1 + \cdots + \theta_{t-1} T_{t-1}) + \beta_1 x_{it.1} + \cdots + \beta_k x_{itk} + u_{it}$$

(3.4)

Where,

D_i is dummy variables for each cross-sectional unit except one

T_t is dummy variables for each time-period except one.

The null hypothesis and alternative hypothesis of LSDV are as follows:

The null hypothesis is:

$$H_0 = D_1 = \cdots = D_{i-1} = 0 \quad \text{or} \quad H_0 = T_1 = \cdots = T_{t-1} = 0$$

(3.5)

Where, all dummy parameters except one are zero.

The alternative hypothesis is:

$$H_0 \neq D_1 \neq \cdots \neq D_{i-1} \neq 0 \quad \text{or} \quad H_0 \neq T_1 \neq \cdots \neq T_{t-1} \neq 0$$

(3.6)

The F-test is used to test this hypothesizes. It could be concluded that the fixed effect model is superior to the pooled OLS model if the null hypothesis is rejected (Baltagi, 2001; Greene, 2003; Griffiths et al., 1993).

Therefore, the restricted F statistics can be looked at to determine which model is better. The F statistic equation (3.7) is as follows:

$$F(n-1, nT-n-K) = \frac{(R^2_{LSDV} - R^2_{Pooled})/(n-1)}{\frac{1-R^2_{LSDV}}{nT-n-K}} \qquad \textbf{(3.7)}$$

In the null hypothesis, OLS is the effective prediction model. However if the F statistical result is above the table value, it is concluded that the dummy variables have different coefficients, and that the null hypothesis is rejected. Instead of the

OLS model, LSDV model is preferable as a method of estimation (Greene, 2003, p. 289).

c. Random Effects Method

Although the fixed effects model is extensively used, there is a loss of freedom due to a large number of cross sections (due the use of the dummy variable). We use a fixed effect model to analyze panel data to eliminate the unobserved heterogeneity (ε_i), because it is supposed to be associated with the explanatory variables ($x_{it.k}$). However the fixed effect model to avoid ε_i results in inefficient estimators if ε_i is independent of each explanatory variable. The random effect model, also called the variance component model, considers unobserved heterogeneity to be random rather than fixed (Baltagi, 2001; Greene, 2003). Therefore, when cross sectional units are chosen randomly from a large population, the random effect model is suitable (Baltagi, 2001, p. 15).

If a variation is known among different groups, the random effect is calculated by generalized least squares (GLS). However, if the variance structure is unspecific, the variance structure should be assessed using the feasible generalized least squares FGLS method (Xu, Lee, & Eom, 2007).

i. Single Factor Random Effects Model (REM1)

With the dummy variable, the differences in each individual's behavior with various fixed parameters were expressed. Due to the degree of freedom problem, this method lost information. These differences are included in the error term of the random effect model, in other words that the differences in the error term are taken into account (Kök & Şimşek, 2006).

$$y_{it} = \beta_{1i} + \beta_2 x_{2it} + \cdots + \beta_k x_{it.k} + u_{it}, \qquad i = 1, \ldots, N;\ t1, \ldots, T; \qquad \textbf{(3.8)}$$

The random variable with an average β1 was assumed instead of treating '1i' as a constant. The value of a cross section's constant coefficient is expressed (3.9) as follows:

$$\beta_{1i} = \beta_1 + \varepsilon_i \qquad i=1, 2,\ldots, N \qquad \textbf{(3.9)}$$

Here ε_i is a random error term with zero mean and σ_g^2 variance. We get the following equation (3.10) when we replace $\beta_{1i} = \beta_1 + \varepsilon_i$ in the equation (3.8):

$$y_{it} = \beta_1 + \beta_2 x_{2it} + \beta_3 x_{3it} + \varepsilon_i + u_{it} \quad \textbf{(3.10)}$$

The $w_{it} = \varepsilon_i + u_{it}$ equation here called a composite error term. Two components are part of this composite error (w_{it}). ε_i which is the cross-section unit-specific error component (individual error and differences, showing variation between people in relation to a fixed time), u_{it} which it is the idiosyncratic error resulting from the combination of time series and cross-section (indicates all errors). We get the following equation (3.11) when we replace $w_{it} = \varepsilon_i + u_{it}$ in the equation (3.10):

$$y_{it} = \beta_1 + \beta_2 x_{2it} + \beta_3 x_{3it} + \varepsilon_i + u_{it} \quad \textbf{(3.11)}$$

The method of estimation used is not OLS. Given that the matrix of Variance-Covariance differs by units, the GLS method is used to handle the variance-covariance matrix. The variance test between the groups in the model should take place, whether REM1 or the OLS model is the estimation method. Lagrange multiple test and likelihood ratio test (F-statistics) are used for that purpose. The null hypothesis states that the groups differ.

If the null hypothesis is not accepted, the REM1 model will be preferred to the OLS model according to the LM test statistics. (Khajeh, 2014).

$$H_0 = \sigma_1^2 = \sigma_2^2 = \cdots = \sigma_n^2 = 0$$

$$H_1 \neq \sigma_1^2 \neq \sigma_2^2 \neq \cdots \neq \sigma_n^2 \neq 0$$

(3.12)

The perception of specific effects to groups as fixed or random in the panel data analysis is one of the major problems in choosing a model. It is thus an important matter to choose from which models LSDV and REM1 to predict. While the group coefficients are determined in the LSDV model, these coefficients are the values selected random from a sample in the REM1 model. OLS is therefore the best nonlinear deviation estimator of the LSDV model, whereas in REM1, GLS is the best nonlinear estimator.

They both have their own disadvantages. Although in the model of the fixed effects there is a problem with the degrees of freedom, there is a problem as to whether the model of the random effects contains a correlation between specific effects and explanatory variables. Therefore, the problem in the random effects model; it is based on the assumptions that the cross-sectional error component ε_i may correlate with the explanatory X variables (Khajeh, 2014).

Whether the time effect is related to independent variable is the main difference among the fixed or random models. When random models are valid, estimators of fixed effects provide consistent identifiable estimates of parameters. LSDV is more persuasive than predicting REM for many researchers. LSDV is more convincing for many researchers than the prediction of REM. The idea that constant variables can not be related with the respective explanatory variables is based on this preference. Two estimators with different properties were developed depending on the relationship between the explanatory variables x and ε_i (Kök & Şimşek, 2006):

1. If the ε_i and x explanatory parameters are not correlated, the random effects model is consistent and effective. The model for fixed effects is consistent but not efficient.
2. If the ε_i and x explanatory parameters are correlated, the fixed effects model is consistent and effective. The model for random effects is consistent but not efficient.

In order to answer the question, if the N cross sections come from a large population, the random effect model will be appropriate to the extent that a correlation between the explanatory variables x and ε_i is expected. Conversely, the model for fixed effects is more convenient if the interest exceeds a certain cross-section.

Apart from these determinations, there is a test helps to choose between the fixed and random effects models. Hausman (1978) statistics tests the correlation between specific cross-sectional effects and the explanatory variables x and ε_i. This test has a distribution of $\chi 2$ with p degrees of freedom. Rejecting the null hypothesis leads to the conclusion that the model of fixed effects should be tested versus the model of random effects. The following hypotheses are (Kök & Şimşek, 2006):

H_0: E (ε_i | Xit) = 0 cross-sectional and time effects are random.

No correlation between (ε_i) and X explanatory variables

H_1: E (ε_i | Xit) ≠ 0 cross-sectional and time effects are fixed.

There is a correlation between (ε_i) and X explanatory variables

2. Test of Assumptions

Before the panel regression analysis takes place, assumptions must be checked in order to proceed with interpreting the results, these tests will be applied one by one, as shown in the following figure (Figure 5):

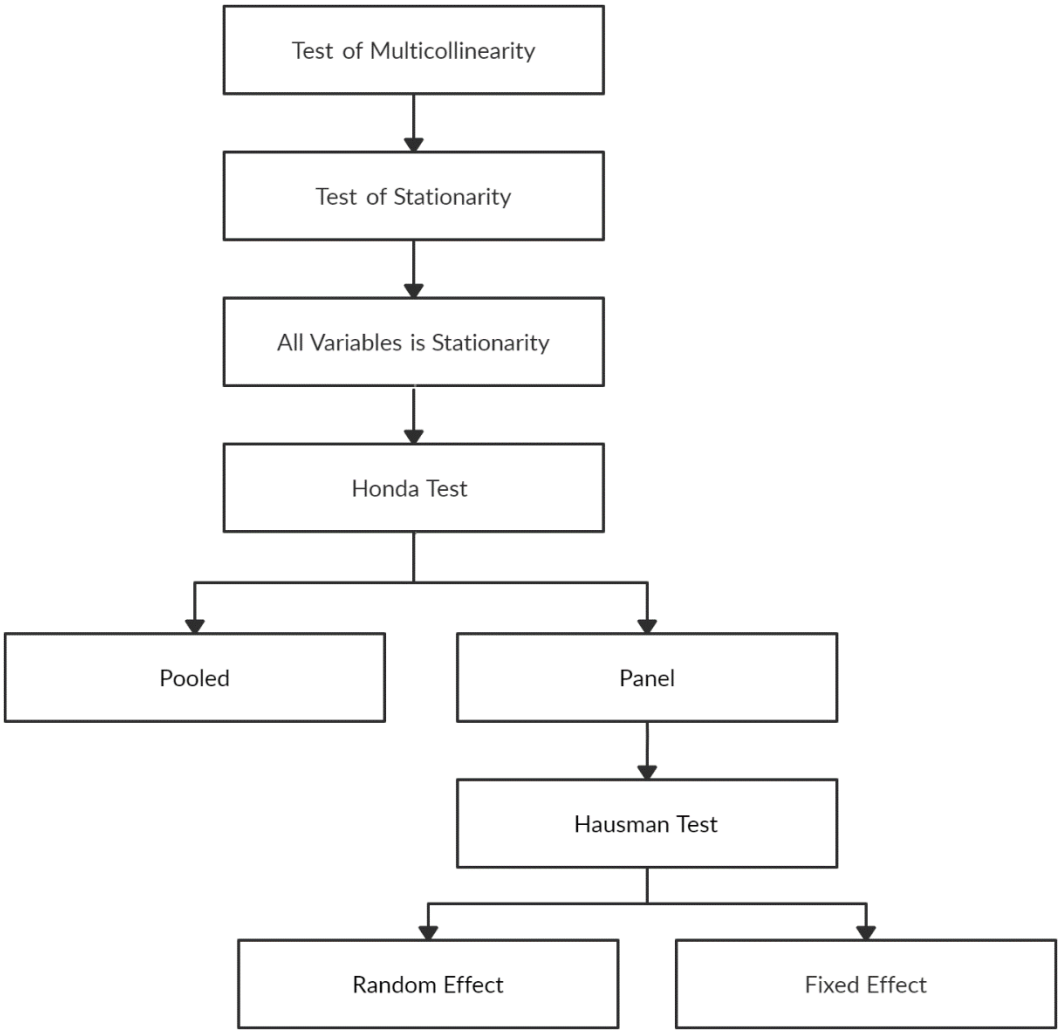

Figure 5 Assumptions Tests

The first step is checking the multicollinearity assumption. Multicollinearity takes place when in a multiple regression model there are two or more independent variables with high correlation between themselves. If some features are heavily correlated,

it may be difficult to differentiate between their individual effects on the dependent variable. Multicollinearity can be identified with different techniques, one of them being the Variance Inflation Factor (VIF). Therefore, it has been applied the Variance Inflation Factor (VIF) test to determine whether in all the models, the independent variables are highly correlated with each other. The criteria that is most suitable to detect multicollinearity are presented below (Menard, 2001, p. 75):

- If the VIF (Variance Inflation Factor) value is greater than > 5, this indicates there is multicollinearity among predictors.

