

CURRENT STUDIES IN SOCIAL SCIENCE

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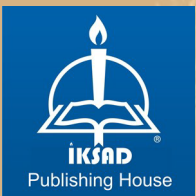
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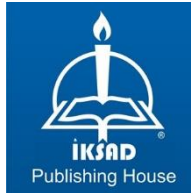
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PREFACE

Social sciences and social scientists are very important for the development of society and country. Every event of interest to the society is in the subject of social sciences, so it is of great importance to work together in all kinds of studies and the joint efforts of all disciplines for the society. Social sciences include International Relations, Geography, History, Law, Philosophy, Educational Sciences, Psychology, Theology, Sociology, Linguistics, Archeology, Political Science, Musicology, Business, Tourism, Linguistics. This book aims to deal with current problems in social sciences. Considering the dimensions of the book, studies on these prominent topics in social sciences were included.

In this book, which diffret studies in the field of Social Sciences, five studies prepared by seven valuable researchers in the fields of Social Sciences, education, management, financial, business, and tourism are included. This research, which will be read with interest by anyone interested in the field of Social Sciences, once again reveals the structure of social and humanities open to continuous development.

I would like to thank all my professors who have universalized, shared and reproduced the information by writing a chapter for the book on behalf of researchers who will benefit from this book. In addition, endless thanks to all those who contributed to the realization of this book and similar books and to İKSAD Publishing, which brings writers on a platform and turns these valuable works into a book.

Assoc. Prof. Dr. Aliye AKIN

CHAPTER 1
INTELLIGENT TUTORING SYSTEMS in MUSIC
EDUCATION*

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* A part of this study was presented as an oral presentation at the 2nd International Conference on Future of Teaching and Education in Munich, Germany on December 06-08, 2019 and published as online abstract.

INTRODUCTION

With the development of science and technology, computers have been taken their place among indispensable elements of our lives. Computer technology, which is actively used in all fields in the world, is widely used in education under the name of the computer-based teaching model. The content in the computer-based model is presented within the framework of a specific program. In this context, the system asks questions to the students where necessary, gives feedback according to the answers given and the program resumes. However, insufficient feedbacks and lack of individualized instruction due to the uncertainty of the target audience are among the most important shortcomings of this system (Erkoç, Gül & Karadeniz Bayrak, 2007). Today, while educational needs continue to increase, different ways are sought to find solutions to these requirements. As the problem-solving skills of the students improved, the individual learning approach is adopted more, and this case revealed the need for developing software that has the features of human intelligence called artificial intelligence.

Artificial intelligence is defined by Erkoç et al. (2007:624) as “*a multidimensional discipline trying to develop computer systems that can make the process which is alike human intelligence by understanding the cognitive and ideational structure of humans*”. Artificial intelligence in ‘education’ can be defined as; “*the use of AI methodologies and AI ways of thinking applied to discover insights and methods for use in education*” (Naughton as cited in Holand,

2000:2). With the development of artificial intelligence technology, training programs shape according to the students' personal features, development process, and their learning tendency, and today, computer programs used in almost every field of education are prepared under the name of "Intelligent Tutoring Systems (ITSs)".

In this study, the structure of ITS was investigated in general terms and ITS applications used in music education were determined. Accordingly, this research aims to give information about intelligent tutoring systems using artificial intelligence and to reveal how these systems are used in the fields of music education. This research is a descriptive study based on a screening model and books, articles, proceedings, dissertations, and websites related to the subject were examined by using the literature review.

1. INTELLIGENT TUTORING SYSTEMS (ITSs)

In the classroom model where face-to-face education is applied, multiple teaching methods can be used in a combination. However, the increase in the number of students in the classroom causes some teaching methods not to be applied. Considering that education according to the student level is important, it is clear that one-to-one teaching methods for individualized learning are advantageous in comparison with traditional methods. However, the decrease in individual education opportunities due to the increase in the number of students has brought technology-based education methods to the

forefront, and computer programs that use intelligent tutoring systems have started to become preferable at present.

Intelligent Tutoring Systems are pedagogical computer programs created by the use of artificial intelligence techniques, computer and instructional technologies, and they know whom to teach, what to teach and how to teach (Akpınar, 1999; Doğan & Kubat, 2008; Nwana, 1990).

According to Erdemir & Kandil Ingeç (2014: 227); ITS aims to imitate teachers by adapting the system to the strengths, weaknesses and other features of the students. As the student uses the system, the noticed deficiencies can be remedy by using different teaching strategies, and it provides convenience for teachers and students. Instructing the courses by adaptable web-based ITS provides advantages such as place and time, individual perception, creating rich content, and reaching a large number of students. These advantages can eliminate the challenges arising in the classroom and increase overall success.

Intelligent Tutoring System is a system that can adapt to the individual needs of the students and aims to reach the behaviors of the teacher. The status and learning process of the same age students can be different from each other. While a number of students learn fast, others may learn slower or may have difficulties accessing the learning tools. ITS presents flexible learning materials and has the ability to provide students with individualized instruction and

feedback (Erdemir & Kandil Ingeç, 2014; Mark & Greer; Shute et al., as cited in Virvou & Moundridou, 2000). One of the most important features of intelligent tutoring systems is to apply an evaluation system to prepare students for the next lesson, unlike traditional training based on computer-aided systems. To assess the students with only “true” or “false” options as in the classical methods can restrict their development. On the other hand, ITS has an evaluation system equipped with multimedia elements such as audio and video that motivates the students by giving positive feedback, and this situation can affect the students’ success positively (Beck as cited in Bahçeci & Gürol, 2010:123). According to a research conducted at Carnegie-Mellon University, compared to traditional training, intelligent tutoring systems allowed an improvement of quality of learning 43% and a reduction of length of learning 30% (Frasson & Aimeur, 1998:153).

1.1. The Structure of Intelligent Tutoring Systems

Most of the researchers classified the intelligent tutoring systems as four components which are operated in cooperation and they are explained below:

1.1.1. Expert Knowledge Module:

The expert knowledge module is a database that contains the main and educational knowledge related to a specific field to be taught (Doğan & Kubat, 2008). Two functions are important in this module; the first is to generate questions, answers, and explanations. Thus, the notions

and the skills that are required to be gained to the student are created. The second is to evaluate the student's performance. It generates solution paths to problems so that the answers of the student can be evaluated. So the system can identify where the student has difficulties by comparing him/her answers (El-Sheikh, 2002; Fischetti & Gisolfi, 1990).

1.1.2. Student Knowledge Module

The student knowledge module, which is the second module of ITS, manages the student's understanding of the domain. It stores data about student's level of knowledge, errors and misconceptions, and the educational behaviors related to his /her learning activity. This module can simulate the student's behavior by recognizing the peculiar features of the user (Fischetti & Gisolfi, 1990).

The student's information is kept in two different ways as long-term and short-term. The long-term student module contains information that does not change rapidly which is valid for a long period. The level of knowledge and learning method can be shown as an example. On the contrary, the short-term student module contains the information which is valid only for one session such as the educational behaviors followed constantly (Kaya & Korkmaz, 2007:175; Mayo, 2001:3). Thus, the features of the students are identified by intelligent tutoring systems through this module.

