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Strategic Planning In Libya's Higher Education System: A Theoretical Evaluation[1]

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Abstract
For nearly 30 years, strategic planning researchers, advocates, and practitioners have argued that effective strategic management is a tool to improve organizational performance. They argue that this is associated with a positive relationship between strategic planning and organizational performance. They argue that strategic planning is associated with organization and environmental harmony. This is because improved financial performance, the definition of effective organizational missions, is vital to create and sustain competition. The Relationship between Strategic Planning and Performance Concepts requires that strategic planning and performance management processes be considered inseparable as two parts, when both concepts require an efficient and efficient operation. In fact, the relationship between the two concepts can be expressed quite simply. Targets are part of the strategic planning process. This study aims to understand strategic planning taking into account the present circumstances.
Keywords: Strategic Planning, University of Tripoli, Higher Education Performance

1.Introduction

Over the past few years, both the programs and the number of students in Libya's higher education institutions have increased dramatically. The large increase in the number of higher education institutions also has exceeded the country's needs and demands. There are many studies on this subject in the literature. The common ideas of studies are that there are many shortcomings in the current higher education system in Libya, both in performance and function. This study found that the implementation of tertiary institutions present in Libya needs to be critically evaluated. It has been noted that the implementation of higher education institutions should be addressed in a comprehensive manner. The notion of strategic planning may first be used to assert that a process that is incomplete or flawed, when it comes to the emergence of educational institutions, can be dealt with in a strategic plan. This increases the development and performance of organizations (Piorun, 2011).

2.Literature

Organizational performance is crucial for the organization to determine the speed of inventory turnover, clients, profitability, market share, and productivity levels. The goal of these organizations is to improve organizational performance. Because the main purpose of organizations is to make profits. And Iravo. (2013) one of the questions in business is why some organizations fail others. It is also being attempted to determine the relationship between the driving forces of organizational performance and its success. In her work published in Fwaya (2006), she sees performance as a formula for evaluating an organization under certain parameters such as operation, efficiency, motivation and effectiveness. Nzuve and Nyaega (2012) argue that

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performance management and improvement are at the heart of strategic management. The reason is that many strategic ideas are aimed at identifying and measuring performance. Awino (2011) argues that an organization must achieve high returns and determine performance factors at all levels in order to be considered successful. Odhiambo (2009) argues that organizations may prefer three performance-oriented approaches. The first is the target approach (the organization pursues specific identifiable goals). Second, the system approach (which defines performance as the relationship between the organization and its surroundings) (URL-1 Access Date:01.06.2021). Aboudaber (2022) explores the impact of strategic planning to achieve recommendations that improve efficiency and effectiveness in tertiary institutions in Libya

He sees the main concept of performance as the ability to secure the organization's limited and valuable resources in its environment. The third approach to the process relates the performance to the behavior of the organization's human resource (Waiganjo et.al., 2012). Kiragu (2005) associates the concept of performance with four factors: financial, customer, internal processes, and innovation. The financial factor refers to financial factors for improving performance such as profit margin, asset transfer, leverage, cash flow, and operating capital (Wadongo, etc., 2010). Customer-factor performance characterizes brand image, customer satisfaction, customer retention and customer profitability. Internal processes emphasize the efficiency of the organization's system, while ultimately, innovation is the organization's potential to adapt to changing conditions. This work is based on Resource-Based Theory. According to Resource-Based Theory, strategic management and economics are closely related to each other. On the other hand, they have the power to influence each other (Barney, 1991). The other principle of this theory is that the organization's ability to compete or perform at a high level is proportional to its distinctive property (Johnson and., 2008). Resource-Based Theory primarily advocates control of the organization's valuable material or non-material resources (Penrose, 1959; Rumelt, 1984; Wernerfelt, 1984). The related theory argues that organizations must be heterogeneous and not mobile in order to turn short-term competitive advantages into a sustainable competitive advantage. What is meant by non-mobile is that they are not imitative and cannot be substituted (Barney, 1991). The strategy is a match between the organizations' own internal resources and capabilities, and the opportunities and risks created by their external environments. The organization's resources and capabilities are the fundamental issues that determine their strategies. These resources and abilities also help to establish an organization's identity.

The main objective of Resource-Based Theory is to understand relationships between resources, skills, competitive advantage, and performance. Source-based opinion has become a common interest for management science writers, and many works have been written about it. Source-Based Theory argues that if resources are administered so that they cannot be imitated by competitors, then they will be given a sustainable competitive advantage. The inability to replicate resources creates a competitive barrier for other organizations (Mahoney and Pandian, 1992). An organization will take advantage of sustainable competition because its resources are rare, valuable, imitative, non-negotiable, non-residential (Barney, 1999). Umar (2005) investigated the strategic management relationship between the merger of Nestle and Lever Brothers. A review of the study's findings finds that strategic management practices, particularly merging, have played a crucial role in the success, growth, and survival of organizations (URL-2 Access Date: 08.06.2022). In his studies Ademi (1992) he discovered a positive relationship between strategic management and organizational performance in Nigerian banks. Another researcher examined the impact of strategic management on enterprise performance in selected small businesses in Lagos Metropolis, Nigeria. The findings found that strategic management practices increase both corporate profitability and business market share. Thus it has been suggested that the concept of strategic planning should be strictly adopted by commercial enterprises (Dauda et.al., 2010), Fiberesima and Abdul Rani (2013) have studied the effects of strategic management on the success of organizations in their business. The study concludes that strategic management is positively associated with corporate success, and that strategic management practices are successful in business. Another work was done in Kenya by Gichunge (2007). This study also examined the relationship between strategic management and organizational performance of medium-sized manufacturing enterprises. One of the key

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findings of the study is the existence of a relationship between competition and strategic management. Businesses that officially adopt strategic management are outperforming businesses that don't. Singh (2005) chose a different institution in his work. The organization favored in the study differs from non-profit. The most important finding of the study is the relationship between strategic planning and organization performance even in non-profit institutions.

In their study, Askarany and Yazdifar (2012), they examined the relationship of proposed strategic management techniques to the theory of organizational change in recent years. The relationship between organizational performance and strategic management techniques in almost all sectors of New Zealand is under scrutiny. Results show an important relationship between the adoption of new strategic management techniques and the performance of business. Owolabi and Makinde (2012) studied the effects of strategic planning on institutional performance at Babcock University in Nigeria. As a result, they demonstrated a meaningful positive relationship between strategic planning and business performance. Andrews and I. (2006) they studied the relationship between strategy and organizational performance with a variable model in which external factors were taken into account. The research consists of senior and middle-level executives from 120 organizations. The research uses a Likert-type scale. The research focuses on the relationship between strategy types and hierarchical layout. The result was that research had positive, defense neutral, and negative effects on response.

The source-based theory introduced by Barney argues that competitors cannot compete significantly with well-positioned organizations in the market and may not perform well enough to compete. In order to sustain competitiveness on the market and on the market, an organization must also utilize the opportunities it faces while generating or developing many new resources. Therefore, an organization should devote the most time to resource management. One should bear in mind that organizations are always surrounded by high uncertainty. Developing new resources is vital for organizations to survive and stay one step ahead of competition (Crook, etc., 2008). The strategic planning process will give organizations the opportunity to effectively analyze their environment, and will allow them to tailor their plans to their environment. All this will result in a higher level of performance.

Recent research into the concept of organizational performance has highlighted that organizational performance does not have a one-dimensional structure, but should be measured by several different factors (Andersen, etc., 2016; Hubbard, 2009; Walker, etc., 2010). These factors include more "classical" concepts such as productivity, effectiveness and financial performance, as well as more relevant concepts such as social consequences and customer responsiveness. More importantly, organizational performance scientists have found many instances of the concept being influenced, especially by management, organization, and environment variables (Fisk, 2010; Walker and Andrews, 2015). As the concept of organizational performance is explored, more and more dimensions are emphasized. In this study, he outlines the relationship between organizational performance and productivity, efficiency, responsiveness, financial considerations.

Strategic planning is one of the chief issues of particular importance in modern educational institutions. Educational institutions generally recognize strategic planning as a method in the regeneration and development stages. Although educational institutions use strategic planning to boost performance, it should be recognized that this concept alone is not sufficient to improve performance (Andrews et.al., 2012).

In general, educational institutions, especially higher education institutions, have produced a number of studies, including strategic planning, which has been one of the foremost leaders of modern government concepts in the past period of self-improvement. The concept of development and innovation, as well as continuous work as an intellectual and administrative philosophy, focused on developing an organized and

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active strategy and intended to bring about desired changes. The important thing to notice here is that this needs to be done in conjunction with the staff of the university. Joyce (1999) emphasized the need to plan for each component of the university and that strategizing would result in excessive concentration on performance. So strategy, as a tool for manipulating and shaping behavior, is true when it's actually implemented. Strategic planning is closely related to identifying organizational goals and objectives, designing policies and career plans, and choosing the organizational structure and administrative systems necessary to achieve these objectives and objectives. The strategic planning process is more than just a set of rules to be followed, and it expresses a philosophical approach to the business world (Dalal-Clayton and Bass, 2000).

Almost all scientists and communities interested in strategy have emphasized the importance of strategic planning. However, when this emphasis was made, they said that inequality in the sense of aspiration and abilities prevailed among institutions that were planning, implementing or developing strategic planning. It should be taken into account that some managers or leaders who make a strategic plan may be incomplete in their strategic thinking. Strategic planning was actually started to be implemented by many organizations. In some cases, a lot of deficiencies arise in the development of applications and theories. First, the first step in strategic planning, the transformation of organizations, comes with both a difficult and a long-term duration. This negativity has many institutions actually opting out of practice. It also means a very long process for strategic planning to show results. In general, strategic plans call for a continuous change, improvement, or perfection of institutions. Strategic planning has become an instrument of being better and more competitive for tertiary institutions, as is often called. Management has become much easier to deal with the challenges of today's conditions than strategic planning. The strategic planning of higher education institutions makes re-shaping institutions easier.

3.Conceptual Frame

In the 21st century, the size of firms was not important, but social changes around the world affected all the firms. Firms have become part of the global business world while being affected by developments and pressures. This can be attributed to a changing, dynamic, turbulent, unsustainable and highly competitive nature of the business climate. During this period, the relationship between business and society also experienced a significant change. The key drivers of this shift can be attributed to the globalization of trade, the increasing size and impact of corporate organizations, the repositioning of governments, the increasing strategic importance of stakeholder relations, knowledge and brand reputation (Olanipekun, 2015). The competitive business environment requires strategic planning and also requires resolution of the complexity of the decision-making process. Managing various activities is only part of the responsibilities of the modern administrator. The firm's near exterior reveals a second set of compelling factors. Administrators design strategic planning processes that they think will facilitate the proper positioning of a company in a competitive environment to effectively deal with everything affecting its growth ability. In the process of strategic planning, the firm's directors play a serious role. Strategic planning processes are being developed to more accurately forecast environmental changes and respond to unexpected competitive demands. Firms can therefore be prepared for domestic and international threats.

Porter (1985) argues that formulating a comprehensive strategy in his study is to link a company to its surroundings. Aremu (2010) argues that the strategy has many stakeholders. These stakeholders can be listed as stakeholders, suppliers, creditors, customers, and employees. Each one of these stakeholders has improved strategic planning, enabling firms to perform better, increasing employee loyalty. Strategic planning allows for the systematic management of change. It enables the organization to correctly deploy existing resources to serve a purpose.

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In their work, Sharabati and Fuqaha (2014) brought to the literature that the strategic leadership was the most important practice in the age of globalization that separated the organizations. Strategic planning is being advocated as a key process for achieving vision, strategy and goals. Businesses involved in business need to carry out a specific strategic planning process to adapt to their environment, no matter what they do. Strategic planning is an area that involves the use of resources by managers, and deals with the major initiatives that are planned and emerging to enhance the performance of firms in their external environments (Nag et.al, 2007). Strategic planning and implementation includes determining the missions, visions, and objectives of firms, their projects, policies, plans, and the allocation of resources to implement the blueprints, projects, and programs designed to achieve these goals. Strategic planning and implementation, on the other hand, gives the business an overall direction.

The strategic planning activity can include not only the management tier but also the executive management units and all internal stakeholders within the firm. This coverage area is closely related to the structure of the account. Strategic planning encompasses the organization's mission, vision, and objectives, policies and plans, to identify projects, programs, and implement, and allocate resources that are usually designed to meet these goals.

4.Strategy and Strategic Planning

The basic strategy of a company can actually be defined as action plans to effectively and efficiently implement management activities. The creation of a strategy can aim to increase the business, attract more customers, ensure continuity, compete successfully, conduct management activities effectively, and improve the company's financial performance. Strategies, on the other hand, represent a management commitment to continue certain activities. Organizations without a strategy can be compared to a ship without a rudder (Thompson et.al, 2008). Strategic planning is one of the most valuable management tools for making corporate dreams come true. Organizations need to formulate and implement strategic plans in order to achieve their long-term goals, taking into account relevant internal and external environmental variables (Arnoldo and Majluf, 1991). A coherent strategic planning process includes enterprise activities and resource allocation needed to achieve enterprise strategic goals. Many private and public sector firms that are considered successful direct their visions and missions to their corporate decisions on resource allocation to compete. This is how they strengthen their competitive position.

Organizations operate in a dynamic, turbulent and ever-changing competitive environment as a result of environmental factors. The reasons for these markets are economic fluctuations, the development of new products and technologies, social changes, wars, globalization. As a result, both private and public institutions should be flexible and innovative in how they deal with the competition challenge and the unusual circumstances that customers face to meet their changing, complex needs. To be flexible and innovative, greater emphasis should be placed on strategic planning (Bumes, 2000).

A better understanding of the situation calls for a detailed description of what strategic planning is. There are many strategic planning definitions in the literature. This includes those who are more accepted than these definitions.

According to another definition by Sharplin and Mabry (1985), strategic planning is the vision of a desired future. In this planning the vision is widely defined. On the other hand, it is a process that expresses systematization of a range of activities to achieve goals or objectives. In contrast to long-term planning — which begins with the present situation and determines the way to meet future forecasted needs — strategic

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planning begins with the desired end and returns to the current state. At every stage of long-term planning, the planner asks, "What should be done here to reach the next (higher) stage?" At every stage of strategic planning, he asks, "What should be done in the previous (sub) stage to get there?" In addition, unlike tactical planning - which focuses on meeting narrow defined intermediate goals with predefined tools - strategic planning looks at things more broadly and is flexible in choosing its tools. Another feature of strategic planning allows the organization to interact effectively with its environment. Elements of this interaction include political, social, technological, and economic elements.

A variety of strategic planning models have been developed by many researchers. The models proposed by these researchers include strategy planning, implementation of the organization's strategy, and strategic control focus. These researchers also stated that planning strategy and environmental analysis should be considered in the strategic planning stage (David and David, 2003).

It can be examined in three basic phases: mainly in the strategic planning process, planning, implementation and evaluation. It is important to note that these stages are divided into different ways by different scientists. The planning stage represents a strategic step in achieving the goals of organizations (Certo et.al, 1997). In a 2005 study, David stated that the formulation of strategies requires deciding what job to continue, how to allocate resources, and whether to enter international markets. The strategy is to develop missions, identify opportunities and threats, identify strengths and weaknesses (SWOT analysis), establish long-term goals, produce alternative strategies and select the best strategy to implement. This stage is also the implementation phase of strategic plans (Sharplin and Mabry, 1985), which began operations according to strategic plans. This phase also includes companies building goals, developing policies, motivating employees and allocating resources to implement strategies. Certo and. (1997) emphasizes that organizational analyzes of organizations need to be carried out effectively in order to determine the direction of organizations.

The final stage to be mentioned is the evaluation and control phase (Certo et.al, 1997), which allows information on the performance of strategic planning in the implementation phase and comparisons with existing standards. Assessment and control activities also allow for the review of existing strategies, measurement of performance, and corrective action. The evaluation of strategic plans and practices is important in the context of how institutions relate to what they have achieved today and what they will achieve tomorrow. One should bear in mind that success will always bring new and different problems. Institutions that are complacent about issues cannot sustain problems (David and David, 2003).

5.Peformance

Performance Management in effect refers to the ongoing activities to achieve goals efficiently and efficiently (Cokins, 2009). Performance management can be measured using a wide range of criteria, including standards and indicators. These measurements clearly demonstrate opportunities for performance improvements. Optimal results are possible by performance measurement.

Performance management can focus on a broad range of areas, from the performance of an organization, a unit, or an employee, to even product or service generation processes. Business performance management enables organizations to set strategic goals and then measure performance according to their availability, according to Daniels (2006). Business performance management, on the other hand, incorporates a number of technology-supported management techniques and analytical processes. Core business performance includes management processes, financial planning, operational planning, consolidation and reporting, business modeling, analysis, and tracking of key performance indicators associated with the strategy. As mentioned

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earlier, the strategy refers to the long-term process an organization seeks to maintain or improve its performance. Business performance management is permanent and unlikely to change significantly in the short term (Zajac and Shortell, 1989). Many studies strongly support this idea. Examples include works by Hannan and Freeman in 1984, Amburgey, etc., in 1990, and by Barnett and Freeman in 2001. The works are in the bibliography. Interested readers can find this work in the bibliography part of the study.

Works that highlight the relationship between strategy and business performance are included in the literature. Akpan (2000) argues that various measures for measuring organizational performance can be used. These criteria can be listed in the form of simple financial criteria such as return on investment, return on equity, profit margin, market share, equity debt, earnings per share, sales growth, and asset growth. All these values, however, do not appear to be sufficient alone to evaluate the success or failure of the strategy. Strategic planning studies carried out by Nmadu (2007) in Nigeria recognized the existence of the relationship between strategic management and organizational performance. The researcher named after him has shown that corporate financial performance tends to increase with a unit increase in strategic plan implementation levels. For all the financial performance indicators used (earnings per share, pretax profit, return on capital used, net asset, current operating capital ratio, increase in proportional market share, new product groups, total deposit), the performance of the institution has also tended to increase concurrently as the level of strategic planning increases.

In fact, strategic planning can make a significant difference to the performance of institutions. Basically, choosing strategic planning approaches where managers at all levels of a business interact in planning and implementation results in positive outcomes (David and David, 2003).

The relationship between strategy and performance was also seriously dealt with by Hammerers (1986). According to Hammerers (1986), performance improvement is a clear target of strategy. However, other approaches have also associated a wide range of outcomes (survival, learning, and so on) with performance, in addition to economic performance or in relation to economic performance.

In many empirical studies, he emphasizes the relationship between strategy and performance. For example, Miller and Friesen (1982) identified ten different strategic types. Six of these strategies have generally been characterized as successful (Adjustable Company at Medium Challenge, Adaptable Firm in a Very Challenging Environment, Dominant Firm, Under Fire Giant, Entrepreneur Holding, and Innovative Company). The remaining four strategies failed. Studies by Hambrick, Inc. in 1983 and by Miles, etc., in 1978 found significant performance differences among participants using strategy typologies. The general strategy literature also acknowledges the existence of performance differences. For example, Mascarenhas and Aaker (1989) found significant performance differences among strategic groups in the oil drilling industry, while Fiegenbaum and Thomas (1995) found meaningful differences between strategic groups in the insurance industry.

On the other hand, Cool and Schendel (1988) found some performance differences between groups in the pharmaceutical industry, but later concluded that strategic group effects were stronger than risk-return relationships. Nenkat and. (1990) in a study, they proved a relationship between resource distributions and performance. By distributing resources more differently than they should have, the firms have differentiated significantly in terms of performance levels. Natarjan. (1986) stressed that intercompany comparisons and performance differences are important. In this cross-sectional study involving many industries, Natarjan (1986) found that the dimensions of aggression, analysis, defensiveness, reactivity and risk were associated with profitability.

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Organizational performance is generally considered a term referring to for-profit organizations. Organizational performance includes expected outcomes, actual outcomes, or outcomes, of an organization measured against their goals or objectives. Experts interested in organizational performance consider institutional performance, including strategic planners, operations, financial or legal developments. In recent years, organizations have tried to manage their business performance by employing balanced points card methodology, in which more performance can be measured and monitored in multidimensional terms. These include financial performance (stock return), customer service, social responsibility (corporate leadership and community access), and employee management factors. As organizations grow, they improve in all senses and increase their interaction with other companies and organizations. Organizations had to choose to negotiate with other companies to expand their operations. The concept of organizational performance is needed right here. Because with organizational performance organizations can increase their impact, provide better, orderly response to deadlines, and produce quality work. For this reason, organizations strive to improve their organizational performance, invent new techniques that can improve their performance and help them improve themselves.

One technique discovered by scientists for improved organizational performance is the balanced points card method. In this way, the activities of an organization can be measured by vision and strategies. With this technical assistance, managers of the organizations gain a comprehensive view of the company's performance. In an overview of the organization's performance, business owners can improve areas that need improvement so they can get more done (Kaplan and Norton, 2005).

Organizational performance predictions of companies are also very important in light of these narratives. Because with the right organizational performance forecast, a business can both improve performance and drive business growth. Therefore, accurate detection of organizational performance is essential to productivity enhancement (www.management performance advice.com/org performance, Retrieved 27.05.2022).

When it comes to organizational performance, the method of benchmarking is more than a foregone issue. The benchmark introduces a general change in the structure of organizations and assists in achieving better results. The performance or objective of each part/unit of a business or organization is determined beforehand. Then a measurement is set as standard for performance comparison. Performance or effort is compared to defined standards and this process is called benchmarking. The main purpose of the benchmark is to compare what is achieved with other metrics or standard scales and evaluate performance results. The benchmark can also be performed between organizations or companies in the same sector (Webometrics, 2004, Web Ranking of World Universities, 2010).

6.Education in Libya

Libya is an Arab country situated in North Africa on the southern coast of the Mediterranean. Libya's economy can be associated largely with oil, in that it has many oil reserves. The total area of the country is about 1,759,540 square kilometers. It also has the longest coastline of any Mediterranean country, with a length of about 1.955 km. Libya's neighbors are listed as follows. In the east, Egypt in the southeast, Sudan in the south, Chad and Niger in the west, Algeria in the west, and Tunisia in the northwest. Libya is also a country that is a member of many associations as a result of its neighborly relations and international relations. They can be ranked as United Nations, African Union, Arab Maghreb Union, Arab States League, Non-Aligned Movement, Organization of Islamic Conference and OPEC (The People's Committee for Education, 2001; Oxford Business Group, 2008).

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The population of Libya is not very large, compared to the official figures for the country. The total population of the country is 6,310,434, according to official records. This number also includes tens of thousands of people who emigrated to and are not actually Libyan citizens (Hanley, 2001) to search for business opportunities due to the attractive offers offered to foreign professionals at universities and tertiary institutions. Despite such emigration from the outside, the population is still small.

The Libyan government has implemented a development program (Hanley, 2001) that seeks to promote, improve and modernize the infrastructure of education and understanding. Libya's education secretary, who served in 2000, emphasized that education, health and social services are the top priorities in developing Libya's infrastructure.

According to the study published by Hanley in 2001, the Gaddafi Development Foundation took on the responsibility of developing the educational system and infrastructure in Libya, and subsequently, efforts were undertaken to modernize and strengthen 5,000 schools and colleges. This development includes the creation of model training institutions for the future generation of Libya. Efforts have been made to recruit equipment and specialists at every level. Additionally, the agenda for this program includes the following points:

Improvement of curricula in schools and universities, including scientific journals, periodicals, and books.
Opening the door to unifying Libyans in the global community through many programs — such as providing young Libyans the opportunity to continue studying abroad and to achieve international qualifications.
The launch of an 18-month plan to provide one million computers to a million Libyan children.
Integrating Libya into the global educational community with its vast Internet network.
Activation of education hospitals
Educate and activate young entrepreneurs to help them succeed in their new endeavors.
The realization of the e-government system.
Opening the door for co-operation between international education institutions and drafting programs to improve cooperation.
To fund Libya's educational development.
Providing foreign scholarships to students in order to quality their education abroad. Among the main countries are Britain, Canada, the United States, Malaysia, Egypt and Australia.

By 1980, in order to correct this situation, the Libyan government legalized the program known as the "New Educational Structure". This program restructured the school curricula in favor of technical issues, and specific emphasis was placed on Arabic language and Quran education in humanities. In addition, from the seventh grade, English instruction was also compelled to keep up with developments in the world. The introduction of traditional high school schools at the high school level, as well as professional and technical schools that further specialize. At the same time, new educational reforms have carried out applications with an emphasis on technical and vocational education at the higher education level. By the 2000s, Libya had seen a significant increase in the number of high technical and professional schools. The General Public Education Committee and the Occupational Education Committee have been dissolved, and the transfer of responsibilities and responsibilities to regional public committees has been legalized (Libya Undersecretariat for National Education, 2000).

According to The Economist (2009), most of the governments in the Arabian Peninsula are aware of the fact that their university and school systems are in poor shape. The responsible governments of Arab countries, including Libya, have been waging a sustained struggle for the improvement of their educational infrastructure and facilities. The number of college students has been 13,418 in the past, while by 1996 students accounted

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for 27% of Libya's population. But a good part of these students are the migrant students who come with their parents to Libya and participate in the education institutions. At present, the number of students in elementary and secondary education is growing rapidly. The new educational reforms were introduced in 1980, aimed at changing the curricula of schools, beginning the Arabic language and Koran studies, and promoting technical issues in addition to the humanities. He emphasized the opening of vocational and technical schools in secondary school, as well as traditional schools. This strategy also emphasized the opening of technical and professional institutions (Teferra and Altbach, 2003; Yousefi, etc., 2006), which contributed significantly to the development of these regions in different parts of the country.

The educational system that existed in the past in Libya was the model 6-3-3. This model of education states that education began at age 6 and that elementary school lasted six years, followed by three years as a middle school and three years as a high school. The system now exists, which specializes in 2 years of kindergarten, 9 years of basic education, and 3 or 4 years of secondary education (Clark, 2010). Eventually, the successful candidates obtain a "General Secondary School" certificate or, alternatively, a technical school diploma. Adequate and highly successful, sixteen institutions, nine universities, and seven higher education institutions qualify to continue higher education (Al Gamatti, 2005).

And Sophie. (2009) The Libyan government is currently working on implementing one of the largest educational projects in the country. The government is about to implement the largest university building program in the world, with the goal of motivating future generations to choose and work in their own countries rather than receiving education in other countries. Another reason for this project is to reduce the number of highly motivated and bright students who have left the country in the last few years in order to pursue higher university degrees. As part of this project, in 2006 the Ministry of Education drafted a five-year strategic plan to improve the country's educational facilities and infrastructure, starting in 2008. In 2007, the Organization for Development of Administrative Centers, responsible for strategic infrastructure projects, announced plans to build and develop 25 Libyan universities. New strategic partnership initiatives have been undertaken between universities in Libya and successful foreign universities in order to improve the education system. Examples include a partnership between Sabha University in Libya and Heriot-Watt University in the United Kingdom and Edinburgh.

7.Higher Education in Libya

Sophie et.al. (2009), they argued that the rapidly increasing number of students at each level of education should also increase in the number of educational institutions, particularly higher education institutions. For example, the number of universities increased from two universities in 1975 to nine universities in 2003, with the number of technical and professional institutes reaching 84 since 1980. The first university in Libya started teaching in Benghazi in 1951. The primary purpose of universities in that period is to provide education to teachers of secondary schools, to develop the capacities of students and government employees.

Then in 1957 the College of Economics and Commerce, 1962 the Faculty of Law, 1966 the Faculty of Agriculture began their education. The expansion continued in 1970 with the opening of the Faculty of Medicine, Al-Bayda Islamic University, and with the development of oil production, the Faculty of Petroleum and Mineral Engineering was established in 1972. The University of Libya was divided into two universities in 1973. This is the University of Tripoli and the University of Benghazi. These universities are now called Al-Fatah University in Tripoli and Gar-Yuns University in Benghazi. In the following years, the number of universities was increased, and universities were undergoing new educational reforms to allow them to study the increasing number of students. The number of universities increased to 13 in 1995. Higher education in

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Libya is also encouraging talented and intellectual people to emigrate to Libya and participate in educational institutions (Al-Shapani, 2001).

For this reason, higher education in Libya is offered in both public and private universities and higher education institutes. Since 2000, the country's public committees have served as the body responsible for the management of education in the Libyan regions (Teferra & Altbach, 2003). In Libya, higher education is administered by the People's Committee of Higher Education, while each university is administered by its own People's Committee. This public committee includes secretaries, department heads and deans. The faculty board serves as a direct member of the faculty secretaries' University People's Committee. There are also Student Community Councils to manage students' businesses and activities. Introduced by higher education institutes and university colleges, the private sector and the local public administration (Shabiat), it was ultimately built by local government officials in 1997-2000 to address the quality and needs of education through developments in more than five private universities (Al Falugi, 2008).

8.Post-Gaddafi Period (2011 to Present)

The 2011 civil war sparked criticism of many institutions and functions, a criticism reflected in the educational system. In the educational system and programs implemented especially during the Gaddafi era, there have been severe criticism and many errors have come to light. According to the Tripoli Post, a major Libyan newspaper, students at the University of Tripoli complained at the time that the Gaddafi regime provided them with low quality education.

Following this period of internal turmoil and a proliferation of criticism, the newly appointed Education Ministry began its efforts to rewrite the curriculum. In January 2012, new curricula and texts were introduced. In the interim regime, many practices were implemented to eliminate the temporary impact on education levels and to allow for the removal of deficiencies. Suliman Al-Sahli was appointed acting education minister, emphasizing the need for an objective training program.