Second step is to check the stationarity assumption. Stationarity is an assumption that must be met for panel data analysis prior to regression analysis, where the cross-sectional aspect for the time dimension is incorporated. As the impact of the shocks that took place in stationary series is temporary, the series returns to its average levels and the root presence indicates that the series is not stationary if analyzed in the long term (Benli & Yenisu, 2017). Various root unit tests were carried out for determining the stationaries of the panel data series in econometrics literature. In this study, the stationary test carried out by Levin, Lin and Chu (2002), one of the unit root tests of the second generation has been investigated. "No Unit Root" means that the series of variables used in modeling the relationship between dependent variable and independent variables are stationary and these variables have a suitable structure for modeling and prediction.

After examining the previous tests, the next step is to select the method for the panel data. Tests are carried out to determine whether the models could be or not pooled together or whether fixed effect or random effect models are appropriate in panel data. Breusch and Pagan (1980) suggested a test on the basis of the Lagrange Multiplier (LM), to test random individual effects against null of the pooled model. One the deficiencies of the Breusch-Pagan test is that the alternative hypothesis is two-sided, despite the fact that the variance components cannot be negative. Honda (1985) suggests a uniformly most powerful (UMP) LM_{μ} statistics for $H_0^{\mu}: \sigma_{\mu}^2=0$ based on the pooled estimator, the one-way strong LM statistics as follow (3.13):

$$LM^{H} = \frac{LM_1+LM_2}{\sqrt{2}} \qquad \textbf{(3.13)}$$

Where, LM_1 and LM_2 are expressed unidirectionally in the equations specified in (3.14) and (3.15).

$$LM_1 = \sqrt{\frac{NT}{2(T-1)}} G_\mu \quad \textbf{(3.14)}$$

$$LM_2 = \sqrt{\frac{NT}{2(T-1)}} G_\lambda$$

(3.15)

Acceptance of the H0 hypothesis in Honda test application means that the data can be pooled and, if rejected (P <0.05), the random effects occur (Baltagi, Song, & Koh, 2003).

The next step is to examine whether models are suitable for the model of random effects or for fixed effects if panel data cannot be pooled. As the key presumption, the assumption of the random effects being uncorrelated with explanatory variables is the primary assumption of the random effects calculation. One common method for testing this assumption is using Hausman (1978) test. The Hausman (1978) test compares a random effect model to its fixed counterpart. If the null hypothesis is not rejected that the individual effects are not correlated with to other regressors where (p> 0.05), a random effect model is favored over its fixed counterpart.

The following table 3 shows, which appropriate methods, should be employed for the models on based of Hausman (1978) and Honda (1985) tests:

Table 3 Selection the Appropriate Methods for Panel Regression Model on Based of Hausman and Honda Tests

Hausman test	Honda test	Selection
H0 is not rejected (P>.05) (No fixed effect)	H0 is not rejected (P>.05) (No random effect)	Pooled OLS
H0 is rejected (P <.05) (fixed effect)	H0 is not rejected (P>.05) (No random effect)	Fixed effect model
H0 is not rejected (P>.05) (No fixed effect)	H0 is rejected (P <.05) (random effect)	Random effect model
H0 is rejected (P <.05) (fixed effect)	H0 is rejected (P <.05) (random effect)	Fixed effect model

Source: Hausman (1978) and Honda (1985)

Robust estimators were used for panel regression test models. Robust estimators are used to predict the heteroskedasticity and/or autocorrelation detected in regression models. In an unexplained variation of model, robust standard errors account for heteroskedasticity. In other words, if the variation in the results variable is correlated to

explanatory variables, robust standard errors can take account of this correlation ("About Robust," 2020). The estimates made using Tatoğlu's (2016) recommended clustered robust standard error approach. Clustered standard errors are a special type of robust standard errors that accounts for heteroskedasticity across "clusters" of observations (such as states, schools, or individuals). When analysis of the panel data, when each unit is observed over time, clustered standard errors are generally recommended.

IV. RESEARCH FINDINGS

A. Descriptive Statistics

Table 4 shows descriptive statistics for all the dependent and independents variables used in this study. The table contains information including the number of observations, the minimum value, the maximum value, mean, and the standard deviation of each of the variables.

The mean of (TOBIN) variable is 1.409499 and has the lowest value of 0.468193 and the highest value of 12.60348. The Return on Assets (ROA) variable, which represent the firm profitability takes the lowest -0.26562, the highest 0.523894, and has a mean of 0.045345, which is considerably lower than TOBIN. A negative ROA implies that certain companies cannot use their assets to generate income effectively. The MTS, which is the first variable representing the marketing intensity, used to determine the cost of marketing efforts to generate sales levels in a given period, and this variable has a mean of 0.051858 takes the lowest value 0, the highest value 0.439289. The second variable (MTOE), which shows the ratio of marketing expenditures to operating expenditures, and this variable takes the lowest 0, the highest 0.871707 and has a mean of 0.245444. For the both MTS and MTOE having lowest value 0 means that some companies do not have marketing, sales and distribution expenditures. Firm size is represented by the natural logarithm of firms' total assets. This variable has a mean of 20.43579 and is distributed between lowest value 16.20647 and higher value 25.71282. The last variable in descriptive statistics is DEBT, which measures the total debt to total assets of a company. With a mean of 0.617992 and is distributed between lowest value 0.008581 and higher value 1.166506.

Table 4 Descriptive Statistics

	Mean	Median	Maximum	Minimum	Std. Dev.	Observations
TOBIN	1.40949	1.15725	12.60348	0.468193	1.1113	196
ROA	0.04534	0.04006	0.523894	-0.26562	0.0936	196
MTS	0.05185	0.01271	0.439289	0	0.0821	196
MTOE	0.24544	0.11391	0.871707	0	0.2866	196

LNSIZE	20.4357	20.2340	25.71282	16.20647	2.1150	196
DEBT	0.61799	0.65178	1.166506	0.008581	0.2603	196

B. Correlation Analysis

Table 5 presents the correlation matrix for the variables in the study. It is shown that MTS and MTOE variables, which they represent the marketing efforts having a very highly correlated value (0.75511). This situation could however, lead to a multicollinearity problem as the MTS and the MTOE are examined in separate models and in one model in the previous section, as a result, the tests of the Variance Inflation Factor (VIF) as shown in Table 6 were implemented to determine whether independent variables have several linear connections between themselves in each model. According to Menard (2001, p.75), a VIF less than 5 is acceptable, because of that no inconsistencies were found in all models. As showed in Table 5, positive and statistically significant results were obtained between MTS and TOBIN, between MTOE and TOBIN and between MTOE and ROA. In other words, as the MTS and MTOE increase, the ratio of Tobin's Q also increases. The existence of a statistically significant and inversely related relationship between MTS and ROA is another important feature of the correlation matrix. Whether or not these relationships are certain can be said only following the results of the panel data analysis that take the cross-section and time dimensions into account.

Table 5 Correlation Matrix

	TOBIN	ROA	MTS	MTOE	LNSIZE	DEBT
TOBIN	1	0.132031	0.007041	0.134642	-0.19386	-0.08541
ROA	0.132031	1	-0.08827	0.048182	0.172902	-0.07979
MTS	0.007041	-0.08827	1	0.75511	0.168334	0.209739
MTOE	0.134642	0.048182	0.75511	1	0.415013	0.315506
LNSIZE	-0.19386	0.172902	0.168334	0.415013	1	0.37959
DEBT	-0.08541	-0.07979	0.209739	0.315506	0.37959	1

Table 6 Variance Inflation Factor (VIF) Tests

Model 1&4			
Variable	Coefficient Variance	VIF	Result
MTS	0.967676	1.056174	VIF<5
LNSIZE	0.001629	1.179693	VIF<5
DEBT	0.109304	1.19901	VIF<5

C	0.598953	-

Table 6 (continued).

Model 2&5			
Variable	Coefficient Variance	VIF	Result
MTOE	0.088537	1.252178	VIF<5
LNSIZE	0.001711	1.317345	VIF<5
DEBT	0.103813	1.211	VIF<5
C	0.621364	-	
Model 3&6			
Variable	Coefficient Variance	VIF	Result
MTS	2.032229	2.474521	VIF<5
MTOE	0.197729	2.93374	VIF<5
LNSIZE	0.001731	1.398151	VIF<5
DEBT	0.099024	1.211824	VIF<5
C	0.628636	-	

C. Tests for Assumptions

As mentioned in the previous chapter the stationarity test developed by Levin, Lin, and Chu (LLC) unit root test is needed to test whether if there are misleading results caused by unreal relationships arise in regressions with non-stationary series. The results of the Levin, Lin, and Chu (LLC) unit root test presented in Table 7 show that in a series of variables there is no unit root in all models, so that stationarity is achieved.