1.1.3. Tutoring Module

Tutoring module, which is also called pedagogical module, has a structure that decides how to continue the education and which teaching strategies to be used with the help of the expert knowledge and the student knowledge modules. It designs and regulates instructional interactions with the learner. It is closely linked to the student knowledge module using information about the learner, and its own tutorial goal structure decides which lessons will be arranged in an order, which instructional activities will be presented. Moreover, this module organizes new material to be taught, different practice tasks, and gives support and advice. As an example, if the learner is insufficient about the study and has a low score, the tutor presents more examples. If the score is high, the tutor can ask the learner to solve more questions or move on to the next topic (El-Sheikh, 2002:83; Mandl & Lesgold, 1988:vii; Mctaggart as cited in Doğan & Kubat, 2008:8; Padayachee as cited in Nacakçı & Kurtuldu, 2010:152).

1.1.4. User Interface Module

It is the module that provides communication and interaction between the intelligent tutoring system and the student and it controls the dialogues and screen layouts. The items that constitute the system are represented by visual objects. The important thing is how the material should be presented to the student in the most effective way. Since it is the module where ITS interacts with the student, it should provide

ease of use for the learner, and should have simplifying and motivating features as much as possible (El-Sheikh, 2002:18; Doğan & Kubat, 2008:7; Kaya & Korkmaz, 2007:176).

2. ITS BASED MUSIC EDUCATION PROGRAMS

Music education is a special field based on theory and practice which has the dimensions of ear training, instrument training, and voice training, that needs to be studied meticulously. With the development of technology, computer-aided design is also used in music education and provides self-study opportunities for students. According to Nacakçı & Kurtuldu (2011); the music education fields used in music technology can be listed as; ear training, music theory, musical analysis, harmonization, instrument training and accompaniment. In this way, students have advantages such as increasing the effectiveness of self-study, organizing their learning experience independently according to their own level, making self-assessment and developing the imagination and creativity with the opportunities offered by the software (p. 115-117). However, a number of shortcomings due to the inability of computer-aided instruction to individualize education caused the development of programs using artificial intelligence technology under the name of intelligent tutoring systems in recent years and became commonly used in the field of music education.

Intelligent Tutoring Systems are designed to train the students according to their level of readiness. Therefore, these systems help users to be able to practice the exercises on their own. The music programs using ITS have been developed to enable the students to practice courses individually related to ear training (intervals and chords, musical dictation, etc.) which is based on music theory. Moreover, different programs related to ITS are also used in other domains of music education.

According to O'Shea & Self (1983) and Hofstetter (1981), the first use of computers in teaching music and, most other subjects, was usually associated with the theory of learning behaviorism. A representative example of this kind of system in music was the GUIDO ear-training system which is based on ITS (as cited in Holand, 2000:3). In 1974, a package of ear training programs called GUIDO (Graded Units for Interactive Dictation Operations) including intervals, melodies, chords, harmonies, and rhythms, developed at the University of Delaware in Newark, USA (Hofstetter, 1981). The *Guido system* offered instructions in ear training and theory. Each *Guido* lesson was divided into units of instruction that are graded as to their levels of difficulty. The programs were highly interactive, with the students participating in a constant dialogue. Each unit in *Guido* included a set of drill-and-practice and diagnostic exercises. While students took several kinds of musical dictation in the ear training lessons, on the other hand, they developed speed and accuracy in constructing, identifying, and working with musical materials formed from various

combinations of pitch and rhythmical notation in theory lessons (Arenson & Hofstetter, 1983:46).

Another earliest software based on ITS was for harmonization named *Vivace*. Holland (2000:4) defined the software as;

A rule-based expert system for the task of four-part chorale writing, created by Thomas (1985). Although not in itself a full ITS, it formed the basis for one. Vivace takes as input an eighteenth-century choral melody and writes a bass line and two inner voices that fit the melody. The system employs rules and guidelines for harmonization, drawn from textbooks, abstracted from the practice of past composers.

Under the guidance of the previous researches, the studies related to computer-based music education programs using ITS continue by adapting today's technology. These programs which are mostly developed in the field of ear training, music theory and performance, are introduced below.

2.1. Ear Master: Computer programs that are prepared to increase musical hearing capacity include the topics of intervals, chords, scales, rhythm, and dictation. Ear training courses in these topics are given through musical exercises that get harder according to the student's level by the use of ear training programs, and the interaction between the computer and the user is established via keyboard, headset, and microphone (Levendoğlu, 2004).

Ear Master is an ear training program that the students can practice the exercises individually. The program was first developed in 1996 with limited features². Today, it is used in the world's leading music schools such as the University of Westminster, Berklee College of Music and Université de Paris Gustave Eiffel, with more comprehensive features and updated applications³. According to the official website of Ear Master⁴;

- The program contains over 2500 music theory exercises for all levels covering ear training, sight-singing practice, rhythm training, and jazz harmony. Ear Master exercises include intervals, chords, chord inventions, harmonic progressions and cadences, scales and modes, rhythms and melodies in the *Standard* and *Jazz* training mode as indicated in Figure 1. Additionally, in the *Customized Exercise* training mode, the students can practice with specific intervals, chords or scales in specific keys as G-, F- or C-clef and train sight-singing in specific scales. The program configures individual training sessions with hundreds of available options and combinations. When the time limit is needed for preparing exams, the program also serves intense training setups for the users.

² <https://www.earmaster.com/> (Date accessed on 15.11.2019)

³ E-mail message from Quentin Nicolett to the author, April 29, 2020

⁴ <https://www.earmaster.com/products/ear-training-sight-singing/earmaster-software.html> (Date accessed on 15.11.2019)

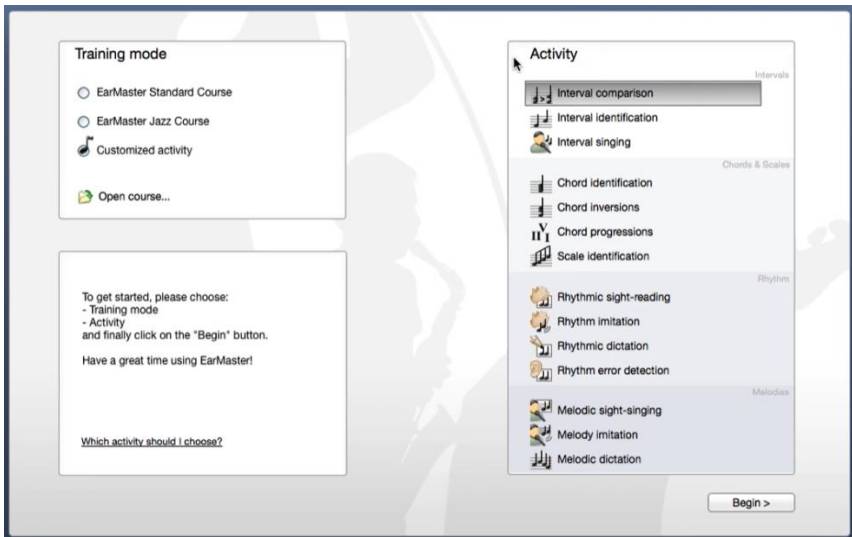


Figure 1: The Modes of Ear Master. © EarMaster ApS 1996 - 2020. Used with permission.

Source: <https://www.earmaster.com/> (Date Accessed on 15.11.2019)

- Most of the exercises can be used with a microphone to sing or clap users' answers in real-time. Users can complete their rhythmic sight-reading and rhythm clap-back exercises by clapping their hands in front of a microphone. The software, thanks to its audio detection algorithms, analyzes the recorded claps and gives detailed feedback to the user on his performance. A curve or marks is drawn on the notes as the user sings or claps them, and Ear Master tells which ones were on pitch, on time, slightly off, or wrong (Figure 2 and Figure 3).