Vocational training with the Gaddafi regime in the country has become highly focused on local and public sector jobs. Shifting this focus to private sector jobs and implementing practices to improve international relations has become a key issue for Libya's newly-elected government. Libya's Technical and Professional Training Council signed an agreement with British-based TVET BK in 2013 to facilitate efforts to modernize institutions and overhaul professional education established in the 1970s and 1980s. TVET BK has agreed to set up UK-based workshops to speed the transition of skilled workers to the private sector. In May 2013, the General National Congress launched the financial program to send students to study programs abroad. 2,004 educators and 5,692 pupils were selected for this program, with the number rising to 3,616 over the coming years. As part of the same program, 31,000 students were to be sent abroad to study English language. This program initially gave priority to students struggling during the civil war, and was expanded over time to allow women and disabled students to receive scholarships.

9.History of Higher Education in Tripoli, Libya

Tripoli university education in Libya dates back to the independence won in 1951. Then the university education life began to develop, with the University of Tripoli divided into the campuses of Benghazi and Tripoli. After many years on the campuses, several faculties have been established, including the Faculty of Arts and Education, Science, Economics and Commerce, Law and Agriculture. In 1967, both the Faculty of

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High Technical Research and the Faculty of Engineering and Education began teaching at these universities. In 1970, the Faculty of Medicine, Arabic, and Islamic Sciences began to recruit students.

As previously mentioned, the University of Tripoli and the University of Benghazi were divided into two separate, independent universities in 1973. These universities are then renamed as Al-Fatah University and Gar-Yuns University respectively. Due to the increased number of students enrolled in higher education during the 1980s and 1990s, the two universities were restructured and increased with different universities. In recent years, due to some policy changes, it has been decided to reduce the number of universities to nine again. Furthermore, under new policies, university education is considered non-central and specialized universities. Although no formal study of the distribution of student records at Libyan universities has been conducted, there is a lack of equilibrium between the number of students enrolled in humanities and arts, and the number of students in science and technology (Teferra and Altbach, 2003).

To be eligible for admission to both university and non-university programs in Libya, there must be at least one Secondary Education Certificate. Since 1990, all universities have proposed that 65 percent or higher of secondary education exams be achieved as a condition for enrollment in a program. Some faculties, such as medicine and engineering, require scores of over 75 percent for admission. Students with an average of less than 65 percent are admitted to higher education and vocational institutions. Students from specialized secondary schools are encouraged to maintain their specialty.

10.Results and Suggestions

The study found that strategic management and implementation have significant implications for business performance. Preferring the right strategic implications is an effective way of maximizing the performance of organizations as a whole, not just as an individual. The study therefore emphasizes that strategic planning practices must be taken seriously in order to achieve sustainable and high business performance.

Recommendations developed based on the study's findings may be listed as follows;

1st Academic and administrative staff of Libyan universities need to develop a strategic planning model in order to improve the institution's competitiveness.
2nd The universities serving in Libya need to adopt the right competitive strategies. So they can take steps that can have advantages both over their competitors and at the global level.
3RD It should promote positive cultural interaction with international universities, promote international research centers, and promote agreements with select universities.
4th It is necessary to strengthen the loyalty of the staff serving in every facet of the university to the institution.
5TH The motivations of academics working in the university should be increased.
6TH Courses, seminars and training must be provided to develop the skills of the professors in strategic planning of the universities serving in Libya.

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Improving The Quality of Service In The Libyan Oil Sector: A Theoretical Assessment[1]

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Abstract
Customer satisfaction, quality of service and loyalty, business hiring, profitability and productivity top the list of concerns to help overcome today's economic woes. Organizations that do not want to lose the competitive edge tend to use technology as much as possible in order to improve quality of service, obtain data on employee satisfaction. Work satisfaction is one of the issues that needs to be continually investigated and examined by a significant presence in the field, having a structure surrounding the workers, and being able to vary according to the changing circumstances. The reasons for choosing Libya in the study include the ability to respond to various changes, focus on building an effective structure, reform, administrative development and the role of a country making rapid strides towards political development programs.
Keywords: Business, Employee Fulfillment, Quality of Service, Libyan Gas Sector

Introduction

Over the years, companies have viewed perceived quality of service as a strategic tool for positioning next to achieving operational efficiency and improving business performance (Mehta, et. al., 2000). Quality of service, especially in the service sector, was regarded as a threshold for the success of institutions (Gilbert and Veloutsou, 2006; Anantharanthan, et. al. 1985) due to its close relationship with employee satisfaction. Because of this, companies always regard the concept of quality and quality as a source of competitive advantage that must be attempted to achieve. On the other hand, excellent quality of service enhances employee retention and causes employees to repeat their buying behavior (Cronin Jr & Taylor, 1992). Services are often regarded as a key factor in creating value and affecting employee satisfaction. Therefore, the oil and gas industry in Libya must be strategically positioned to provide quality services in order to satisfy employees. To provide an improved quality of service, the employee responsiveness and expectations of oil and gas companies must be investigated. Oil and gas companies that have internalized such information can strategically focus on quality-of-service targets.

Quality of Service Definition

Kotler and Armstrong (2006) described the service as "a whole of actions or activities that one side can offer to another, which are essentially abstract, but do not affect any property at the same time." Service may be related to non-material or non-financial products. Meanwhile, Zeithaml et.al. (1990) argue that "quality of service, customer service emerges as an assessment focused on specific reliability, responsiveness, assurance, empathy or tangible qualities." Customer evaluation of the quality of service provided to customers enables businesses to quickly identify existing issues, improve services, and better meet customer expectations.Bebas (2022) revealed that employees' perceptions of quality of service are at lower levels

Quality has been recognized in the service sector since particularly the 1980s in markets where many advanced and supply amounts are greater than the amount of demand. However, the time period is considered to be 1990s when the focus is on significant activities for implementing and examining the quality of service or activities to measure satisfaction/dissatisfaction (Chen and Aritejo, 2008). Parasuraman et.al. (1988) began conducting QOS studies in the 1980s, exploring various institutions involved in the service sector. Research has been thoroughly investigated (Parasuraman, et.al., 1988) on what factors may affect quality of service based on the employee's perspective. Initially,

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the elements of reliability, accountability, customization, understanding, efficiency, accessibility, kindness, security, communication, physical requirements and customer understanding were investigated on eleven workers involved in the study.

When the literature is scanned, scientists argue that the quality is the result of assessing the service of the user or the consumer. The service in the literature is often associated with the quality perceived by the consumer. The perceived quality can also be defined as the experience of the business or the overall superiority over other businesses (Zeithaml, 1987; Zammuto, et.al.., 1996). Likewise, Parasuraman et.al. (1994) concluded that the employee's perceptions of quality of service resulted from their pre-service expectations and a comparison of their actual service experience. The perceived quality is also seen as a form of behavior that relates to the satisfaction of individuals, stemming from the performance perceptions of expectations (Rowley, 1997).

Therefore, the perceived quality of service can also be described as the consequence of an assessment of the overall comparison of a set of services. In this case, employees may contact department heads, etc. (Yang et.al.., 2004). As a result, the quality of service will be judged to be high if business regularly delivers the service above consumer expectations. In contrast, if the business fails to meet customer expectations, the quality of service will be considered low (Zammuto and Keaveney,1996).

According to Lassar et.al. (2000), the SERQUAL scale contains two widely accepted perspectives for quality of service involving a functional quality framework. Gronroos (1988) emphasized that the quality of service consists of three dimensions: "the technical quality of the result", "the quality of the work for the interview", and "the image of the institution". In examining quality parameters, the service argues that the quality associated with the presentation process and the quality associated with the result of the consumer managed service after the implementation of the service should be distinguished.

Importance of Quality of Service

Ghazian et.al. (2016) wrote in their study that it was customer service management that was important for organizations to get more customers. Delivering quality service is actually a component of customer service management and marketing policies. Zeithaml (2013) stated that quality customer service should not only consist of the customer service department, but should be accepted as a key factor of customer service for all management and employees and should be of a common spirit. Due to consumers becoming more sophisticated and up-to-date in their needs, today they are demanding higher standards of service and view the service element as a whole of customer satisfaction, service delivery, and customer relationships. Professional service companies are therefore in the market to provide quality customer service. It is important to consider the key variables of being able to deliver quality service. These variables are sorted by reassurance, empathy, reliability, accountability, and physical competences.

Manage Quality of Service

Customer satisfaction is an important part of the workforce satisfaction of its employees. It is among the views advocated by scientists that employee satisfaction levels are significantly associated with quality of service and customer satisfaction. Employees with high levels of business satisfaction can take on a powerful core role in achieving excellence and organizational effectiveness. The impact of employee satisfaction on quality of service and customer satisfaction has also been widely discussed in literature and marketing applications recently (Spiro and Weitz, 1990). Employees with low or unhappy satisfaction will not be able to provide the customer with excellent service (Sclesinger and Zornitsky, 1991; Brief and Motowidlo, 1986; Brown and Lam, 2008).

In the management literature, the importance of the positions of the organization's employees, such as satisfaction, commitment, and loyalty, and how these attitudes affect the organization's performance are rarely presented in depth (Boudreau, 2004; Boudreau, Hopp, McClain, and Thomas, 2003). The subject of how human resources can affect business is also rarely seen in the literature. The relationship between customer satisfaction and employee satisfaction when a literature scan is performed is in literature as the Theory of Social Change (Konovsky and Pugh, 1994) and the Theory of Psychological Contract (Robinson and Morrison, 1995).

Many scientists have studied how to understand the relationship between human resource management and quality of service. Many scholars who have dealt with the subject and laid out studies have also claimed to have a relationship between employee satisfaction and the customer-induced work environment. Latif et.al. (2013) found a low correlation between employee satisfaction and performance. Many researchers have tested the relationship between worker satisfaction and attitudes such as dismissal, absence, latency, use of banned medicines, sabotage. However, the relationship between levels of employee satisfaction with their work and quality of service elements was much less and empirically examined in the writing.

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Quality of service is often called a critical prerequisite for establishing and maintaining a satisfactory relationship with employees. The relationship between quality of service and employee satisfaction became a subject of great strategic importance (Cronin and Taylor, 1992). In general, the quality of service perceived by employees is considered a precedent for satisfaction (Spreng and Mckoy, 1996). For this reason, it is important to understand correctly what factors the level of satisfaction of employees is associated with. For businesses with an enterprise structure, quality of service can be considered to be a high value (Lassar, 2000).

Quality of Service Perception & Gaps

The service's expectations, perceptions, or experiences may differ materially from those of the customer, which may cause the perceived quality of the service to be different. The perceived value of the quality of service comes from the difference between service expectancy and service perception. When customers' perceptions exceed their expectations, they feel that quality is too high and when service perceptions do not meet their expectations, they do not find it unacceptable. If perceptions are sufficient to meet their expectations, satisfactory quality is at stake.

Meeting or even surpassing employee expectations is the ideal situation for both businesses and employees. The quality of the service is very extensive and covers all service ranges. However, changes and experience with alternative service providers may be effective in shaping employee expectations. The important thing here is to meet employee expectations for a particular service (Hernon and Nitecki, 2001).

Business management is largely focused on managing the gaps between expectations and customer perceptions (Zeithaml, 2013). The main purpose of business is actually to reduce the difference between performance perception and expectations to acceptable levels

Libyan Oil and Gas Industry

When oil was first discovered in 1959 and first exported in 1961, Libya was initially referred to as a young monarchy with a federal system and a unified government open to foreign investments. In the first decade of exploration, the country's oil industry and infrastructure quickly expanded from the sparsely populated interior to Tobruk (east), starting with terminals, refineries and north-bound pipelines to export oil on the Gulf Coast (west).

After the army seized power in 1969, Libya began to rule by a largely formally accepted dictatorial regime. In the second decade, the oil industry was both enriched and heavily damaged. In the early 1970s, the state faced a serious wave of nationalization because it acquired a majority stake in most foreign companies and local conglomerates. This eminent domain led to a decline in production from a peak of about 3 mb/d in 1970 to about 1 mb/d in the early 1980s and an average of 1.5 mb/d. In the 1980s and 1990s, western oil companies were responsible for a number of reasons, leading to a number of regional crises. Relations between Libya and the western countries have resulted in Libya being affected by prolonged crises stemming from ideological policies, with the claim that Libya was involved in international terrorist attacks. Crisis continued until the early 2000s, when UN and US sanctions were lifted from Libya, as large western oil companies were able to resume or maintain their direct operations in Libya. In the process, which started with the lifting of UN and US sanctions, the Libyan government's ability to find foreign investment in oil and gas was accelerated.

Among the foreign oil companies operating in Libya or licensed in the period from the beginning of 2000s to 2011, BP, Chevron, CNPC, Eni, Marathon, Occidental, OMV, Repsol, Shell, Statoil, Total and Winter were also listed.

As a result, two of the biggest indicators of increased stability in the oil and gas industry during the 2000s compared to previous years could be listed as investments by foreign companies and increases in exploration and oil production. This led to a moderate increase in Libya's overall oil and gas production.

These increases are largely due to the lifting of UN sanctions, followed by those imposed by the United States and European countries. between 2002 and 2007, oil production increased from 1.4 mb/d to 1.8 mb/d. The average decade between 2001 and 2010 was 1.64 mb/d, compared to an average of 1.45 mb/d in 1991-2000. Even this data proves that the average is going up. Examples of major oil and gas investments include the development of the West Libya Gas Project, the construction of a 520 km Green Stream pipeline from Mellitah to Gela in Sicily, operated by a joint venture between Eni and NOC (National Oil Corporation).

In 2011, many events have occurred during the period since the fall of the previous regime (the February 17 Revolution). Each one of these events and events has led to the policies and political developments that have shaped the oil and gas industry, sometimes willingly and sometimes unintentionally. One can be said for sure is that Libya's oil and gas industry cannot be integrated into the new Libyan era during this time, as the policies enacted and the existing leadership incorporated extraordinary features. These unusual practices have been particularly notable in previous periods, but they have not been proven to be extraordinary.

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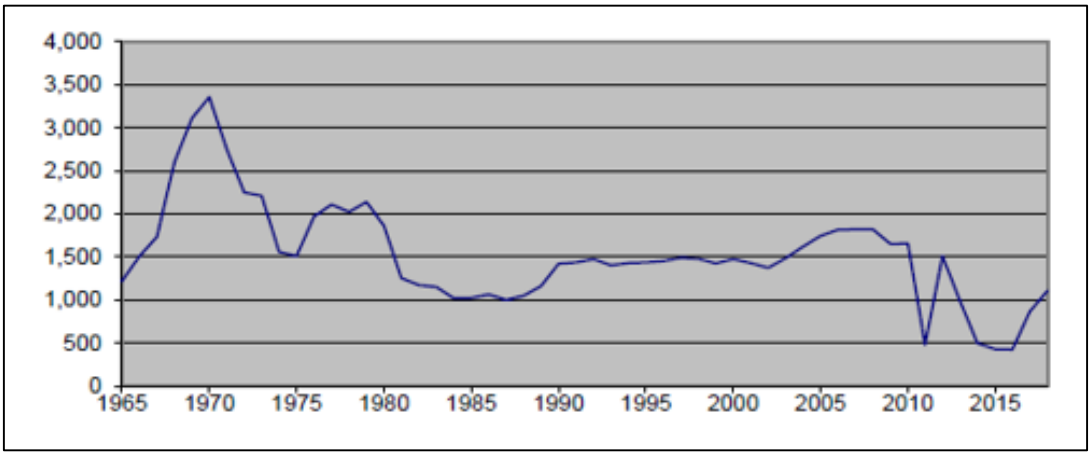

Figure 1: Average daily oil production from 1965 to 2018 (Source: BP Statistical Review (2020))

At first, throughout and after 2011, the main factors undermining oil and gas activities can be described as an atmosphere of armed conflict and violent insecurity. Distrust had become a general feature of Libya, as the national government (the interim government that was inaugurated in late 2011, after the previous president, and the elected government that took office in July 2012) and local authorities had not been able to ensure an atmosphere of confidence. The national government provided for the establishment of the militia and the combined security forces to ensure a safe environment.

Over time, local struggles for physical control of oil facilities overlapped the competition between national governments, which emerged after mid-2014, and were shaped by this competition. This political struggle has caused some difficulties for the oil industry, especially for the NOC. Specifically, between 2014 and 2017, politicians competing to become Libya's national government have intervened several times in order to gain formal control of the NOC establishment.

The combination of insecurity and political competition for the control of the oil sector inevitably brought about negative consequences for the production and investment. Oil production had recovered in late 2011, and oil production was estimated at 1.5 million barrels per day (mb/d) before the year 2012, when production began to fall again.

The atmosphere of conflict and insecurity caused a series of stalls and disruptions in oil fields and export terminals, with oil production falling below an average of 500,000 barrels per day (b/d) or even 200,000 barrels per day from 2014 to 2016.

Importance of the Oil and Gas Industry in Libya

According to a 2013 study by Oke and Kareem, there has been a great growth in oil and gas for the past 25 years and demand is likely to grow significantly more in 2030. The energy demand is likely to grow more and more, due to the growing expansion of technology, oil and gas industry, while the growing energy demand seems to be more and more affordable at the moment (Visser and Larderel, 1997). The necessity of finding new ways to increase oil and gas production should not be forgotten (Elbanna, 2010). Furthermore, it is imperative to expand investment in the production facilities of this oil and gas industry in order to facilitate the growing energy needs and demand of this era. Over the past decade, a significant contribution or investment has been seen in oil and gas production, as well as in the supply, to support the oil and gas industry and free market capacity.

Lifestyle and working conditions, which are present-day conditions, have increased the importance of the oil and gas sector. Transportation has become an essential part of human life; the fuel is used in raw form and has become a necessary and essential resource as an electric generating tool that uncovers many other things (such as plastic) and makes our lives easy and comfortable in every way. Demand for oil and gas continues to rise around the world due to the growing need for energy. The most significant reason for this increase in demand is the continued increase in world population. Developing countries such as China and India must use considerable energy and power to sustain their lifecycles and

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sustain their economies. Two factors are essential for understanding the oil and gas industry; downstream and upstream flow in the oil and gas industry is the industry

Many of the companies involved in the oil and gas industry are involved in both functions. The industry, called upstream and downstream, also refers to a multinational structure. The most important component of upstream in the oil and gas industry is services that incorporate technical services, such as contracts, to deliver companies' special technical services to the industry. It is important to note that the world's largest oil and gas reserves are located in the Middle East countries. Middle Eastern countries have about two-thirds of the world's total gas reserves, or about 1.5 trillion barrels of oil and gas reserves (Devold, 2013).

Most of Libya's crude oil exports are obtained by European countries. The Sirte basin, the largest oil output in Libya, accounts for 80% of the oil reserves. In the area of Sedimanter basins - which includes all resources including Sirte, Ghadames, Kufra, Murzuk, Cyrenaica and Off Shore - Libya is the sixth largest reserve nation in the world, including large undiscovered resources (Visser and Larderel, 1997).

Results and Suggestions

The Libyan oil industry should focus equally on factors of quality of service, not only on material assets. This will help companies provide their employees with a good working environment, raise the level of satisfaction for their employees, and stay on top of the company. Similarly, upcoming studies in Libya have the potential to draw comparisons between the public sector and the private sector. This compares the quality of service and business satisfaction perceptions between the two sectors and results that can be more generalized. Companies in Libya must strive to improve the sub-dimensions on the scale of corporate quality of service to increase the work satisfaction of their employees. This will increase the company's competitiveness, durability and productivity. Improvement of the quality of service needs to be a long-term goal for organizations. It must also be developed continuously. Relationships between the quality of business services and the motivation and performance of employees can also be included in the research. And this can do a much broader modeling.

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Cryptocurrency Impacts On Strategic Management

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Abstract

As an emerging technology, Blockchain deals with organizations, people and technology. This particular case shows us that the potentials and impacts of Blockchain cannot be ignored, especially by addressing the issues of trust, sharing and privacy in the context of interconnected business processes. Discussions that started with supply chain management seem to have reached organizational management. While there are researchers who think that such anonymity will harm the organizational structure, there are also researchers who think the opposite. In this study, the relationship between the use of cryptocurrencies and strategic management, which is almost never discussed in the literature, will be examined. This research, which is the first study on this subject, will also reveal in general terms what kind of changes the use of cryptocurrencies should bring in strategic management.

Keywords: Cryptocurrency, Strategic Management, Blockchain

1. Introduction

One of the most important reasons for technological developments and companies to grow together is innovation. Increasing innovation continues to be a key area of interest for both government and entrepreneurs. On the other hand, in order to increase their competitiveness and growth simultaneously, they need to have a culture that includes flexibility and fast action. This culture manifests itself as a culture of change. Technologies combined with the analysis of big data and artificial intelligence are changing the way a business communicates with stakeholders. Blockchain, on the other hand, is a decentralized distributed system that can record the source of a digital asset and increase the speed of large volumes of data inside and outside the organization. Modeling is programmed to process big data and it is a technique that changes the way it works, the way organizations work, and the lifecycle of businesses in general. The popularity of blockchain technology depends on the popularity of cryptocurrencies. With the inclusion of cryptocurrencies in the system, as distributed systems become more visible, its management and strategic structure will become more controversial. The cryptocurrency market can also interact with and affect other markets and variables. Indices, which are the indicator indices of the markets, are important in terms of examining the relationship between the markets (Kendirli et.al.,2022). Kendirli and Şenol (2021) told that discussions about crypto currencies, which have been mentioned frequently in recent years, bring the butterfly effect to our minds by looking at the state it has reached recently

2. Literature Review

Abrams (1972) found that 13% of coins and 42% of paper money were contaminated by potential pathogens by taking random sample cultures from coins and paper money. Angelakis et al. (2014) investigated the potential of banknotes and coins to be a source of pathogens, as they have the capacity to significantly expand the known bacterial and viral diversity on coins and fomites. Al Shehhi et al. (2014) examined the basis on which online users choose to use and adopt cryptocurrency. Ali et al. (2014) examined both the incentives of individuals and the economics of the schemes designed at the macroeconomic level, creating significant difficulties in their widespread adoption. Ali et al. (2014) examined how distributed ledgers reveal the possibility of transforming the financial system more generally. In their study, Savaşgümrük and Danacı (2014) examined how digital money or bitcoin, one of the most known in the market, emerged, with its advantages and disadvantages, and whether it can be used especially in international trade. Tasca (2015) extensively examined current trends in the field to gain a quantitative understanding of the potential opportunities and risks arising

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from the global adoption of digital currencies. Çarkacıoğlu (2016) examined in his study that bitcoin can be bought, sold and exchanged with other currencies. Bonaiuti (2016) mentioned in his study that technology innovation and habits of new consumers develop two interesting experiences in the payment landscape. Koçoğlu et al. (2016) examined the history of bitcoin, bitcoin system and how the protocol works. In their study, Gültekin and Bulut (2016) examined the new economy created by bitcoin and its related sectors. Bunjaku et al. (2017) examined in their study that it is not easy to predict the future of cryptocurrencies as there is much to be done in the field of official regulations.

In his study, Üzer (2017) examined that virtual currencies pose many risks for users, and despite all these risks, virtual currencies are becoming more and more preferred due to the benefits they provide compared to traditional payment instruments. Khalilov et al. (2017) examined the studies and regulations in the field of digital money in the world and in Turkey. In the study they carried out in Mendi and Çabuk (2018), the basic structure of blockchain, the advantages it offers and all its advantages, as well as the reason for the hesitations in the transition to implementation were examined. In Alpago's (2018) study, the structures, functions, and place and importance of bitcoin and similar cryptocurrencies in the current monetary system were examined. Atalay (2018) examined blockchain technology in his study. Since there is no central database, it has been concluded that the risk of loss or theft is eliminated. Kaplanhan (2018) examined how crypto money emerged, how it was produced, by whom it was managed and how it was used. In the study they carried out in Gümüş and Erkuş (2019), cryptocurrencies that emerged as a result of the use of blockchain technology were examined based on the history of money. Yıldırım (2019) examined the approaches of countries related to blockchain technology, crypto money and cryptocurrencies in the world in his study. Kamacı and Özden (2019) examined the relationship between tulip mania and crypto money in their study. Bondarenko et al. In their study in (2019), the international experience of various countries of the world in the application, use and economic and legal status of crypto currency was examined. In his study, Rice (2019) examined issues such as concerns about the level of trust required in cryptocurrency, low oversight and liquidity thinness to invest in the future, and uncertainty of the future. It has been concluded that the future of crypto currency also requires very economic forecasting. Corbet et al. In their study in (2020), the relationship between volatility and financial stress period between major Chinese stock markets and Bitcoin was examined. Chohan (2020) examined whether cryptocurrencies really provide a hedge against traditional instruments during market turmoil, using data from the first phase of the 2020 coronavirus recession. Erdem (2020) examined other groundbreaking innovations and technological developments that emerged after the crisis. Lemma (2020) examined the impact of the evolution of financial technology on the money market in his study. Chohan (2020) examined the scope and impact of virtual currency guidelines in his study. In his study in Oran (2020), he examined the effects of the economic crises that emerged in the past years on other countries in the history of the world and in the globalization process. Fama et al. In their study in (2020), it was examined that in the global crisis scenario, the inability of the official monetary system to provide solutions to serious problems affecting the society became more and more evident. In their study, Fry and Serbera (2020) aimed to develop new quantitative methods to predict the speculation level and long-term sustainability of Bitcoin and Blockchain. In his work in Ραμπατζής (2020), he investigated the origins of modern money and examined money as a tool.

Zhu and Fu (2020) examined the relationship between Blockchain and Bitcoin in their study. In their study, Jabotinsky and Sarel (2020) mentioned that people can respond to the threat of global instability by switching from traditional currencies to cryptocurrencies. Yarovaya et al. In their study in (2020), the analysis of the herds in the crypto money markets at the time of the COVID-19 epidemic was examined. Iron et al. In their study in (2020), the relationship between cryptocurrencies and COVID-19 cases was examined. In their study in Cheng and Yen (2020), the relationship between COVID-19, an infectious disease, and different financial assets was examined. Alpago et al. In their study conducted in (2020), it was examined how the epidemic will lead to changes and transformations in socioeconomic life, as well as in education, health and sociocultural fields. It has been concluded that this change and transformation process will gain weight in the direction of digitalization and online transactions. Dikmen et al. In their study in (2020), they mentioned that the COVID-19 pandemic still continues to be a serious public health problem. Aslan (2020) examined pandemics in his study.

3. Backround

Blockchain is the new era technology of our lives. It is a distributed, anonymous, transparent, encrypted and agglutinative database or shared registry that enables our transactions to be kept in digital environment, with the application area becoming widespread and accessible to everyone day by day. These data, which are recorded in blocks in a sequential manner, are produced when the block is full, so that they are linked together as chain rings and stored in a

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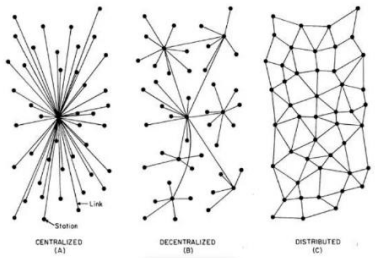
chronological order. The founder of the digital currency Ethereum, which emerged in 2013, Vitalik Buterin Blockchain definition is as follows:

"This is such a magical computer that anyone can install programs and leave them to run on their own; on this computer also all current and past states of each program are always visible to everyone; At the same time, this computer carries a crypto-economically secured guarantee that the programs on the chain will continue to function exactly as the Blockchain protocol specifies."

Figure 1. Centralized, Decentralized and Distributed Architectures



Source: http://icommunity.io

As shown in Figure 1, the blockchain database does not suffer from the vulnerability of central databases. (Gündüz and Tepeci, 2018)

Cryptography; It is all of the encryption methods that are used to transform the information contained in all kinds of data into a form that cannot be understood by undesirable parties and that ensures the integrity and security of the data.

Your main need is based on cryptographic evidence instead of trust, without the need for a third trusted person by both parties.

Digital Coins; digital currencies are fictitious currency represented in digital environment using the science of cryptography and they are encrypted based on mathematics. While producing these virtual currencies, it provides a digital level information exchange with a transaction that is possible thanks to certain level of cryptography rules. The purpose of using the science of cryptography here is to secure money transfer and transfer transactions. The first created virtual currency was Bitcoin (BTC), which was created by Satoshi Nakamoto in 2009. (Azman, 2018) Today, there are 2,953 virtual currencies with a total market value of $255,213,194.130.

Bitcoin was created in 2008 by a group or person named Satoshi Nakamoto, and block transfers started in January 2009. With Bitcoin, direct person-to-person (P2P) payments can be made securely and they can be bought, sold and exchanged for other currencies without the need for any middlemen or brokers.

Ethereum emerged after Bitcoin and is logically and systematically similar to Bitcoin. (Akcan, 2018) It is a digital cryptocurrency developed by Russian programmer Vitalik Buterin and created and released in 2015. Ethereum mining is done with the GPU, not the CPU. This is important in terms of decentralization. Since Ethereum mining uses home computers, not ASICs (which are done with graphics cards), ether production is highly decentralized. (Guven and Şahinöz, 2018)

The effects of digital currencies on the economy are related to how countries approach digital currencies. These currencies, which are used in the purchase of goods and services and money transfers, are also related to the digital legislation of the countries. For this reason, it has an impact on world economies. The ability to transfer digital currencies without the need for an intermediary eliminates the need for many intermediary institutions and individuals to know and trust each other, or the need for a government guarantee, without a third party. Studies show that studies on blockchain technology mainly focus on digital currencies, however, there is no technological obstacle in the adoption of digital currencies, and they will be diversified with political and legal regulations and will take place more in our lives.