Table 7 Unit Root Test Results

Variables	Statistics Value	Probability Value (p)	Result
TOBIN	-8.69556	0.0000***	No unit root
ROA	-9.66525	0.0000***	No unit root
MTS	-14.7608	0.0000***	No unit root
MTOE	-20.7617	0.0000***	No unit root
LNSIZE	-28.9416	0.0000***	No unit root
DEBT	-14.573	0.0000***	No unit root

*, **, *** means statistical significance at 10%, 5% and 1% levels.

The following step is to choose the panel data method. In this context, tests are carried out in panel data models to determine whether models can be pooled

(Poolability) OLS or whether fixed or random effect modeling is appropriate. As mentioned in the previous chapter; the Honda (1985) test selected for that purpose. The test results in Table 8 show that the Honda test null hypothesis (P <0.05) is rejected, therefore the data cannot be pooled, and random effects can be found in every single model.

Table 8 Honda Test Results

	Statistics Value	Probability Value (p)	Result
Model 1			
Cross-section	5.165424	0.0000***	Model cannot be pooled
Time	-0.232614	--	Model cannot be pooled
Both	3.488023	0.0002***	Model cannot be pooled
Model 2			
Cross-section	4.486782	0.0000***	Model cannot be pooled
Time	-0.139628	--	Model cannot be pooled
Both	3.073902	0.0011***	Model cannot be pooled
Model 3			
Cross-section	3.79487	0.0001***	Model cannot be pooled
Time	-0.232614	--	Model cannot be pooled
Both	2.414517	0.0079***	Model cannot be pooled
Model 4			
Cross-section	7.034447	0.0000***	Model cannot be pooled
Time	-0.986577	--	Model cannot be pooled
Both	4.276489	0.0000***	Model cannot be pooled
Model 5			
Cross-section	6.907549	0.0000***	Model cannot be pooled
Time	-0.974074	--	Model cannot be pooled
Both	4.1956	0.0000***	Model cannot be pooled
Model 6			
Cross-section	7.057008	0.0000***	Model cannot be pooled
Time	-0.88045	--	Model cannot be

Both	4.367486	0.0000***	pooled Model cannot be pooled

*, **, *** means statistical significance at 10%, 5% and 1% levels.

The next step is to investigate whether models are suitable for fixed effects or for random effects model after it has been determined that the panel data models cannot be pooled. The Hausman (1978) test is used for this purpose. The Hausman test shows that acceptance of the null hypothesis (H0) indicates the suitability of the random effects model and its rejection indicates that the fixed effects model should be applied. The H0 hypotheses were found to be approved (P > 0.05) and the decision was made to use random effects method in all models according to the Hausman results in Table 9.

Table 9 Hausman Test Results

	Statistics Value	Probability Value (p)	Result
Model 1	2.219294	0.5282	Random effects method should be chosen
Model 2	2.136778	0.5445	Random effects method should be chosen
Model 3	3.251648	0.5166	Random effects method should be chosen
Model 4	7.618793	0.0546	Random effects method should be chosen
Model 5	5.612075	0.1321	Random effects method should be chosen

Model 6	5.623098	0.2291	Random effects method should be chosen

D. Regression Results

1. Relation between Marketing Efforts and Firm's Market Value

The study uses panel regression analysis. For testing the impact of marketing efforts on firm financial performance indicators, in respect of changes in dependent variables the study runs six models.

Table 10 Model 1 Panel Regression Test Results

Dependent Variable: TOBIN				
	Coefficient	Robust Std. Error	z statistics	Probability Value (p)
MTS	0.3750365	0.7989334	0.47	0.639
LNSIZE	-0.1153634	0.0520062	-2.22	0.027**
DEBT	0.0769689	0.3507153	0.22	0.826
C	3.700027	1.130133	3.27	0.001***

N (number of observations): 196, Wald chi2 (3): 6.84 (Probability value: 0.0773), R2: 0.0382

*, **, *** means statistical significance at 10%, 5% and 1% levels.

$$TOBIN_{it} = 3.7 + 0.375\text{MTS}_{it} + -0.115\text{LNSIZE}_{it} + 0.077\text{DEBT}_{it} + \varepsilon_{it} \quad \textbf{(4.1)}$$

Equation 4.1 regressed with dependent variable Tobin's Q and independent variable marketing intensity (MTS). The model regressed under panel data analysis with random effect method and results explained that marketing intensity MTS has no relationship with TOBIN with z-statistic 0.47 and p-value 0.639> 0.05. Therefore, the marketing intensity has no impact on the Tobin's Q. Firm size (LNSIZE), which is included as a control variable in the study, has a negative effect on firm market value (TOBIN). This effect is statistically significant with z-statistic = -2.22 and p-value 0.027. The other control variable, debt ratio (DEBT), was found that has no relationship with TOBIN with z-statistic 0.22 and p-value 0.826> 0.05. The Wald chi2 (3) of model is 6.84 with p-value 0.0773 and R-square is 3.82%. Since the p-

value of MTS is 0.639 it is high enough to accept H0 so that means that we do not reject the null hypothesis, which is *H10: There is no relationship between marketing intensity and firm market value (Tobin's Q).* Note that all models from equation 4.1 to 4.6 were regressed under random effect method.

Table 11 Model 2 Panel Regression Test Results

Dependent Variable: TOBIN				
	Coefficient	Robust Std. Error	z statistics	Probability Value (p)
MTOE	1.030872	0.4929967	2.09	0.037**
LNSIZE	-0.1594106	0.0551021	-2.89	0.004***
DEBT	-0.1011521	0.3348617	-0.3	0.763
C	4.47667	1.175609	3.81	0.000***

N (number of observations): 196, Wald chi2 (3): 9.09 (Probability value: 0.0281), R2: 0.0955

*, **, *** means statistical significance at 10%, 5% and 1% levels.

$$TOBIN_{it} = 4.47 + 1.03\text{MTOE}_{it} + -0.159\text{LNSIZE}_{it} + -0.1\text{DEBT}_{it} + \varepsilon_{it} \quad \textbf{(4.2)}$$

In equation 4.2, the dependent variable is TOBIN as in the first model. However, in this model, the variable of MTOE is included as an independent variable instead of MTS. The model regressed under panel data analysis with random effect method and results explained that marketing expenditures in relation to operating expenditures (MTOE) has a significant and positive relationship with TOBIN with z-statistic 2.09 and p-value 0.037 <0.05. Therefore, marketing expenditures in relation to operating expenditures has impact on the Tobin's Q. Firm size (LNSIZE) variable also has a negative effect on firm market value (TOBIN). This effect is statistically significant with z-statistic = -2.89 and p-value 0.004. The other control variable, debt ratio (DEBT), was also found that has no relationship with TOBIN with z-statistic -0.3 and p-value 0.763> 0.05. The Wald chi2 (3) of model is 9.09 with p-value 0.0281 and R-square is 9.55%. Since the p-value of MTOE is 0.037 it is small enough to reject H0, so that means that we do reject the null hypothesis and accept the alternative hypothesis H2A, which it states that *There is a relationship between* marketing *expenditures to operating expenditures ratio and firm market value (Tobin's Q).*

Table 12 Model 3 Panel Regression Test Results

Dependent Variable: TOBIN

	Coefficient	Robust Std. Error	z statistics	Probability Value (p)
MTS	-4.043575	2.23216	-1.81	0.070*
MTOE	1.999089	0.9144559	2.19	0.029**
LNSIZE	-0.1874535	0.0618127	-3.03	0.002***
DEBT	-0.0860548	0.3436554	-0.25	0.802
C	5.012468	1.282602	3.91	0.000***

N (number of observations): 196, Wald chi2 (4): 11.14 (Probability value: 0.0250), R2: 0.1417

*, **, *** means statistical significance at 10%, 5% and 1% levels.

$$TOBIN_{it} = 5.01 + -4.04\text{MTS}_{it} + 1.99\text{MTOE}_{it} + -0.18\text{LNSIZE}_{it} - 0.08\text{DEBT}_{it} + \varepsilon_{it}$$

(4.3)

In Model 3, as in Model 1 and Model 2, the dependent variable is TOBIN. However, the MTS and MTOE variables are included together as independent variables in this model. The model regressed under panel data analysis with random effect method and results explained that MTS has a significant and negative relationship with TOBIN with z-statistic -1.81 and p-value 0.07. Therefore, the increasing in marketing intensity causing decreasing in the firm market value (TOBIN). The other independent value MTOE has a significant and positive relationship with TOBIN with z-statistic 2.19 and p-value 0.029 <0.05. Firm size (LNSIZE) variable also has a negative effect on firm market value (TOBIN). This effect is statistically significant with z-statistic = -3.03 and p-value 0.002. The other control variable, debt ratio (DEBT), was also found that has no relationship with TOBIN with z-statistic -0.25 and p-value 0.802> 0.05. The Wald chi2 (4) of model is 11.14 with p-value 0.025 and R-square is 14%.

In the previous three models, the results show that when marketing intensity was presented a lone with controls variables as shown in Model 1, it was found that has no relationship with the Tobin's Q and that means that has no effect on the firm market value. In addition, when marketing expenditures in relation to operating expenditures presented alone with control variables as shown in Model 2, it was found that has a significant and positive relationship with Tobin's Q and that means that has effect on the firm market value. However, when marketing intensity and marketing expenditures in relation to operating expenditures were included together in the same model with control variables as shown in model 3, it was found that marketing intensity has a significant and negative relationship with Tobin's Q and thus nega-

tively effect on firm market value. While, marketing expenditures in relation to operating expenditures has a significant and positive relationship with Tobin's Q and thus positively effect on firm market value.