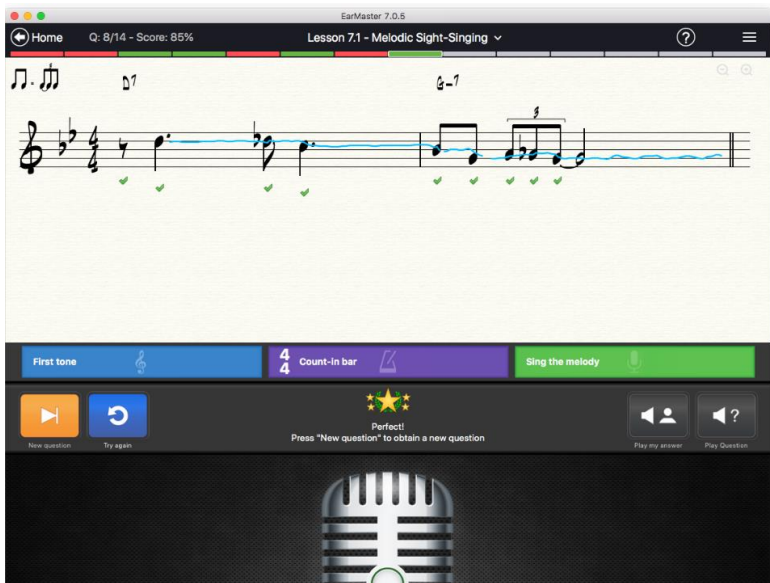


Figure 2: A screenshot of Melodic Sight-Singing. © EarMaster ApS 1996 - 2020. Used with permission.
Source: <https://www.earmaster.com/> (Date Accessed on 15.11.2019)

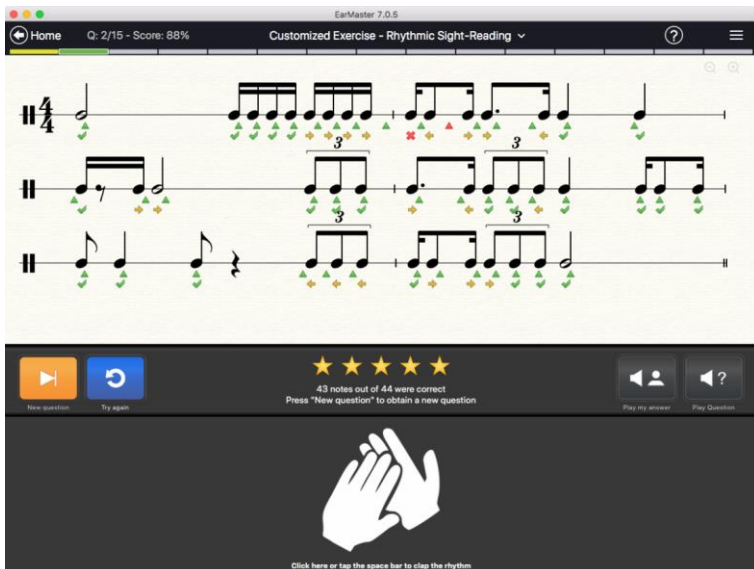


Figure 3: A screenshot of Rhythm Clapback. © EarMaster ApS 1996 - 2020. Used with permission.
Source: <https://www.earmaster.com/> (Date Accessed on 15.11.2019)

- Another unique feature of Ear Master is “Artificial Intelligence”. The software analyzes the users’ performance and adapts the content of the exercises according to the needs as he or she completes them. In the case of the user does the exercises well, the lesson ends. However, if the user has difficulties, the program will be extended with additional questions to make sure that he/she fully understands the current topic.

2.2. Tonica Fugata: Tonica Fugata is a software that helps to harmonize the melody according to the rules of harmonic analyses for soprano, alto, tenor or bass. In addition to this feature, the software can convert a written melody into a fugue or canon form (Kürün, 2017:62).

According to the official website⁵, Tonica uses sophisticated neural network techniques and artificial intelligence to ‘learn’ styles of the composers and can recreate original harmonies in that style. It has a number of different features to help composition as harmonizing melodies into three and four parts, creating complete canons from melodies, creating fugues from any length of melodic theme, and analyzing the users’ harmonies with the choice of presentation either as functional harmonics (T - D), interval theory (I-V) as seen in Figure 4 and 5 or Jazz harmonics according to Berklee standard (Cmaj7 - Gsus).

⁵ <https://capellasoftware.com/tonica-overview/> (Date accessed on 15.11.2019) and <https://www.capella-software.com/us/index.cfm/products/tonica-fugata/feature-list/> (Date accessed on 30.04.2020)

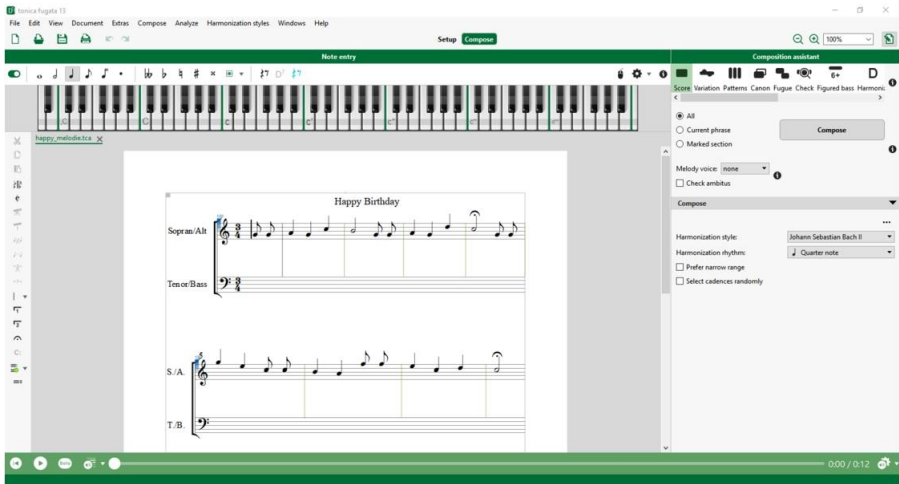


Figure 4: A Screenshot of Tonica Fugata with an Initial Melody. © capella-software AG (English) 2020. Used with permission.

Source: <https://www.capella-software.com/us/index.cfm/products/tonica-fugata/screenshots/> (Date Accessed on 30.04.2020)

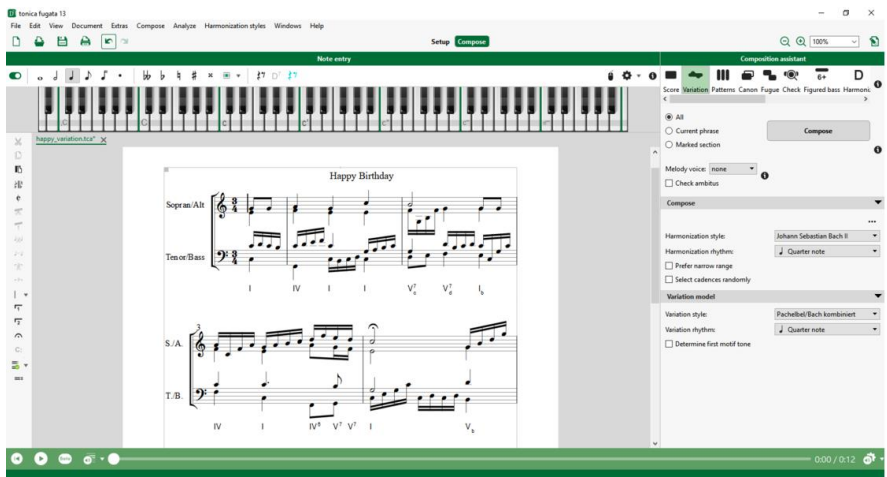


Figure 5: A Screenshot of the Melody Harmonized by Tonica Fugata with Interval Theory (I-V). © capella-software AG (English) 2020. Used with permission.