Accelerating Digital Transformation After 2019

Historical pandemics and epidemics until today; epidemic diseases such as black plague, cholera, influenza and typhoid. Covid-19 is a pandemic caused by a new corona virus called SARS-CoV2, which started in December 2019 and originated in Wuhan, the capital of the Hubei region of China. The epidemic, which later spread to various countries, was declared a pandemic by the World Health Organization (WHO) on March 11, 2020 and affected the world. During the corona virus period, tourism comes to the forefront as a process that has a shocking effect on the economy and social life, especially on aviation and the stock market. (Alpago, 2020) In this period, digital services such as virtual meetings, the ability to work from home, remote health and distance education gain importance. In this process, it has become a necessity to go digital while thinking and producing.

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With the corona virus epidemic that started in China and affected the whole world, financial markets were affected by this. Crises such as the coronavirus pandemic increase the pressure on governments and businesses to maintain supply chains. In the news about the US congress held on March 23, 2020, a forward-looking item was included among the proposals in the corona virus aid package bill negotiations: issuing digital dollars and creating digital wallets. Within the scope of the bill, the digital dollar; Defined as "the balance in dollars made up of digital ledgers and recorded as a liability at any bank affiliated with the Fed (Federal Reserve Bank)" On April 28, 2020, the World Economic Forum's new digital FDI initiative suggested that using blockchain-based solutions, covid Published a report on how to address failures in supply chains affected by the-19 outbreak and blockchain guidance aimed at accelerating post-covid-19 economic recovery. While all this was going on, there were serious ups and downs in the values of digital currencies.

Figure 2. BTC/USD Price History Chart (September 2019-May 2020)

Source: https://www.buybitcoinworldwide.com/tr/fiyat/

In addition to financial markets, coronavirus digital currencies are also affecting Bitcoin prices, in particular. Bitcoin price had reached $10000 before the corona virus. This is due to the fact that investors are decentralized, not controlled by any government or third party, in times of global economic uncertainty, it has been considered reliable. However, it also faced the biggest daily drop in its history, falling from $7600 to $5300 in one day. On the other hand, since the transformation of decentralized currencies in the center of the whole world, which is protected by a solid foundation of blockchain and cryptography, is quite volatile due to the corona virus, it is necessary to control the prices by constantly conducting analysis and market monitoring.

Figure 3. ETH/USD Crypto Chart (September 2019-May 2020)

Souce: https://tr.tradingview.com/symbols/ETHUSD/

Ethereum, the second largest digital currency, has been trading between $180-$200 as of May. Digital currency analysts say that the value of Ethereum will increase fourfold this year, increase by 50% in June or end in volatility like Bitcoin. It is a necessity of the coin world to constantly control the prices by analyzing the conversions accurately and on the spot.

Strategic Management: Why is it necessary

It is an indisputable fact that most of the strategic plans have difficulties in realizing a company's potential values. If an investment is made in creating a plan, the company sees that it will not achieve the desired results over time, makes

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new plans and directs towards changes to achieve the targeted results. At this point, although the management alone is insufficient, it may not be a guide. Since the concept called strategic management is a dynamic process, it is an effective working order that gives the chance to intervene by considering the problems as existing obstacles before they arise. Especially in large enterprises with a distributed structure, it is very difficult to combine them around a common goal, as there are very different work groups and employee armies. The way to deal with such difficulties, which brings with it the problem of focus, often leads businesses to unpredictable processes. At this point, strategic management processes are needed and some requirements are determined beforehand.

At this point, it is essential to focus on the most important activity for an effective management process. Moreover, managers should know that there is no point in transforming and forcing the organization into something it is not. Companies should focus on existing competitive advantages and know how to take advantage of them. It must understand what drives its core business, its sales, its profitability, and work to extract more value from its core business without really moving away from its main focus. Communication is one of the most important fields of activity of strategic management. It is important that the entire company is aware of each other. It is important that employees contribute to the process and success and feel that they are involved. Considering that there may be rumors and false discourses within the institution, it is important that the personnel do not hinder each other's efforts internally. Informing human resources and encouraging them to ask questions by asking their opinions are also among the basic requirements of strategic management. It should be known that the orientation will be more when the benefits of strategic planning and strategic goals are explained to the personnel. In this sense, the business can make strategic management a part of life by organizing meetings that ensure the active participation of everyone involved as a part of communication. The most important difference on the human side of strategic management is that participation in the process increases and revitalizes the workforce.

Again, the most meaningful field of activity of strategic management is continuity and being a dynamic activity. The adaptability of processes is the result of dynamism and flexibility. Fluctuating competition is among the most important reasons for compliance with consumers and economic market conditions. In this sense, holding strategic meetings on a regular basis can help review progress and push the most important concerns to the agenda. Addressing the opportunities and seeing the threats in a timely manner is the most important reason why the strategic management approach is preferred from this perspective.

Objective channels and objective eyes are the most important variable that helps the management at points that cannot be seen. With a Strategic External Eye, the conformity assessment of the business's plans and strategies can be made easily. In this sense, instead of acting from assumptions, businesses have the opportunity to see themselves more objectively in the mirror by doing more grounded activities. The fact that businesses can answer difficult questions is an indication that strategic management fulfills its objectives.

Undoubtedly, strategy management is vital to the success of any business. It gives the plan for successful expansion. Success ultimately depends on top management's capacity to provide the necessary leadership to a) devise a well-thought-out, fact-based plan, and b) create an environment conducive to strategy implementation. This creates a sense of ownership and dedication that will ensure the success of the project.

Cryptocurrency Market and Strategic Management Relationship (Preliminary Evaluation)

Cryptocurrency markets have a direct impact on businesses. Starting from the board of directors, all management levels from top to bottom had to consider the consequences of the indirect effects of cryptocurrencies on their businesses after Covid 19. Cryptocurrencies have ceased to be a tool that can only be used in money and capital markets. Cryptocurrencies also have the power to change the rules of strategic business management. Financial services firms in various countries have started to see demand for cryptocurrencies from their customers, and at the same time, capital markets have faced significant developments regarding cryptocurrencies.

Due to the nature of capital markets, the business world, the speed of the money market created by crypto assets, has had an impact on the effectiveness of organizations working with each other. Managers who do not have knowledge of basic technology have had to deal with security, technological and risk factors while dealing with a new asset.

The point that needs to be understood here is this: Not only financial risks, but also shopping related to cryptocurrencies have brought operational risks to light. From this point of view, the boards of directors have to discuss and review the general strategies and approve the final issues related to the exchanges to be made using cryptocurrencies. At this point, it is important that the boards of directors have knowledge about crypto assets, in other words, it is important to ensure that people who have knowledge take part in the boards of directors.

The first thing to be done from an organizational point of view is for businesses that produce products or services to ask themselves whether they will be included in the crypto money market. It is a fact that businesses that will benefit from the crypto money market while evaluating their existing products or services have a technical aspect both in terms of

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payment systems and cash movements, potentially becoming eligible for the crypto money market. Organizational structuring needs to be completed in the departments formed by the people who will manage them. If a business that wants to take advantage of the opportunities in the crypto money market wants to exist in its own market, it has to review the management levels to join the crypto system.

Strategic decision making is necessary for strategic management. Some suggestions made by some researchers that is ti about management or governance (Ulusoy et. al., 2022). For strategic decisions, it is necessary to set goals and objectives. At this point, the business; It has to quickly adapt the decisions and targets to be made regarding its activities to the crypto money market. The reason for this can be explained as follows. If the contribution of the strategic goals to the company value and the contribution to the profitability of the company will be prioritized, it will put its strategic activities in the foreground within this scope and carry out its activities through the organization that it has strategically structured. Secondly, the business, which knows that the activity does not consist of giving and receiving payments in information exchanges about its customers, should know that a management structure that will operate in accordance with the crypto money market will directly affect the value of the company in business and transactions.

With the growth of the cryptocurrency market day by day, innovations such as the increase in cross-border transactions, real-time operating systems, NFT markets, decentralized finance (DeFi), identity management systems have come to the fore. If it is thought that crypto money systems belong to blockchain technologies, it would not be wrong to say that transactions will not be recorded by institutions such as banks. On the one hand, this means that both identity and financial data will be placed, on the other hand, it means that there should be some changes in the organizations to which the personnel carrying out the work belong. In other words, blockchain-enabled crypto transactions do not require a third central party, thus paving the way for more “decentralized” commercial transactions. In a transaction owned only by the sender and the receiver, it becomes necessary to define strategic business management policies again. Considering the ability to process suppliers in real-time, eliminate human errors in updating data, and use smart contracts for payments in blockchain-based applications, it will become clear that modeling that seems to be a zero-human model will not be possible in the near future. Although the reduction of personnel seems to be the first plan, the possibility of turning the qualified workforce into a workforce with more technical qualifications cannot be ignored.

Since the adoption of crypto money systems is still a new concept for businesses, it becomes more important for the stakeholders of the businesses to develop their core capabilities and make them applicable.

Strategic management is used by an organization to achieve its goals.

Discussions and Suggestions

If businesses want to increase access to their products, they must know how to receive and give crypto payments in order to open up to new global markets. In this sense, it is necessary to waive the strategies in which the products are overpriced while determining the strategies. Processing transactions using a currency such as Bitcoin is one way to trade seamlessly internationally. Starting off by accepting cryptocurrencies opens the way for the business to access more diverse markets. Reputation can pave the way for increasing sales and positively affecting profitability. Since cryptocurrencies facilitate both domestic and international trade, many of the international barriers and limitations can be forgotten. It can pave the way for a fairer pricing as it reduces costs. It has been stated in the previous paragraphs that the cyber security issue is one of the most important issues for Strategic Management. Cyber security is one of the most important obstacles to the digitization of a business. Since digital currencies are not tied to any country or currency, they can protect businesses from financial risks such as inflation or interest, even foreign exchange differences. Since privacy will not be at the forefront as a strategic goal, cyber security will no longer be a cost factor for businesses after this part, and cyber risks will be eliminated here.

The development of digital payment channels together with digitalization, which has a great contribution to Strategic Management, means improving payment capacity as it will pave the way for businesses more. The reduction in the costs of transactions with financial intermediaries helps to transfer the resource created here to other channels of the enterprise. The fact that businesses operating directly or indirectly in many countries of the world, such as firing, hiring and preparing payrolls of wages, are carried out over cryptocurrencies means that the costs of this are further reduced. Small businesses, on the other hand, can minimize their cost and security sensitivities by reducing their relational costs related to banks with cryptocurrencies.

By switching to cryptocurrency transactions, businesses can step into new technologies that use cryptocurrencies such as NFT. NFTs, as it is known, Qualified Intellectual Deed, or non-fungible token as it is popularly known in English, is a unit of data stored in a digital ledger called a blockchain, which confirms that a digital asset is unique and therefore not interchangeable. Therefore, businesses that switch to NFT technologies can also switch to this field by creating an online brand. The transition to NFT and the brand studies to be carried out in this area are the most effective ways that the

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company can develop in order to stand out from its competitors in the market where it is located. A branding that can be realized on NFT also paves the way for establishing relationships with different customer groups. An effective brand with a solid foundation in cryptocurrencies and mastering NFT technology is a factor that increases brand value by owning a certain consumer segment. It is easier for the business to describe what an NFT-based brand represents, and thus businesses have the chance to more easily eliminate incompatibilities with their customers. In this sense, NFTs are confronted with the ability to further increase strategic competition in today's innovative market with the intention of encouraging positive strategic actions that will benefit the business. Thus, businesses that use cryptocurrencies and create a marketing and brand strategy with NFT have the chance to prioritize the excitement, sincerity and robustness of their products in their products. In this sense, the sophistication brought by technology may pave the way for the product or the service to be given to the consumer to be more prestigious and even to be presented to the customer with technological elegance. Most of the time, branding and technology have acted independently of each other, and what the connection may be and the effect of technology on branding have been overlooked. In this sense, businesses that want to create a strategic brand policy may not be able to reach all customer touch points quickly and make their brands more memorable and consistent.

Conclusion

The cryptocurrency market will undoubtedly provide new opportunities for companies producing products and services of all sizes and types. It should not be only technically and financially that this can be adapted to the markets quickly. Organizations also have to adapt their organizational structures to crypto markets or, more broadly, blockchain structures. The rapid development of strategies and their inclusion in strategic management practices has become a necessity.

However, when it comes to developing a strategy, there is no single answer or way to approach all considerations. Rather than being distracted by scam or how other organizations are reacting, each organization should seize the opportunity based on its unique strengths, market position, legal situation and growth strategy.

While making the evaluation, the difficulties experienced in the adaptation processes to changes can be overcome with a quick but important review at all levels of management, especially the organizational structure of the institution, human resources.

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Impact of using cryptocurrencies on monetary policy: A model of El Salvador[1]

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Abstract

In this study, the positive impact of cryptocurrencies on the monetary policy represented by the financial and banking sector of the State of El Salvador is evaluated for being one of the countries that do not have a national currency; in order to measure the extent of confidence and acceptance of banks and their customers in El Salvador to adopt cryptocurrencies in the field of banking and financial work, in addition to the possibility of issuing cryptocurrencies by the Central Bank of El Salvador. The evaluation tool was a questionnaire with two models; the first was for the banking sector, as it was distributed to a group of managers and employees of the 6 largest banks in El Salvador, and the second model was for the financial sector and included a group of companies and individuals dealing in cryptocurrencies. SPSS26 was used to analyze the answers to the questionnaire. A statistically significant impact relationship was found to adopt of cryptocurrencies and the monetary policy of the banking sector by reducing the costs of banking services and raising operational efficiency, developing and upgrading banking services. It was found that there is a statistically significant influence relationship for the adoption of encrypted currencies, the monetary policy of the financial sector, the development of e-commerce, in addition to the use of the e-wallet. The recommendations encourage the responsible authorities in El Salvador to move towards the application of cryptocurrency trading while strengthening the necessary legal and regulatory frameworks that govern and regulate existing transactions using cryptocurrencies and e-commerce, in addition to developing and promoting the use of their new technologies in a comprehensive manner.

Keywords: Cryptocurrencies, Monetary Policy, E-Commerce, E-Wallet, El Salvador

1. Introduction

The rapid development of financial technology has had a clear and significant impact on all aspects of economic and financial life, which was represented in the quick completion of transactions and reducing their costs. Cryptocurrencies are one of the applications that this technology has produced. Cryptocurrencies are means of monetary exchange where the value is stored and transferred electronically (S. Nakamoto, 2009). They differ from the traditional concept of money in ensuring security and verifiability (Procházka, 2018). Bitcoin is the first and most famous cryptocurrency, and it is a digital sequence that can be obtained either from exchanging money or selling goods and services through electronic businesses that accept Bitcoin units, making it a fiat currency, or mining using the basic technology "blockchain". It is a secure and distributed database that contains transaction history, "blockchain" technology is like a ledger that stores all verified exchanges on the network and Bitcoin as financial assets (N. Nakamoto et al., 2008). This ledger consists of blocks linked to each other, each block contains a list of transactions for some exchanges, private users (miners) create a block locally by choosing different pending transactions, after which each new block is drawn through a mathematical process similar to Sudoku (Ulusoy and Çelik,2019). When the miner finds the network solution, it wins a predetermined number of Bitcoins, and other participants must start competing again with another network (Tschorsch & Scheuermann, 2016) . Cryptocurrencies rely on a decentralized system where there is no central monetary authority that controls their creation, and they can also be obtained from different platforms. Therefore, they are considered outside the recognized regulated payment systems so the offer of cryptocurrencies is not subject to the approved monetary policy of central

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banks, but rather develops based on the activity of users in the cryptocurrency mining process. This may pose a challenge to central banks, monetary policy represented by the financial and banking sector is the set of measures taken by the state to control the value of the national currency compared to other currencies around the world. It is considered one of the main pillars in the construction of macroeconomic policy is at the forefront of the structure of the country's macroeconomic policies. Monetary policy is used to address economic imbalances, it is an important mechanism used by contemporary economies in a way that enables them to achieve goals. Controlling and regulating the means of payment in the country occupies the most important objectives of monetary policy in the economy, as the central bank can absorb cash in excess of the needs of trading or the financing process and can provide new cash balances according to the prevailing economic conditions (Bugallo, 2013). The central bank, through monetary policy tools, controls the money supply such as increasing or decreasing the monetary issuance, as well as supervising commercial banks (Goldberg et al., 2020) ,Hence the role of monetary policy emerges in the event of its adoption of cryptocurrencies (especially in the state of El Salvador as it does not have a national currency of its own) in developing banking services, raising the operational efficiency of banks and supporting e-commerce. The study aims at determining the nature of the relationship between cryptocurrencies and monetary policy and its impact on the financial sector and measuring the extent of trust and acceptance of banks and their customers in El Salvador to adopt cryptocurrencies in the field of banking and financial work, as well as trying to come up with recommendations that may contribute to the issuance of encrypted currencies by the Central Bank of El Salvador. As for the study dilemma; it is how it affects cryptocurrencies in monetary policy through the financial and banking sector, and this dilemma raises some questions, including whether cryptocurrencies affect the development of services in El Salvadoran banks and have a role in enhancing operational efficiency, reducing the costs of services and bank transfers, developing e-commerce, and raising the efficiency of portfolio performance in order to address the study dilemma and answer the questions, a set of hypotheses can be built that form answers to the questions posed, and these hypotheses are as follows:

$H0_1$: There is no statistically significant impact relationship between the adoption of cryptocurrencies and the monetary policy of the banking sector (banks) of El Salvador and the two hypotheses are subdivided:

$H0_{1.1}$: There is no statistically significant impact of adopting cryptocurrencies, reducing banking services costs, and raising the operational efficiency of El Salvadoran banks.

$H0_{1.2}$: There is no statistically significant impact of the adoption of cryptocurrencies in the promotion, development and upgrading of banking services in Salvadoran banks.

$H0_2$: There is no statistically significant impact relationship between the adoption of cryptocurrencies and the monetary policy of the financial sector in El Salvador, and the two hypotheses are:

$H0_{2.1}$: There is no statistically significant impact relationship for cryptocurrency adoption and e-commerce.

$H0_{2.2}$: There is no statistically significant impact relationship to the adoption of cryptocurrencies and e-wallets.

To determine the validity of the hypotheses and to reach the objectives of the study, both the descriptive analytical approach was used in the theoretical aspect by addressing the theoretical literature related to the subject, but this aspect must be attached to an analytical aspect that studies the relationship between the variables of the study, so the questionnaire model that was presented to a group of specialists in this field and at a high level of experience and workers in a number of banks for the State of El Salvador as well as a group of companies and individuals trading in cryptocurrencies was used, and statistical and standard methods were used in the SPSS26 program to analyze the data .

2. Literature Review

Study Nakamoto, aimed at presenting the technical dimensions of cryptocurrencies in terms of peer-to-peer principle, digital forecasts and blockchain and introducing Bitcoin for the first time, and solved the problem of double spending facing electronic accounts (S. Nakamoto, 2009) .

Study Harrison & Mano, concluded that practice makes cryptocurrency money and is used as a mean of payment in commercial transactions (Harrison & Mano, 2015).

Study Franco, dealt with extensive research on the concept of virtual cryptocurrencies, it highlighted more broadly the currency of (Bitcoin) in terms of its origin, composition, the nature of its composition, the mechanisms of its work, and the technique used in its operation. It also concluded that Bitcoin is characterized by a high degree of encryption and security, and the extent to which it is related to monetary policy, global monetary management, and the cancellation of financial intermediation in banks (Franco, 2014).

Study Claeys, dealt with the characteristics of money and the extent to which cryptocurrencies have these characteristics, the possibility of cryptocurrencies playing the same role and replacing funds controlled by the Central Bank, and whether cryptocurrencies have the impact of changing the nature of monetary policy? It concluded the technology of the decentralized ledger of peer-to-peer innovations in transactions that were difficult to imagine a decade ago. This

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technology has also led to the development of cryptocurrencies and allowed them to challenge the role of money as a mean of exchange. Cryptocurrencies can develop into legitimate private payment methods with a positive impact by acting as a disciplined device that drives central banks (especially in countries that have a history of lax monetary policy) (Claeys et al., 2018).

Study Elhaj & Barakeh, aimed to test the impact of e-commerce on the profitability of the transport sector in the United States of America, identifying differences in this impact according to the size of transport companies. The study relied on the descriptive analytical approach by conducting a qualitative quantitative survey on a random sample of American citizens who benefit from transport services. The study found that there is a strong impact of e-commerce on the profitability of the transport sector in the United States of America, and this impact was greater for small transport companies than for large ones (Elhaj & Barakeh, 2015).

Study Kareem, aimed to test the impact of e-commerce on the organizational performance of some retail stores in Nigeria. The study relied on the experimental descriptive approach by preparing a special questionnaire and applying it to a sample of 48 workers in 8 retail stores in Nigeria. After collecting data and analyzing it statistically, the study found out that the application of e-commerce and the adoption of its operations has a statistically significant impact on the organizational performance of retail stores in Nigeria, through its contribution to improving operations, reducing costs and increasing profit levels. It also contributes to increasing the demand of foreigners to buy from these stores and thus increasing profits (Kareem et al., 2014). Kendirli et. al (2022) examine the relationship between the CCi30 index, BIST 100, and Nasdaq Indices. Kendirli nd Şenol (2021) study within the framework of Chaos theory, the impact analysis between the large stock market volume and the Bitcoin volume. Uygun (2019)'s study goal is the idea of a coin that will gain value with respect to real economic resources, with high security, which can be mining according to the requirements, using blockchain or derivative technology shaped according to needs.

3. Field study (Method and procedures)

The study sample: The study population consists of two categories; the first represents the axis of the banking sector, which is a group of bank employees in El Salvador from 6 major banks, and the second category represents the axis of the financial sector, which is a group of companies and individuals that deal in cryptocurrencies. The statistical data on the study population was collected through two forms of a questionnaire that included a number of questions. Form 1 of the questionnaire included (financial managers and their deputies ,heads of departments, and senior employees) working in banks that were chosen as the community of study of the banking sector axis. Form 2 of the questionnaire included (companies and individuals trading in cryptocurrencies) that were selected as the community of study of the financial sector axis. 200 copies of Form 1 were sent, 170 of which were returned, 8 were excluded because they were incorrect, so that the number of correct forms was 162 of form 1. While 200 copies of form 2 were sent, 164 were retrieved and 28 were excluded due to invalidity, so the number of correct copies of form 2 becomes 136, Table (1) shows the number of participants and the demographic distribution of the study sample in the questionnaire for models (1 & 2).

Table (1) the number of participants in the questionnaire for both models and personal data

	Type	Model 1		Model 2	
		Number	Percentage	Number	Percentage
Gender	Male	112	%82.3	103	%63.5
	Female	24	%17.7	59	%36.5
Age	25-35	61	%37.6	43	%31.6
	36-45	76	%47	51	%37.5
	46- And more	25	%15.4	42	%30.9
The scientific degree	Bachelor's degree and less	73	%45	79	%58
	Higher Diploma	25	%15.4	31	%22.8
	M.A.	45	%27.8	17	%12.5
	Ph.D	19	%11.8	9	%6.7
Experience	5- and less	55	%34	89	%65.5
	6-10	46	%28.5	47	%34.5
	11-15	39	%24	0	0
	16- And more	22	%13.5	0	0

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Model 1 contains 42 questions divided into 3 axes, which are the axis of importance of cryptocurrencies, the axis of reducing the costs of banking services and raising the operational efficiency of El Salvadoran banks, and the axis of focus of promoting and developing banking services and upgrading them in El Salvadoran banks. As for Form 2, it contains 33 questions divided into 3 axes: the axis of the importance of cryptocurrencies, the axis of developing e-commerce, and the axis of promoting and developing the use of the e- wallet. The ***Five Likert Scale*** was used, and from its arithmetic average, the importance score was calculated as follows (5-1)/5 = 0.79, distribution becomes as shown in table 2 (Sekaran & Bougie, 2016).

Table (2) Five Likert Scale and degree of importance

Answer	Degree	limit	Importance
Strongly Disagree	1	1 -1.97	Very low
Disagree	2	1.80 – 2.59	low
Neutral	3	2.60 – 3.39	Medium
Agree	4	3.40 – 4.19	High
Strongly agree	5	4.20 - 5	Very high

In order to verify the credibility of the questionnaire, we presented the apparent validity of the questionnaire to eight arbitrators from different specializations, and some paragraphs of the questionnaire were modified based on the proposed observations to become its final form consisting of (75) paragraphs based on the variables of the study. As for verifying the internal stability of the questionnaire and its credibility, it was measured using the Alpha Cronbach coefficient of the SPSS 26 program, as it reached (0.97), and therefore it is acceptable for the purposes of statistical analysis (Bougie & Sekaran, 2019) , Table (3) shows the value of Cronbach's Alpha .

Table (3) Alpha Cronbach stability coefficient. Source: SPSS output

Cronbach's Alpha	N of Items
0.997	75

4. Results and Discussion

SPSS26 was used to analyze the data and information obtained from the two forms of questionnaire 1 & 2 for the banking and financial monetary policy sectors to identify the arithmetic averages, the extent of deviation of the responses of the study community and the importance of each of the statements of the study variables, and for each of the main axes.

Table (4) shows the descriptive analysis of the responses of the sample form 1 on the paragraphs of the axis of importance of cryptocurrencies. It is apparent from the table that most of the paragraphs related to this variable had a high and very high degree of significance. It obtained an arithmetic mean of 4.005 with a high degree of significance and a relatively low standard deviation of 0.973 indicating the absence of a large dispersion in the answers of the study sample and their agreement to a large extent in their answers. Paragraph 9 reached the lowest ranking with regard to the average answers, where the arithmetic mean was 3.68, a standard deviation of 1.244 and a high degree of importance, which is related to the presence of a sufficient number of offices, companies and brokers in El Salvador for the sale and purchase of cryptocurrencies, followed by the rest of the paragraphs with higher averages, while paragraph 6 reached the highest level of arithmetic mean was 4.43 and the lowest deviation was 0.703, with very high significance, it was related to the ease

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and speed of super cryptocurrencies in conversion. This confirms the importance of cryptocurrencies in terms of speed and ease of transfer (Sekaran & Bougie, 2016).

Table (4) The arithmetic mean, standard deviation, and importance of the banking sector axis of monetary policy , paragraph of importance of cryptocurrencies

	Question	Standard Deviation	Arithmetic Mean	İmportance
1	There is a good knowledge in the financial markets of El Salvador of the most important cryptocurrencies such as bitcoin, lithium, and others.	0.818	4.33	Very high
2	Governmental entities support dealing in cryptocurrencies.	0.92	4.02	Very high
3	There is an approved legal framework for cryptocurrencies in El Salvador	1.131	3.89	High
4	The state of El Salvador supports cryptocurrencies in Payment operations to Governmental entities	1.131	3.78	High
5	Cryptocurrencies are becoming popular in El Salvador	0.771	4.27	Very high
6	Cryptocurrencies are characterized by ease and super speed of conversion.	0.703	4.43	Very high
7	Cryptocurrencies are characterized by transparency and security in financial operations.	0.87	4.22	Very high
8	Regulation and support for cryptocurrencies by the government gives them stability in exchange rates.	1,237	3.72	High
9	The presence of a sufficient number of offices, companies, and intermediaries in El Salvador for the sale and purchase of cryptocurrencies.	1.244	3.68	High
10	There are competent authorities that have sufficient infrastructure, effective mechanisms and have confidence in managing cryptocurrency operations securely and effectively	1.093	3.80	High
11	Companies whose business is based on the use of cryptocurrencies are achieving domestic and international success.	0.981	4.09	High
12	There is a large category of individuals who have an awareness of electronic payment and rely on it to complete some online purchases.	1.186	3.80	High
13	There are operations for the sale, purchase, or exchange of products, services, and information in cryptocurrencies via the internet.	1.121	3.90	High
14	Investing in cryptocurrencies generates profits that positively affect the country's economy.	0.939	4.16	High
Average		0.973	4.005	High

Table (5) shows the descriptive analysis of the responses of the sample form 1 on the paragraphs of the axis of Reducing banking services costs and raising the operational efficiency of El Salvadoran banks. It is apparent from the table that most of the paragraphs related to this variable had a high and very high degree of significance. It obtained an arithmetic

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mean of 3.959 with a high degree of significance and a relatively low standard deviation of 1.02 indicating the absence of a large dispersion in the answers of the study sample and their agreement to a large extent in their answers. Paragraph 6 reached the lowest ranking with regard to the average answers, where the arithmetic mean was 3.69, a standard deviation of 1.192, and a high degree of importance, which is related to the contribution to facilitating e-payment processes for local and international trade operations, followed by the rest of the paragraphs with higher averages, while paragraph 13 reached the highest level of arithmetic mean was 4.35 and the lowest deviation was 0.760, with very high significance, it was related to the contribution to reducing the cost related to the administrative operations of banks. This confirms the importance of cryptocurrencies in terms of reducing banking services costs and raising the operational efficiency of El Salvadoran banks (Sekaran & Bougie, 2016)

Table (5): The arithmetic mean and standard deviation of the banking sector axis of monetary policy, paragraph of reducing the costs of banking services

	Question	Standard Deviation	Arithmetic Mean	Degree Of İmportance
1	Contributes to reducing the cost of money transfers resulting from the absence of an intermediary.	1.118	3.83	High
2	Contributes to reducing the cost of financing for import, .export, and money transfer operations	1.158	3.84	High
3	Contributes to reducing infrastructure costs in remote areas resulting from making money transfers without the need to establish new infrastructure.	1.214	3.85	High
4	Contributes to reducing the costs of banks and enhancing the efficiency of banking infrastructure by eliminating the need for complex routine operations in the transfer of funds.	1.051	4.01	High
5	Contributes to meeting the needs of domestic and international trade very quickly.	1.130	3.80	High
6	Contributes to facilitating e-payment processes for local and international trade operations.	1.192	3.69	High
7	Contributes to saving the cost of remittances related to import and export operations	.877	4.18	High
8	Contributes to the acceleration of import and export operations resulting from the provision of instant payments and the speed of transfers.	1.018	4.04	High
9	contributes to facing competition from cryptocurrency companies that use e-payment services.	1.048	3.98	High
10	Contribute to facing competition with international banks that use cryptocurrencies in their transactions.	.999	4.12	High
11	The low cost of remittances makes banks gain a competitive advantage and the client does not resort to informal methods.	.798	4.25	Very high
12	Contribute to the reduction of operational expenses.	1.225	3.73	High
13	Contribute to reducing the cost related to the administrative operations of banks.	.760	4.35	Very high
14	Contributes to the elimination of financial corruption by making data visible and the absence of an intermediary to complete financial transactions.	1.206	3.75	High
Average		1.024	3.959	High

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Table (6) shows the descriptive analysis of the responses of the sample form 1 on the paragraphs of the axis of development and raising the efficiency of banking services performance. It is apparent from the table that most of the paragraphs related to this variable had a high and very high degree of significance. It obtained an arithmetic mean of 4.045 with a high degree of significance and a relatively low standard deviation of 0.99 indicating the absence of a large dispersion in the answers of the study sample and their agreement to a large extent in their answers. Paragraph 13 reached the lowest ranking with regard to the average answers, where the arithmetic mean was 3.65, a standard deviation of 1.202, and a high degree of importance, which is related to the contributes to better verifying its customers, as it knows for sure that their personal data is correct and has not been subjected to any kind of manipulation , followed by the rest of the paragraphs with higher averages, while paragraph 14 reached the highest level of arithmetic mean was 4.35 and the lowest deviation was 0.76, with very high significance, it was related to the contributes to increasing the administrative efficiency of the bank by providing and exchanging data with interested parties. This confirms the importance of cryptocurrencies in terms of reducing In increasing administrative efficiency and the significant role of cryptocurrencies in the development of banking services within El Salvador (Sekaran & Bougie, 2016).