2. Relation between Marketing Efforts and Firm Profitability

Table 13 Model 4 Panel Regression Test Results

Dependent Variable: ROA				
	Coefficient	Robust Std. Error	z statistics	Probability Value (p)
MTS	-0.2150495	0.1334376	-1.61	0.107
LNSIZE	0.0129287	0.0045724	2.83	0.005***
DEBT	-0.0870619	0.0517525	-1.68	0.093*
C	-0.153907	0.1068057	-1.44	0.150

N (number of observations): 196, Wald chi2 (3): 14.2 (Probability value: 0.0027), R2: 0.0591

*, **, *** means statistical significance at 10%, 5% and 1% levels.

$$ROA_{it} = -0.15 + -0.21\text{MTS}_{it} + 0.0123\text{LNSIZE}_{it} + -0.087\text{DEBT}_{it} + \varepsilon_{it} \quad \textbf{(4.4)}$$

In equation 4.4, the dependent variable this time is return on assets (ROA) and independent variable marketing intensity (MTS). The model regressed under panel data analysis with random effect method and results explained that marketing intensity (MTS) has no relationship with return on asset (ROA) with z-statistic -1.61 and p-value 0.107> 0.05. Therefore, marketing intensity has no impact on firm profitability. In this model, it was found that the firm size (LNSIZE) has a positive effect on firm profitability (ROA). This effect is statistically significant with z-statistic = 2.83 and p-value 0.005. The other control variable, debt ratio (DEBT), has a negative effect on firm profitability (ROA) with z-statistic -1.68 and p-value 0.093. The Wald chi2 (3) of model is 14.2 with p-value 0.0027 and R-square is 5.91%. Since the p-value of MTS is 0.107 it is high enough to accept H30 so that means that we do not reject the null hypothesis, which is H30: *There is no relationship between marketing intensity and firm profitability (ROA).*

Tablo 14 Model 5 Panel Regression Test Results

Dependent Variable: ROA				
	Coefficient	Robust Std. Error	z statistics	Probability Value (p)
MTOE	-0.0114717	0.0399528	-0.29	0.774
LNSIZE	0.0126756	0.0049272	2.57	0.010**
DEBT	-0.0945179	0.0536758	-1.76	0.078*
C	-0.1524631	0.1133855	-1.34	0.179

N (number of observations): 196, Wald chi2 (3): 12.62 (Probability value: 0.0055), R2: 0.0511

*, **, *** means statistical significance at 10%, 5% and 1% levels.

$$ROA_{it} = -0.15 + -0.011\text{MTOE}_{it} + 0.0126\text{LNSIZE}_{it} + -0.094\text{DEBT}_{it} + \varepsilon_{it} \quad \textbf{(4.5)}$$

In equation 4.5, the dependent variable is ROA as in previous model. However, in this model, the variable of MTOE is included as an independent variable instead of MTS. The model regressed under panel data analysis with random effect method and results explained that marketing expenditures in relation to operating expenditures (MTOE) has no relationship with ROA with z-statistic -0.29 and p-value 0.774> 0.05. Therefore, marketing expenditures in relation to operating expenditures has no impact on the firm profitability. Firm size (LNSIZE) variable also has a positive effect on firm profitability (ROA). This effect is statistically significant with z-statistic = 2.57 and p-value 0.01. The other control variable, debt ratio (DEBT) also found negatively affects the dependent variable ROA with z-statistic -1.76 and p-value 0.078. The Wald chi2 (3) of model is 12.62 with p-value 0.0055 and R-square is 5.11%. Since the p-value of MTOE is 0.774 it is high enough to accept H40 so that means that we do not reject the null hypothesis, which is H40: *There is no relationship between marketing expenditures to operating expenditures ratio and firm profitability (ROA).*

Tablo 15 Model 6 Panel Regression Test Results

Dependent Variable: ROA				
	Coefficient	Robust Std. Error	z statistics	Probability Value (p)
MTS	-0.379468	0.1660619	-2.29	0.022**
MTOE	0.0796552	0.0467431	1.7	0.088*
LNSIZE	0.0098585	0.004982	1.98	0.048**
DEBT	-0.0907655	0.051981	-1.75	0.081*
C	-0.0999004	01169485	-0.85	0.393

N (number of observations): 196, Wald chi2 (4): 14.80 (Probability value: 0.0051), R2: 0.0739

*, **, *** means statistical significance at 10%, 5% and 1% levels.

$$ROA_{it} = -0.099 + -0.379\text{MTS}_{it} + 0.079\text{MTOE}_{it} + 0.0098\text{LNSIZE}_{it} - 0.09\text{DEBT}_{it} + \varepsilon_{it}$$

(4.9)

In Model 6, as in Model 4 and Model 5, the dependent variable is ROA. However, the MTS and MTOE variables are included together as independent variables in this model. The model regressed under panel data analysis with random effect method and results explained that MTS has a significant and negative relationship with ROA with z-statistic -2.29 and p-value 0.022 <0.05. Therefore, the increasing in marketing intensity causing decreasing in the firm profitability (ROA). The other independent value MTOE has a significant and positive relationship with TOBIN with z-statistic 1.7 and p-value 0.088. Firm size (LNSIZE) variable also has a positive effect on firm market value (ROA). This effect is statistically significant with z-statistic = 1.98 and p-value 0.045. The other control variable, debt ratio (DEBT), was also found that negatively affects the dependent variable ROA with z-statistic -1.75 and p-value 0.081. The Wald chi2 (4) of model is 14.8 with p-value 0.0051 and R-square is 7.39%.

In the previous three models, the results show that when marketing intensity was presented a lone with controls variables as shown in Model 4, it was found that has no relationship with ROA and thus has no effect on firm profitability. In addition, when marketing expenditures in relation to operating expenditures presented alone with control variables as shown in model 5, it was found that has no relationship with ROA and that means that has no effect on the firm profitability. However, when marketing intensity and marketing expenditures in relation to operating expenditures were included together in the same model with control variables as shown in Model 6, it was found that marketing intensity has a significant and negative relationship with ROA and thus negatively effect on firm profitability, and marketing expenditures in relation to operating expenditures has a significant and positive relationship with ROA and thus positively affect the firm profitability.

V. DISCUSSION AND CONCLUSION

A. Summary and Conclusion

The relationship between marketing efforts and financial performance of the firm has been an important topic for researchers. In this thesis, it is aimed at understanding the utilization and impact of marketing efforts on the financial performance of firms.

The most important expenses for a company are operating costs. The operating expenses of "Research and Development," "General Management" and "Marketing" are part of its activities. Without a doubt, the main costs are the marketing expenses of companies. In theoretical discussions, most studies on several countries have argued that "Marketing expenditures" are an investment that in future will generate value for the company. The majority of studies on the subject found positive results between marketing and firm profitability, firm value or firm sales.

The purpose of this study is to examine the effect of "Marketing efforts" on firm financial performance. In the research, the data of 2016-2019 of 49 companies whose stocks are traded in Borsa Istanbul (BIST) Services Index (XUHIZ) were used. Marketing efforts indicators (marketing intensity MTS and marketing expenditures in relation to operating expenditures MTOE), were used as independent variables in the study. Debt ratio (DEBT) and firm size (INSIZE) are included in the analysis as control variables. As the dependent variables (Return on Assets ROA and Tobin’s Q), were used as indicator of the firm performance.

The study uses six various econometric models in order to find out the cause and effect relationship between marketing efforts and firm performance in order to test whether marketing expenditure impacts the firm performance.

A panel regression analysis was used as analysis method. According to the results of panel regression analysis, by analyzing 6 six various econometric models, in term of firm market value, in contrast to other studies, it was found that marketing

intensity MTS has a significant and negative relationship with Tobin's Q and thus negatively effect on firm market value. However, marketing expenditures in relation to operating expenditures MTOE has a significant and positive relationship with Tobin's Q and thus positively effect on firm market value. In term of firm profitability, in contrast to other studies, it was found that marketing intensity MTS has a significant and negative relationship with ROA and thus negatively effect on firm profitability. However, marketing expenditures in relation to operating expenditures MTOE has a significant and positive relationship with ROA and thus positively effect on firm profitability.

Furthermore, in this research, when the control variables are examined, a negative relationship between the debt ratio of firms (DEBT) and return on asset (ROA) and thus the debt is a determinant on firm profitability. However, it was found that there is no relationship between the debt ratio of firms (DEBT) and TOBIN and thus the debt is not a determinant on firm market value. In addition, a negative relationship between firm size (LNSIZE) and ROA was found; however, a positive relationship was found between firm size (LNSIZE) and TOBIN and thus the firm size is a determinant on both firm profitability and market value.

In conclusion, for companies where listed in Borsa Istanbul (BIST) Service Index, in term of firm profitability, MTS and DEBT have a significant and negative relationship with firm profitability and thus the increase in the ratio of marketing expenditures to total sales will decrease profitability rates of companies and that the debts is a determinant on firm profitability. However, in term of market value of the firm, it was found that MTS has significant and negative relationship with firm market value, but DEBT has no relationship with market value and thus the increase in the ratio of marketing expenditures to total sales will decrease market value of companies and that the debts is not a determinant on firm market value. These results reveal that low profitable and market value companies endure more marketing expenses as a percentage in order to grow and increase their sales

However, in terms of MTOE, it was found that MTOE has a significant and positive relationship with both firm market value and firm profitability and thus an increase in marketing expenditures in relation to operating expenditures will cause increase in both firm market value and firm profitability.

B. Limitations of the Study

As with most research studies, this research has certain limitations that should be recognized in order to suggest future studies. To list some of them:

- Out of all companies operate in Borsa Istanbul BIST, a 66 companies were operating in BIST service index have been selected.

- Out of 66 companies operating in BIST service index, 49 companies were used for the purpose of conducting a panel regression analysis because some companies their accounting periods are different and some companies are listed in Borsa Istanbul after 2016 and some companies' sales in some years are zero.

- Only two dependent variables as indicator of firm financial performance were employed in the study.

- This study covers the time period between 2016-2019.

C. Contribution to Literature

In the literature, even if there are several studies in different countries investigating the effect of marketing efforts on the firm financial performance, Marketing efforts - financial performance relationship, has not been studied enough in Turkey, marketing research were examined mostly one-dimensional. In this research, financial performance is measured in term of market value of the firm and profitability, which make this thesis work unique. By conducting this study, it has been possible to acquire information about what marketing efforts are and their role at a company, by doing an application on BIST companies, the future readers of the paper will be able to gain knowledge about which marketing efforts affect firm's financial performance in Turkey.

D. Recommendations for Future Studies

This thesis examines the effect of marketing efforts on firm financial performance of BIST service companies covering time period between 2016-2019. Instead

of 66 companies where listed in Borsa Istanbul BIST service index, future researchers can do the same research using all BIST companies for all sector with covering a wide range of time periods. The results of the analysis can therefore, be better generalized across a broader range of companies. In addition, further indicators of financial performance, which were not analyzed, can be studied to improve the quality of research.