Source: <https://www.capella-software.com/us/index.cfm/products/tonica-fugata/screenshots/> (Date Accessed on 30.04.2020)

2.3. Capella Melody Trainer: It is a personal training program for performers developed by a German company, Capella Software AG. It is an intelligent software suitable for singing and instrument performers. The most important feature of the program is to be able to record the performance via a microphone and to provide feedback to correct the mistakes as intonation, pitch, etc., by comparing the performer's recording with the original score found in its digital library. Apart from the preloaded works, the users can scan their own scores and add them to the library. Thus, an unlimited archive can be created⁶.

The software compares the user's recording with the original notes, displays overtones in real-time, and gives graphical feedback directly in different colors. When the notes turn red in the user's performance, he or she has to take care of the intonation (Figure 6). In sound magnifier mode (mouse mode) the user is able to analyze inaccuracies in more detail. The magnifier helps to see where the problem is, whether the pitch is too high or too low (Figure 7). In the light of the analysis, the users can correct their mistake(s) and improve their performance. With Capella melody trainer it is possible to listen to certain passages that are more difficult, and practice them over and over with a loop function, even changing the speed, and learn to sing or play in tune (Capella Melody Trainer, 2016).

⁶ <https://www.capella-software.com/us/index.cfm/products/capella-melody-trainer>
(Date accessed on 16.11.2019)



Figure 6: A Screenshot of Pitch Pointer Instrument. © capella-software AG (English) 2020. Used with permission.

Source: <https://www.capella-software.com/us/index.cfm/products/capella-melody-trainer> (Date Accessed on 16.11.2020)

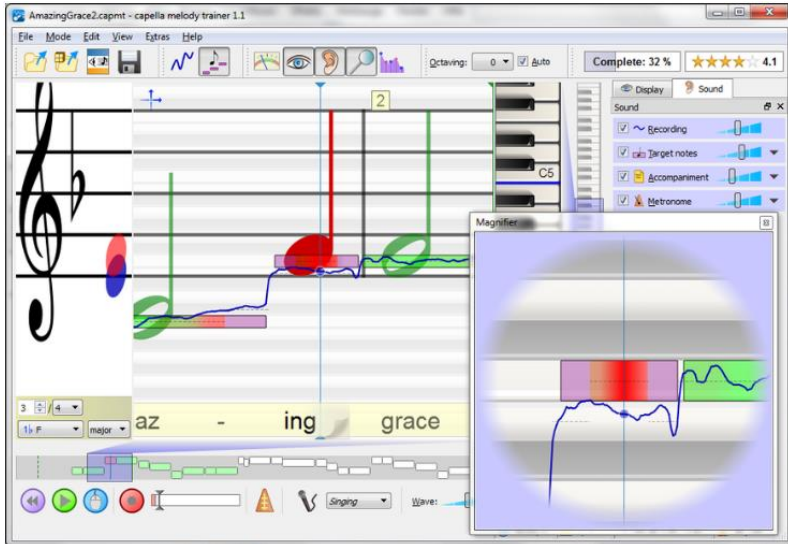


Figure 7: A Screenshot of Magnifier Mode. © capella-software AG (English) 2020. Used with permission.

Source: <https://www.capella-software.com/us/index.cfm/products/capella-melody-trainer> (Date Accessed on 16.11.2020)

Certainly, it is not possible to substitute the program for an individual course in the guidance of a teacher. Nevertheless, the performers can study by providing their self-control through the program up to the next course. The program can contribute to the users' performance training, so, they can study in a controlled manner during the rehearsal process.

To summarize, in Capella Melody Trainer, the data is created through the user's audio-recording (Student Knowledge Module). When this data is compared with the original scores which are preloaded in the digital library (Expert Knowledge Module), the user is informed about the mistakes and the program guides the user how to correct them (Tutoring Module) by interacting with him/her (User interface). It can be said that this cycle shows the Capella Melody Trainer application which provides individualized training is based on ITS.

2.4. Practice First: It is an application included in MusicFirst software. Before giving information about PracticeFirst, it is thought it would be useful to introduce the software in which the application is considered. Accordingly, MusicFirst is a cloud-based tool for music educators and students, which is available on any internet-enabled device, including tablets, mobile devices, desktops, laptops, and smartboards⁷. The software contains several applications as *Focus on Sound*, a multimedia encyclopedia for developing skills in melody, harmony, rhythm, technology, and theory; *Sight Reading Factory*,

⁷ <https://www.musicfirst.com/applications/practicefirst/> (Date accessed on 22.03.2020)

which helps to improve sight-reading skills; *Soundation for Education*, is an online music-making application; *Auralia*, is an ear training app; *Musition*, is a music theory program; and *Noteflight*, which allows the student to compose, view, and share music notation from any web browser. These applications are for the students in grades K-12 to explore music outside the traditional classroom, and they are available twenty-four hours per day / seven days per week on any device as long as there is an internet connection (MacVicar, 2018:16).

Among the applications in MusicFirst software, the unique intelligent app. using ITS for instrument education is PracticeFirst. According to the official website⁸; it is suitable for the band, orchestra, choir, solo instruments and singing, allowing the students to practice anytime and anywhere via internet-enabled devices. Students gain meaningful insights into the quality of their practice and can accelerate their achievement by receiving instantaneous and intuitive feedback.

Available collections are a compilation of all of the preloaded content in PracticeFirst. Methods for individual instruments including wind and stringed instruments, piano, voice, guitar, mallet percussion band and choral collections of warm-up exercises, scales, Corals and songs, and sight-reading exercises are included in the application. Not only the users can practice the preloaded content, but they can also load their own scores to the digital library. PracticeFirst lets the students

⁸ <https://www.musicfirst.com/applications/practicefirst/> (Date accessed on 22.03.2020)

record their performance for their self-assessments. A tuner is included in the application to make the users sure that they are in tune before the performance. Furthermore, able to record the performance with or without accompaniment, tempo change, the ability of the teacher to review the student assessments at any time and anywhere via the cloud system are other features of PracticeFirst. Once the recording has been analyzed, PracticeFirst evaluates the user with an overall score based on a 100% scale (Figure 8) and gives graphical feedback about the rhythm and the pitch in detail just as “Capella Melody Trainer” explained above (PracticeFirst 2.0 Overview, 2016).