Table (6) The arithmetic mean and standard deviation of the banking sector axis of monetary policy, paragraph of reducing the costs of banking services

	Question	Standard Deviation	Arithmetic Mean	Degree Of İmportance
1	Contributes to the completion of financial transactions and transactions faster and more accurately	.998	4.10	High
2	No need to make an administrative effort to keep records or settle disputes related to financial transactions	1.149	3.83	High
3	Contributes to increasing administrative efficiency resulting from the speed of data provision and Exchange	.998	4.13	High
4	Contributes to reducing operational risks and improving the efficiency of banks ' performance	1.098	3.99	High
5	Contributes to achieving more transparency for the bank and privacy for the customer	.982	4.17	High
6	Contributes to achieving more transparency and security to make financial transactions visible and unchangeable	1.063	3.99	High
7	Contributes to achieving transparency in the bank's ability to follow up financial transactions	.904	4.27	Very high
8	Contributes to achieving security for customers through the stability of financial operations,and not changing them	1.059	4.06	High
9	Contribute to the elimination of corruption and reduce fraud resulting from transparency and consistency of transactions	1.095	3.93	High
10	Contribute to achieving more transparency through the so-called smart contracts that aim to complete transactions without an intermediary	.878	4.22	Very high
11	Contributes to the shortening of paper transactions, which enhances the levels of security, accuracy and speed in money transfers	1.054	4.03	High
12	Contributes to achieving privacy by not disclosing the user's identity because it is not subject to any financial authority at all	1.109	3.92	High
13	Contributes to better verifying its customers, as it knows for sure that their personal data is correct and has not been subjected to any kind of manipulation.	1.202	3.65	High
14	Contributes to increasing the administrative efficiency of the bank by providing and exchanging data with interested parties.	.760	4.35	Very high
Average		.992	4.045	High

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Table (7) shows the descriptive analysis of the responses of the sample form 2 on the paragraphs of the axis of importance of cryptocurrencies. It is apparent from the table that most of the paragraphs related to this variable had a high and very high degree of significance. It obtained an arithmetic mean of 4.013 with a high degree of significance and a relatively low standard deviation of 0.980 indicating the absence of a large dispersion in the answers of the study sample and their agreement to a large extent in their answers. Paragraph 5 reached the lowest ranking with regard to the average answers, where the arithmetic mean was 3.83, a standard deviation of 1.015 and a high degree of importance, which is related to the large group of individuals who are aware of electronic payment and rely on it to complete some online purchases, followed by the rest of the paragraphs with higher averages, while paragraph 1 reached the highest level of arithmetic mean was 4.23 and the lowest deviation was 0.852, with very high significance, it was related to the a good knowledge in the financial markets of El Salvador of the most important cryptocurrencies such as bitcoin, lithium, and others, This confirms a good knowledge of the cryptocurrency financial markets in El Salvador (Bougie & Sekaran, 2019).

Table (7) The arithmetic mean, standard deviation, and the degree of importance of the financial sector axis of monetary policy, the importance of cryptocurrencies paragraph

	Question	Standard Deviation	Arithmetic Mean	Degree Of İmportance
1	There is a good knowledge in the financial markets of El Salvador of the most important cryptocurrencies such as bitcoin, lithium, and others.	.852	4.23	Very high
2	Governmental entities support dealing in cryptocurrencies.	1.088	3.97	High
3	There is an approved legal framework for cryptocurrencies in El Salvador	1.011	4.00	High
4	The state of El Salvador supports cryptocurrencies in Payment operations to Governmental entities	1.058	3.85	High
5	There is a large group of individuals who are aware of electronic payment and rely on it to complete some online purchases.	1.015	3.83	High
6	Cryptocurrencies are characterized by ease and super speed of conversion.	.994	4.07	High
7	Cryptocurrencies are characterized by transparency and security in financial operations.	1.031	3.94	High
8	Regulation and support for cryptocurrencies by the government gives them stability in exchange rates.	.918	4.04	High
9	The presence of a sufficient number of offices, companies, and intermediaries in El Salvador for the sale and purchase of cryptocurrencies.	1.221	3.89	High
10	There are competent authorities that have sufficient infrastructure, effective mechanisms and have confidence in managing cryptocurrency operations securely and effectively	.990	4.07	High
11	Companies whose business is based on the use of cryptocurrencies are achieving domestic and international success.	1.046	4.10	High
12	There is a large category of individuals who have an awareness of electronic payment and rely on it to complete some online purchases.	.990	4.07	High
13	There are operations for the sale, purchase, or exchange of products, services, and information in cryptocurrencies via the internet.	.903	4.08	High
14	Investing in cryptocurrencies generates profits that positively affect the country's economy.	.999	4.05	High

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Average	.98067	4.0137	High

Table (8) shows the descriptive analysis of the responses of the sample form 2 on the paragraphs of the axis of importance of E-commerce development. It is apparent from the table that most of the paragraphs related to this variable had a high and very high degree of significance. It obtained an arithmetic mean of 3.93 with a high degree of significance and a relatively low standard deviation of 1.079 indicating the absence of a large dispersion in the answers of the study sample and their agreement to a large extent in their answers. Paragraph 9 reached the lowest ranking with regard to the average answers, where the arithmetic mean was 3.70, a standard deviation of 1.213 and a high degree of importance, which is related to the online sales, purchases or exchanges of products, services and information in El Salvador, followed by the rest of the paragraphs with higher averages, while paragraph 3 reached the highest level of arithmetic mean was 4.13 and the lowest deviation was 1.01 , with very high significance, it was related to the sufficient awareness among individuals and institutions of the ease and security provided by e-commerce and Information Technology, This confirms the importance of e-commerce in El Salvador (Bougie & Sekaran, 2019).

Table (8) the arithmetic mean, standard deviation, and the degree of importance of the financial sector axis of monetary policy, paragraph on the importance of developing e-commerce

	Question	Standard Deviation	Arithmetic Mean	Degree Of İmportance
1	El Salvador has the necessary legal and regulatory frameworks that govern and regulate cryptocurrency-based transactions and e-commerce.	1.088	3.97	High
2	El Salvador has the infrastructure and ready-made communication networks and technology necessary for e-commerce.	1.183	3.85	High
3	There is sufficient awareness among individuals and institutions of the ease and security provided by e-commerce and Information Technology.	1.010	4.13	High
4	The use of cryptocurrencies in e-commerce is widespread for internal and external financial transactions.	1.033	4.00	High
5	The use of e-commerce in conducting electronic transactions is widespread in El Salvador.	1.216	3.75	High
6	There are a large number of domestic and international electronic markets on which services, goods, and money are exchanged.	1.060	3.87	High
7	E-commerce is an effective means of trade exchange between business enterprises, producers, and consumers	1.046	4.10	High
8	E-commerce is an effective way to provide demands and needs and facilitate business with less time, cost and effort.	1.221	3.89	High
9	There are online sales, purchases or exchanges of products, services and information in El Salvador.	1.213	3.70	High
10	Companies in El Salvador that operate based on e-commerce are achieving local and international success.	.990	4.07	High
Average		1.079	3.93	High

Table (9) shows the descriptive analysis of the responses of the sample form 2 on the paragraphs of the axis of importance of E- wallet. It is apparent from the table that most of the paragraphs related to this variable had a high and very high degree of significance. It obtained an arithmetic mean of 4.0588 with a high degree of significance and a relatively low standard deviation of 0.894 indicating the absence of a large dispersion in the answers of the study sample and their agreement to a large extent in their answers. Paragraph 7 reached the lowest ranking with regard to the average answers, where the arithmetic mean was 3.83, a standard deviation of 1.015 and a high degree of importance, which is related to

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the enough awareness among citizens about the e-wallet and how to use it to conduct financial transactions securely, followed by the rest of the paragraphs with higher averages, while paragraph 6 reached the highest level of arithmetic mean was 4.35 and the lowest deviation was 0.764 , with very high significance, it was related to the E-wallets help their users to keep their personal and financial data and information they need confidential and secure, This confirms the importance of dealing with all kinds of technology available to keep abreast of developments in the world of finance and business to maintain survival in the major global markets (Bougie & Sekaran, 2019).

Table (9) The arithmetic mean, standard deviation, and the degree of importance of the financial sector axis of monetary policy, paragraph on the importance of e-wallet

	Question	Standard Deviation	Arithmetic Mean	Degree Of İmportance
1	The presence of e-wallets that support all cryptocurrencies that investors need to trade.	.999	4.05	High
2	Cryptocurrencies can be purchased with traditional currencies through an e-wallet.	.903	4.08	High
3	Financial transactions can be made directly from the e-wallet easily and securely.	.850	4.25	High
4	Using an e-wallet to purchase goods and services and conduct e-transactions.	1.058	3.85	High
5	All financial movements of cryptocurrencies can be regulated through the use of an e-wallet.	.824	4.13	High
6	E-wallets help their users to keep their personal and financial data and information they need confidential and secure.	.764	4.35	Very high
7	There is enough awareness among citizens about the e-wallet and how to use it to conduct financial transactions securely.	1.015	3.83	High
8	There are competent authorities that have sufficient infrastructure and effective mechanisms and have confidence in managing e-wallets effectively, efficiently, and securely.	.918	4.04	High
9	All information and data that is inside the e-wallet is in an encrypted format that protects the data.	1.031	3.94	High
Average		.894	**4.0588**	High

Table (10) indicates Pearson correlation coefficient between the axis of importance of cryptocurrencies represented by the symbol (AB) with the two axes of the banking sector, and its value reached (0.998) with the axis of reducing the costs of banking services and raising the operational efficiency of banks represented by the symbol (A), which indicates that there is a strong direct relationship, meaning that the banking costs are falling and the operational efficiency of banks is positive increases positively with the increase in dealing with cryptocurrencies, while its value reached (0.994) with the axis of developing and raising the efficiency of banking services performance represented by the symbol (B). It also indicates a strong direct correlation, which means that there is a development and an increase in the efficiency of the performance of banking services with an increase in dealing with cryptocurrencies, and the value of the correlation coefficient reached (0.993) between the two axes of the banking sector itself, which is a strong positive correlation.

Table (10) Pearson correlation coefficient for the axis of importance of cryptocurrencies with the axis of the banking sector

Variable	AB	A	B
AB	*1*		
A	*0.988***	*1*	
B	*0.994***	*0.993***	*1*

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Table (11) indicates pearson correlation coefficient between the axis of importance of cryptocurrencies represented by the symbol (CD) with the two axes of the financial sector, and its value reached (0.995) with the axis of developing e-commerce represented by the symbol (C), which indicates that there is a strong direct relationship, meaning that the development of e-commerce increases positively with the increase in dealing with cryptocurrencies, while its value reached (0.994) with the axis of using the e- wallet represented by the symbol (D). It also indicates a strong direct correlation, which means that there is a use and development of the e- wallet with an increase in dealing with cryptocurrencies, and the value of the correlation coefficient reached (0.998) between the two axes of the financial sector itself, which is a strong positive correlation.

Table (11) Pearson correlation coefficient for the axis of importance of cryptocurrencies with the two axes of the financial sector

Variable	CD	C	D
CD	*1*		
C	*0.995***	*1*	
D	*0.994***	*0.998***	*1*

Table (12) presents the simple regression analysis of the relationship between the axis of cryptocurrencies and the axis of monetary policy, the banking sector, the paragraph of reducing the costs of banking services and raising operational efficiency. It was found out that the value of the correlation coefficient is (0.324), while the absolute calculated *T* value was (4.315), which is higher than its tabular value (1.185) at a degree of freedom (161), and the significant *p-vale* of 0.259. The value of the determination coefficient was (0.30), and it indicates that about 30% of the changes that occur in the decrease in the costs of banking services and the increase in the operational efficiency of banks can be explained by dealing in cryptocurrencies, and this value can be highly relied upon in the process of interpretation and prediction of the relationship with the paragraph of the promotion and development of banking services, so the value of the *correlation* coefficient was (0.333), and the absolute value of the calculated *T* was (1.512), which is higher than its tabular value (1.224) at a degree of freedom (161), and the significant *p-vale* of 0.244. The value of the determination coefficient was (0.37), indicating that about 37% of the changes that occur in the promotion, development and upgrading of banking services can be explained by dealing in cryptocurrencies. This value can be highly relied upon in the process of interpretation and prediction. Through the outputs of the simple regression analysis, the costs of banking services and the operational efficiency of banks are affected by dealing with cryptocurrency. Therefore, the null hypothesis $H0_{1.1}$ was rejected, and the alternative hypothesis was accepted; i.e. there is a statistically significant relationship for adopting cryptocurrencies, reducing the costs of banking services raising the operational efficiency of El Salvadoran banks, rejecting the null hypothesis $H0_{1.2}$, and accepting the alternative hypothesis, meaning that there is a statistically significant relationship for adopting cryptocurrencies and promoting and developing banking services and upgrading them El Salvadoran banks. By rejecting the two null hypotheses and accepting the alternative hypotheses for the two paragraphs of the monetary policy - the banking sector, the main null hypothesis $H0_1$ was rejected and the alternative hypothesis was accepted, meaning that there is a statistically significant effect relationship for the adoption of cryptocurrencies and monetary policy for the banking sector in El Salvador.

Table (12) simple regression analysis of the relationship between the cryptocurrency axis and the monetary policy axis banking sector

AB	Calculated value for (F)	R	R^2	*Adjusted R2*	Calculated value for T	T	p-vale	*Sig*	*Result*	
A	1.405	0.324	0.105	0.30	4.315	1.185	0.259	0.001	*Reject* $H0_{1.1}$	*Reject H01*
B	1.499	0.33	0.11	0.37	1.51	1.12	0.244	0.157	*Reject* $H0_{1.2}$	

Table (13) presents the simple regression analysis of the relationship between the axis of cryptocurrencies and the axis of monetary policy, the financial sector, the paragraph of E-Commerce. It was found out that the value of the correlation coefficient is (0.325), while the absolute calculated *T* value was (2.728), which is higher than its tabular value (0.972) at a degree of freedom (135), and the significant *p-vale* of 0.360. The value of the determination coefficient was (0.06), and it indicates that about 6% of the changes that occur in E-Commerce can be explained by dealing in cryptocurrencies, and

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this value can be highly relied upon in the process of interpretation and prediction of the relationship. with the paragraph of the e-wallet so the value of the *correlation coefficient* was (0.358), and the absolute value of the calculated *T* was (2.832), which is higher than its tabular value (1.014) at a degree of freedom (135), and the significant *p-vale* of 0.344. The value of the determination coefficient was (0.03), It indicates that about 3% of the changes that occur in the e-wallet can be explained by dealing in cryptocurrencies. This value can be highly relied upon in the process of interpretation and prediction. Through the outputs of the simple regression analysis, the banking costs and operational efficiency of banks are affected by cryptocurrency. Therefore, the null hypothesis $H0_{2.1}$ was rejected, and the alternative hypothesis was accepted; i.e. there is a statistically significant relationship for adopting cryptocurrencies and increase in e-commerce of El Salvadoran . Rejecting the null hypothesis $H0_{2.2}$, and accepting the alternative hypothesis, meaning that there is a statistically significant relationship for adopting cryptocurrencies and promoting and E-wallet developing them El Salvadoran. By rejecting the two null hypotheses and accepting the alternative hypotheses for the two paragraphs of the monetary policy financial sector, the main null hypothesis $H0_2$ was rejected and the alternative hypothesis was accepted, meaning that there is a statistically significant effect relationship for the adoption of cryptocurrencies and monetary policy for financial sector in El Salvador.

Table (13) simple regression analysis of the relationship between the cryptocurrency axis and the monetary policy axis financial sector

CD	Calculated value for (F)	R	R^2	*Adjusted R2*	Calculated value for T	T	p-vale	*Sig*	*Result*	
C	0.945	0.325	0.106	0.06	2.728	0.972	0.360	0.026	*Reject* $H0_{2.1}$	*Reject* $H0_2$
D	1.028	0.358	0.128	0.03	2.832	1.014	0.344	0.025	*Reject* $H0_{2.2}$	

5. Results and Recommendations

From the conclusions reached, the following recommendations may be drawn:

1. Central banks must deal with financial technology, use its tools, and work to control and regulate it in a way that preserves the financial stability of the state. In order not to become a spectator, central banks must work to issue their own digital currencies, be under their supervision and control, develop the technology of the distributed ledger records DLT, and deal with BlockChain technology to store and preserve data. These steps will have a great impact in enhancing the role of central banks and their ability to carry out their functions and control over the tools of monetary policy.
2. Developing legislation and systems for operations based on financial technology FinTech, so as to ensure that central banks play their role in supervising and controlling transactions developed and based on financial technology.
3. Empowering the necessary legal and regulatory frameworks that govern and regulate existing transactions by cryptocurrency and e-commerce.
4. Encouraging the concerned authorities, especially in countries that do not have a national currency, to move towards the application of cryptocurrency trading.
5. Paying attention to the development of the use of e-commerce in El Salvador by increasing the spread of cryptocurrencies, while avoiding their risks.
6. Educating all users of cryptocurrency in El Salvador about the importance of using digital wallets to store cryptocurrency, as it is important to keep funds safe.
7. Creating governmental organizations and entities in the country of El Salvador that monitor the circulation of cryptocurrencies and issue awareness bulletins on an ongoing basis to their users to help them use them correctly and safely away from risks.
8. Conducting research and other studies examining the possibility of issuing El Salvador cryptocurrencies by the Central Bank.

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Behavioral Management And Behavioral Economics: Evaluation of the Executive in Terms of Corporate Leadership Role and Individual Investor Role

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Abstract

Behavioral management and behavioral economics are two fields that have gained increasing attention in the realm of organizational behavior and decision-making. Both fields recognize that human behavior is not always rational or predictable, and that factors such as emotions, biases, and social influence can significantly impact decision-making processes. In this article, we aim to explore the intersection of these two fields by evaluating the executive in terms of their role as a corporate leader and as an individual investor. Specifically, we will examine the tendency for self-deception in these roles, the impact of experience and reference points on decision-making, the importance of risk perception, and the influence of personal values and beliefs on decision-making processes. By analyzing these factors through the lens of behavioral management and economics, we hope to contribute to a greater understanding of the complexities of decision-making in these roles, and to identify strategies for more effective leadership and investment practices. Corporate leaders are responsible for making decisions that are in the best interest of the company, while individual investors are focused on maximizing their own personal financial gains. This can create situations where corporate leaders make decisions that may benefit the company in the long term, but may not necessarily lead to immediate gains for individual investors. In some cases, corporate leaders may prioritize their own interests over those of individual investors, leading to conflicts between the two roles. In this study, a brief review has been conducted regarding both roles. Based on relevant studies in the literature, conclusions and recommendations have been made. Surveys and scales have been used to explore the validity of these recommendations and to open the way for further research.

Keywords: Behavioral Management, Corporate Leadership Role, Individual Investor Role

1. Introduction

Behavioral economics is one of the subfields of behavioral sciences. The concept of behavioral economics is derived from theories related to human behavior in psychology, sociology, and anthropology, and it is a discipline that attempts to understand the behavior of businesses by utilizing these theories.

The goal or scope of behavioral economics is to understand why market participants have biases and how these biases can be minimized in the information market. Behavioral sciences also examine the dimensions of mistakes made by behavioral decision makers, search for their causes, and investigate the systematic analysis of these mistakes.

Behavioral economics is the field that investigates the factors that influence the rational behavior of individuals considering investing in a financial process, what types of information are important in investment preferences, and how accurately and correctly this information is perceived and interpreted. Behavioral processes are not simple processes. Behavioral economics is a field where work is done to have convincing choices for investors. It deals not only with personal factors that affect individuals' investment preferences but also with all internal and external factors that affect individuals' investment preferences.

Behavioral management, on the other hand, is designed to explain managerial situations that current human-based models cannot explain by using information about human behavior. Behavioral strategic management attempts to interpret a company's strategic

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management behaviors based on human behavior. By assuming that the individuals who are stakeholders of the company do not act entirely rationally in their relationships with the company, behavioral strategic management aims to increase the explanatory power of strategic management by determining the difference between the actual behaviors of individuals who are involved with the company. The behavioral dimension of strategic management, which attempts to explain the actions that all parties (management, employees, debtors, creditors, partners) believe they are taking with psychological, sociological, and other variables, also demonstrates the appearance of common results that can be achieved by the combination of different fields.

People think dynamically but do not always act rationally. In addition to trying to behave with a monotonous sense of duty, they are not creatures that think in a monotonous way. Some companies may experience difficulties when human existence is overlooked with task-based applications that arise in the workplace. It is also evident that there are people in management who have misunderstood their knowledge and expectations about the company. Behavioral management aims to explain these types of psychological fallacies about individuals.

When looking at behavioral theories, it can be observed that they focus on what stakeholders prioritize individually. For example, the most fundamental proposition of human behavior assumed that the majority of people are rational. When looking at the definition of a rational person, they are described as someone who makes logical decisions based on reason, has self-control by applying the rules of reason and does not repeat their mistakes. They are curious to find things that do not fit with their logic. However, it is often forgotten that they always act in their own interest when it comes to businesses. Whoever the employee is, a person must always behave like a human. It should not be forgotten that a person's greatest friend is themselves and their greatest enemy is themselves. However, those who deal with science outside of behavioral theories have often overlooked the damages that individuals have caused to both themselves and the business in the workplace.

When looking at behavioral economics, different models have been developed. These models generally try to reveal that economies are based on the behaviors of investors. These developed models are based on assumptions that are supported experimentally by observations of investors' behaviors in the field of psychology (Ülkü, 2001:101).

When looking at behavioral models, individuals engage in behaviors that suit them. Everyone is normal according to their own standards. Therefore, the acceptance of this normality is made in the following way: When making a decision, a person first thinks of themselves. However, the actions they take by thinking of themselves do not always have the correct effects. An individual with biases will eventually be swayed to the most suitable place for themselves by combining their own characteristics with the influences they receive from environmental stimuli. The option that a person labels as the most suitable decision is the one that satisfies them the most.

It is difficult for individual investors to access relevant information and evaluate the information correctly when making uncertain decisions. Given these difficulties, individuals can use mental shortcuts or general practical rules rather than using optimal statistical models when making decisions. Mental shortcuts can be defined as individuals who do not use reasoning when making choices and rely on their previous experiences.

Taking all these explanations into account, a definition can be made as follows: Behavioral finance can be defined as the science that examines the effects of psychology on investors' and the market's behaviors.

2. Literature

Muthimi et. al. (2018) proposes an integrated theoretical model for linking leadership strategies and firm performance while providing for the role of leadership paradigms, leadership behavioural focus and firm capabilities. The emerging theoretical propositions and implications for future research are discussed.

Kenny's review (2016) of recent literature however, sourced in peer-reviewed journal articles published between 2005 and 2016, suggests that public relations is too complex and fluid an activity to be summarised in a single approach and supports a broadening of the bases of public relations theory.

Stubbart (1989) explores the linkages between cognitive science and strategic management research. The article examines the foundations of modern cognitive science. Several areas of recent research that are particularly relevant to strategic thinking are reviewed. The article concludes with a call for a more explicit cognitive emphasis in strategic management.

Chatterjee et. al. (2003) develops an integrated framework of risk management and strategic competitive advantage that incorporates behavioural and economic notions of risk. The resulting model argues for the importance of risk-taking to sustainable competitive advantage and ultimately to firm performance.

In Piórkowska's (2016) article, strategic management is discussed in terms of the concept of behavioral strategy, adaptability structure, microfoundations, organizational theory, and psychology. Additionally, the article is related to a multilevel approach that includes individual, team, and organizational levels to some extent. The aim of the article is to rank mixed approaches towards adaptability in the behavioral strategy field.

In Fahey's (1981) article, an attempt is made to bridge the gap between the rational/analytical and behavioral/political concepts in strategic decision making. The connections and interactions between these approaches to strategic decision making are investigated in the context of strategic energy management, which is a specific decision domain.

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3. Evaluation in Terms of Management Theories

When considering management theories in relation to behavioral modeling, it is useful to briefly discuss the traditional management theory, also known as the classical approach. Scientific management, management process, and bureaucratic approaches can be seen here. When looking at neoclassical approaches, we see the Hawthorne experiments which focus on human relations and group dynamics. Modern approaches, on the other hand, appear as systems and contingency approaches. While some of these focus on belief-oriented work and situational characteristics, others address human-centered processes. Furthermore, it is not wrong to state that values and underlying assumptions that affect managers' decisions and their relationships with other stakeholders in the organization are key elements that shape management styles. Behavioral theories sometimes attempt to explain the causes of a person's behavior and the ways in which their reactions are shown. In the initial studies, greater emphasis was generally placed on the views and thoughts of managers, which led to a top-down approach. However, in the past 50 years, studies have examined behavioral effects both from top to bottom and from bottom to top. In some cases, large corporations have even formalized their own management styles, identifying the most suitable ideas for their business structures based on their own personal behavior and experimentation.

When we look at traditional management approaches, although they form the basis of these theories, criticisms have also been made of these theories. Some of these criticisms include the assumption that people make rational decisions based on their minds rather than emotions, the inherent laziness that comes from genetics and birth, the need for management, the emphasis on meeting material needs, the prevention of workplace freedom by job security, and the belief that obtaining definite knowledge about the future can eliminate errors. Moreover, it is controversial in contemporary times that traditional management principles fail to consider human and environmental factors in management functions. On the other hand, in the scientific management process, Taylor's scientific principles, on-the-job training, cooperation, specialization, incentive wage system, and placement of individuals with the appropriate abilities for standardized jobs are emphasized. Job design, standardization, foremanship, and specialization can be considered among the contributions of scientific management to science. The most fundamental problem here is that the scientific management approach sees people only as a production factor, which results in disregarding the social and psychological needs of employees.Job satisfaction is another important thing and Güven (2022) examine the effect and relationship of job satisfaction of white-collar staff, who has to make decisions and take responsibilities regarding the works the organization have been conducting, its functioning, and its future by taking place in every level of executive groups in the organizational hierarchy, on organizational performance.

Fayol, in the management process approach, aimed to develop management principles with a broader understanding than scientific management. In this approach, activities related to production, sales, accounting and finance, risk and security activities, and even management activities as the most abstract activity were taken into account. In this approach, the keywords can be summarized as obedience, respect, authority-responsibility, unity of command, unity of direction, prioritizing organizational interests, personnel rewarding, hierarchy, centralization, equality, encouraging employees to perform stable and balanced work in their work lives, and entrepreneurship. As can be seen, there is no direct development related to the psycho-social development of employees.

Weber's ideal bureaucracy is related to avoiding emotional behavior of managers, regulating salaries, ensuring job security, and preventing external interventions in the organization. Here, criticisms directed towards Weber's theory include the possibility of arbitrary rules, potential communication deficiencies, and the determination of working principles without delving into the causes of human behavior.

After these stages, Neoclassical management theories emerged. Its most important contribution to organizational and management theory was its ability to explain how humans behave and why they behave that way within the organization structure, and the relationship between structure and behavior. The fundamental idea of the behavioral approach is to understand the "human" element working within the structure of the organization. When the organizational dimension of Behavioral Management is considered, it can be said that it is the theory that comes closest to the human concept of the Neoclassical theory.