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APPENDICES

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APPENDIX 1: List of 66 Companies were Listed in the Borsa Istanbul BIST Services Index (XUHIZ)

Table 16: List of 66 Companies were Listed in the Borsa Istanbul BIST Services Index (XUHIZ)

No	Code	Company Title
1	ADESE	ADESE ALIŞVERİŞ MERKEZLERİ TİCARET A.Ş.
2	AKGUV	AKDENİZ GÜVENLİK HİZMETLERİ A.Ş.
3	AKENR	AKENERJİ ELEKTRİK ÜRETİM A.Ş.
4	AKSEN	AKSA ENERJİ ÜRETİM A.Ş.
5	AKSUE	AKSU ENERJİ VE TİCARET A.Ş.
6	AYCES	ALTIN YUNUS ÇEŞME TURİSTİK TESİSLER A.Ş.
7	ANELE	ANEL ELEKTRİK PROJE TAAHHÜT VE TİCARET A.Ş.
8	AVTUR	AVRASYA PETROL VE TURİSTİK TESİSLER YATIRIMLAR A.Ş.
9	AYEN	AYEN ENERJİ A.Ş.
10	BJKAS	BEŞİKTAŞ FUTBOL YATIRIMLARI SANAYİ VE TİCARET A.Ş.
11	BEYAZ	BEYAZ FİLO OTO KİRALAMA A.Ş.
12	BIMAS	BİM BİRLEŞİK MAĞAZALAR A.Ş.
13	BIZIM	BİZİM TOPTAN SATIŞ MAĞAZALARI A.Ş.
14	CRFSA	CARREFOURSA CARREFOUR SABANCI TİCARET MERKEZİ A.Ş.
15	CEOEM	CEO EVENT MEDYA A.Ş.
16	CLEBI	ÇELEBİ HAVA SERVİSİ A.Ş.
17	DOCO	DO & CO AKTIENGESELLSCHAFT
18	DOAS	DOĞUŞ OTOMOTİV SERVİS VE TİCARET A.Ş.
19	EDIP	EDİP GAYRİMENKUL YATIRIM SANAYİ VE TİCARET A.Ş.
20	ENJSA	ENERJİSA ENERJİ A.Ş.
21	ENKAI	ENKA İNŞAAT VE SANAYİ A.Ş.
22	FENER	FENERBAHÇE FUTBOL A.Ş.
23	FLAP	FLAP KONGRE TOPLANTI HİZMETLERİ OTOMOTİV VE TURİZM A.Ş.
24	GSRAY	GALATASARAY SPORTİF SINAİ VE TİCARİ YATIRIMLAR A.Ş.
25	GSDDE	GSD DENİZCİLİK GAYRİMENKUL İNŞAAT SANAYİ VE TİCARET A.Ş.
26	IDEAS	İDEALİST DANIŞMANLIK A.Ş.
27	IHLGM	İHLAS GAYRİMENKUL PROJE GELİŞTİRME VE TİCARET A.Ş.
28	INTEM	İNTEMA İNŞAAT VE TESİSAT MALZEMELERİ YATIRIM VE PAZARLAMA A.Ş.
29	KUYAS	KUYUMCUKENT GAYRİMENKUL YATIRIMLARI A.Ş.

Table 16 (continued)

30	LKMNH	LOKMAN HEKİM ENGÜRÜSAĞ SAĞLIK, TURİZM, EĞİTİM HİZMETLERİ VE İNŞAAT TAAHHÜT A.Ş.
31	MAALT	MARMARİS ALTINYUNUS TURİSTİK TESİSLER A.Ş.
32	MARTI	MARTI OTEL İŞLETMELERİ A.Ş.
33	MAVI	MAVİ GİYİM SANAYİ VE TİCARET A.Ş.
34	MEPET	MEPET METRO PETROL VE TESİSLERİ SANAYİ TİCARET A.Ş.
35	METUR	METEMTUR OTELCİLİK VE TURİZM İŞLET-MELERİ A.Ş.
36	MGROS	MİGROS TİCARET A.Ş.
37	MIPAZ	MİLPA TİCARİ VE SINAİ ÜRÜNLER PAZARLA-MA SANAYİ VE TİCARET A.Ş.
38	MPARK	MLP SAĞLIK HİZMETLERİ A.Ş.
39	NATEN	NATUREL YENİLENEBİLİR ENERJİ TİCARET A.Ş.
40	ODAS	ODAŞ ELEKTRİK ÜRETİM SANAYİ TİCARET A.Ş.
41	ORGE	ORGE ENERJİ ELEKTRİK TAAHHÜT A.Ş.
42	PGSUS	PEGASUS HAVA TAŞIMACILIĞI A.Ş.
43	PSDTC	PERGAMON STATUS DIŞ TİCARET A.Ş.
44	PKENT	PETROKENT TURİZM A.Ş.
45	RYSAS	REYSAŞ TAŞIMACILIK VE LOJİSTİK TİCARET A.Ş.
46	SANEL	SAN-EL MÜHENDİSLİK ELEKTRİK TAAHHÜT SANAYİ VE TİCARET A.Ş.
47	SANKO	SANKO PAZARLAMA İTHALAT İHRACAT A.Ş.
48	SELEC	SELÇUK ECZA DEPOSU TİCARET VE SANAYİ A.Ş.
49	SNKRN	SENKRON GÜVENLİK VE İLETİŞİM SİSTEM-LERİ A.Ş.
50	SONME	SÖNMEZ FİLAMENT SENTETİK İPLİK VE EL-YAF SANAYİ A.Ş.
51	SOKM	ŞOK MARKETLER TİCARET A.Ş.
52	TEKTU	TEK-ART İNŞAAT TİCARET TURİZM SANAYİ VE YATIRIMLAR A.Ş.
53	TKNSA	TEKNOSA İÇ VE DIŞ TİCARET A.Ş.
54	TGSAS	TGS DIŞ TİCARET A.Ş.
55	TLMAN	TRABZON LİMAN İŞLETMECİLİĞİ A.Ş.
56	TSPOR	TRABZONSPOR SPORTİF YATIRIM VE FUTBOL İŞLETMECİLİĞİ TİCARET A.Ş.
57	TCELL	TURKCELL İLETİŞİM HİZMETLERİ A.Ş.
58	THYAO	TÜRK HAVA YOLLARI A.O.
59	TTKOM	TÜRK TELEKOMÜNİKASYON A.Ş.
60	TURGG	TÜRKER PROJE GAYRİMENKUL VE YATIRIM GELİŞTİRME A.Ş.

Table 16 (continued)

61	ULAS	ULAŞLAR TURİZM YATIRIMLARI VE DAYANIKLI TÜKETİM MALLARI TİCARET PAZARLAMA A.Ş.
62	UTPYA	UTOPYA TURİZM İNŞAAT İŞLETMECİLİK TİCARET A.Ş.
63	VAKKO	VAKKO TEKSTİL VE HAZIR GİYİM SANAYİ İŞLETMELERİ A.Ş.
64	YAYLA	YAYLA ENERJİ ÜRETİM TURİZM VE İNŞAAT TİCARET A.Ş.
65	YYAPI	YEŞİL YAPI ENDÜSTRİSİ A.Ş.
66	ZOREN	ZORLU ENERJİ ELEKTRİK ÜRETİM A.Ş.

APPENDIX 2: Lagrange Multiplier Tests Results for Random Effects for all Models using Eviews 9 Software

Equation: MODEL1 Workfile: MOHANNAD DATA SET-...

View | Proc | Object | Print | Name | Freeze | Estimate | Forecast | Stats | Resids

Lagrange Multiplier Tests for Random Effects
Null hypotheses: No effects
Alternative hypotheses: Two-sided (Breusch-Pagan) and one-sided (all others) alternatives

	Test Hypothesis		
	Cross-section	Time	Both
Breusch-Pagan	26.68161 (0.0000)	0.054109 (0.8161)	26.73572 (0.0000)
Honda	5.165424 (0.0000)	-0.232614 --	3.488023 (0.0002)
King-Wu	5.165424 (0.0000)	-0.232614 --	1.027130 (0.1522)
Standardized Honda	5.588063 (0.0000)	0.121727 (0.4516)	-1.219941 --
Standardized King-Wu	5.588063 (0.0000)	0.121727 (0.4516)	-1.540744 --
Gourierioux, et al.*	--	--	26.68161 (< 0.01)

Figure 6 Lagrange Multiplier Tests for Random Effects for Model 1

Equation: MODEL2 Workfile: MOHANNAD DATA SE...

View | Proc | Object | Print | Name | Freeze | Estimate | Forecast | Stats | Resids

Lagrange Multiplier Tests for Random Effects
Null hypotheses: No effects
Alternative hypotheses: Two-sided (Breusch-Pagan) and one-sided (all others) alternatives

	Test Hypothesis		
	Cross-section	Time	Both
Breusch-Pagan	20.13122 (0.0000)	0.019496 (0.8890)	20.15071 (0.0000)
Honda	4.486782 (0.0000)	-0.139628 --	3.073902 (0.0011)
King-Wu	4.486782 (0.0000)	-0.139628 --	0.952746 (0.1704)
Standardized Honda	4.905034 (0.0000)	0.227410 (0.4101)	-1.672983 --
Standardized King-Wu	4.905034 (0.0000)	0.227410 (0.4101)	-1.623655 --
Gourierioux, et al.*	--	--	20.13122 (< 0.01)