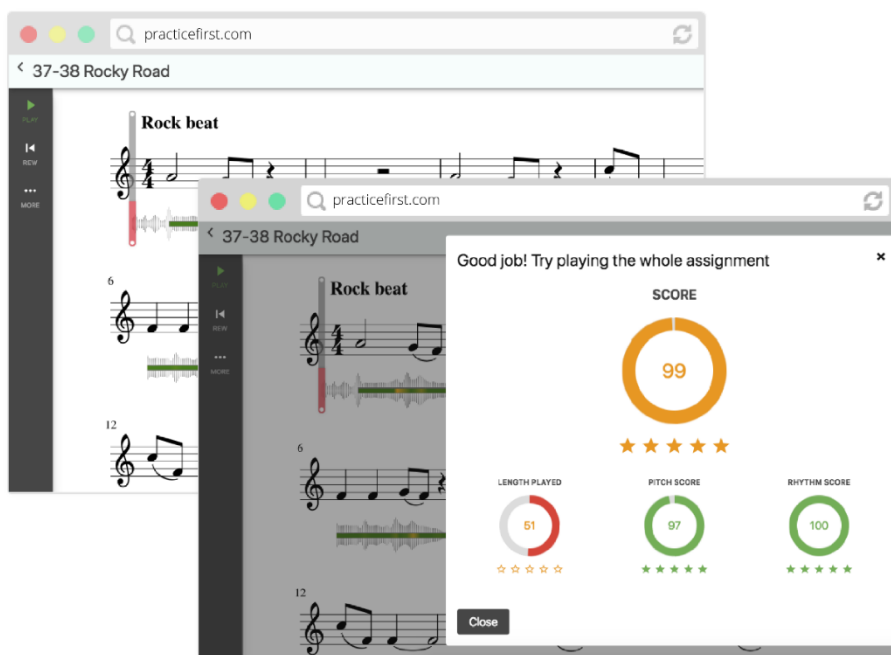


Figure 8: A Screenshot of General Assessment. © 2014 - 2020 MusicFirst v3. Used with permission.

Source: <https://www.musicfirst.com/applications/practicefirst/> (Date accessed on 22.03.2020)

As seen in Figure 9a, in case of an increase of tempo or rushing of rhythm, the line curves up; on the contrary, if the student slows down or plays a note quite a bit late, then the line curves down (Figure 9b). In addition to these assessments; the green, yellow and red colors represent the pitch scale between good to weak as seen in Figure 10 (PracticeFirst 2.0 Overview, 2016).



Figure 9a: A screenshot of tempo increase. © 2014 - 2020 MusicFirst v3. Used with permission.

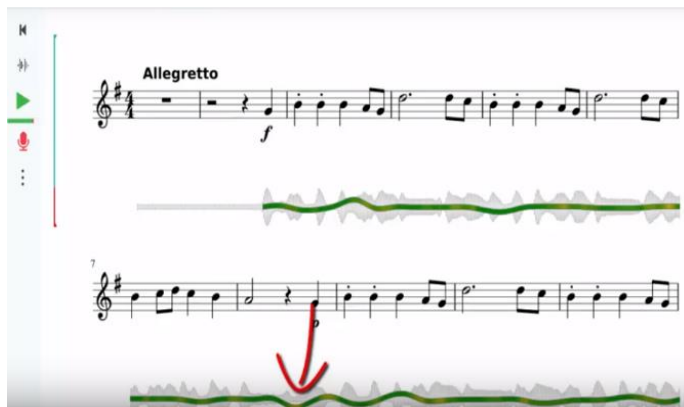


Figure 9b: A screenshot of tempo decrease. © 2014 - 2020 MusicFirst v3. Used with permission.

Source: <https://www.youtube.com/watch?v=H-Gzj0xkVw8> (Date accessed on 22.03.2020)

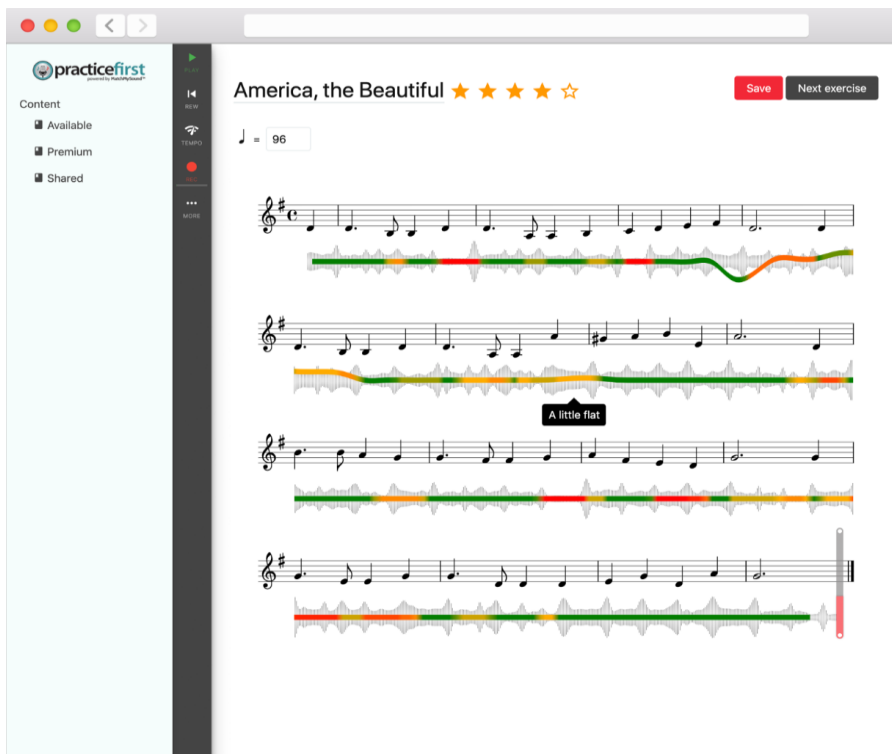


Figure 10: A screenshot of Pitch Assessment. © 2014 - 2020 MusicFirst v3. Used with permission.

Source: <https://www.musicfirst.com/applications/practicefirst/> (Date accessed on 22.03.2020)

Since PracticeFirst has the ability to provide graphical feedback about the tempo and the intonation errors to the user by comparing the recorded performance with the original score in its database, it can be said that this application is also ITS based tool like *Capella Melody Trainer*.

CONCLUSION

Since the 1980s, teaching methods have been renewed and computer-based teaching methods have been used in numerous fields. These methods help the student to reinforce the subject taught by asking questions and giving feedback according to the answers. However, deficiencies such as inadequate feedback and lack of individual instruction led researchers to prepare computer programs that think like the human brain. These programs which are called intelligent tutoring systems (ITS) have started to be used in the field of music education as in many other education fields.

In this study, it is found that the first applications used ITS in music education were “Guido” and “Vivace”. Guido, which developed in 1974, was in the fields of music theory and ear training, including intervals, melodies, chords, harmonies, and rhythms. Vivace, on the other hand, was a composition software developed in 1985 and it harmonized a given melody into four-part choir work within the framework of the harmonic rules. Under the guidance of these studies, the development of the computer programs related to music education is continued, and the applications used advanced technologies are developed to satisfy the educational needs of the new generation who consider the internet a necessity in their lives and communicate via tablets, laptops, and smartphones.

According to the findings of this research, the music applications such as EarMaster (used in ear training and music theory), Tonica Fugata, (used in the field of harmony), and Capella Melody Trainer and PracticeFirst, (both used in performance training) have intelligent tutoring systems related to artificial intelligence technology. The ITS-based versions of the EarMaster program, which has existed since 1996, are used in the world's leading music institutes such as the University of Westminster, Berklee College of Music and Université de Paris Gustave Eiffel.