- Humans are social beings who live within organizations.
- Maximum benefit is achieved when human characteristics are emphasized in their treatment within the organization.
- If the groups to which humans belong are classified and identified, the behavioral dimension of the organization comes to the forefront.
- Humans are not merely material beings, but predominantly social and psychological beings.
- The existence of human perceptions and attitudes is important both in and outside the workplace.
- Leadership becomes easier when human behavior is understood.
- Analyzing human behavior makes communication within the organization easier.

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Group dynamics refers to the study of the social causes and consequences of mutual interaction among individuals. This point is important for understanding the social aspect of management. A person's relationship with the group he or she belongs to is a major determinant of their work life. Being part of a group also affects a person's commitment to the workplace. In this sense, a competitive element arises from a behavioral perspective, which can be seen as an advantage for the organization if managed properly. When looking at modern approaches, the system and contingency approaches have been developed due to the inadequacy of traditional and behavioral management approaches in solving organizational problems. The system approach considers the whole as the most important factor. Here, we can again see a starting point that is not centered on humans, but indirectly contributes to human benefits. It brings together the superior aspects of traditional and behavioral management approaches while also providing opportunities to strengthen their weak points. Contingency, on the other hand, focuses on the conditions under which the organization operates. As conditions change, the system adapts to those changes. The external environment is the primary point of departure. When evaluated in terms of management theories, it is not possible to find an approach that directly prioritizes human behavior, except for the neoclassical management approach.

4. Behavioral Finance and Behavioral Management for Managers

Individuals do not make decisions only based on what is expected of them. The direction of their expectations, their thoughts, and the influence of the groups they belong to may not be enough. Investors who want to invest in a company also see themselves as part of the company as they become shareholders. At this point, the concept of Behavioral Finance suggests that companies should make financial decisions while considering human investor psychology. It is possible that managers may make decisions that are not rational in terms of their financial decisions since they are also investors (or owners) of the company and are affected by their emotions and moods when it comes to their own wealth or their company's financial activities. When talking about investment, it is generally referred to portfolio investors. Similarly, when discussing Behavioral Finance, studies on individual investors in money and capital markets usually come to mind. However, it is also possible to consider the concept of Behavioral Finance (Behavioral Economics) from the perspective of top-level financial decision-making managers or major shareholders within companies.

It is believed that there is no difference between behavioral tendencies and managerial tendencies. Corporate executives may sometimes have a tendency to deceive themselves with their decisions. Psychology shows that individuals may have a tendency to deceive themselves in their current decision-making based on their past experiences. In this regard, it can be said that corporate executives may also have a tendency to deceive themselves when making financial decisions. Additionally, as humans, executives may possess various dynamic qualities, one of which is excessive confidence. While executives may feel more concerned about potential risks in their personal investments, is it possible for them to feel the same level of concern when investing in their companies? Excessive optimism occurs when individuals believe that they will achieve their desired outcomes no matter what. Executives who are excessively optimistic may be prone to making careless decisions, or they may not want to act cautiously when they need to. Furthermore, when asked for their opinions about a specific incident, executives may have a higher level of optimism regarding whether they would make the same mistakes as others.

Another mistake that managers make is their tendency to misjudge their errors when implementing a decision that is supported by the behavioral aspects of financing. It is possible that they attribute their failures to bad luck, a larger problem, or others. Many managers are able to achieve more predictable results when events are evaluated later. Real investors who are also capital market players and company owners who need to make investment decisions use their mental processes in the same way as those who manage portfolios. Both managers and other investors tend to exhibit irrational tendencies.

Investors often view good companies as good investment options, associating their positive qualities such as high-quality products, excellent management personnel, and expected high growth with good investments. This is a shortcut for investors to view good company performance as a good investment decision. This misconception leads to ignoring the possibility that companies that are currently performing well may not be able to sustain their success in the future (Gümüş et al., 2013).

Business owners, like portfolio managers, know that the way financial situations are presented can be crucial in their financial decision-making process. From this perspective, it can be concluded that the framing effect in behavioral finance is also relevant for business owners. In the decision-making process, corporate executives tend to rely more on previously learned information and experiences at certain points. This turns into a concept called the availability bias. Therefore, a question to be asked to a manager is "Have you ever thought that your experiences have distorted your perception?" Managers can also get stuck on points that they think have little impact on financial decisions. This is a common mistake not only in business but also in other areas of life. When making investment decisions, managers may focus on a variable that will not yield meaningful results. This is known as the anchoring effect, which refers to how a decision is influenced by any similar event or image. In this context, a question that can be asked is whether the same reference point is used when making any investment decision. The open-ended question can even be turned into which reference points are commonly used.

Managers are aware of the existence of luck in all the decisions they make. This is mostly due to the fact that in the risk-return relationship, they cannot fully control either the gain or loss. Loss is usually attributed to luck, while gain is attributed to experience. This is one of the problems that investors generally face. It often arises when predicting whether an event will turn out to be good or bad. This leads to the conclusion that there is a presence of Kahneman and Tversky's "loss aversion theory," which suggests that

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managers may be more sensitive to loss than gain (Korkmaz and Ceylan, 2006). The debate about whether a manager generally values pain and loss more than happiness and gain is an important point to consider. This issue is in line with the themes expressed in Adam Smith's book "The Theory of Moral Sentiments" published in 1759. It also aligns with his ideas about individual interests and economic behaviors, which evolved into the trilogy of conformity to corporate interests, conformity to personal interests, and economic behavior in his book "The Wealth of Nations" published in 1776. Therefore, the order of importance between corporate interests, personal interests, and economic behavior becomes a significant point to answer. Managers, like portfolio investors, must also be aware that they cannot control unforeseeable events and that they do not have the ability to influence the outcome of events. On the other hand, whether they tend to protect the status quo by avoiding excessive risk, being content with the investments they already have, and holding onto them, as in the "bird in hand" theory, is a different research topic (Gazel, 2014).

Behavioral finance's most important aspect lies in the concept of absolute mental accounting. It is important to question whether a manager who invests in a company thinks the same way in their personal accounts. For instance, it must be discussed whether buying a car for the company is the same mental accounting as buying a car for personal use. Since Thaler (1999), it has been questioned whether there are differences between the basic areas where the company's general accounting is stored in the mind and where individual investment is stored. The conservatism bias, which is the tendency to ignore new information, is similar to the risk aversion or gain-loss theory. Two questions may arise from this: whether conservative thinking creates a difference between a person's decisions that will contribute to the company's capital and their decisions when managing their personal capital as a company executive, and which positions the conservative-leaning person feels the need to verify information from more, inside or outside the company. It is important to distinguish whether an individual is biased towards conservatism or confirmation bias. Although similar in meaning, it can be explained as follows: in conservatism bias, investors react less when they ignore new information, while in confirmation bias, investors tend to react weakly by considering developments based on the information presented to them (Dave and Wolfe, 2003, cited in Ormancı, 2023).

Can the manager distinguish between what they want to do and what their emotions guide them to do? Which aspect of their worldview influences them more? Is reality what is correct or what others do? If reality is what others do, is it the distant majority or the closer and most trusted circle? Even if the manager is in internal conflict, in which investment do they think they made fewer mistakes? Which investment is more exhausting in terms of gathering sufficient information? In which investment can the manager resort to self-denial or denial of the information they have acquired? Different questions can be addressed in the information gathering stage for supportive information about an investment. Suppose a manager has to make an A investment decision for the company and a B investment decision for their personal investments at the same time. Which investment is more likely to cause dissatisfaction? In both cases, if failure results in equal loss, which investment causes more damage? When one needs to be chosen, which investment group will they prefer? If the manager's thoughts are described with support and resistance points, which investment is more likely to have longer support and resistance points? Does a cat still think the liver is dirty when it can't reach it? In such a situation, which investment is more likely to be subject to this type of thinking?

5. Discussion

Behavioral management and behavioral economics are interdisciplinary fields that have significant implications for understanding and evaluating the role of executives in terms of corporate leadership and individual investor roles. To assess an executive's performance in these domains, several key factors should be considered:

Self-awareness and self-regulation: Executives should have a strong understanding of their own cognitive biases and emotions, as well as the ability to control them. This self-awareness can lead to more rational decision-making and better risk management, both as corporate leaders and individual investors.

Self-awareness refers to the ability to recognize one's emotions, cognitive biases, and their impact on decision-making. Executives should engage in regular self-reflection and solicit feedback from others to better understand their strengths and weaknesses.

Self-regulation involves managing one's emotions and biases to minimize their negative impact on decision-making. Techniques like mindfulness, emotional intelligence training, and cognitive debiasing can help executives improve their self-regulation skills.

Understanding the behavior of others: Executives must be able to identify and manage the biases and emotions of their team members, peers, and stakeholders. This can help them create a more cohesive and effective organization, as well as make more informed investment decisions by understanding the behavior of other market participants.

Executives should be knowledgeable about common cognitive biases and emotional drivers affecting the behavior of employees, customers, and investors. This understanding can help them design more effective strategies, policies, and incentives.

Emotional intelligence is crucial for understanding and empathizing with others' emotions and needs. This can foster a more collaborative and supportive work environment, leading to increased employee engagement and productivity.

Decision-making processes: Executives should be adept at incorporating behavioral insights into their decision-making processes. This may involve using techniques like mental accounting, framing, and the use of heuristics to make more rational and effective choices in both leadership and investment contexts.

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Mental accounting refers to the cognitive process of organizing financial information into separate mental "accounts." Executives can use this concept to help them allocate resources more effectively and make better-informed financial decisions.

Framing involves presenting information or choices in a particular way to influence decision-making. Executives should be aware of the framing effect and use it ethically to present options and information in a manner that leads to more rational choices.

Heuristics are mental shortcuts that people use to make decisions more quickly. While they can be useful, they can also lead to biased decision-making. Executives should be aware of common heuristics and their potential pitfalls to improve the quality of their decisions.

Communication and influence: Executives must be skilled at communicating behavioral insights and influencing others to make better decisions. This can lead to improved organizational performance and investment outcomes by aligning the interests of all stakeholders.

Executives should be skilled in using persuasive communication techniques, such as storytelling, metaphors, and vivid examples, to convey the importance of behavioral insights and motivate others to adopt better decision-making practices.

Influence strategies, such as social proof, authority, and scarcity, can be used ethically by executives to encourage desired behaviors among employees, customers, and investors.

Ethical considerations: Executives should be aware of the potential ethical implications of using behavioral insights to influence the behavior of others. They must strike a balance between maximizing corporate and investment performance and ensuring that they respect the autonomy and dignity of all stakeholders.

Executives must ensure that their use of behavioral insights respects individuals' autonomy and dignity. This includes being transparent about their intentions, seeking informed consent when appropriate, and avoiding manipulative or coercive tactics.

Organizations should have clear ethical guidelines and frameworks in place to guide the use of behavioral insights in decision-making and communication.

Long-term perspective: Both corporate leaders and individual investors should prioritize long-term value creation over short-term gains. This approach can help executives make more sustainable decisions and minimize the impact of short-term market fluctuations on their investment portfolios.

Executives should focus on creating long-term value by investing in research and development, employee development, and sustainable business practices.

As individual investors, executives should adopt a long-term investment strategy, focusing on fundamentals and avoiding impulsive decisions based on short-term market fluctuations or emotions.

Adaptability and learning: Executives should be open to learning from new insights in the fields of behavioral management and behavioral economics, and be prepared to adapt their leadership and investment approaches accordingly.

Executives should stay informed about new developments in behavioral management and behavioral economics, attending conferences, reading publications, and participating in industry networks.

They should foster a learning culture within their organizations, encouraging employees to share knowledge and insights, and investing in continuous learning and development programs.

In summary, an executive's performance in the realms of behavioral management and behavioral economics can be assessed by considering their self-awareness, understanding of others, decision-making processes, communication abilities, ethical considerations, long-term perspective, and adaptability. By cultivating these skills, executives can enhance their effectiveness as corporate leaders and individual investors, ultimately leading to improved organizational performance and investment outcomes.

6. RESULTS

1.It is believed that there is no difference between behavioral tendencies and managerial tendencies.
2.Which role exhibits a greater tendency towards self-deception, the Manager or the Investor?
3.While a manager may be more concerned about potential risks in individual investments (as an investor), is it possible for them to have the same level of concern when making investment decisions for the company they manage?
4.Is it likely that a manager who does not consider themselves overly optimistic would still believe that investment decisions will always turn out in their favor?
5.In which role is there a greater tendency to misinterpret mistakes when implementing a supported decision?
6.In which investment is it more common to encounter situations where a problem is large in scale, arises from external factors, and the responsibility for failure is shifted to others?
7.Is it reasonable to ignore the possibility that companies that are currently achieving high profits may not be able to sustain the same level of success in the future?
8.Does experience distort perception?
9.Can it be measured whether the same reference point is used when making any investment decision?
10.Can it be determined which reference points are frequently used at this point?

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11.Is the assertion that chance is usually attributed to loss and experience is usually attributed to gain accurate?
12.When it comes to whether a manager places greater importance on their losses/pains or gains/happiness in life, it is clear that losses/pains are given more weight. Which loss will have a higher impact on the "pain-loss barometer": managerial investments or individual investments?
13.How should behaviors that benefit managerial financial interests, behaviors that benefit individual financial interests, and economic behaviors be prioritized?
14.Is the option of believing that one has the ability to change events that they cannot control and to influence the outcome of events valid for someone who holds both roles (manager and investor)?
15.In which role is there a greater tendency to avoid taking excessive risks and to maintain the status quo by being happy with the investments they currently hold?
16.Is buying a car for the company the same as buying a car for oneself?
17.Can it be determined whether conservative thinking creates a difference between decisions made when contributing to the company's capital and when managing one's own capital as a company executive?
18.Can it be determined in which of the two positions a person who has a conservative tendency feels the need to verify information more?
19.Can it be determined whether the tendency is towards conservatism or towards confirmation bias?
20.Is the manager able to distinguish between what they want to do and what their emotions are leading them to do?
21.Which role does the manager believe has a greater influence on their worldview?
22.Is reality what is true, or is it what others do?
23.If reality is what others do, is the distant majority seen as "others" or is a closer and more trusted group considered to be "others"?
24.If a manager is in an internal conflict, which investment does he or she believe they make fewer mistakes in?
25.Which investment is more exhausting when trying to determine whether acquired information is sufficient?
26.In which investment form can a manager go so far as to discredit or deny information within their own mind?
27.During the stage of collecting supportive information about an investment, it is possible to encounter different questions. If a manager thinks that they must make investment decision A for the company and decision B for their personal investments at the same time, in which investment will they experience more regret and dissatisfaction at the end of the day?
28.In both cases where failure results in equal loss, which investment experiences greater devastation?
29.When one must be preferred, which investment group will be chosen?
30.In which case is the distance between the support and resistance points

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Gri İlişkisel Analiz Yöntemiyle Türk Bankacılık Sektörünün İncelenmesi

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Özet:

Gri ilişkisel analiz ile Türk Bankacılık Sektöründe yeni normalin belirlenmesi ve en iyi durumun tespit edilmesi için bu çalışma gerçekleştirilmiştir. Çalışma 01.2017 tarihi ile 01.2023 arasındaki 72 aylık dönemi kapsamaktadır. Bankacılık Düzenleme ve Denetleme Kurumu(BDDK)'nun aylık bankacılık sektörü verilerinden ve Borsa İstanbul Bankacılık Sektörü Endeksi(XBank)'nden faydalanılmıştır. Endeks değişiminin sıralaması ile gri sıralamanın ilk iki sıranın belirlenmesinde aynı sonucu verdiği ve elde edilen sonuçların en iyi durum tespiti için benzerlik gösterdiği tespit edilmiştir. Ortalama durum ve ortalama sıra tespitinde ise sonuçların farklılık gösterdiği belirlenmiştir. Farklılıkların temelinde analiz döneminde uygulamaya alınan yeni politikalar, COVID-19 pandemisi gibi çeşitli faktörlerin etkisinin olduğu düşünülmektedir. Gözlem sayısının arttırılarak tekrar değerlendirmeler yapılması ortalamada daha yakınsayacak bir sonuç elde edilmesi önerilmektedir.

Anahtar Kelimeler: Gri İlişki, Gri İlişkisel Analiz, Optimizasyon

Examination of the Turkish Banking Sector with the Gray Relational Analysis Method

Abstract:
This study aimed to use gray relational analysis to determine the "new normal" and optimal situation in the Turkish banking sector. The study covers the 72-month period between January 2017 and January 2023, using monthly data from the Banking Regulation and Supervision Agency (BDDK) and Borsa Istanbul Banking Sector Index (XBank). The results show that the order of the index change and the gray order yields the same result for determining the top two positions, and the results for determining the optimal situation are similar. However, the results differ in determining the average situation and rank, which may be influenced by various factors such as new policies and the COVID-19 pandemic. To obtain more reliable results, it is recommended to increase the number of observations and conduct further evaluations.

Key words: Grey relationship, Grey relational analysis, Optimization

1. Giriş

Finans dünyası güncelden ve gelişmelerden bağımsız düşünülemez. Bankacılık sektörü Türkiye gibi gelişmekte olan ekonomilerde finans sektörünün can damarlarındandır. İçinde bulunduğumuz çağda, tüm piyasa aktörlerinin derinden hissettiği paranın uyumadığı gerçeği teknolojik gelişmelerle kendini çok daha derinden hissettirir hale gelmiştir. Çok uzun zaman önce değil, bundan bir 10 yıl kadar önce veri akışı ve dijital kanalların tüm sektörlerde günümüzde olduğu kadar yoğun kullanılmayışı, bireylerin normal algısının sıkça sorgulanmasını gerektirmemekteydi. Her zaman olduğu gibi değişim zaman alan bir süreç iken zaman kavramı yüksek frekanslı işlemler ile yeni bir boyut kazandı. Araştırma konumuz zaman içerisindeki değişime adaptasyon ve yeni normal algısının tespiti kapsamında değerlendirmelerin

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sunulmasından ibarettir. Haberlerin, internet sayfalarının, borsa ve iş piyasası dergilerinin yoğun olarak irdelediği rekorlar ve dipler, gelişmekte olan piyasa örneklerinden Türkiye'de de paranın kalbinde yer almaktadır(Diken, 2022; Dünya Gazetesi, 2022; HaberTürk, 2022; HalkTv Web, 2022; Hürriyet, 2022; Milliyet, 2022; Yılmaz, 2023). Çalışmanın amacı yeni normalin anlaşılması için farklı bir bakış sunulmasıdır. Bu kapsamda gri teoriden faydalanarak banka endeksi ile karşılaştırma gerçekleştirilmiştir.

Son 5 yılda Dünya ile paralel olarak Türk bankacılık sektörünün de köklü bir değişim sürecinden geçtiği düşünülmektedir. Bu süreçte alışılmış olan iyinin ve olağanın sorgulanması gelecek ile ilgili değerlendirmelerin daha sağlıklı yapılması açısından önemli görülmektedir. Bu çalışmada 2017 yılı Ocak ayından başlayarak 2023 yılı Ocak ayına kadar Türk Bankacılık Sektörünün durumu ile çıkarım yapmak için gri ilişkisel analizden faydalanılmıştır. Analizler kapsamında, araştırmanın sınırını oluşturan 72 aylık veri içerisinde katılım bankası ve mevduat bankası ayrımı yapılmadan sektörün bir bütün olarak geçirmiş olduğu aylardan hangisinin daha iyi olduğunun belirlenmesi amaçlanmıştır. Bu amaç doğrultusunda tasarlanan çalışma, gelecekte araştırmacılar tarafından gerçekleştirilebilecek çalışmalarda iyinin ve normalin ne olduğunun belirlenmesi için önem arz etmektedir.

Çalışma tasarımı dört bölüm şeklinde gerçekleştirilmiştir. İlk bölüm olan giriş kısmında araştırmanın amacı ve araştırma sorusunun tanıtımı gerçekleştirilerek alan yazın taraması sunulmuştur. Araştırma verilerinin kaynakları ve araştırmada kullanılan yöntem ikinci bölümde sunulmuştur. Analiz sonuçları çalışmanın üçüncü bölümü olan bulgular ve tartışma kısmında sunulmaktadır. Sonuç bölümünde genel bir değerlendirme ile çalışma sonlandırılmaktadır.

1.1 Literatür:

Alan yazında çok kriterli karar verme yöntemlerinden faydalanan çok çalışma bulunmaktadır. Gri teori kapsamında kalınmaya gayret göstererek seçilmiş güncel yayınlar ve temel yayınlar ile araştırma gerçekleştirilmiştir. Gri teori literatürden de görüleceği üzere çeşitli alanlarda uygulama imkanı bulmakta karar vericileri farklı biçimlerde desteklemektedir.

Konunun temelleri 1980'lerde atılmış olup, ilerleyen yıllarda Çin'in Wuhan kentinden Deng Julong'un gri sistem teorisine giriş adlı disiplinler arası çalışmasıyla dünyaya yayılma imkanı bulmuştur(Julong, 1989).

Kandemir ve Karataş (2016) çalışmalarında, İstanbul Menkul Kıymetler Borsası'nda işlem gören 12 mevduat bankasının finansal performansını incelemişlerdir. "Ticari Bankaların Finansal Performanslarının Çok Kriterli Karar Verme Yöntemleri ile İncelenmesi: Borsa İstanbul'da İşlem Gören Bankalar Üzerine Bir Uygulama (2004-2014)" başlıklı bu çalışmada, 2004 ve 2014 yılları arasında Gri İlişkisel Analiz, Topsis ve Vikor analiz yöntemlerini kullanmışlardır. Gri İlişkisel Analiz ve Topsis'e göre, en yüksek ve en düşük finansal performansa sahip olan bankalar aynıdır. Ancak Vikor analizine göre, en yüksek performansa sahip banka ile en düşük performansa sahip banka değişmiştir. 2017 yılında yayınlanan "Finansal Performans ve Hisse Senedi Getirisi İlişkisi: BIST Sürdürülebilirlik Endeksindeki Bankalar Üzerine Bir İnceleme" başlıklı makalelerinde, Ünal ve Yüksel bankaların finansal performansı ile hisse senedi getirileri arasında bir ilişki olup olmadığını incelemişlerdir. Bu çalışmada finansal performansı incelemek için çok kriterli karar verme yöntemlerinden biri olan Promethee yöntemini tercih etmişlerdir. Yöntemde 10 finansal oran kullanmışlardır. Ancak çalışmalarında finansal performans ile hisse senedi getirileri arasında istatistiksel olarak anlamlı bir ilişki bulamamışlardır. Camelia, Emil ve Liviu-Adrian (2013) çalışmalarında, Avrupa finans sektöründe tanımlanan en önemli riskleri Gri ilişkisel analiz yöntemini kullanarak kategorize etmiş ve aralarındaki ilişkiyi araştırmışlardır(Kanat, 2019).

Çin'de gerçekleştirilen bir çalışmada sınır ötesi e-ticaret gelişimini etkileyen faktörlerin analizinde, sınır ötesi e-ticaret gelişimini etkileyen faktörler arasındaki korelasyonun ampirik bir analizini yapmak için gri teori uygulanmıştır (Chen, 2022). Türkiye'deki bir tekstil firmasının Personel Seçim Probleminde, çeşitli performans gereklilikleri ve kriterleri dikkate alınarak sistematik bir yaklaşım önerilen çalışmada alternatifleri sıralamak için Gri İlişki Analizi yöntemi uygulanmıştır(Ozgormus, Guner Goren, & Senocak, 2021). İmalat sanayinde, belirli faktörlerin yüzey parlatma kalitesi üzerindeki etkisi bulanık gri ve Taguchi analizi ile değerlendirilmiştir(Nguyen, Wu, Quang, Duc, & Son, 2021). Kentsel dönüşüm kapsamında yıkımı gerçekleştirilen riskli bina yerine, yeni binayı inşa edecek müteahhit firmanın SWARA temelli Gri İlişkisel Analiz yöntemiyle seçilmesi için gerçekleştirilmiş bir çalışma bulunmaktadır(Çakır, 2017). Başka bir araştırmada, gri ilişkisel analiz (GRA) ve Taguchi kullanarak çekme mukavemetini, eğilme mukavemetini ve aşınma direncini aynı anda etkileyen optimize edilmiş yazıcı parametrelerini bulmayı amaçlanmıştır. Optimal kombinasyon, en yüksek Gri İlişkisel Dereceye sahip kombinasyondur(Singh & Bharti, 2022). Türkiye sağlık sisteminde önemli bir yere sahip olan devlet üniversitesi hastanelerinin finansal performanslarını Gri İlişkisel Analiz yöntemi (GİA) ile değerlendirilmiştir(Kurt Gümüş & Balcı, 2020). Çekici ürünler veya mekanlar yaratmak amacıyla müşteri tercihlerine dayalı bir tasarım konsepti olan Miryoku mühendisliği tarafından kurulan üç seviyeli değerlendirme şeması platformunda, ilk olarak Kansei kelimelerinin öncelik sırasını kapsamlı bir şekilde değerlendirmek için gri ilişki analizi kullanılmış son olarak ise temel Kansei faktörleri ile temsili ürün tasarım öğeleri arasında bir eşleme işlevi oluşturmak için sinir ağı kullanılmıştır. Sonuçlara dayanarak, algısal olarak en çekici ürün tasarımı keşfedilmiştir(Kang, 2020).

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Farklı bir çalışmada, şiddetli plastik deformasyon proses parametrelerini çoklu performans ölçümlerini göz önünde bulundurarak optimize etmek için deneysel sonuçlara yeni ve etkili bir yaklaşım olan Taguchi gri ilişkisel analizi uygulanmıştır(Girish, Siddesh, & Satish, 2019). İngiltere için gerçekleştirilen bir çalışmada, etkin bir şekilde yerel optimum probleminden kaçınarak sistem içerisinde objektif enerji dağıtım sorunlarını çözme kabiliyetine sahip, çok amaçlı parçacık sürü optimizasyonu (MOPSO) ve gri ilişki analizine (GRA) dayalı (MOPSO-GRA olarak adlandırılan) bir algoritma geliştirilmiştir(Yuan, Liu, & Bucknall, 2021b). Bir diğer çalışmalarında yazarlar, gri sistem teorisinin, belirli bir gri seviye ile daha küçük düzensiz veri örneklem boyutuna dayalı olarak veri analizinin doğruluğunu sağladığını öne sürmüştür(Yuan, Liu, & Bucknall, 2021a). Yönetim bilimleri ve üretim planlamaları kapsamında, ürün kalitesini iyileştirmek için üretim sırasında parça kalitesini etkileyen parametreler çeşitli yöntemlerle optimize edilmektedir. Parametre optimizasyonu için sinyal/gürültü (S/N) analizi, yanıt yüzeyi metodolojisi, gri ilişki analizi gibi yöntemler sıklıkla kullanılmaktadır. Bu çalışmada analiz ve optimizasyon adımında gri ilişki kullanılmıştır(Seçgin, 2021b). Yazarın başka bir çalışmasında, deneysel parametrelerin etkilerini araştırmak için Sinyal/Gürültü analizi yapılmıştır. Daha sonra şekillendirme kuvveti ve yüzey pürüzlülüğünü birlikte optimize etmek için gri ilişki analizi yapılmıştır. Çoklu optimizasyon yöntemlerinden biri gri ilişkisel analizdir. Bu yöntemde optimize edilecek deneysel sonuçlar önce normalize edilir. Daha sonra gri ilişki katsayısı ve gri ilişki derecesi hesaplanır ve en büyük gri ilişki derecesi deneyde optimum sonucu verir(Seçgin, 2021a). Son bir örnek olarak sigorta sektöründe faaliyet gösteren üç şirketin finansal performanslarına göre sıralanmasının amaçlandığı çalışmada gri ilişkisel analiz yönteminden faydalanıldığı belirlenmiştir(Peker & Baki, 2011). Ulusoy (2009) yaptığı çalışmada ise gri sistem teorisi kullanarak bileşik faiz oranları üzerine araştırma yapmıştır.

Alan yazından belirlendiği üzere, matematik temelli ve mühendislikte yoğun uygulama alanı bulan gri sistem teorisi sosyal bilimler alanında da karar vericilerin kararlarında, destek sistemi olarak kullanılmaktadır. Bu çalışmada mühendislik çalışmalarında amaçlanan en iyi durumun yani üretim süreçlerinde tespit edilmesi amaçlanan optimal durumun finans sektörüne uyarlanması gerçekleştirilmiştir. Bu çalışmada Türk bankacılık sektörünün son beş yıldaki en iyi durumunun ve ortalamasının tespiti için gri ilişkisel analizden faydalanılmıştır.

2. Yöntem ve Veriler

Çalışma tasarımında Bankacılık Düzenleme ve Denetleme Kurumu(BDDK)'nun aylık bankacılık sektörü verilerinden yararlanılmıştır. Rasyolar başlığından minimize edilmesi arzu edilen 1 numaralı "Takipteki Alacaklar (Brüt) / Toplam Nakdi Krediler (%) oranı", maksimize edilmesi arzu edilen 8 numaralı "Dönem Net Kârı (Zararı) / Ortalama Toplam Aktifler (%)" oranı, maksimize edilmesi arzu edilen 14 numaralı "Ücret, Komisyon ve Bankacılık Hizmetleri Gelirleri / Toplam Gelirler (%) " oranı, minimize edilmesi arzu edilen 15 numaralı "İşletme Giderleri / Ortalama Toplam Aktifler (%)" oranı ile Sermaye Yeterliliği başlığından ortalamaya yaklaşması arzu edilen 9 numaralı "Sermaye Yeterliliği Standart Rasyosu ((5/7)*100) (YÜZDE)" oranı araştırma tasarımında sektör durumu tespiti için kullanılmıştır(BDDK, 2023). Ayrıca geleneksel yönteme de bağlı kalınarak Borsa İstanbul banka endeksi değişimi ile sınama gerçekleştirilmiştir. Banka endeks tarihi serisi Yahoo Finance sitesi üzerinden temin edilmiştir(Yahoo Finance, 2023). Analiz periyodu içerisinde endekste sıfır atma işlemi gerçekleştirilmiş olduğundan seriler 01.07.2020 tarihinden öncesine düzeltme uygulanarak uyumlu hale getirilmiştir(Türev Piyasalar Operasyon Direktörlüğü, 2020).