Figure 7 Lagrange Multiplier Tests for Random Effects for Model 2

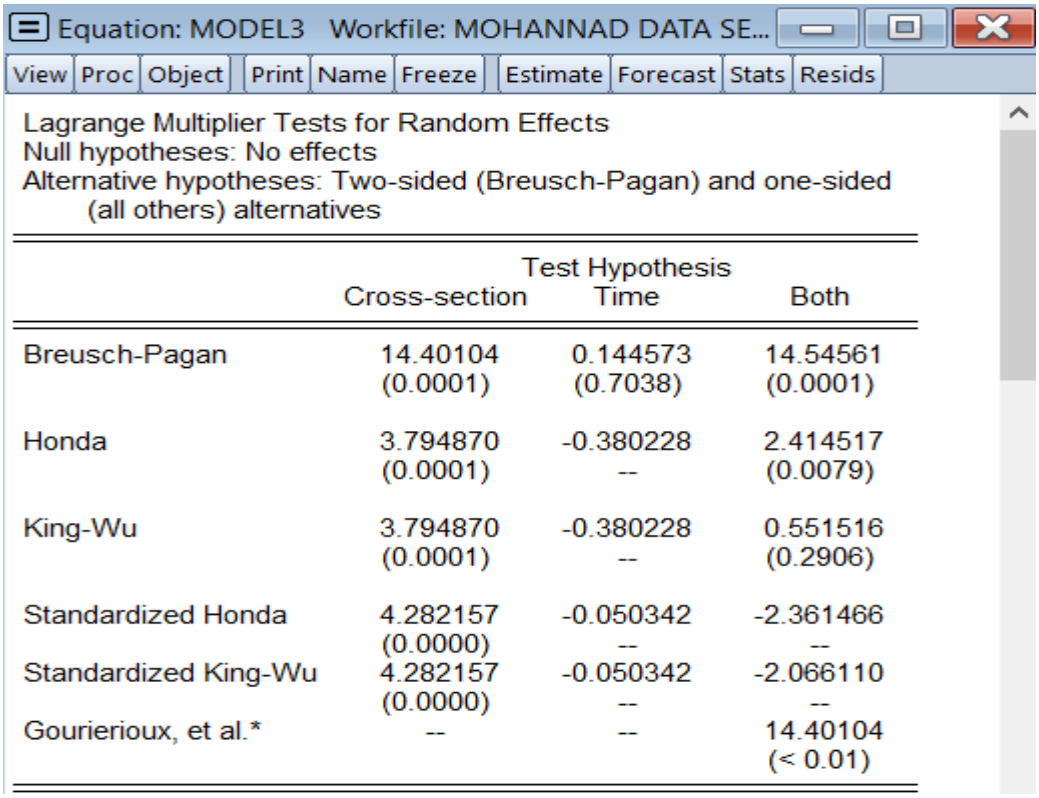


Figure 8 Lagrange Multiplier Tests for Random Effects for Model 3

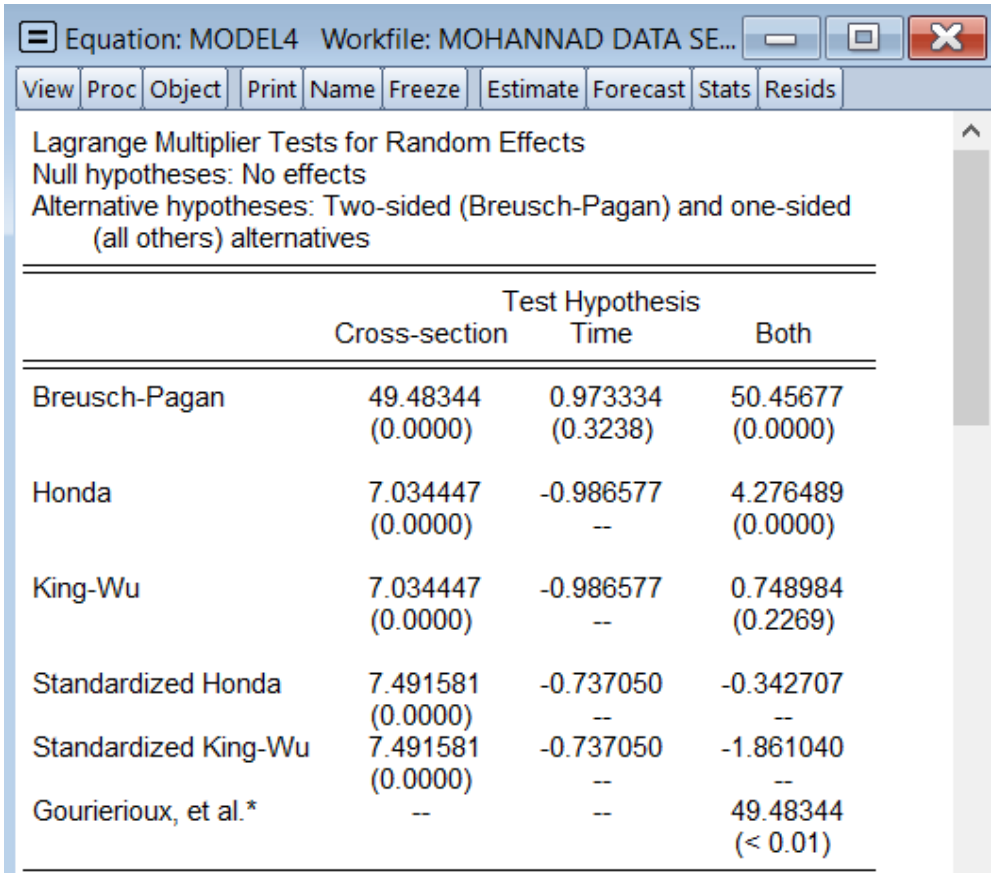
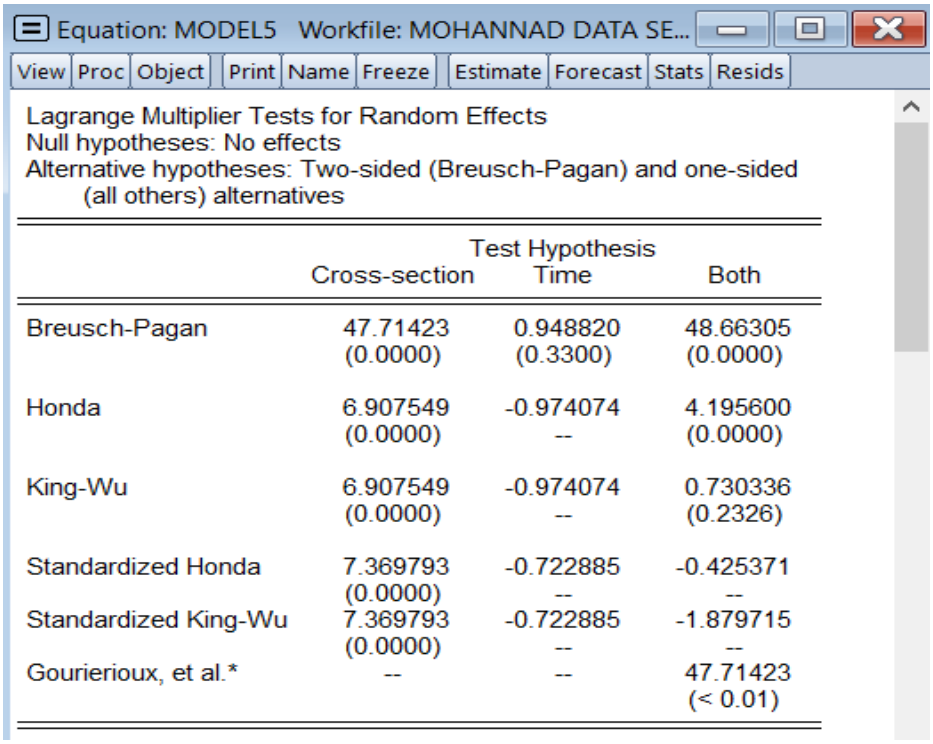


Figure 9 Lagrange Multiplier Tests for Random Effects for Model 4



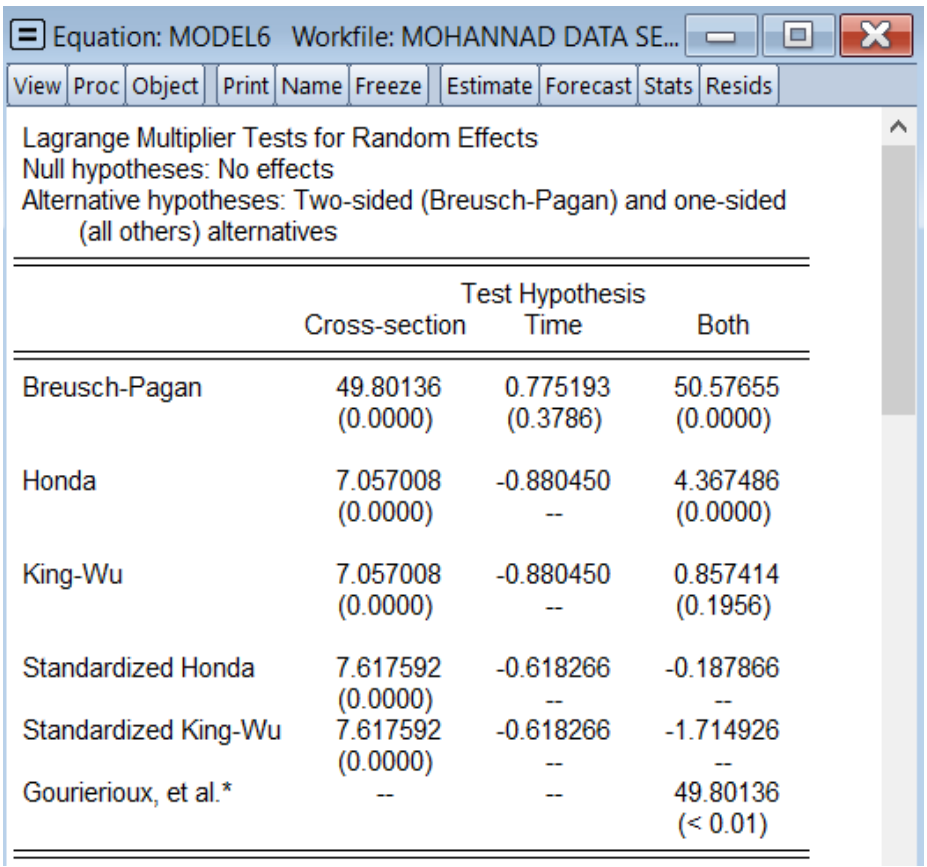
Equation: MODEL5 Workfile: MOHANNAD DATA SE...

View | Proc | Object | Print | Name | Freeze | Estimate | Forecast | Stats | Resids

Lagrange Multiplier Tests for Random Effects
Null hypotheses: No effects
Alternative hypotheses: Two-sided (Breusch-Pagan) and one-sided (all others) alternatives

	Test Hypothesis		
	Cross-section	Time	Both
Breusch-Pagan	47.71423 (0.0000)	0.948820 (0.3300)	48.66305 (0.0000)
Honda	6.907549 (0.0000)	-0.974074 --	4.195600 (0.0000)
King-Wu	6.907549 (0.0000)	-0.974074 --	0.730336 (0.2326)
Standardized Honda	7.369793 (0.0000)	-0.722885 --	-0.425371 --
Standardized King-Wu	7.369793 (0.0000)	-0.722885 --	-1.879715 --
Gourieroux, et al.*	--	--	47.71423 (< 0.01)

Figure 10 Lagrange Multiplier Tests for Random Effects for Model 5



Equation: MODEL6 Workfile: MOHANNAD DATA SE...