The relationship between the modules (expert knowledge, student knowledge, tutoring, and user interface) constituting the structure of ITS is also seen in the music education applications which are found in the result of this research. These applications provide individualized training by giving personal feedback like teachers, unlike the other programs used for computer-based instruction. So, it should not be thought that every computer-based software has the features of ITS. Today, educators give importance to ITS used with artificial intelligence technology, and a great amount of educational software, also including music education, is shaped according to the personal characteristics of students, their developmental processes, and learning tendencies. Thus, these applications provide positive contributions to the individuals' educational process. As a result of the literature review obtained in this research; apart from the computer programs named EarMaster, Tonica Fugata, Capella Melody Trainer, and PracticeFirst, it was seen that various programs related to music

education are being developed through different projects. Accordingly, it is understood that research and development studies related to the applications using intelligent tutoring systems are still being continued. In this manner, ITS-based applications in music history, musicology, and instructive notation software for K12 level can be developed, in addition to the existed music theory, ear training, and performance training programs.

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CHAPTER 2
AS A NEW PHENOMENON: DIGITAL CUISINE
CULTURE

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INTRODUCTION

Culture is a phenomenon that has a constantly changing and developing dynamic nature due to various factors experienced over time. When we look at the past, it is seen that there are changes in the cultures of societies. These changes show that culture has come to adapt to new situations. With the rapid development of technology in the globalizing world, cultures have now interacted more closely with each other and changes have begun to occur more rapidly.

With the development of technology, societies started to be digitalized and they were able to keep up with this situation quickly. When the statistics of internet users in the world are analyzed, it is seen that 59% of the world population is internet users and one out of every two people uses social media. It is stated that internet users have increased with the widespread use of smart phones against the decrease in the use of tools such as computers and tablets (Bayrak, 02.02.2020). With the increase of internet users, inter-communal interaction has increased rapidly and cultures have been affected by this speed and have been exposed to faster change. It is easier for people to use the internet constantly in their daily lives, to share on social media, to have information in search engines, and it has made it easier for people to adapt to this digitalization.

Intense use of technology in everyday life has led to the formation of a digital culture. This rapid and boundaryless sharing in technology enables digital culture to change and develop rapidly, unlike the change of classical culture. The purpose of this study, based on this point, is to

find out that changing and developing culinary cultures of societies, as a result of technological applications, discloses the concept of digital cuisine culture by changing tourist behavior. In this context, problems of the research are; “Is there a new culinary culture created through technology-related social media applications?”, “Can this mentioned culinary culture be named as digital cuisine culture?”. Regarding research problems, the study was designed through grounded theory.

1. RESEARCH METHOD

Since the concept of digital cuisine culture is a newly developing phenomenon, it is very important to create a scientific structure within a theoretical framework. In line with this importance, in the study, it is aimed to create a model by determining the basic codes that make up the digital cuisine culture. In order to achieve this purpose, the study is designed through grounded theory.

This patterning method is preferred because the classification process (Aksakal and Kırkaya, 2013: 8) can be done through the grounded theory by gathering similar situations and events at a common point. In other words, the data obtained in the research process are collected systematically (Akoğlan Kozak and Aydın, 2018: 178) and the data are analyzed by open, axial and selective coding (Urquhart, 2012; Glaser and Strauss, 2017).

In the study, 13 articles, 2 papers and 4 theses related to digital cuisine culture are examined. The studies are carried out on the concepts based on in order to explain the digital cuisine culture. The reviews take an

eight-month period. It is seen that tourism culture has emerged as a result of examining the concepts of culture and cultural creativity in order to gain the admiration of tourists. It is determined that culture, cultural creativity and tourism culture are affected by technological developments, that is, the increase in use of social media. As a result, it is seen that the desire to share culture, cultural creativity, tourism culture, use of technology based on social media, and sharing culinary cultures in destinations has emerged.

In accordance with the purpose of the study, *open codes* were determined by examining the literature in detail. In the next stage, *axial coding* was made and similar concepts were revealed. The concepts revealed are classified in five categories. Categories are classified as culture, cultural creativity, tourism culture, culinary culture and technology. The categories were divided into sub-categories and dimensions, and the relationship between them was exposed. In this context, it has been observed that culture has a complex structure, cultural creativity has emerged as a result of the changes experienced by societies, and tourism culture has been affected by this, and social media, which has developed in a technology-dependent manner, is another sub-category. In addition to these categories, coding was made based on the conclusion that culinary cultures related to the constantly changing social structure were constructed and their destinations were affected. It consists of selective coding at the last stage. As a result of the examinations made between categories, sub-categories and dimensions, a single category "Digital Cuisine Culture" is examined.

As a result of the examinations, modeling that reveals and expresses the digital cuisine culture has been done.

1.1. Open Coding Findings

As a result of open coding, digital cuisine culture focuses on five basic codes, Detailed evaluations of the codes are given below.

- **Culture**

Because it is the only species that has a culture, human beings are unique. When it comes to culture, it is meant the extra somatic, temporal continuity of the things and events that are symbolic (White, 2007: 3). In other words, culture is the way we live life. It is a concept regarding what we wear, what we eat, what language we speak, which stories we tell or how we celebrate (Kalman, 2009). Instead of fixing cultures to traditional mind sets, there is a transformation between cultural mind frames due to various factors. This plays a very important role in revealing creative performance (Leung and Koh, 2018: 12).

- **Cultural Creativity**

Explaining cultural creativity is difficult because culture is a dynamic process. Culture is a living phenomenon (Swanson, and DeVereau, 2017), and cultures constantly learn and adapt to new situations (Robinson and Picard, 2006: 20). As a result of new experiences created with the host and visitors, new and more unique touristic products based on cultural creativity emerge. Food culture is a good example that can be evaluated in this respect.

- **Tourism Culture**

Since it is a versatile industry, tourism produces culture (Boniface, 1998: 748) and the concept of tourism culture emerges. It covers the topics of “Tourism culture: maximizing the culture of tourism products, redefining tourist experiences, addressing the cultural effects of tourism and dealing with the changing culture of the industry” (Craik, 2003: 113). Tourism culture creates an abstract link between the host community and visitors (Canavan, 2016: 230). On the other hand, it offers more flexible and authentic experiences that can be created together between homeowners and tourists rather than mass produced products for mass tourism (Richards, 2011: 1225).

- **Culinary Culture**

Cultural identity expresses values, norms, beliefs and practices (Rutsaert, 2013: 135). Food has a symbolic function with a cultural identity. Food expresses a collective coexistence beyond defining themselves (Kittler and Sucher, 2008: 4). Although food is seen as an essential element for survival (Silva et al., 2014: 466), it also provides understanding of the socio-economic structure and political tendencies in societies (Henderson, 2013: 904). Today, there are tourist groups who leave their places of residence temporarily for the purpose of food tasting and dining experiences. The dining experience allows tourists to discover the cultural origins of the destination (Santa Cruz et al., 2019: 1). The dining experience emerges as an important factor such that determines the destination selection, satisfaction of tourists regarding

the destination and loyalty to the destinations (Berbel-Pineda et al., 2019: 1).

- **Using Technology Based Social Media**

Especially with the development of technology, link between the cultures developing closer relationships with each other and the motivation to travel for the purpose of experiencing food is strengthening. In other words, globalization appears as a driving force (Mak et al., 2012: 171) to rebuild or reinvent local food traditions and features. In our daily life, everyone's use of social media is a sign of food and beverage culture and provides communication between individuals (Güneş et al., 2018: 82). Restaurants and food shared at applications such as TripAdvisor, Foursquare, Facebook, and Instagram arouse curiosity in people and stimulate them. In this context, people constantly leave their places of residence and temporarily move to the destinations they are interested in and experience those restaurants (Atwal et al., 2019) and food. As a result, a new cultural structure emerges and that is called digital cuisine culture in the study.