Tablo 1. Araştırmanın Değişkenleri

Değişken Adı	Değişken Kodu
Sermaye Yeterliliği - Sermaye Yeterliliği Standart Rasyosu (Yüzde) (milyon TL)-Toplam	A
Rasyolar - Takipteki Alacaklar (Brüt) / Toplam Nakdi Krediler (%)-Rasyo	B
Rasyolar - Dönem Net Kârı (Zararı) / Ortalama Toplam Aktifler (%)-Rasyo	C
Rasyolar - Ücret, Komisyon ve Bankacılık Hizmetleri Gelirleri / Toplam Gelirler (%)-Rasyo	D
Rasyolar - İşletme Giderleri / Ortalama Toplam Aktifler (%)-Rasyo	E

y_{ij} karar matrisini Denklem 1'de sunulmuştur. Karar matrisinin belirlenmesi işleminde 5 değişken ve 72 dönem olacak biçimde $Y_{5,72}$ olarak tasarım sunulmuştur. Satırlar değerlendirilen alternatifleri göstermektedir. Sütunlar değerleme kriterlerini göstermektedir. Jozić, Bajić, & Celent, 2015 prosedürleri takip edilerek minimize ve maksimize edilmesi arzu edilen değerlendirmeler ve Kanat, 2019 çalışması takip edilerek ortalamaya yaklaştırılması arzu edilen hesaplamalar gerçekleştirilmiştir. Denklemler ve çalışmada kullanımı şöyledir(Jozić, Bajić, & Celent, 2015; Kanat, 2019):

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$$Y_{ij} = \begin{bmatrix} y_{11} & & \cdots & & y_{1j} \\ & y_{22} & y_{23} & y_{24} & \\ \vdots & y_{32} & y_{33} & \vdots & \vdots \\ & y_{42} & \vdots & \vdots & \\ y_{i1} & & \cdots & & y_{ij} \end{bmatrix} \qquad \textbf{(Denklem 1)}$$

Çalışmalarda karşılaştırma serilerinin oluşturulması için karar matrisi içindeki verilerin normalizasyon işlemi gerçekleştirilir. Normalize edilmiş karar matrisi ile hesaplamalara devam edilir. Hesaplanacak değerlerin en büyük, en küçük veya ortalamaya yakın bir değere göre standartlaştırılması arzu edilebilir. Her bir koşul için normalizasyon işleminde kullanılması gereken fonksiyon farklıdır.

İlgili kriter serisinin değerinin maksimize edilmesi arzu ediliyorsa Denklem 2'den faydalanılır.

$$x_{ij} = \frac{y_{ij} - \min(y_{ij})}{\max(y_{ij}) - \min(y_{ij})} \qquad \textbf{(Denklem 2)}$$

İlgili kriter serisinin değerinin minimize edilmesi arzu ediliyorsa Denklem 3'ten faydalanılır.

$$x_{ij} = \frac{\max(y_{ij}) - y_{ij}}{\max(y_{ij}) - \min(y_{ij})} \qquad \textbf{(Denklem 3)}$$

İlgili kriter serisinin değerinin ortalama bir seviyede bulunması arzu ediliyorsa Denklem 4'ten faydalanılır.

$$x_{ij} = \frac{|y_{ij} - \min(y_{0j})|}{\max(y_{ij}) - y_{0j}} \qquad \textbf{(Denklem 4)}$$

İlgili kriter serisinin değerinin ortalama bir seviyede bulunması arzu ediliyorsa Denklem 5'ten faydalanılır.

$$\gamma(x_{0j}, x_{ij}) = \frac{(\Delta_{min} - \xi\Delta_{max})}{(\Delta_{ij} - \xi\Delta_{max})}, \forall i, j \qquad \textbf{(Denklem 5)}$$

Denklem 5'te hesaplanan $\gamma(x_{0j}, x_{ij})$ x_{ij} ile x_{0j} arasındaki gri ilişki katsayısıdır. Ayrıca, ξ ayırt edici katsayı olup ξ ∈ (0,1] olarak tanımlanmaktadır. $\Delta_{ij} = |x_{0j} - x_{ij}|$ biçiminde hesaplanmaktadır.

$$\Gamma(x_0, x_i) = \sum_{j=1}^{n} w_j \gamma(x_{0j}, x_{ij}), \forall i \qquad \textbf{(Denklem 6)}$$

Denklem 6'da gri ilişkisel uzayda gri ilişkisel derece hesaplanmaktadır. Gri ilişki katsayılarının ağırlıklandırılırmış toplamı olarak hesaplanır. Çalışmamızda faktör ağırlık toplamı bir olup, tüm faktörlerin ağırlığı eşittir. Beş faktör bulunduğu için her faktör ağırlığı 0,20 olarak kullanılmıştır. Gri ilişkisel derece karşılaştırma serisi ile referans serinin benzerlik derecesini ifade eder. Karşılaştırılan seriden referans seriye en çok benzeyen, en iyi seçimi, durumu temsil etmektedir.

3. Bulgular ve Tartışma

Gerçekleştirilen analizlerde eşit ağırlık veya öznel olarak ağırlık seçimi, çok kriterli karar verme yöntemlerinin eleştiri noktalarından biridir. Değişkenlerin analizindeki katkılarının hesaplanabilmesi için ileri analiz ve ağırlıklandırma yöntemleri kullanılabilir, ancak bu çalışmada amaçlanan yarar için eşit ağırlıklı kullanım yeterli görülmektedir(Daver, 2020, p. 191). Bu çalışmada, Jozić, Bajić, & Celent, 2015 ile aynı sistemde Taguchi yöntemi ile tasarım gerçekleştirilmiştir. Taguchi yöntemi ile süreci etkileyen faktörleri organize etmek için ortagonal diziler kullanılmaktadır. Bu yöntem faktör seviyelerinin eşit ağırlıklı olmasını ve böylece dengeli olmasını sağlar(Jozić et al., 2015, p. 328).

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En iyi dönem tespiti veya ortalama bir dönemin tespiti için faaliyetlerin yürütüldüğü her ayın sonuçlarını bir operasyon dönemi denemesi olarak değerlendirerek ilgi dönemin çıktılarını inceleme altına almak gerekir. Bu kapsamda beş karar değişkenine ve 72 deneme dönemine uygun tasarım Tablo 2'de sunulmuştur.

Tablo 2. Karar Matrisi, Y_{ij} değerleri

Dönem (Yıl/Ay)	A	B	C	D	E
2022/12	19.46	2.10	3.66	9.22	1.73
2022/11	19.38	2.16	3.35	9.29	1.51
2022/10	19.24	2.23	2.95	9.24	1.33
2022/9	18.83	2.28	2.57	9.16	1.18
2022/8	18.69	2.38	2.31	9.08	1.03
2022/7	18.05	2.42	1.95	8.97	0.89
2022/6	18.05	2.49	1.63	9.07	0.75
2022/5	18.14	2.61	1.31	8.88	0.63
2022/4	20.38	2.75	1.00	8.82	0.51
2022/3	20.39	2.86	0.66	8.90	0.38
2022/2	19.05	3.02	0.42	8.44	0.25
2022/1	18.53	3.13	0.22	7.63	0.13
2021/12	18.39	3.15	1.32	9.71	1.51
2021/11	17.79	3.22	1.10	9.41	1.33
2021/10	17.37	3.50	0.99	10.50	1.23
2021/9	17.36	3.54	0.87	10.66	1.11
2021/8	17.32	3.67	0.74	10.54	0.99
2021/7	17.51	3.71	0.62	10.42	0.87
2021/6	17.80	3.66	0.53	10.26	0.74
2021/5	17.86	3.69	0.39	9.87	0.63
2021/4	17.93	3.74	0.33	9.84	0.50
2021/3	18.00	3.79	0.26	8.88	0.37
2021/2	18.17	4.02	0.15	10.22	0.25
2021/1	18.37	4.08	0.07	9.40	0.13
2020/12	18.74	4.08	1.07	10.50	1.59
2020/11	19.38	3.97	1.05	10.65	1.44
2020/10	19.42	3.97	0.93	10.28	1.32
2020/9	19.43	4.06	0.88	10.69	1.20
2020/8	19.28	4.14	0.83	10.80	1.09
2020/7	19.21	4.25	0.77	10.93	0.98
2020/6	19.52	4.41	0.61	10.87	0.85
2020/5	19.45	4.54	0.55	10.68	0.71
2020/4	18.74	4.64	0.41	10.75	0.58
2020/3	17.90	4.96	0.34	11.68	0.43
2020/2	17.71	5.20	0.33	12.29	0.29
2020/1	18.42	5.34	0.17	12.14	0.15
2019/12	18.40	5.36	1.16	12.20	1.77
2019/11	18.63	5.23	1.11	12.05	1.59

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Dönem (Yıl/Ay)	A	B	C	D	E
2019/10	18.49	5.15	0.99	11.90	1.44
2019/9	18.44	4.96	0.87	11.72	1.29
2019/8	17.93	4.64	0.79	11.52	1.15
2019/7	18.19	4.57	0.68	11.41	1.01
2019/6	17.73	4.36	0.60	11.28	0.86
2019/5	17.07	4.18	0.48	11.06	0.73
2019/4	16.89	4.05	0.40	10.78	0.58
2019/3	16.37	4.04	0.31	10.62	0.43
2019/2	17.03	4.11	0.17	11.12	0.29
2019/1	17.13	4.03	0.08	10.27	0.14
2018/12	17.30	3.87	1.45	10.06	1.67
2018/11	18.20	3.70	1.36	10.00	1.47
2018/10	18.19	3.47	1.23	9.73	1.35
2018/9	18.09	3.22	1.12	9.46	1.22
2018/8	17.33	2.85	1.05	8.81	1.10
2018/7	16.10	3.05	0.96	10.18	0.99
2018/6	16.26	3.03	0.84	10.46	0.86
2018/5	15.94	2.82	0.70	10.11	0.73
2018/4	16.41	2.88	0.56	10.82	0.58
2018/3	16.56	2.90	0.42	10.58	0.43
2018/2	16.71	2.92	0.26	10.50	0.28
2018/1	16.81	2.94	0.14	9.95	0.14
2017/12	16.85	2.95	1.62	11.81	1.80
2017/11	16.43	2.93	1.51	11.94	1.63
2017/10	16.88	3.01	1.39	12.04	1.49
2017/9	17.20	3.04	1.27	11.88	1.34
2017/8	17.18	3.12	1.14	11.61	1.20
2017/7	16.95	3.10	1.00	11.77	1.05
2017/6	16.87	3.09	0.88	11.78	0.90
2017/5	16.68	3.18	0.74	11.48	0.75
2017/4	16.38	3.19	0.61	11.50	0.59
2017/3	16.05	3.21	0.46	11.87	0.44
2017/2	15.92	3.25	0.30	11.38	0.29
2017/1	15.17	3.19	0.13	10.40	0.14

2022/12 sıra numarası olarak 1(bir) numaraya karşılık gelecek şekilde, 2017/1 ise sıra numarası olarak 72 numaraya karşılık gelecek şekilde kodlanmıştır. Referans serisi 0 serisi olarak belirlenmiştir ve tüm değerleri bire eşittir.

Tablo 3. Normalleştirilmiş Karar Matrisi, X_{ij} değerleri

S.No	A	B	C	D	E
Hedef/Amaç	Ortalama	Minimum	Maksimum	Maksimum	Minimum
1	0.9519	1.0000	1.0000	0.3406	0.0404
2	0.9475	0.9803	0.9135	0.3566	0.1765
3	0.9404	0.9604	0.8017	0.3442	0.2799

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S.No	A	B	C	D	E
Hedef/Amaç	Ortalama	Minimum	Maksimum	Maksimum	Minimum
4	0.9191	0.9439	0.6944	0.3272	0.3719
5	0.9123	0.9129	0.6237	0.3101	0.4590
6	0.8792	0.9019	0.5233	0.2865	0.5446
7	0.8792	0.8807	0.4338	0.3094	0.6268
8	0.8840	0.8422	0.3438	0.2670	0.7015
9	0.9992	0.7983	0.2586	0.2549	0.7708
10	1.0000	0.7668	0.1630	0.2723	0.8497
11	0.9305	0.7160	0.0961	0.1730	0.9280
12	0.9039	0.6835	0.0407	0.0000	1.0000
13	0.8967	0.6778	0.3467	0.4453	0.1740
14	0.8659	0.6560	0.2857	0.3810	0.2814
15	0.8442	0.5694	0.2566	0.6154	0.3415
16	0.8434	0.5574	0.2213	0.6492	0.4148
17	0.8417	0.5174	0.1872	0.6242	0.4873
18	0.8511	0.5065	0.1530	0.5982	0.5602
19	0.8665	0.5210	0.1263	0.5645	0.6330
20	0.8694	0.5105	0.0881	0.4812	0.7034
21	0.8728	0.4965	0.0716	0.4732	0.7764
22	0.8766	0.4795	0.0534	0.2686	0.8555
23	0.8855	0.4114	0.0223	0.5559	0.9297
24	0.8958	0.3928	0.0000	0.3793	0.9999
25	0.9147	0.3922	0.2765	0.6162	0.1261
26	0.9479	0.4256	0.2734	0.6483	0.2165
27	0.9500	0.4256	0.2393	0.5693	0.2890
28	0.9503	0.3972	0.2252	0.6570	0.3583
29	0.9425	0.3732	0.2108	0.6790	0.4267
30	0.9390	0.3401	0.1934	0.7070	0.4935
31	0.9549	0.2890	0.1512	0.6946	0.5679
32	0.9511	0.2517	0.1345	0.6549	0.6505
33	0.9147	0.2194	0.0931	0.6682	0.7307
34	0.8714	0.1227	0.0734	0.8683	0.8181
35	0.8616	0.0472	0.0711	1.0000	0.9047
36	0.8983	0.0047	0.0286	0.9671	0.9883
37	0.8973	0.0000	0.3037	0.9804	0.0207
38	0.9089	0.0404	0.2895	0.9473	0.1294
39	0.9016	0.0643	0.2553	0.9166	0.2162
40	0.8990	0.1203	0.2219	0.8772	0.3047
41	0.8730	0.2198	0.2005	0.8346	0.3927
42	0.8862	0.2407	0.1704	0.8113	0.4757
43	0.8624	0.3047	0.1482	0.7828	0.5624
44	0.8286	0.3619	0.1140	0.7351	0.6435
45	0.8192	0.4007	0.0909	0.6763	0.7299
46	0.7928	0.4032	0.0676	0.6417	0.8206
47	0.8266	0.3835	0.0263	0.7482	0.9053
48	0.8318	0.4085	0.0031	0.5669	0.9913
49	0.8403	0.4552	0.3827	0.5212	0.0777
50	0.8871	0.5080	0.3584	0.5073	0.1981
51	0.8862	0.5787	0.3236	0.4495	0.2686
52	0.8813	0.6567	0.2919	0.3918	0.3482
53	0.8422	0.7686	0.2723	0.2521	0.4204
54	0.7787	0.7089	0.2469	0.5466	0.4842
55	0.7869	0.7147	0.2146	0.6066	0.5611
56	0.7702	0.7778	0.1751	0.5325	0.6429
57	0.7946	0.7587	0.1370	0.6839	0.7318
58	0.8021	0.7544	0.0971	0.6333	0.8200
59	0.8099	0.7463	0.0512	0.6160	0.9078

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S.No	A	B	C	D	E
Hedef/Amaç	Ortalama	Minimum	Maksimum	Maksimum	Minimum
60	0.8151	0.7412	0.0189	0.4967	0.9923
61	0.8172	0.7372	0.4304	0.8959	0.0000
62	0.7955	0.7430	0.4016	0.9247	0.1055
63	0.8187	0.7207	0.3677	0.9462	0.1892
64	0.8353	0.7097	0.3331	0.9117	0.2746
65	0.8341	0.6869	0.2977	0.8538	0.3608
66	0.8225	0.6937	0.2583	0.8888	0.4497
67	0.8184	0.6951	0.2243	0.8901	0.5384
68	0.8086	0.6670	0.1851	0.8247	0.6290
69	0.7932	0.6633	0.1499	0.8301	0.7237
70	0.7758	0.6596	0.1093	0.9089	0.8146
71	0.7691	0.6449	0.0628	0.8051	0.9069
72	0.7306	0.6660	0.0159	0.5937	0.9921

Tablo 3'te her bir değişkenin hedeflenen/amaçlanan durumu için normalleştirme işlemi gerçekleştirilmiştir.

Tablo 4. Referans Sırası ve Devinim (Değişim) Sırası, X_0 ve Δ_{ij} değerleri

Reference Sq.	**1.0000**	**1.0000**	**1.0000**	**1.0000**	**1.0000**
Deviation Sq.	**A**	**B**	**C**	**D**	**E**
1	0.0481	0.0000	0.0000	0.6594	0.9596
2	0.0525	0.0197	0.0865	0.6434	0.8235
3	0.0596	0.0396	0.1983	0.6558	0.7201
4	0.0809	0.0561	0.3056	0.6728	0.6281
5	0.0877	0.0871	0.3763	0.6899	0.5410
6	0.1208	0.0981	0.4767	0.7135	0.4554
7	0.1208	0.1193	0.5662	0.6906	0.3732
8	0.1160	0.1578	0.6562	0.7330	0.2985
9	0.0008	0.2017	0.7414	0.7451	0.2292
10	0.0000	0.2332	0.8370	0.7277	0.1503
11	0.0695	0.2840	0.9039	0.8270	0.0720
12	0.0961	0.3165	0.9593	1.0000	0.0000
13	0.1033	0.3222	0.6533	0.5547	0.8260
14	0.1341	0.3440	0.7143	0.6190	0.7186
15	0.1558	0.4306	0.7434	0.3846	0.6585
16	0.1566	0.4426	0.7787	0.3508	0.5852
17	0.1583	0.4826	0.8128	0.3758	0.5127
18	0.1489	0.4935	0.8470	0.4018	0.4398
19	0.1335	0.4790	0.8737	0.4355	0.3670
20	0.1306	0.4895	0.9119	0.5188	0.2966
21	0.1272	0.5035	0.9284	0.5268	0.2236
22	0.1234	0.5205	0.9466	0.7314	0.1445
23	0.1145	0.5886	0.9777	0.4441	0.0703
24	0.1042	0.6072	1.0000	0.6207	0.0001
25	0.0853	0.6078	0.7235	0.3838	0.8739
26	0.0521	0.5744	0.7266	0.3517	0.7835
27	0.0500	0.5744	0.7607	0.4307	0.7110
28	0.0497	0.6028	0.7748	0.3430	0.6417
29	0.0575	0.6268	0.7892	0.3210	0.5733
30	0.0610	0.6599	0.8066	0.2930	0.5065
31	0.0451	0.7110	0.8488	0.3054	0.4321
32	0.0489	0.7483	0.8655	0.3451	0.3495
33	0.0853	0.7806	0.9069	0.3318	0.2693
34	0.1286	0.8773	0.9266	0.1317	0.1819
35	0.1384	0.9528	0.9289	0.0000	0.0953
36	0.1017	0.9953	0.9714	0.0329	0.0117
37	0.1027	1.0000	0.6963	0.0196	0.9793

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Reference Sq.	1.0000	1.0000	1.0000	1.0000	1.0000
Deviation Sq.	A	B	C	D	E
38	0.0911	0.9596	0.7105	0.0527	0.8706
39	0.0984	0.9357	0.7447	0.0834	0.7838
40	0.1010	0.8797	0.7781	0.1228	0.6953
41	0.1270	0.7802	0.7995	0.1654	0.6073
42	0.1138	0.7593	0.8296	0.1887	0.5243
43	0.1376	0.6953	0.8518	0.2172	0.4376
44	0.1714	0.6381	0.8860	0.2649	0.3565
45	0.1808	0.5993	0.9091	0.3237	0.2701
46	0.2072	0.5968	0.9324	0.3583	0.1794
47	0.1734	0.6165	0.9737	0.2518	0.0947
48	0.1682	0.5915	0.9969	0.4331	0.0087
49	0.1597	0.5448	0.6173	0.4788	0.9223
50	0.1129	0.4920	0.6416	0.4927	0.8019
51	0.1138	0.4213	0.6764	0.5505	0.7314
52	0.1187	0.3433	0.7081	0.6082	0.6518
53	0.1578	0.2314	0.7277	0.7479	0.5796
54	0.2213	0.2911	0.7531	0.4534	0.5158
55	0.2131	0.2853	0.7854	0.3934	0.4389
56	0.2298	0.2222	0.8249	0.4675	0.3571
57	0.2054	0.2413	0.8630	0.3161	0.2682
58	0.1979	0.2456	0.9029	0.3667	0.1800
59	0.1901	0.2537	0.9488	0.3840	0.0922
60	0.1849	0.2588	0.9811	0.5033	0.0077
61	0.1828	0.2628	0.5696	0.1041	1.0000
62	0.2045	0.2570	0.5984	0.0753	0.8945
63	0.1813	0.2793	0.6323	0.0538	0.8108
64	0.1647	0.2903	0.6669	0.0883	0.7254
65	0.1659	0.3131	0.7023	0.1462	0.6392
66	0.1775	0.3063	0.7417	0.1112	0.5503
67	0.1816	0.3049	0.7757	0.1099	0.4616
68	0.1914	0.3330	0.8149	0.1753	0.3710
69	0.2068	0.3367	0.8501	0.1699	0.2763
70	0.2242	0.3404	0.8907	0.0911	0.1854
71	0.2309	0.3551	0.9372	0.1949	0.0931
72	0.2694	0.3340	0.9841	0.4063	0.0079
Δmax	0.2694	1.0000	1.0000	1.0000	1.0000
Δmin	0.0000	0.0000	0.0000	0.0000	0.0000

Tablo 4. Referans Sırası ve Devinim (Değişim) Sırası, X0 ve Δij değerleri sunulmuştur. Hesaplamanın devamında kullanılacağı için maksimum ve minimum değişimler de listelenmiştir. Gri ilişki katsayılarını ve gri ilişki derecesini belirlemek için ayırt edici bir katsayıdan yararlanması gerekmektedir. ξ ayırt edici katsayı için kullanılmakta olup bu değer sıfır ile bir arasında bir değer alır. Katsayının küçük olması yüksek ayırt edicilik anlamına gelmektedir. Matematiksel ifade olarak ξ ∈ (0,1] biçiminde göstermek mümkündür. Çalışmada literatürle uyumlu olarak ξ=0,5 olarak kullanılmıştır.

Tablo 5. Dönemler için hesaplanan Gri İlişkisel Katsayılar, Gri İlişkisel Derece ve Gri İlişki Sırası

Dönem (Yıl/Ay)	A	B	C	D	E	Grey Rank	Grade
2022/12	0.7370	1.0000	1.0000	0.4313	0.3426	1	0.7022
2022/11	0.7197	0.9621	0.8525	0.4373	0.3778	2	0.6699
2022/10	0.6932	0.9267	0.7160	0.4326	0.4098	5	0.6356
2022/9	0.6248	0.8992	0.6207	0.4263	0.4432	8	0.6029
2022/8	0.6057	0.8516	0.5706	0.4202	0.4803	9	0.5857
2022/7	0.5272	0.8360	0.5119	0.4120	0.5234	16	0.5621
2022/6	0.5271	0.8073	0.4690	0.4199	0.5726	18	0.5592
2022/5	0.5373	0.7601	0.4325	0.4055	0.6261	23	0.5523

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Dönem (Yıl/Ay)	A	B	C	D	E	Grey Rank	Grade
2022/4	0.9942	0.7125	0.4028	0.4016	0.6856	4	0.6393
2022/3	1.0000	0.6820	0.3740	0.4073	0.7689	3	0.6464
2022/2	0.6597	0.6377	0.3561	0.3768	0.8741	11	0.5809
2022/1	0.5837	0.6123	0.3426	0.3333	1.0000	13	0.5744
2021/12	0.5659	0.6081	0.4336	0.4741	0.3771	60	0.4917
2021/11	0.5012	0.5924	0.4118	0.4468	0.4103	71	0.4725
2021/10	0.4637	0.5373	0.4021	0.5652	0.4316	68	0.4800
2021/9	0.4624	0.5305	0.3910	0.5877	0.4607	62	0.4865
2021/8	0.4597	0.5089	0.3809	0.5709	0.4937	66	0.4828
2021/7	0.4750	0.5033	0.3712	0.5544	0.5320	61	0.4872
2021/6	0.5023	0.5107	0.3640	0.5345	0.5767	57	0.4976
2021/5	0.5076	0.5053	0.3541	0.4908	0.6277	58	0.4971
2021/4	0.5144	0.4983	0.3500	0.4870	0.6910	48	0.5081
2021/3	0.5219	0.4900	0.3456	0.4060	0.7758	50	0.5079
2021/2	0.5406	0.4593	0.3384	0.5296	0.8767	28	0.5489
2021/1	0.5638	0.4516	0.3333	0.4462	0.9999	19	0.5590
2020/12	0.6123	0.4514	0.4087	0.5657	0.3639	67	0.4804
2020/11	0.7212	0.4654	0.4076	0.5871	0.3896	45	0.5142
2020/10	0.7293	0.4654	0.3966	0.5372	0.4129	47	0.5083
2020/9	0.7305	0.4534	0.3922	0.5931	0.4380	43	0.5214
2020/8	0.7010	0.4437	0.3878	0.6090	0.4659	42	0.5215
2020/7	0.6884	0.4311	0.3827	0.6305	0.4968	38	0.5259
2020/6	0.7492	0.4129	0.3707	0.6208	0.5365	36	0.5380
2020/5	0.7337	0.4006	0.3662	0.5916	0.5886	37	0.5361
2020/4	0.6123	0.3905	0.3554	0.6011	0.6499	41	0.5218
2020/3	0.5115	0.3630	0.3505	0.7915	0.7333	26	0.5499
2020/2	0.4932	0.3442	0.3499	1.0000	0.8399	7	0.6054
2020/1	0.5698	0.3344	0.3398	0.9383	0.9770	6	0.6319
2019/12	0.5674	0.3333	0.4180	0.9622	0.3380	40	0.5238
2019/11	0.5964	0.3426	0.4131	0.9046	0.3648	39	0.5243
2019/10	0.5780	0.3483	0.4017	0.8570	0.3895	44	0.5149
2019/9	0.5716	0.3624	0.3912	0.8029	0.4183	46	0.5093
2019/8	0.5148	0.3906	0.3848	0.7514	0.4516	55	0.4986
2019/7	0.5420	0.3970	0.3761	0.7260	0.4882	51	0.5058
2019/6	0.4948	0.4183	0.3699	0.6972	0.5333	53	0.5027
2019/5	0.4400	0.4393	0.3607	0.6537	0.5838	59	0.4955
2019/4	0.4269	0.4549	0.3548	0.6070	0.6493	56	0.4986
2019/3	0.3939	0.4559	0.3491	0.5825	0.7360	52	0.5035
2019/2	0.4371	0.4478	0.3393	0.6651	0.8408	31	0.5460
2019/1	0.4447	0.4581	0.3340	0.5359	0.9830	24	0.5511
2018/12	0.4575	0.4786	0.4475	0.5108	0.3515	72	0.4492
2018/11	0.5439	0.5040	0.4380	0.5037	0.3841	70	0.4747
2018/10	0.5421	0.5427	0.4250	0.4760	0.4060	69	0.4784
2018/9	0.5317	0.5929	0.4139	0.4512	0.4341	64	0.4847
2018/8	0.4605	0.6836	0.4073	0.4007	0.4631	65	0.4830
2018/7	0.3783	0.6321	0.3990	0.5244	0.4922	63	0.4852
2018/6	0.3873	0.6367	0.3890	0.5596	0.5325	54	0.5010
2018/5	0.3696	0.6923	0.3774	0.5168	0.5834	49	0.5079
2018/4	0.3960	0.6745	0.3668	0.6127	0.6509	34	0.5402
2018/3	0.4050	0.6706	0.3564	0.5769	0.7353	29	0.5488
2018/2	0.4148	0.6634	0.3451	0.5656	0.8443	15	0.5666
2018/1	0.4215	0.6590	0.3376	0.4984	0.9847	12	0.5802
2017/12	0.4243	0.6555	0.4675	0.8276	0.3333	32	0.5416
2017/11	0.3972	0.6605	0.4552	0.8691	0.3586	30	0.5481
2017/10	0.4263	0.6416	0.4416	0.9029	0.3815	20	0.5588
2017/9	0.4499	0.6327	0.4285	0.8499	0.4080	22	0.5538
2017/8	0.4481	0.6149	0.4159	0.7738	0.4389	35	0.5383
2017/7	0.4314	0.6201	0.4027	0.8180	0.4760	27	0.5496
2017/6	0.4258	0.6212	0.3919	0.8197	0.5199	21	0.5557

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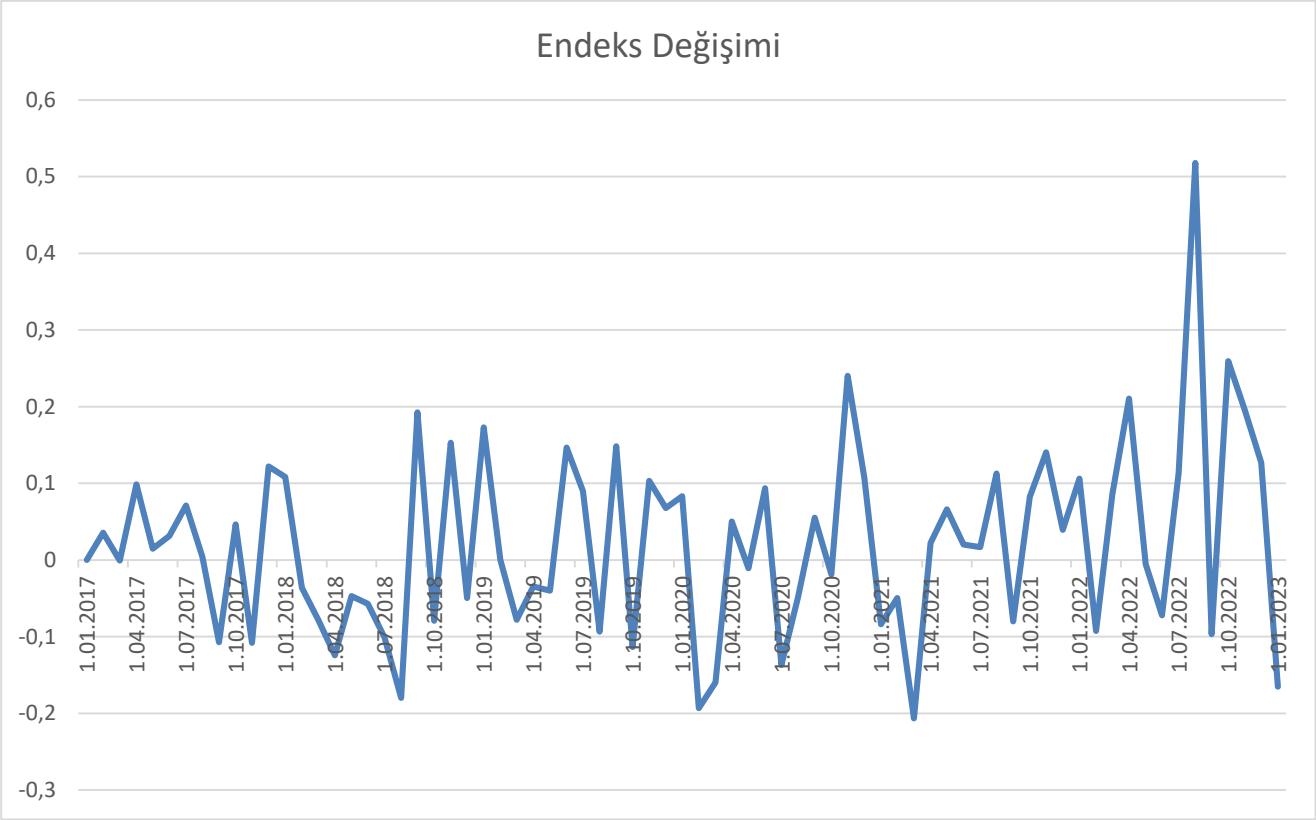
Dönem (Yıl/Ay)	A	B	C	D	E	Grey Rank	Grade
2017/5	0.4131	0.6002	0.3803	0.7404	0.5741	33	0.5416
2017/4	0.3944	0.5976	0.3703	0.7464	0.6441	25	0.5505
2017/3	0.3753	0.5949	0.3595	0.8458	0.7295	10	0.5810
2017/2	0.3685	0.5848	0.3479	0.7195	0.8431	14	0.5727
2017/1	0.3333	0.5995	0.3369	0.5517	0.9844	17	0.5612

Tablo 5 incelendiğinde gri ilişki sırası ve skoru olarak en iyi durumun 2022 yılının Aralık ayında ve ikinci en iyi durumun 2022 yılının Kasım ayında olduğu belirlenmiştir. Çalışmanın zaman serisi içerisinde, analiz dönemi boyunca erişilmesi arzu edilen duruma 2022 yılı Kasım ve 2022 Aralık aylarında yaklaşılmıştır.