View | Proc | Object | Print | Name | Freeze | Estimate | Forecast | Stats | Resids

Lagrange Multiplier Tests for Random Effects
Null hypotheses: No effects
Alternative hypotheses: Two-sided (Breusch-Pagan) and one-sided (all others) alternatives

	Test Hypothesis		
	Cross-section	Time	Both
Breusch-Pagan	49.80136 (0.0000)	0.775193 (0.3786)	50.57655 (0.0000)
Honda	7.057008 (0.0000)	-0.880450 --	4.367486 (0.0000)
King-Wu	7.057008 (0.0000)	-0.880450 --	0.857414 (0.1956)
Standardized Honda	7.617592 (0.0000)	-0.618266 --	-0.187866 --
Standardized King-Wu	7.617592 (0.0000)	-0.618266 --	-1.714926 --
Gourieroux, et al.*	--	--	49.80136 (< 0.01)

Figure 11 Lagrange Multiplier Tests for Random Effects for Model 6

APPENDIX 3: Correlated Random Effects - Hausman Test Results for all Models using Eviews 9 Software

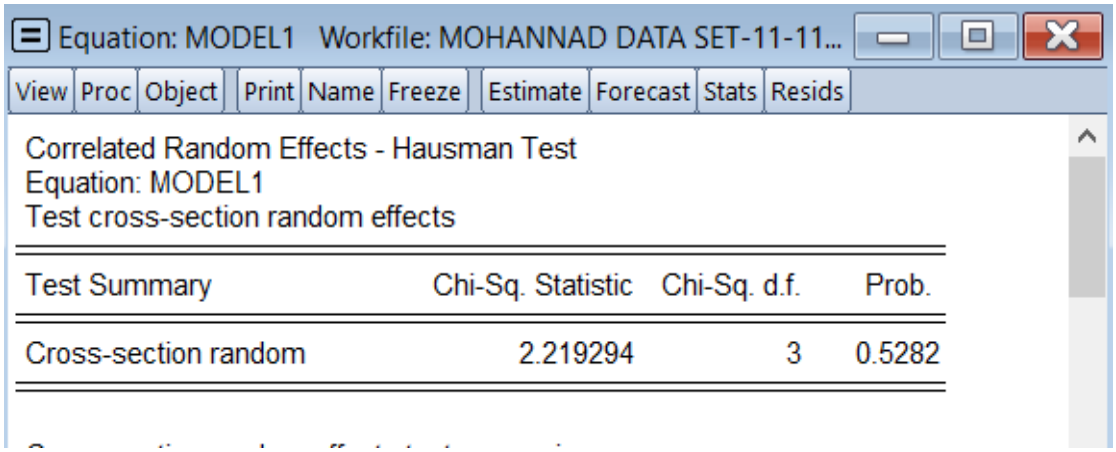


Figure 12 Correlated Random Effects - Hausman Test for Model 1

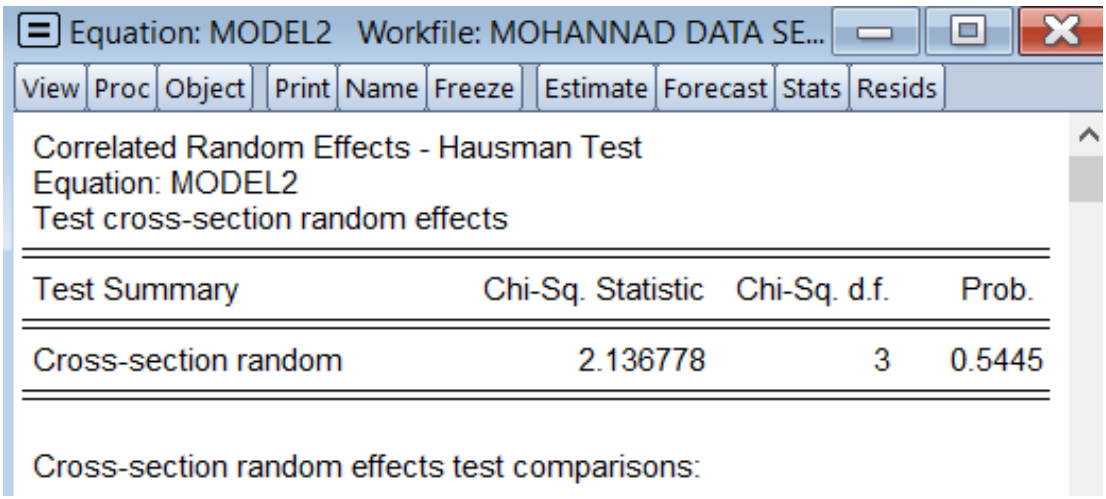


Figure 13 Correlated Random Effects - Hausman Test for Model 2

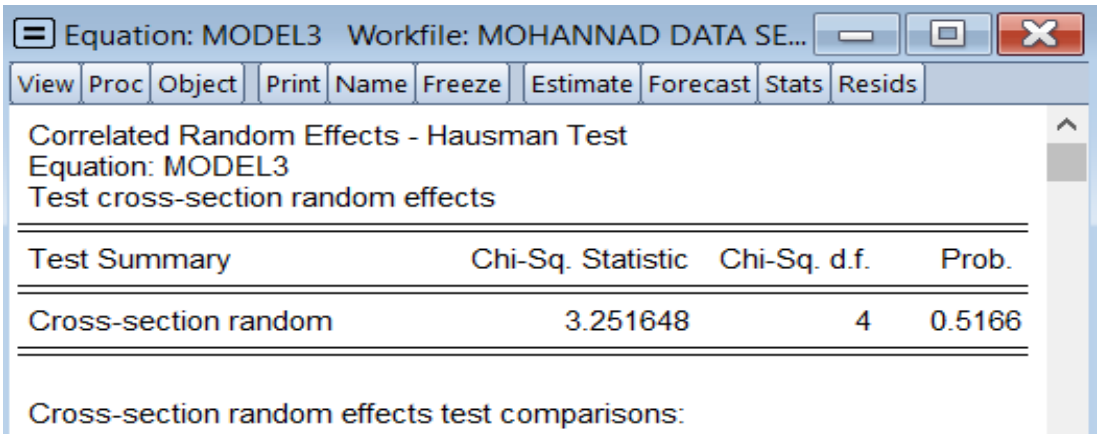


Figure 14 Correlated Random Effects - Hausman Test for Model 3

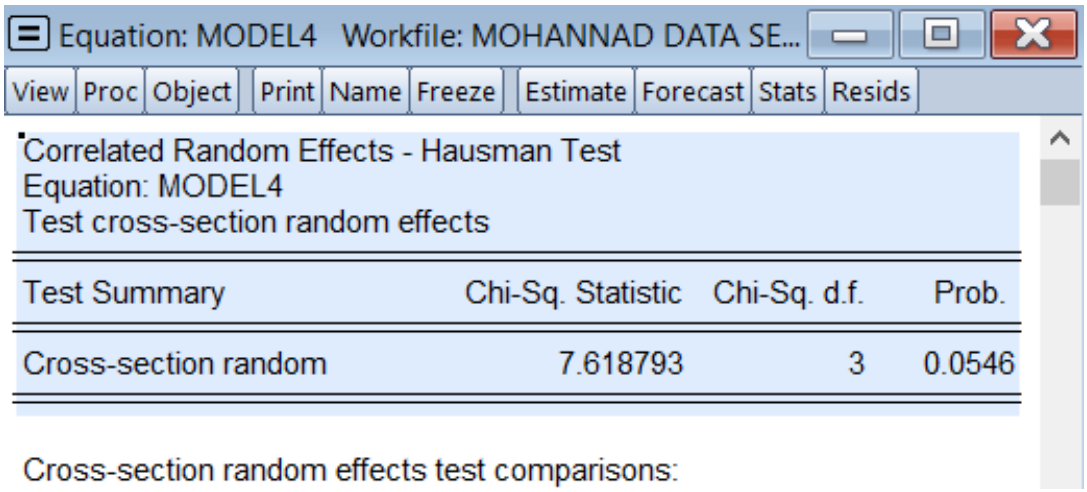


Figure 15 Correlated Random Effects - Hausman Test for Model 4

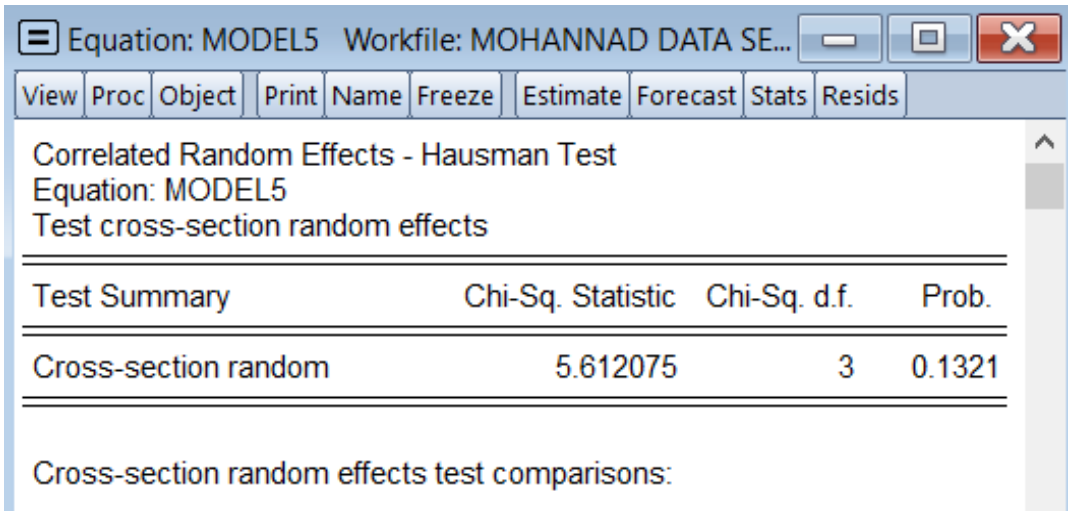


Figure 16 Correlated Random Effects - Hausman Test for Model 5

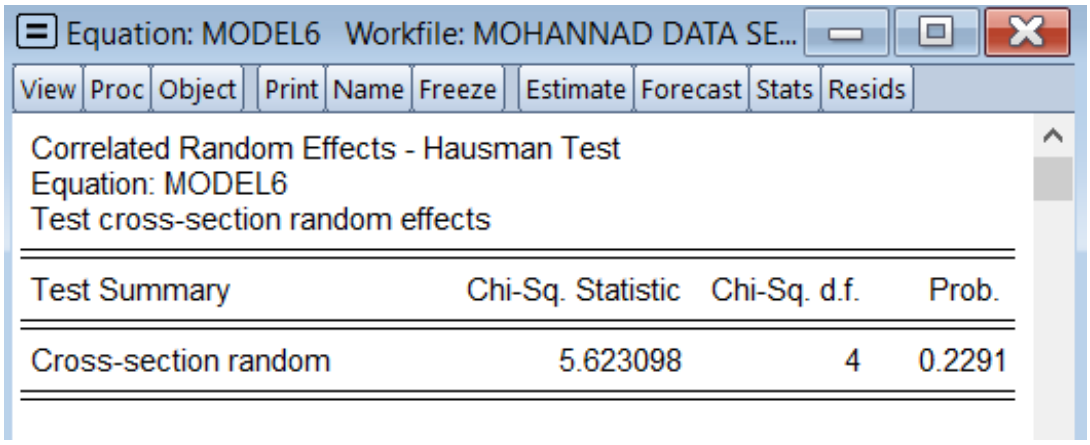


Figure 17 Correlated Random Effects - Hausman Test for Model 6

APPENDIX 4: Panel Regression Analysis Results for all Models using Stata 14 Software

Random-effects GLS regression — Number of obs = 196
Group variable: sirketler1 — Number of groups = 49

R-sq:
within = 0.0139
between = 0.0692
overall = 0.0382

Obs per group:
min = 4
avg = 4.0
max = 4

Wald chi2(3) = 6.84
corr(u_i, X) = 0 (assumed) — Prob > chi2 = 0.0773

(Std. Err. adjusted for 49 clusters in sirketler1)

tobin	Coef.	Robust Std. Err.	z	P>|z|	[95% Conf.	Interval]
mts	.3750365	.7989334	0.47	0.639	-1.190844	1.940917
lnsize	-.1153634	.0520062	-2.22	0.027	-.2172937	-.0134331
debt	.0769689	.3507153	0.22	0.826	-.6104204	.7643582
_cons	3.700027	1.130133	3.27	0.001	1.485007	5.915047
sigma_u	.63526686					
sigma_e	.91015169					
rho	.3275841	(fraction of variance due to u_i)				

Figure 18 Panel Regression Analysis Results for Model 1

Random-effects GLS regression — Number of obs = 196
Group variable: sirketler1 — Number of groups = 49

R-sq:
within = 0.0153
between = 0.1778
overall = 0.0955

Obs per group:
min = 4
avg = 4.0
max = 4

Wald chi2(3) = 9.09
corr(u_i, X) = 0 (assumed) — Prob > chi2 = 0.0281

(Std. Err. adjusted for 49 clusters in sirketler1)

tobin	Coef.	Robust Std. Err.	z	P>|z|	[95% Conf.	Interval]
mtoe	1.030872	.4929967	2.09	0.037	.0646158	1.997127
lnsize	-.1594106	.0551021	-2.89	0.004	-.2674086	-.0514125
debt	-.1011521	.3348617	-0.30	0.763	-.7574688	.5551647
_cons	4.47667	1.175609	3.81	0.000	2.172519	6.780822
sigma_u	.57632859					
sigma_e	.90760155					
rho	.28735705	(fraction of variance due to u_i)				

Figure 19 Panel Regression Analysis Results for Model 2

```
Random-effects GLS regression                   Number of obs     =       196
Group variable: sirketler1                      Number of groups  =        49

R-sq:                                           Obs per group:
     within  = 0.0186                                         min =         4
     between = 0.2691                                         avg =       4.0
     overall = 0.1417                                         max =         4

                                                Wald chi2(4)      =     11.14
corr(u_i, X)   = 0 (assumed)                    Prob > chi2       =    0.0250

                          (Std. Err. adjusted for 49 clusters in sirketler1)
------------------------------------------------------------------------------
             |               Robust
       tobin |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
         mts |  -4.043575    2.23216    -1.81   0.070    -8.418528    .3313775
        mtoe |   1.999089   .9144559     2.19   0.029     .2067881    3.791389
      lnsize |  -.1874535   .0618127    -3.03   0.002    -.3086042   -.0663028
        debt |  -.0860548   .3436554    -0.25   0.802     -.759607    .5874974
       _cons |   5.012468   1.282602     3.91   0.000     2.498614    7.526323
-------------+----------------------------------------------------------------
     sigma_u |  .52806826
     sigma_e |  .90741183
         rho |  .25298753   (fraction of variance due to u_i)
------------------------------------------------------------------------------
```

Figure 20 Panel Regression Analysis Results for Model 3

```
Random-effects GLS regression                   Number of obs     =       196
Group variable: sirketler1                      Number of groups  =        49

R-sq:                                           Obs per group:
     within  = 0.1117                                         min =         4
     between = 0.0581                                         avg =       4.0
     overall = 0.0591                                         max =         4

                                                Wald chi2(3)      =     14.12
corr(u_i, X)   = 0 (assumed)                    Prob > chi2       =    0.0027

                          (Std. Err. adjusted for 49 clusters in sirketler1)
------------------------------------------------------------------------------
             |               Robust