1.2. Axial and Selective Coding Findings

As a result of the categories revealed through the codings made by the help of literature reviews, the code of “Digital Cuisine Culture” has been reached.

1.2.1. Digital Cuisine Culture

Food is becoming increasingly central in the experience of tourism destinations. With the rise of the experience economy, food becomes one of the central elements so that destinations could take as a basis at branding, shaping the image of the destination and promoting tourism (Richards, 2015). Social media is becoming increasingly important as a source of information for tourists (Ming and Chua, 2016: 443).

Recently, the role of social media sites in our lives has gained increasing importance (Timilsina, 2017: 3). However, social media sites seem to have a wide impact on cultures and societies (Neter et al., 2020: 3). It appears that social media users have a widespread impact on the world that changes their daily routines, including eating, sharing (Mejova et al., 2016) and buying (Segokgo, 2016: 29; Haff, 2017) habits. (Abbar et al., 2015: 3197). So much so that Zhang et al. (2019) determines that consumers' behavior on choosing food can be learned through social media. In other words, the change of food behaviors through social media emerges as a factor affecting culinary cultures.

Scientific and technological developments play a role in creating food and beverage production that responds to the demands of the global market more effectively, more harmoniously, reliably and sustainably (Güneş et al., 2018: 77). In addition, the development of smartphones and applications with technology and the desire of people to be visible on social networks cause social change. So much so that food cultures are affected by this change and reveals the concept of digital cuisine culture (Çaycı and Aktaş, 2018: 726).

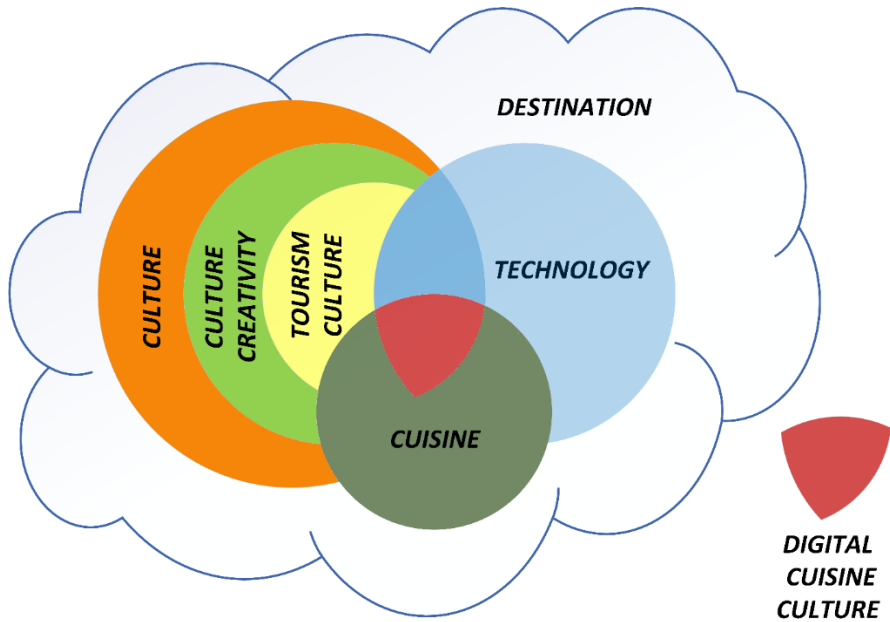


Fig. 1: Digital Cuisine Culture

Digital cuisine culture is a comprehensive concept that is influenced by the facts of culture, cultural creativity, tourism culture, technology, food and food culture. Dishes that develop in connection with local communities are the food culture of that region. In times when technology did not exist, food cultures developed, changed and reshaped, influenced by events such as immigration, wars or tourist activities. This cycle in food culture has never ended. However, with the development of technology, food culture is carried to another dimension and continues its change from here. Hidden dishes and food cultures are exposed through various social media applications. The food that is exposed is more known, it has become familiar, and it has been started to be produced and sold in a larger area by going out of a small region.

Before the digital age, culinary cultures were based on the characteristics of their partly closed region, with pineapple facts, etc. While it is taking shape, this situation has changed completely in the digital age. The development of transportation, positive developments in the food supply chain, that is, the fact that nutrients can be transported anywhere, the increase in the use of social media as a result of the advancement of technology, makes the dishes not specific to certain regions. Easy access to nutrients causes meals that are specific to certain regions to be produced in the desired place without being obstructed by time and space. As a result of the use of social media applications developed in accordance with the technology, it increases the awareness and demand of the dishes from certain regions. At the end, as a result of the use of social media, it makes it possible to request and supply dishes specific to certain regions everywhere. This situation reveals radical changes in food culture. Especially in mega cities, it has been passed from traditional cuisine culture to digital cuisine culture. For example, a megacity Istanbul-Turkey and has a cosmopolitan structure. Due to its cosmopolitan structure, people with many different culinary cultures live together. However, tourists who visited Istanbul, not only in the culinary culture of Istanbul, are likely to be willing to live the experience with Turkey's culinary culture. In this sense, restaurants with different concepts are opened in order to experience dishes of various culinary cultures learned from social media. As a result of this cycle continuing, a digital cuisine culture emerges.

The use of social media, which develops in connection with technology, constantly changes the behavior of tourists and the structure of the touristic products they want to experience. There was a cultural change, especially when tourists traveling to experience different culinary cultures wanted to experience the cuisine or culinary cultures they saw on social media. This cultural change, a desire to experience the dishes of various culinary cultures that come out with cultural creativity and are shared on social media, creates a new market structure. This market structure affects the tourism culture and hence the culinary culture. Figure 1 is designed to express this interaction.

CONCLUSSION

Social media, which provides a large data flow with its usage rates and shared information, is the global culture of today. According to today's culture, societies are increasingly digitalized in every field. So much so that, thanks to digital technology, societies can access information very easily. It is observed that digitalization has recently increased in the area of food and beverage, which is an important criterion in the choice of destinations for tourists. Tourists who use computer, tablet, smartphone etc. could easily get information about the variety of food and beverage of the destinations as well as share their experiences easily. Many digital domains such as blogs, websites, discussion forums, mobile apps and social media platforms allow visual presentation of food and drink and make it easy to access comments about tourists' experiences. All these digital technologies enable to find and evaluate shared images, ideas, beliefs and practices, experiences and experiences about food and

drink in public forums. It was previously partly closed to and shaped based on the characteristics of its own region, and traditional facts of that region, etc., awareness of the culinary culture increases and its continuity is provided with the developing technology. The technology has enabled tourists to easily find information about the destination, restaurant, food, beverage they want by entering the search engine, and the reliability of this information increases with the increasing number of shares on the subject.

The sharing of information on the preparation and presentation of food and beverages, the creation of visuals, self-attraction sharing, advice on how to get the best food, useful and harmful foods have increased so much that now tourists can evaluate what and how they can consume foods in their destination according to these shares. They make decisions based on this information. The abundance of these digital data emerging with the increase in technology reveals the popular culinary culture concept and provides new data about this culture. Analyzing these data provides more information about the digital cuisine culture. For example, the geographical location, time, preparation and consumption differences or similarities, consumption preferences can be analyzed and information about the digital cuisine culture of the region can be obtained. In other words, these data shared in digital environment reveal the digital cuisine culture of that destination.