4. Sonuç

Gri ilişkisel analiz sonuçları ile geleneksel finans görüşü açısından endeks değerleri incelendiğinde ilk iki sıranın 2022 Kasım ve 2022 Aralık ayları için aynı sırada bulunduğu tespiti yapılmaktadır. Ancak, ortalamalarda yer alan sıralamalarda gri ilişkisel sıralama ile endeks değeri sırası arasında farklılıklar olduğu belirlenmektedir.

Şekil 1. Borsa İstanbul XBANK endeksi önceki aya göre % değişim



XBANK endeks yüzde değişim grafiği Şekil 1'de sunulmuştur. Endeks değişiminin sıralaması ile gri sıralamanın ilk iki sıranın belirlenmesinde aynı sonucu verdiği ve benzerlik gösterdiği tespit edilmiştir. Elde edilen sonuçlara göre Borsa İstanbul Bankacılık Sektörü Endeksi analiz dönemi içerisinde en iyi durumuna 2022 yılının son iki ayında gelmiştir. "Takipteki Alacaklar (Brüt) / Toplam Nakdi Krediler (%) oranı", "Dönem Net Kârı (Zararı) / Ortalama Toplam Aktifler (%)" oranı, "Ücret, Komisyon ve Bankacılık Hizmetleri Gelirleri / Toplam Gelirler (%)" oranı, "İşletme Giderleri / Ortalama Toplam Aktifler (%)" oranı ile "Sermaye Yeterliliği Standart Rasyosu ((5/7)*100) (YÜZDE)" oranından faydalanarak belirlenen gri ilişkisel katsayılar ve gri ilişkisel derece ilk iki sırada 2022 yılının son iki ayının bulunduğunu göstermektedir. Kanun koyucu tarafından getirilen kısıtlar net olduğundan ve bankacılık sektöründe bu kısıtlardan sapmanın güçlü yaptırımları bulunmasından ötürü "Sermaye Yeterliliği Standart Rasyosu" ile ilgili gri ilişki kısıtının ortalama yerine maksimumun arzu edilmesi durumunda da gri ilişkisel sıralamanın değişmediği sonucuna ulaşmayı

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sağlamıştır. Sektörde şeffaf ve hesap verilebilir iş ve işlemlerin tesis edilmesinin önemi burada bir kez daha belirlenmektedir. 72 gözlem değerinin ortası 36 olup 35 ile 37 arasındaki sıraların incelenmesi hem endeks hem de gri ilişki sıralarında gerçekleştirilmiştir. Endeks değişimi ile belirlenen sıranın ortaları ile gri ilişki ile belirlenen sıra ortası arasında bariz farklılıklar tespit edilmiştir. Mevcut veri seti ile gerçekleştirilen çalışmada yeni normalin ne olduğunu söylemek ve ortalamayı temsil eden tarihi belirlemek olanaklı olmamıştır. Analiz döneminde uygulamaya konulan yeni politikalar, tarihi pandemi gibi çok ve çeşitli faktörün bu sonucun elde edilmesinde etkisinin bulunduğu düşünülmektedir. Gözlem sayısının arttırılarak tekrar değerlendirmeler yapılması ortalamada daha yakınsayacak bir sonuç elde edilmesini destekleyebilecektir.

5. Kaynakça

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The Effect of Organizational Change and Development Management on Sustainable Development

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Abstract

This article aims to investigate the impact of corporate change and development management on sustainable development within companies. By the interaction between corporate transformation processes and sustainable development goals, the study aims to identify the best practices and strategies that can help achieve long-term success. In this process, it aims to identify the best practices and strategies that can help businesses while maintaining their economic, social and environmental sustainability commitments.

Keywords: Organizational Change, Development Management, Sustainable Development

1. Introduction

Corporate change and development management are the basic elements of business success in today's rapidly changing world. Due to reasons such as globalization, technological advances and changing consumer preferences, companies are facing increasing challenges, and their ability to adapt and grow is extremely important. At the same time, sustainable development has become a vital paradigm for businesses trying to balance economic growth with social justice and environmental protection. This article aims to understand how institutional change and development management can contribute to sustainable development and to identify strategies and practices that can provide meaningful progress in this area..

2. The Term Organizational Change

Institutional change refers to the process of making significant changes to the structure, processes, culture or strategies of an organization. The reasons for this may include changes in the market, technological advances, or changes in the goals and objectives of the organization. Dec. Corporate change can occur in many different ways, such as restructuring the hierarchy, introducing new technologies, changing communication channels, reviewing business processes, or redefining the organization's culture. It can be a planned or unplanned process and it can take place at different levels at the individual, group, department or organization level. Corporate change can be challenging and create disruption, but it can also offer opportunities for growth and innovation. Effective change management requires careful planning, communication and cooperation with stakeholders related to employees in order for change to be successfully implemented and sustainable for the long term.Institutional change is a complex process involving various stages within an organization, and different stakeholders need to be involved and cooperate in this process. Here are some basic elements and stages of organizational change: Determining the need for change is related to recognizing the need for change within the organization, and this may vary depending on internal or external factors. The need for change can be determined through such means as data analysis, feedback from employees or customers, or performance indicators. Once the need for change has been determined, it is necessary to make a change planning. This includes determining the scope of the change, developing a plan for implementing the change, and creating a timeline. The implementation phase of the change involves the implementation of the plan. This may require training employees, introducing new processes or technologies, or changing the organizational structure. The implementation phase requires careful communication and

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cooperation with employees and stakeholders so that they understand and support the change.After the implementation of the change, it is important to evaluate its effectiveness. This includes measuring the impact of change on the organization's performance, evaluating the level of employee satisfaction, and determining the unexpected consequences of change (Güven,2021,p.1). Based on the evaluation of the change, adjustments can be made to increase its effectiveness. This stage requires continuous improvement and continuous monitoring to ensure that the change is sustainable and achieves the desired results.Corporate change can be challenging, and it is important to manage it effectively for it to be successful. This requires strong leadership, effective communication and cooperation with employees and stakeholders in the process of change. Ulusoy and Civek (2020) researched that the covid pandemic changed the order of human needs.Burke (2017) presents different theories and approaches related to institutional change from an overview point of view and offers practical guidance on managing change within organizations. It covers topics such as resistance to change, the role of leadership in change management and the impact of technology on corporate change. Kotter (2012), based on his field research and experiences, has designed an eight-step process for managing institutional change. It emphasizes the importance of creating a sense of urgency, building a coalition of support and communicating a clear vision for change. Bridges (2009) focuses on the human side of institutional change and explores the emotional and psychological effects of change on individuals and groups within organizations. It offers practical advice on managing transition processes and helping employees on their journey through the change process. Holman et al. (2017) provide a comprehensive overview of the different methods and approaches of institutional change, including large-scale change initiatives, participatory change processes, and continuous improvement methods. It includes case studies and practical guidance on the implementation of change in many different organizational contexts.

3. The General Effects of Organizations Change in terms of Organization itself

Changes in an organization can have both positive and negative effects on the organization. Here are the effects of organizational changes in general:

Organizational change implemented effectively can improve performance, efficiency and effectiveness. The ability to provide products or services can be improved by applying new technologies, improving processes, or restructuring the organization.Change within an organization can support innovation by encouraging an environment suitable for creativity and experimentation. With new ideas, technologies or processes, the organization can become more adaptable and responsive to changing Sunday conditions. Increasing competitiveness: Organizational change can increase competitiveness by enabling the organization to respond to new challenges and opportunities. Through the adoption of new technologies, processes or strategies, the organization can improve its Sunday competitiveness. Employee resistance can be caused by organizational change, especially if employees perceive change as a threat to job security or business processes. Resistance can lead to a decrease in morale, an increase in layoffs, and a decrease in production. Organizational change can be distressing for employees, especially when there is a sudden or significant change. Employees may experience emotions associated with anxiety, uncertainty, or loss, which can have a negative impact on their well-being and job performance. The deterioration of the culture of the organization can be caused by organizational change and can be difficult to manage. A change in leadership, restructuring, or other changes in the structure or processes of the organization may have an impact on culture and values. The effects of organizational changes on the organization are influenced by change management and implementation. Effective change management requires careful planning, communication and the participation of employees and stakeholders to ensure long-term success and sustainability of change (Carnall, 2007) (Cummings et.al., 2014) (Kotter, 1996) (Senior and Fleming,2006) (Tushman and O'reilly,2007).

4. The General Effects of Organizational Change in Terms of Economy Itself

Institutional change can have significant impacts on local and global economies. Here are the general economic consequences of corporate change:

Corporate change can increase the competitiveness of a company by enabling it to respond to market demands and changing economic conditions. This can result in increased innovation, efficiency and productivity and have a positive impact on the entire economy.Corporate change can lead to job creation in some areas, such as new technology or product development, and job loss in other areas due to outsourcing or automation. This can affect the overall employment rate and the distribution of job positions throughout the economy.Changes in consumer demand: Institutional change can cause changes in consumer demand, which can have implications for the entire economy. For example, a company that offers a new product or service may create new demands, while a company that moves production to a different country

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may change consumer preferences or spending habits.Suppliers and partners may be affected by corporate change, especially for businesses if they are dependent on this organization. Changes in production procedures, supply channels or strategic partnerships can have reverberating effects on the entire economy.Institutional change can also affect local economies, especially if the organization is a large employment provider or located in a small community. Changes in production or employment levels can cause economic recessions and negatively affect the well-being of local residents and businesses.The effects of institutional change on the economy depend on many variables, such as the nature and magnitude of the change, the relevant sector or industry, and the global economic climate. Effective change management and strategic planning can help organizations and the entire economy reduce negative impacts and maximize positive outcomes.Pyka and Cantner (2016) investigate the effects of structural change (changes such as industries or technology) on the economy. It addresses the effects of structural change on employment, productivity and innovation and offers guidance on how governments and businesses can manage these changes effectively.Driffield and Taylor (2016) examine the effects of globalization on the structural transformation within the labor market and the economy. It addresses issues such as the effects of outsourcing, the impact of technology on employment, and the role of education and training in adapting to structural change.Drucker (2014) examines the impact of innovation and entrepreneurship on economic development and structural transformation. He discusses the importance of developing new products and services, adapting to changing Sunday conditions and creating an innovative culture within organizations.Dodgson et al. (2014) provide a comprehensive overview of innovation management. It addresses issues such as the economic impacts of innovation and the role of organizational change made to promote innovation. It includes topics such as open innovation, information management and strategic innovation planning.These resources provide information on the effects of institutional change on the economy and the importance of managing structural change.

5. The Term of Development management

Development management is the process of organizing, planning, and directing the different phases of a project or initiative to ensure its successful completion. In the context of municipal planning, development management is the administration of land use, infrastructure, resources, and the constructed environment in order to facilitate sustainable growth and development. This procedure typically involves coordinating with stakeholders, balancing competing interests, and adhering to regulations and policies.

Key development management components may include:Project management: Determining the project's scope, objectives, and timeline, as well as the required resources, personnel, and budget. Regulatory compliance entails ensuring the project complies with local, regional, and national laws, policies, and regulations. Collaboration with stakeholders, including community members, government agencies, developers, and investors, to resolve concerns, solicit feedback, and promote cooperation. Risk management is the process of identifying potential risks, devising strategies to eliminate or mitigate them, and monitoring progress to ensure risks are adequately addressed. Incorporating environmental, social, and economic factors into the project in order to promote sustainable development and mitigate negative impacts on the community and environment. Monitoring and evaluation entails tracking the project's progress, measuring its success against predetermined goals and objectives, and making any necessary adjustments to ensure optimal results. Financial management includes securing funding, managing budgets, and supervising resource allocation to ensure the financial viability of the undertaking. Conflict resolution entails addressing disputes and conflicts that may arise between parties and working towards solutions that are mutually beneficial.The purpose of development management is to ensure the effective and efficient implementation of initiatives and ultimately contribute to the development of societies, cities and regions. This phase involves the creation of a comprehensive project plan that sets goals, scope, deliveries, milestones and completion dates. In addition, it defines the resources required, such as personnel, equipment and materials. It is important to plan a project, set realistic goals, allocate resources efficiently and create a solid foundation for the entire development process. Development initiatives should follow various laws, regulations and policies such as land use, construction and environmental impact. Compliance includes conducting research to determine applicable regulations, obtaining the necessary permits and certificates, and ensuring that the design and implementation of the project comply with all legal requirements. Non-compliance may result in fines, penalties or even cancellation of the project. Effective communication and cooperation with stakeholders are important for the success of any development initiative. This includes the identification of all stakeholders, including residents, businesses, government agencies and environmental organizations. Regular consultation meetings, meetings and seminars can be organized to collect feedback, resolve concerns and incorporate the views of stakeholders into the design and implementation of the project. Development initiatives face many risks such as cost overruns, delays and regulatory changes. Risk management involves identifying potential risks, evaluating their likelihood and impact, and developing strategies to reduce or mitigate them. Regular monitoring of project progress and risk factors allows for timely changes to the project plan, thereby reducing the

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likelihood of negative consequences. The sustainable development initiative takes into account environmental, social and economic impacts on a long-term basis. This includes environmentally friendly construction projects, the use of energy-efficient technologies and measures to reduce resource consumption. Economic sustainability ensures that the project contributes to local economic development and offers long-term benefits to society, while social sustainability focuses on creating inclusive, accessible and egalitarian spaces.

Monitoring and evaluation is the process of measuring the progress of a project by using performance indicators according to its determined goals and objectives. Regular monitoring helps to identify problems, assess the effectiveness of implemented strategies and make necessary corrections. Evaluation is usually carried out at different stages, such as project implementation and completion, and is used to evaluate the overall effectiveness and impact of the project.

Financial management is important to ensure that development initiatives remain within budget and are financially sustainable. This includes obtaining financing from various sources, such as government grants, loans or funding from private investors, managing budgets, monitoring expenditures and changing fiscal plans when necessary.

These processes represent the basic elements of the development management process. Each of them plays an important role for the successful implementation of development projects and contributing to the development of societies.Conflicts may originate between parties due to competing interests, divergent perspectives, or misunderstandings. Effective conflict resolution requires communication, negotiation, and mediation to reach mutually agreeable solutions. In some instances, mediators or arbitrators may be brought in to assist in the resolution of disputes. Development managers can maximize the success of their projects and contribute to the sustainable development of communities and regions if they comprehend and effectively manage these key elements.

Mullins (2017) provides insights into business development, including evaluation and management of firm growth. Verzuh (2015) provides a comprehensive overview of the principles and practices of project management that can be applied to development management within organizations. Harnish (2014) discusses the obstacles and strategies for expanding enterprises, with an emphasis on the role of development management in fostering organizational growth. Austin (2008) examines strategies for managing research, product development, and commercialization in the context of the biotechnology and pharmaceutical industries, focusing on development management. Ries (2011) presents a methodology for managing the development of new products and services within organizations, with an emphasis on experimentation, iteration, and learning. Kogon et al. (2015) provide practical advice on project management, including development management within organizations, with an emphasis on the skills and techniques required to effectively manage projects. Kim and Mauborgne (2005) discuss the blue ocean strategy and the application of development management to create new market opportunities for businesses. Osterwalder and Pigneur (2010) present a framework for designing, evaluating, and administering business models with an emphasis on development management within organizations

6. The Term of Sustainable Development

Sustainable development is a concept that involves meeting the needs of the present without compromising the ability of future generations to meet their own needs. It aims to balance economic growth, social equity, and environmental protection to ensure long-term well-being for all.Terms, backround, practices are as follows: (Elkington, 1997), (Porter and Kramer,2011) (Dyllick and Muff, 2016) (Savitz and Weber, 2014) (Schaltegger and Wagner, 2006) (Esty and Winston, 2009)(Willard, 2012)(Epstein, 2008)Economic sustainability is the process of ensuring that economic growth and development are durable and beneficial for all members of society.Promoting social equity, inclusion, and cultural diversity while addressing fundamental human requirements such as health, education, and social welfare is social sustainability.Environmental sustainability is the safeguarding of natural resources and ecosystems while minimizing the adverse effects of human activities on the environment.Late in the 20th century, in response to growing concerns about the environmental and social consequences of accelerated industrialization and urbanization, the concept of sustainable development emerged. The 1987 report "Our Common Future" by the World Commission on Environment and Development, also known as the Brundtland Commission, was instrumental in popularizing and defining the principles of sustainable development. Subsequently, the 1992 United Nations Conference on Environment and Development (UNCED), also known as the Earth Summit, reinforced sustainable development's position as a global priority.As businesses recognize the long-term advantages of incorporating sustainability principles into their operations, the importance of sustainable development has increased. Among the methods by which businesses can integrate sustainable development into their practices are:Adopting environmentally favorable practices: Businesses can reduce their environmental impact by implementing energy-efficient technologies, waste reduction, and sustainable material procurement.Through initiatives such as equitable labor practices, philanthropy, and community engagement programs,

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businesses can support local communities and resolve social issues as part of their social responsibility.Firms can develop products and services that have a positive impact on society and the environment while generating a profit using sustainable business models. This may include circular economy models that promote resource efficiency and waste reduction.Businesses can monitor and communicate their sustainability performance via regular reporting, utilizing standardized frameworks such as the Global Reporting Initiative (GRI) or the Sustainability Accounting Standards Board (SASB).Engagement of stakeholders: Businesses can involve a variety of stakeholders, including employees, consumers, and investors, in their sustainability initiatives to promote shared responsibility and nurture collaborative solutions.By incorporating sustainable development principles into their operations, businesses can not only enhance their long-term viability but also contribute to the larger objectives of social equity and environmental protection.

6. How organizational change and development management can contribute to sustainable development?

Organizational transformation and development management, there are various methods that can contribute to sustainable development. Companies can better align their businesses with the principles of economic, social and environmental sustainability by implementing effective change management strategies and creating a culture of continuous improvement. Change and development management can help businesses align their strategic goals with the sustainable development goals. For this purpose, it is necessary to integrate economic, social and environmental factors into decision-making processes and to place sustainability at the center of the organization's vision and mission. Change management can work to reduce resource consumption, reduce waste and improve environmental performance by detecting and solving inefficiencies in business processes. By improving operations and adopting more environmentally friendly practices, organizations can contribute to environmental sustainability while also increasing their overall competitiveness. Corporate development management can provide enterprises with the opportunity to develop new products, services and business models to solve sustainability problems by creating an innovative culture. This may include steps such as the creation of environmentally friendly technologies, the adoption of circular economy principles, or the establishment of social enterprises that address social problems. Encouraging employee participation in sustainability initiatives and providing the necessary skills and resources to support change can ensure more efficient implementation of sustainable practices. Change management can facilitate employee participation in sustainability initiatives by ensuring that employees understand the importance of these initiatives and feel empowered to contribute to success. Change and development management can help organizations build solid relationships with external stakeholders, including suppliers, consumers, and local communities. By involving these stakeholders in sustainability initiatives and participating in collaborative projects, organizations can address complex sustainability challenges by using resources and expertise together.

Organizational change and development management allows enterprises to follow new sustainability trends and respond effectively to new challenges, ensuring the creation of a culture of continuous learning and compliance. Regular evaluation of sustainability performance and identification of improvement areas allows organizations to continuously improve their strategies and practices.

In general, organizational change and development management provides the necessary frameworks and tools to integrate sustainability into business activities. In this way, companies can contribute to the sustainable development goals while achieving long-term success.

By focusing on several important aspects, organizational change, and development management can contribute to sustainable development in greater detail. Change and development management can contribute to the creation of a culture that places a premium on sustainability by instilling sustainable values and behaviors throughout an organization. This may involve developing leadership commitment, establishing defined sustainability objectives, and communicating the significance of sustainability to all levels of employees. Change management can facilitate the incorporation of sustainability into fundamental business processes such as product design, supply chain management, and marketing. This can be accomplished by incorporating life-cycle assessment tools into product development, selecting suppliers based on their environmental and social performance, and promoting sustainable consumption through responsible marketing practices. By providing employees with specialized training and development programs, organizational development management can increase their capacity to contribute to sustainability initiatives. This may consist of seminars on sustainable practices, leadership development for sustainability champions, and cross-functional team-building exercises centered on addressing sustainability challenges. Change and development management can facilitate

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the establishment of comprehensive performance measurement and reporting systems for sustainability, enabling organizations to monitor their progress and identify improvement opportunities. This may involve implementing standard reporting frameworks, such as the Global Reporting Initiative (GRI) or the Sustainability Accounting Standards Board (SASB), and devising customized performance indicators that correspond with the organization's sustainability objectives. By addressing potential obstacles and resistance to change, effective change management can facilitate the successful implementation of sustainability initiatives. This can include developing a clear project vision, constructing a persuasive case for change, engaging key stakeholders, and providing ongoing support and resources for project implementation. By establishing forums for cross-functional collaboration, fostering best practice sharing, and celebrating success tales, organizational development management can promote learning and knowledge sharing around sustainability. This can contribute to the formation of a positive feedback cycle that promotes the continual enhancement of sustainability performance. Change and development managers can help organizations respond effectively to emergent sustainability risks and opportunities by nurturing a culture of resilience and adaptability. This may involve the development of scenario planning capabilities, the establishment of flexible organizational structures, and the promotion of a growth mindset that encourages experimentation and failure-based learning.

Aguinis and Glavas (2012) examine the connection between corporate social responsibility and organizational performance. It emphasizes the significance of effective change management in attaining sustainability goals and makes recommendations for future research on the subject. Beer and Nohria (2000) investigate the factors that contribute to effective organizational change, concentrating on two distinct change management approaches Theory E (which emphasizes economic value) and Theory O (which emphasizes organizational capability). The authors contend that the most effective change management strategies incorporate elements of both theories to facilitate long-term transformation. Cameron and Green (2019) provide an exhaustive overview of change management theories and practices, detailing how to effectively manage change within organizations. The authors discuss a variety of change management models, tools, and techniques, as well as the associated challenges and opportunities. Addressing topics such as organizational culture, leadership, and stakeholder engagement, Dunphy et al. (2007) examine how organizations can implement change management strategies to promote corporate sustainability. The authors provide guidance and case studies to demonstrate how organizations can accomplish sustainable development through effective change management. Eccles and Serafeim (2013) discuss the concept of the performance frontier, which represents the trade-offs between financial performance and sustainability performance that organizations must make. The authors contend that organizations can extend the performance frontier by pursuing innovations that create value for shareholders and stakeholders while minimizing negative social and environmental impacts. The focus of Lozano's (2015) research on the determinants of corporate sustainability is organizational change and development management. The author proposes a framework that takes internal and external factors, as well as organizational capabilities and resources, into account when determining an organization's approach to sustainable development. The paradox theory developed by Smith and Lewis (2011) can help explain the tensions and contradictions that arise when pursuing sustainable development.

7. Identify the strategies and practices

Here is a list of strategies and practices that can assist organizations in contributing to sustainable development by leveraging change and development management:Ensure that the vision and mission statements of the organization reflect a commitment to sustainability, laying the groundwork for aligning business strategies and operations with sustainable development objectives. Create a strategy that integrates economic, social, and environmental objectives and includes setting clear, measurable goals for enhancing the organization's sustainability performance. Establish a cross-functional committee to supervise the implementation of sustainability initiatives, monitor their progress, and report on their performance. Incorporate sustainability into all business decision-making processes, from product development to supply chain management and beyond. Facilitate the successful implementation of sustainability initiatives by employing change management techniques such as creating a sense of urgency, forming a guiding coalition, and devising a vision and strategy for sustainable change. Encourage employees to adopt sustainability as a fundamental organizational value by providing training, resources, and support for sustainable practices, in addition to recognizing and rewarding sustainability efforts. Engage stakeholders, including suppliers, customers, local communities, and regulators, to identify shared sustainability challenges and opportunities and to develop collaborative solutions. By nurturing a culture of innovation and providing funding for research and development, we can encourage and support the creation of new products, services, and business models that contribute to sustainable development. Assess the organization's sustainability performance regularly using established frameworks and metrics, and use this information to identify areas for

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improvement and drive continuous progress toward sustainable development objectives. Transparently share with stakeholders the organization's sustainability performance via reporting and other communication channels, demonstrating the company's commitment to sustainable development and fostering stakeholder trust.

By implementing these strategies and practices, organizations can leverage change and development management to effectively contribute to sustainable development, thereby creating long-term value for their stakeholders and fostering a more sustainable future.

Reexamine and revise the organization's vision and mission statements to include sustainability objectives. Engage stakeholders in the process of redefining the vision and mission, including employees, customers, and investors. Ensure that all organization members are aware of and comprehend the updated vision and mission. Assess the current sustainability performance of the organization to identify areas for improvement. Establish SMART (specific, measurable, achievable, pertinent, and timely) objectives for each pillar of sustainability (economic, social, and environmental).To guide the implementation of the sustainability strategy, create a road map with milestones and deadlines. Appoint a sustainability officer or leader to supervise the team and coordinate the organization's sustainability initiatives. Include representatives from various organizational departments and levels to guarantee a variety of perspectives and expertise. Provide the sustainability team with the necessary authority and resources to drive change and track progress. Develop criteria and guidelines for integrating sustainability into routine decision-making processes. Educate decision-makers on how to evaluate the implications of their decisions on sustainability. Implement tools and systems that facilitate the organization-wide evaluation and monitoring of sustainability performance. Identify potential organizational barriers and resistance to change and develop strategies to overcome them.