         roa |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
         mts |  -.2150495   .1334376    -1.61   0.107    -.4765823    .0464833
      lnsize |   .0129287   .0045724     2.83   0.005     .0039669    .0218905
        debt |  -.0870619   .0517525    -1.68   0.093    -.1884949    .0143712
       _cons |   -.153907   .1068057    -1.44   0.150    -.3632424    .0554283
-------------+----------------------------------------------------------------
     sigma_u |  .06138086
     sigma_e |  .06791545
         rho |  .44958917   (fraction of variance due to u_i)
------------------------------------------------------------------------------
```

Figure 21 Panel Regression Analysis Results for Model 4

```
Random-effects GLS regression                   Number of obs     =        196
Group variable: sirketler1                      Number of groups  =         49

R-sq:                                           Obs per group:
     within  = 0.0699                                         min =          4
     between = 0.0595                                         avg =        4.0
     overall = 0.0511                                         max =          4

                                                Wald chi2(3)      =      12.62
corr(u_i, X)   = 0 (assumed)                    Prob > chi2       =     0.0055

                          (Std. Err. adjusted for 49 clusters in sirketler1)
------------------------------------------------------------------------------
             |               Robust
         roa |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
        mtoe |  -.0114717   .0399528    -0.29   0.774    -.0897778    .0668343
      lnsize |   .0126756   .0049272     2.57   0.010     .0030184    .0223327
        debt |  -.0945179   .0536758    -1.76   0.078    -.1997205    .0106846
       _cons |  -.1524631   .1133855    -1.34   0.179    -.3746946    .0697684
-------------+----------------------------------------------------------------
     sigma_u |  .06111547
     sigma_e |  .06932195
         rho |  .43733294   (fraction of variance due to u_i)
------------------------------------------------------------------------------
```

Figure 22 Panel Regression Analysis Results for Model 5

```
Random-effects GLS regression                   Number of obs     =        196
Group variable: sirketler1                      Number of groups  =         49

R-sq:                                           Obs per group:
     within  = 0.1077                                         min =          4
     between = 0.0736                                         avg =        4.0
     overall = 0.0738                                         max =          4

                                                Wald chi2(4)      =      14.80
corr(u_i, X)   = 0 (assumed)                    Prob > chi2       =     0.0051

                          (Std. Err. adjusted for 49 clusters in sirketler1)
------------------------------------------------------------------------------
             |               Robust
         roa |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
         mts |  -.379468    .1660619    -2.29   0.022    -.7049434   -.0539927
        mtoe |   .0796552   .0467431     1.70   0.088    -.0119595     .17127
      lnsize |   .0098585    .004982     1.98   0.048      .000094    .0196229
        debt |  -.0907655    .051981    -1.75   0.081    -.1926463    .0111154
       _cons |  -.0999004   .1169485    -0.85   0.393    -.3291153    .1293145
-------------+----------------------------------------------------------------
     sigma_u |  .06174239
     sigma_e |  .06812419
         rho |  .45097714   (fraction of variance due to u_i)
------------------------------------------------------------------------------
```

Figure 23 Panel Regression Analysis Results for Model 6

RESUME

Name Surname : Mohannad T A GARBIAH

Place of Birth : UAE

Date of Birth : 17/01/1995

E-mail : m.g1995@hotmail.com

ATTRIBUTE:

A Civil Engineer who is enthusiastic, highly motivated and has a clear understanding of the responsibilities associated with a civil engineer combining the role of the knowledge that was taken from the college through the years with the experience gained from the field. Seeking to share my ideas and adding value to any project that I participated into**.**

EDUCATION:

- **Bachelor :** 2017, Islamic University of Gaza, Faculty of Engineering, Civil Engineering
- **Master :** 2021, Istanbul Aydin University, Master of Business Administration with Thesis

WORK EXPERIENCE:

- **AL Roaya Alshamela for Engineering Consultant**
  - **Training Period:** 3 month
  - **Field of Training:** Supervisor Engineer in Construction of Financial Ministry of Palestine in Gaza

- **AlShawwa Co. SCC**
    - **Working Period:** September 2017- May 2018
    - **Field of Working:** Site Engineer in Construction of Musaed Bin Abduallah Al-Azmi School in Deir Al Ballah Project.

SKILLS

- Mastering the required Civil Engineering Software:
    - Robot
    - AutoCad 2D
    - Revit Structure (with certified certificate of completion the required course of Autodesk with certificate No. 1RNSSRNSR7)
    - WaterGEMS
    - MS Project
    - ARC Map
- Good communication skills
- Hard working
- The ability to work under pressure
- Team worker
- Good decision maker
- Creative thinking
- Excellent bill of quantity skills

LANGUAGES

- Native Arabic
- Fluent English
- Good Turkish