8. Results and Conclusions

Organizational change and development management facilitate sustainable development by aligning strategic objectives, nurturing innovation, engaging employees, collaborating with stakeholders, and promoting continuous learning and adaptation. Businesses can create enduring value for their stakeholders and contribute to a more sustainable future by integrating sustainability principles into their change and development management processes.

In conclusion, organizational change and development management can play a crucial role in advancing sustainable development by creating a sustainability-oriented culture, integrating sustainability into core business processes, building employee capacity, establishing performance measurement systems, managing sustainability projects, fostering learning and knowledge sharing, and promoting resilience and adaptability. By focusing on these essential factors, organizations can achieve long-term economic, social, and environmental sustainability.

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Paris Climate Agreement's Effect on Share Prices

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Abstract

The main purpose of this study is to reveal the possible impact of the entry into force of the Paris Agreement on the stock prices of the companies in the BIST Sustainability Index (XUSRD) with the case study method. The BIST 100 Index was used as a benchmark index, and the daily returns of 66 businesses among 67 companies traded in XUSRD were used to compute Average Abnormal Returns (AAR) and Cumulative Average Abnormal Returns (CAAR). Within the scope of the applied methodology, while determining the event window of -20 days +20 days based on the date of the event, 10.11.2021, 250 was taken into account as the estimation period. The Paris Agreement's implementation has an impact on the stock returns of the firms in XUSRD, it has been found based on the findings gathered. The presence of a predicted trend, however, could not be classified as either positive or negative. These findings led to the conclusion that, under the parameters of the anomaly under consideration, the market is not efficient in semi-strong form.

Key Words: Paris Climate Agreement, Borsa İstanbul, Event Study

1. Introduction

Environmental destructions started happening as a result of the process that began with the Industrial Revolution, with the acceleration of industrialization, the growth in consumption, and the rise in productivity. The rapid consumption of resources in the equation of "limited resources and unlimited demands," which is the foundation of economics, is the part that is ignored in the cycle of more consumption and more production by triggering one another of consumption and production, and as a result, wastes are released to nature. Economic development that causes more environmental harm has a big impact on how our world will develop in the future. The Brundtland Report was the first to make reference to the idea of sustainable development, which arose with the intention of preserving resources and lessening ecological damage.

The United Nations published The Brundtland Report (also known as Our Common Future) in 1987 in honor of former Norwegian Prime Minister Gro Harlem Brundtland's role as Chairman of the World Commission on Environment and Development (WCED). The management of environmental resources, and with it, offered a new era of economic growth, a way to counteract rising poverty, and a way to conserve resources for future generations (WCED, 1987, p.18). In this research, sustainable development is defined as development that satisfies current demands without compromising the ability of future generations to satiate their own needs (WCED, 1987, p.54). The capacity of an ecosystem to adapt to stable states and recover from stresses and shocks is known as sustainability (Scoones, 2007, p.590).

Energy is now regarded as the foundation of manufacturing, technology, and all other necessities for the continuance of human life. The "greenhouse effect" happens when carbon dioxide and derivative gases that mix into the air absorb some of the infrared radiation and prevent it from leaving the atmosphere. These non-renewable energy sources include coal,

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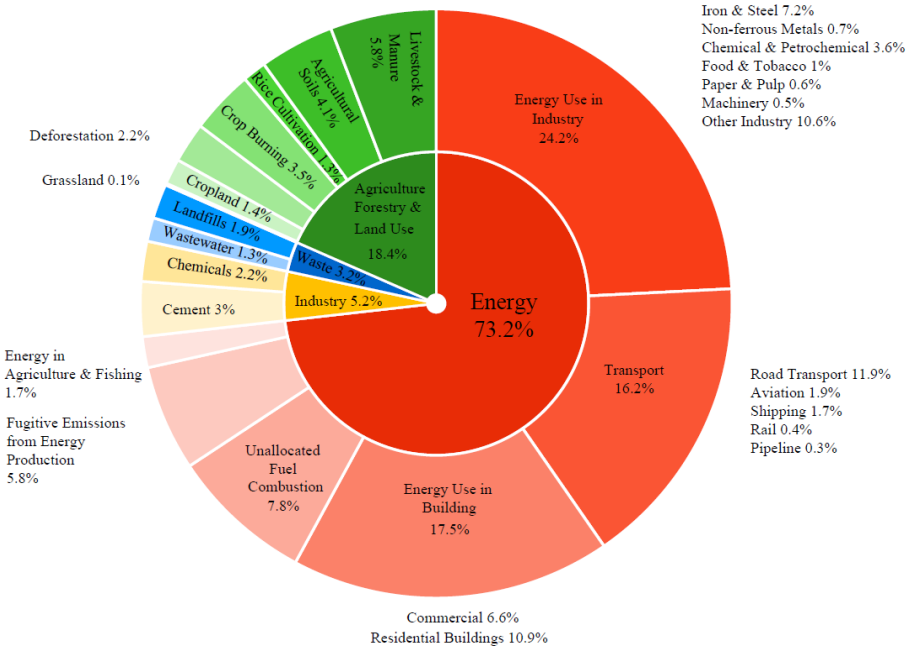
natural gas, and petroleum products, which humans use to meet their energy needs. It is well knowledge that the greenhouse effect causes temperatures to rise.

Figure 1: Global Greenhouse Gas Emissions by Sector in 2016



Kaynak: Our World in Data (2020).[2]

The graph shows the sector-based 2016 greenhouse gas emissions. This states that the energy industry is responsible for 73.2% of the world's greenhouse gas emissions. Agriculture, forestry, and land use come in second with 18.4%, followed by industry with 5.2% and garbage with 3.2%. In 2021, 49.5 gigatons of greenhouse gases were detected globally. The world's thermal equilibrium is disrupted, climate change occurs, glaciers melt, water supplies are harmed, and agricultural areas are damaged as a result of greenhouse gases that are produced with the energy needed for production and demands (zil et al., 2013, p.334). Organizations and institutions have taken action in order to avert this catastrophe. The United Nations Framework Convention on Climate Change, enacted in 1994, is the first environmental pact between governments (Şen et. al.,2019 p.112). Agreement; strives to lessen the effects of greenhouse gases on the environment and lower their atmospheric concentration. The Conference of the Parties (COP) had its inaugural summit in Berlin in 1995 and the Kyoto Protocol was signed at COP 3 in Kyoto in 1997. It was determined that the COP would meet annually beginning in 1994. In accordance with the agreement, nations committed to reducing and limiting their greenhouse gas emissions by 5% from 1990 levels in the first commitment period, which spanned from 2008 to 2012. (United Nations Climate Change, 2022). During COP 18, which was convened in Doha in 2012, it was announced that nations will cut their emissions by

[2] This graph, which uses data from 2016, was selected due to offering the most transparent and in-depth information on sector-by-sector worldwide greenhouse gas emissions. In actuality, the World Bank made reference to this graphic in its publications for 2021. https://www.worldbank.org/en/news/feature/2021/12/16/2021-the-year-in-climate-in-5-numbers

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18% relative to 1990 during the second commitment period, which runs from 2013 to 2020. (Republic of Turkey Ministry of Foreign Affairs, 2022). On December 12, 2015, the COP-21 conference convened in Paris approved the Paris Accord.

The fundamental goal of the Paris Agreement, which serves as the foundation for the climate change regime, is to increase climate change resilience in the years after 2020. Keeping the increase in global temperature below 2°C is the long-term goal (Turkish Ministry of Foreign Affairs, 2022). On April 22, 2016, Turkey signed the Paris Accord alongside 175 other nations' delegates; however, no declaration was made. The Paris Agreement was adopted by Turkey's Grand National Assembly on October 6, 2021; it was published in the Official Gazette on October 7, 2021; and the UN Secretariat was informed of Turkey's acceptance on October 11, 2021. Turkey announced on October 11, 2021 that it would implement the Paris Agreement, the Agreement and its mechanisms without compromising the right to economic and social development. This declaration was made in consideration of the decisions made by the Paris Agreement and the Conference of the Parties to the Convention (United Nations Treaty Collection, 2022). The agreement became law on October 10, 2021, which was 30 days after the Secretariat was notified of the approval. Turkey has raised its reduction goal for 2030 to 41% (about a reduction of 500 million tons of emissions), proclaimed that the peak year for emissions will be 2038 at the latest, and established an objective of net zero emissions by 2053.

The Efficient Markets Hypothesis postulated by Fama (1970) comes to our awareness while we examine the theoretical background on which this research is built. According to the theory of efficient markets, the prices of the securities are considered to mirror all dimensions of the available information simultaneously. Price fluctuations cannot be forecast since they occur randomly and have a random distribution in the market (Bayraktar, 2012, p.38). The market is not efficient, as evidenced by the predictability of stock prices (Mandacı, 2018, p. 85). It is categorized into three categories: weak, semi-strong, and strong efficient markets. Investors cannot create abnormal return by analyzing previous market data since stock prices in a market with low activity reflect all market data, including prior price, volume, and short-term interest rates (Mandacı, 2018, p.88). Security prices completely reflect all information that is readily accessible to the public in semi-strong form (Reilly and Brown, 2011, p.152). Prices in strong-form efficient markets take into account internal information, historical price information, and all publicly released information (Sümer and Aybar, 2016, p.77). -78).

According to the Efficient Markets Hypothesis, investors are rational, fully informed, and motivated to maximize their utility. Behavioral finance is one area where this idea has faced challenged. According to behavioral finance, people might not always make rational decisions or think logically in general (Tufan & Sarıçiçek, 2013, p. 163). Estrada (2001, p. 6) stated that when making investment decisions, investors consider a variety of factors, such as their personal opinions and ideas, and that all information is processed imperfectly, leading to distorted conclusions. Subsequently, understanding financial markets requires disclosing the cognitive and emotional characteristics of people (Aytekin & Aygün, 2016, p.155). Further investigations, however, uncovered instances that defied the notion. It has been discovered through study that stock returns vary from the average at times (Kylar and Akkaya, 2020, p.168). The anomaly is a phenomena that occurs when there is a discrepancy between the results of the theory and atypical behavior (Sümer & Aybar, 2016, p.78). According to the literature, seasonal, firm, and price anomalies can be used to generate abnormal returns (Kylar and Akkaya, 2020, p.168; Mandac, 2018, p.98).

2. Literature Review

Many scholarly studies on companies that conduct their operations with a focus on sustainability are provided in this part of the research.

Using the event study technique, Kuang et al. (2021) examined the dates of compliance with the Paris Agreement, the signing ceremony, its admission into force, and the USA's departure from the agreement for six firms chosen from the S&P Global Clean Energy Index. They concluded that while the Paris Agreement's approval had a positive impact for renewable energy stocks, its admission into force had a negative one. Also, t here was no effect from the signing ceremony or the US decision to leave the Paris Agreement. Keele and DeHart (2011) examined stock price fluctuations before and after the announcement of the collaboration between the US Environmental Protection Agency's (USEPA) Climate Leaders Program and publicly traded corporations in the USA by using event study methodology. They observed that a statistically significant and negative return was found in both of the examination windows, and that a statistically

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insignificant and positive return was attained on the day of the announcement. They were unable to determine if a trend existed, though.

Murguia and Lence (2015) used the event study approach to examine how changes in Newsweek magazine's Global 100 ranking affected the returns of companies and a portfolio with equal weights. They determined that while there had been changes in the relative prices of the stocks, there had been no changes in the portfolio's overall worth. In their investigation on how being a part of the BIST Sustainability Index affects stock returns, Parlakkaya et al. (2019) focused at 43 firms that were part of the BIST Sustainability Index in 2014, 2015, and 2016. They revealed that being an index member has no impact on stock returns in their analysis using the event study methodology.

Duranay and Göçmen Yağcılar (2020) investigated the reactions of investors to be included in the BIST Sustainability Index or not. In the research, which they divided into two groups as those who entered the index in 2018 and 2019 and those who did not, the event study method was used. According to the outcomes, it was seen that being included in the index did not necessarily cause a positive or negative reaction, but not being included in the index elicited a negative response. Becchetti et al. (2012) analyzed the period 1990-2004 for 263 firms in the Domini 400 Social Index. In the research, although a positive reaction was not observed in the entries to the index, a negative abnormal response was observed in the exits from the index.

Based on the stock return rates and PD/DD ratios of the companies included in the BIST Sustainability Index, Çıtak and Ersoy (2016) conducted a study of those firms. In the research, two alternative analytical techniques were applied. In the first, the fifteen companies that were both included and excluded from the BIST Sustainability Index during the January–March 2014 period were split into two groups, and the return rates and PD/DD ratios of the two groups were analyzed using the proper parametric and non-parametric statistical average tests. No distinction between the return rates of the firms that are included in the index and those that are not could be made using this technique. The PD/BV ratios of the index-businesses, however, were greater than those of the non-index companies. In the second, a event study analysis of the BIST Sustainability Index firms was conducted. In the event window that covered 10 days, they were unable to identify a significant value, according to the event study's findings. The average cumulative abnormal return rate, however, was statistically significant and positive for the period 0 + 3.

The Toronto Stock Exchange S&P/TSX Combined Index for 2007 included 146 businesses that issued sustainability reports, which Berthelot et al. (2012) examined at. Investors take sustainability reports into consideration when evaluating reporting firms, according to research that used the weighted least squares approach to assess the variables of market value, book value, and profits before exceptional items.

Using the event study technique, Consoladi et al. (2009) examined companies included in the Dow Jones Sustainability Stoxx Index from 2002 to 2006. Their findings showed that firms included in the index saw positive excess returns, whereas those excluded experienced negative abnormal return. Adaiem and Dayı (2022) showed that financial risk ratio, capital structure, financing costs, and debt repayment ability affected alternative energy companies' performance.

Altinay et al. (2017) employed statistical techniques to compare the performance of banks before and after they entered the index during the 2014–2016 time period. They found that there was no change that was statistically significant, according to their findings.

Sak and Dalgar (2020) applied panel data analysis and the Driscoll-Kraay resistive estimator to assess the data of 35 non-bank corporations that were included in the BIST Corporate Sustainability Index between 2013 and 2016. Corporate sustainability strategies have a positive and considerable impact on financial performance, according to the researchers looked into the implications on financial performance. In the research comparing the profitability of the firms included in the BIST 100 Index with and without the BIST Sustainability Index employing 2016 data, Önder (2017) implemented the multiple linear regression model. The analysis's results indicated that being a part of the index had no impact on a company's ability to generate profit. In their investigation into whether being included in the index will result in abnormal returns, Yetgin and Ersoy (2021) had used event study approach to assess the firms in the BIST Corporate Governance Index for the period of 2007–2018. They obtained significant results for average abnormal returns and cumulative average abnormal returns, according to their findings. Also, in a event study, Sakarya (2011) found a positive correlation between

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the announcement of the rating grade and the stock returns in the companies that were part of the BIST Corporate Governance Index in 2009.

In a different research, Eyübolu (2011) used a paired t-test to examine 24 firms from the time they were added to the BIST Corporate Governance Index until December 2010. The result demonstrates that there was no discernible change in monthly TL-based returns before and after joining the index. Temiz and Acar (2018) used the event study approach to investigate the effects of the firms included in the BIST Sustainability Index between the years of 2014 and 2017 on the stock returns of the index-companies. They observed that on the day of the event, the company's stocks experienced a negative abnormal return. Moreover, the STOXX Index from the years 2005 to 2010 and the RESPECT Index from the years 2009 to 2012 were both examined by conducting the event study approach by Daszynska-Zygadlo et al. (2014). They reported that being a part of the STOXX Index had adverse consequences in their research, which evaluated at how investors reacted to corporate social responsibility. In their research examining the effects of the inclusion of German companies in the Dow Jones STOXX Sustainability Index and the Dow Jones Sustainability World Index on stock performance in the 1999-2002 period, Oberndorfer et al. (2013) used the event study method, the Fama and French three-factor model, and the t-GARCH model. Their findings led them to the conclusion that being a part of the sustainability index had negative effect.

Using a case study approach, Van Stekelenburg at al. (2015) investigated at the connection between corporate sustainability performance and financial success for the years 2009 to 2013. In the research, they examined a sample of European equities regarded as an industry group and a sample of European stocks included or removed from the Dow Jones Sustainability Europe Index. Their results suggest that the inclusion or exclusion announcement had no impact on the stock return for the first analysis group. On the day of the event, they detected a substantial and temporary boost in yield for the included company and a significant and temporary reduction for the excluded firm. They came to the conclusion that market participants reward companies with strong corporate sustainability performance for the second analysis group. Wang and Chen (2017) focused at the founder companies of the Dow Jones Sustainability Index (DJSI) for the years 1991 to 2012 in an effort to gauge how the US capital markets view corporate social responsibility. Also, the study contrasts how much investors in the USA and Taiwan recognize corporate social responsibility (2007-2012 period was examined for Taiwan firms). The investors came to the conclusion that while Taiwanese investors are aware of corporate social responsibility, they do not know enough about the American firms included in DJSI. Another finding indicates that practices related to corporate social responsibility boost reputation while also improving financial performance.

In his research, Kılıç (2011) employed the CAPM model to evaluate if the stock prices of the firms included in the BIST Corporate Governance Index changed before and after they made the public aware that they had obtained the grade necessary to be included in the index. Significant findings were achieved for the index firms as a consequence of the research made for 28 companies. In their research, Büyükşalvarcı and Abdioğlu (2012) examined the impact of firms traded on Borsa Istanbul on stock returns in five-year periods before and after 2005, when corporate governance procedures were required. They accomplished this by using the paired T-test and Wilcoxon Sign Test methodologies. Their observations indicate that the impact on stock return varies depending on the sector. Also, Yenice and Dölen (2013) investigated at how the corporate governance rating influenced the stock market value of firms included in the BIST Corporate Governance Index between 2007 and 2011. They employed the Wilcoxon Signed Ordinal Numbers Test and dependent sample T-test. The observations have led them to the conclusion that there was a considerable and favorable correlation between the corporate governance rating and the stock market values following the announcement of the ratings.

In their analysis for the years 2007–2010, Marti et al. (2015) used the ordinary least squares approach to assess the STOXX Europe 600 and STOXX Europe Sustainability indexes. The analysis' findings contribute them to the view that the firms represented in the sustainability index had higher financial performance. Using the event study approach, Nakai et al. (2013) analyzed the consequences of being included or removed in the Japanese Morningstar Social Responsibility Investing Index for the years 2003–2010. They revealed that although inclusion in the index had a positive impact, exclusion from the index had no impact. In addition, Reddy and Gordon (2010) used the event study method to examine the effects of sustainability reports on financial performance. They focused on the time periods 2003–2009 for companies traded on the New Zealand Stock Exchange and 2002–2009 for those traded on the Australian Stock Exchange. Their research indicates that trading in the sustainability index offers profitable abnormal returns.

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3. Dataset and Methodology

This study's objective is to ascertain if the BIST Sustainability Index (XUSRD) firms affected their stock prices on 10.11.2021, the day the Paris Agreement came into force. The data of 67 index firms as well as the data of the BIST 100 Index, which was used in the analysis as an benchmark index, were evaluated for this purpose by following the Event Study. A firm in XUSRD was disqualified because its findings did not follow the approach. The study took into consideration the estimation period, 250 days while selecting the event window of -20 days + 20 days. Event studies show the effects of a specific event on a company's worth (Serra, 2004). Method; It is presumpted that financial markets are capable of interpreting the impact of recent developments or information on the anticipated future returns of firms (Dasgupta, Laplante, & Mamingi, 1998, p.12). Defining the event and event window, choosing the data set to be analyzed, estimating the expected return, calculating the abnormal return, and determining if the abnormal return is statistically different from zero are all steps in the event study process (Dasgupta et al., 1998, p.12).

The stages of the event study methodology are as follows:

- The returns of stock and benchmark indices are calculated. By taking the natural logarithms, it is approximated to the normal distribution (Konak and Türkoğlu, 2022, p.822):

$$R_t = l_n\left(\frac{P_t}{P_{t-1}}\right) x\ 100 \qquad (1)$$

R_t = logarithm of stock return in period t,
P_t = stock price in period t,
P_{t-1}= is expressed as the stock price in the period t-1

- The expected returns of the companies included in the data set are calculated using the market model (Koç, Çelik, & Çelikkol, 2019, p.849).

$$E_{it} = \alpha_i + \beta_i x R_{mt} + \varepsilon_t \qquad (2)$$

E_{it} = expected return of each firm in period t,
α_i = average market unexplained return for stock i,
β_i = sensitivity of stock i to market movements,
R_{mt} = daily return of the market index,
ε_t= is expressed as a zero-mean error term.

- Abnormal return is calculated (Sakarya, 2011, p.154):

$$AR_{it} = R_{it} - E_{(r)it} \qquad (3)$$

R_{it} = return of the stock on day t,
$E_{(r)it}$= is expressed as the expected return of the stock on day t.

- After calculating the abnormal return (AR), the average abnormal return (AAR) and the cumulative average abnormal return (CAAR) can be calculated. The AAR value is found by dividing the obtained AR by the number of companies, while the calculated AAR values can be found by summing them with each other respectively (Sakarya, 2011, p.155):

$$AAR_{it} = \sum_{i=1}^{N}\left(\frac{1}{N}\right) AR_{it} \qquad (4)$$

$$CAAR_{it} = \sum_{i=1}^{N} AAR_{it} \qquad (5)$$

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It may be inferred that the aforementioned event has an impact on stock returns and that the event represents investors' reactions if the findings obtained statistically differ from zero (Tuominen, 2005:50). If it is equal to or almost equal to zero, the market is efficient in a semi-strong form and the previously mentioned occurrence has no impact on the stocks (Kaderli, 2007, p.148).

The following hypotheses were developed within the parameters of the study to determine how the Paris Agreement's implementation will affect XUSRD:

H_0: In the 20-day period with the entry into force of the Paris Agreement, the average abnormal return level of the companies included in the index is zero.

H_1: In the 20-day period with the entry into force of the Paris Agreement, the average abnormal return level of the companies included in the index is different from zero.

According to these hypotheses, the H0 hypothesis will be disproved if the results of the analyses and the implementation of the Paris Agreement are proven to have a statistically significant impact on XUSRD.

4. Analysis and Evaluation

66 firms included in the index were assessed using the case study approach in order to gauge the impact of the Paris Agreement, which went into effect on 10.11.2021, on the returns of equities in the BIST Sustainability Index (XUSRD). The BIST 100 Index was used as a benchmark index together with data obtained from Datastream that belonged to companies. The Average Abnormal Return and Cumulative Average Abnormal Return formulas were used to evaluate the research's findings.

Table 1: AAR Results for Selected Shares at the Time Paris Agreement Entered into Force

Days	AAR	Std. Dev.	P-Value	Neg. AARs (%)
-20	0,00032	0,01570	0,0159**	47,0%
-19	-0,00148	0,01568	0,0749*	62,1%
-18	0,00060	0,01361	0,0352**	56,1%
-17	0,00152	0,01391	0,0867*	47,0%
-16	-0,00242	0,01501	0,1278	59,1%
-15	-0,00173	0,01917	0,0715*	54,5%
-14	-0,00132	0,01346	0,0779*	56,1%
-13	-0,00185	0,01674	0,0876*	68,2%
-12	-0,00138	0,01461	0,0748*	51,5%
-11	-0,00242	0,01514	0,1264	54,5%
-10	-0,00170	0,01399	0,0963*	56,1%
-9	0,00005	0,00155	0,0241**	47,0%
-8	-0,00188	0,01902	0,0784*	59,1%
-7	-0,00095	0,01659	0,0455**	47,0%
-6	-0,00009	0,02448	0,0029***	51,5%
-5	0,00167	0,02190	0,0604*	47,0%
-4	-0,00140	0,01689	0,0659*	56,1%
-3	-0,00322	0,01595	0,1593	60,6%
-2	-0,00298	0,01596	0,1476	59,1%
-1	0,00177	0,02163	0,0648*	56,1%

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0	*0,00233*	*0,02002*	*0,0923**	*51,5%*
1	0,00189	0,01609	0,0932*	53,0%
2	-0,00019	0,03109	0,0048***	56,1%
3	-0,00303	0,02645	0,0907*	59,1%
4	-0,00070	0,01567	0,0352**	54,5%
5	-0,00469	0,02187	0,1691	65,2%
6	0,00749	0,02671	0,2198	39,4%
7	0,00553	0,01938	0,2236	47,0%
8	-0,00496	0,03385	0,1160	62,1%
9	0,00234	0,02713	0,0684*	45,5%
10	-0,00091	0,02267	0,0319**	59,1%
11	0,00018	0,03015	0,0047***	48,5%
12	-0,00288	0,02242	0,1017	66,7%
13	0,00234	0,02683	0,0691*	47,0%
14	-0,00025	0,02130	0,0092***	53,0%
15	-0,00237	0,01705	0,1099	65,2%
16	0,00338	0,02065	0,1294	51,5%
17	0,00143	0,02501	0,0454**	45,5%
18	-0,00742	0,02467	0,2353	66,7%
19	-0,00151	0,02124	0,0563*	57,6%
20	-0,00087	0,02040	0,0338**	62,1%

*,** and *** denote significance at the 10%, 5% and 1% levels, respectively.

AAR results regarding the effects on firms in XUSRD at the time the Paris Agreement entered into force are shown in Table 1. In the 41-day event window; positive AAR was observed for 15 days and negative AAR for 26 days. Excluding positive AAR on the day of the event, positive AAR was observed on day 6 before the event day, while positive AAR was figured out on day 8 after the event day. Also, within this event window, 29 days gave statistically significant results. Excluding the event day, 16 of the statistically significant results were found before the event, while 12 were determined to occur in the days after the event. While the event day was significant at the 10% level, days -6, 2, 11 and 14 were significant at the 1% level within the event window, and negative AAR was observed on all days except the 11th day. According to the results obtained, it can be claimed that the market is not efficient in semi-strong form within the framework of this anomaly. On the other hand, the existence of a predictable trend could not be determined as positive or negative.

Table 2: CAAR Results for Selected Shares at the Time Paris Agreement Entered into Force

Periods	**CAAR**	**Std. Drv.**	**P-Values**	**Neg. CAARs (%)**
[-20,20]	-0,0218	0,1321	0,1303	56,1%
[-15,15]	-0,0153	0,1140	0,1064	54,5%
[-10,10]	-0,0036	0,0903	0,032**	53,0%
[-5,5]	-0,0085	0,0717	0,0945*	57,6%
[-1,1]	0,0060	0,0438	0,1085	51,5%
[-20,0]	-0,0189	0,0871	0,1710	60,6%
[-15,0]	-0,0151	0,0808	0,1476	53,0%
[-10,0]	-0,0064	0,0714	0,0712*	47,0%
[-5,0]	-0,0018	0,0522	0,0279**	54,5%
[0,2]	0,0040	0,0353	0,0906*	51,5%
[0,5]	-0,0044	0,0426	0,0815*	54,5%
[0,10]	0,0051	0,0768	0,0527*	45,5%
[0,15]	0,0021	0,1053	0,016**	45,5%
[0,20]	-0,0029	0,1082	0,021**	50,0%

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*,** and *** denote significance at the 10%, 5% and 1% levels, respectively.

The CAAR results regarding the effects on companies in XUSRD at the time the Paris Agreement entered into force are demostrated in Table 2. 14 different event windows have been determined on the selected shares. While positive CAAR was observed in 4 of the event windows, negative CAAR was observed in 10 event windows. 9 of these event windows are statistically significant. While the [-5.0] event window covering the event day is significant at the 5% level, the [0.2] event window is significant at the 10% level. Profit realization between these two windows shows a transition from positive to negative. No statistically significant finding was found at the 1% level, but significant results were obtained at the 5% level within 4 different event windows.

5. Conclusion

This study uses the event study approach to examine if the stock prices of the firms in the BIST Sustainability Index (XUSRD) shift on 10.11.2021, the day the Paris Agreement goes into effect. The primary research question of the study is the likelihood of an abnormal return by investors within the given time frame. The Efficient Markets Hypothesis states that because the markets represent all available information, price changes cannot be forecast. Contrarily, behavioral finance shows that when making investment decisions, investors do not prioritize risk and return but rather consider their own beliefs and opinions. Numerous studies in the literature have demonstrated that anomalies and abnormal returns, which are a focus of behavioral finance, are possible. For this reason, it is possible to provide abnormal returns with any event experienced in the index or company-specific.

In the light of this information, a data set was created with the daily returns of 66 companies in XUSRD to test the existence of abnormal returns. With the data set created, 20 days before and 20 days after the evet period from 10.11.2021 in the -20 -250 period were determined as the estimation period. According to the findings, it was determined that the average abnormal return (AAR) took positive and negative values within the 41-day event window and gave statistically significant results in 29 days. While the event day was 10% significant, the -6th, 2nd, 11th and 14th days within the event window were significant at the 1% level. Positive and negative values were determined on 14 separate testing periods for the cumulative average return (CAAR). At the 1% level, statistically significant findings for CAAR could not be found, however they were found at the 5% level. When compared to the [-5.0] review window, which covered the event day, the [0.2] assessment window produced statistically significant outcomes at the 10% level.

It has been found that the market is not efficient in semi-strong form within the context of this anomaly based on the observation of statistically significant data. The H0 hypothesis is disproved by the data, although a predicted trend could not be identified as either positive or negative. This makes it difficult to argue that the abnormal return in the market can be explained in terms of a trend. Moreover, according to the findings obtained in the study, the results show similarities with the results of Keele and DeHart (2011); Murguia and Lence (2015) and Kuang et al. (2021). As a final point, it should be noted that future study may use more data sets or different analytic methods in order to broaden the scope of this research.

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