Considering the emergence process of the concept of digital cuisine culture, it is clear that this culture will change rapidly. The rapid change of culture can be perceived as a negative effect. However, if

destinations manage to keep up with this rapid change, they can use this as an advantage. They can contribute positively to service quality, image, and marketing by taking into account the data shared in the digital environment. On the other hand, digital cuisine culture may have negative effects on the traditional cuisine culture of the destination. In this sense, it is important to ensure the sustainability of the values of traditional cuisine culture. Because of the values in the traditional cuisine culture cannot find their place in the rapidly changing digital cuisine culture, a degeneration will occur in the traditional cuisine culture of the destination. Destinations can also maintain the traditional culinary culture created by their core values to prevent the negativity that may occur as a result of this and ensure sustainability. In this context, geographical indication marked products of destinations can eliminate this negativity. By increasing the number of geographical indication marked products, destinations will preserve the values they have been in traditional cuisine culture and transfer them to the future.

In the light of the studies conducted today, it is known that tourists attach great importance to eating and drinking activities in selecting the destinations. For this reason, the emerging phenomenon of digital cuisine culture emerges as a concept that will contribute to the marketing efforts and image creation of destinations. In the future studies, differences and similarities can be determined by researching the traditional cuisine cultures of the destinations and digital cuisine cultures. By choosing different destinations, determining the digital

culinary culture of those destinations and making comparisons is also suggested as another study subject.

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CHAPTER 3

**AN OVERVIEW OF PERFORMANCE
MANAGEMENT: A CASE STUDY FOR ABC
ELECTRONIC BUSINESS**

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INTRODUCTION

Measurement and evaluation performance processes play an essential role in modern environment of management. Particularly they help to live with rival companies and major concern. Performance measures should be extended to include essential success metrics, either non-financial or organizational. Historical performances metrics such as cycle time, set-up time, execution on schedule, electronics cycle period and process cycle time are essential parameters and daily performance metrics. In all practical areas of the company, quality controls should be extended to cover not just output efficiency but also pricing. Feedback and success reviews are an important part of a multinational efficient business network. This incorporation into consistency must be a popular feature in all contenders' output assessment systems (Bacon, 2008; Neely, 2004).

One of the key techniques of the initiative, namely efficiency and its metrics, auditing and methods of change, was analyzed in contemporary market environments. The key objective of this project is the time analysis, which is one of the strategies for rising efficiency. The analysis of the period test at ABC Electronic Business has been carried out.

Processes of performance evaluation and monitoring and reporting play a major role in contemporary management system. Specially they help to deal with threats and that challenges. The importance of these systems of estimation and monitoring is extracted from the belief that

if you can not evaluate, you can not manage it. Management can have the necessary information about the performance of the company at the right time to do its function (planning, organizing, implementing, regulating). Quality improvement and reporting requirements are the critical effective strategies which meet requirements (Neely, 2007; Performance Measurement, 2006).

Evaluation, measurement performance and auditing programs may offer this support if executives agree that monitoring and monitoring is a necessary part of their work. Performance measurement and management systems may offer this assistance if performance management and reporting mechanisms are able to determine various aspects of success of the organisation and the interaction between those measurements (Epstein et al., 2010; Smith, 2005; Olson et al., 1990).

Good performance measurement and auditing processes has to be capable of providing the best potential results. A criterion for a good performance measurement system is the degree to which it tracks attributes related to customer-driven critical success factors, including compliance quality, timing and speed of delivery and encourages the incorporation and coordination of technology to improve overall market efficiency. Generates response data on the gap between best-in-class performance and the overall quality of the manufacturing unit over time, so that developments in the competitive marketplace can be observed and processes improved with these issues (Epstein et al., 2010; Neely, 2007; Smith, 2005; Olson et al., 1990);

- Encourages preparation and ongoing development in order to identify incentives for change.
- It is sufficient for the stage of the enterprise in which it is used.

Performance measures can be more than cost-effective. World-class output will be focused on both financial and non-financial indicators that drive overall market growth and on processes to catch it. The Good Performance Measurement Framework addresses corporate spending and balance-sheet indicators, as well as sales and expense assessments relevant to the estimate of income. In any event, the amount of steps taken at any time should not be reduced. Performance measurement systems relate manufacturing capability to the manufacturing strategy. This relation is a normal one. World-class performance measurement systems are adapted to effectively track the results of a given set of manufacturing capabilities and provide guidance on the potential of the manufacturing unit to achieve its manufacturing strategic plan. Describing a manufacturing strategy for the company plan as a model of manufacturing choices, desired performance metrics would lead to current output goals. In fact, output metrics will be fluid and updated as the approach progresses. Long-term sustainability includes the use of new technology to enhance results. In considering performance management, organizational success is seen as the cumulative contribution of joint actions and cooperation with all the organization's subsystems (Franceschini et al., 2007; Epstein et al., 2010; Olson et al., 1990).

Defining production strategies in favor of the company plan as a pattern of production options, alternative performance measures must be compatible with existing manufacturing goals. In addition, output metrics are complex and updated with the evolution of the technique. Performance in the long run includes the implementation of new technology to enhance results.

1. PERFORMANCE MEASUREMENT

1.1. Performance Concepts of Organizations

The value of a job program at the end of the default time can be defined as the output of this method. Either qualitative or quantitative, the production. Organizations are created to achieve those objectives and activities. In accordance with this, the management's key duty is to accomplish certain targets at the highest stage. "The best level" depends on the management's understanding of performance. Management performance understanding has been continued to improve and evolved over the years. While the targets are low expenses, optimum productivity and high income in traditional management comprehension, consumer loyalty, efficiency and inventions are of great benefit for success today. Performance measurement systems link manufacturing capabilities and manufacturing strategy. This linkage is a natural one. World-class performance measurement systems are tailored to effectively monitor the outcomes associated with a given set of manufacturing capabilities and provide feedback on the ability of the manufacturing unit to

implement its manufacturing strategy (Taticchi, 2010; Performance Measurement, 2006; Smith, 2005; Olson et al., 1990).

1.2. Performance Dimensions and Their Relations

Organizational performance can be considered as a concept that can answer three main questions about the organisation: Where are we? To investigate the performance by examining the current position of the organisation with present resources in existing organisational structure. How much better could we be? To evaluate the utilization level of potential power in present conditions. Where should we be? To determine the actions of the enterprise on the basis of ideal capacity, implying that there are no internal or external constraints. These three questions define the organization's performance and the areas for evaluation. They also identify areas in which performance improvements can be made. Evaluations demonstrate the developments and improvements that the business has to implement in order to succeed and prosper over the long term. In this approach, performance is defined from six different perspectives: effectiveness efficiency innovation quality of work life profitability, productivity and budget ability. Among all these concepts, productivity is the most important part of the organization performance. It is not possible to manage and direct an organisation without considering the productivity (Epstein et al., 2010; Taticchi, 2010; Franceschini et al., 2007; Smith, 2005; Olson et al., 1990; Akal, 1996).

Performance is characterized in this strategy from six separate perspectives: Effectiveness, efficiency, innovation, quality of work

life, profitability and budgetability, productivity. The most critical aspect of organization's success is efficiency of all such principles. It is not feasible to run and maintain an enterprise without taking into account efficiency Effectiveness determines the level of accomplished objectives. As the definition states. It is related to the objectives of the organisation. For this reason effectiveness is one of the most important performance measurement tools that reflect the overall performance of the organisation. The goals of the company are linked. Output is one of the most critical instruments of success assessment that represents the company's overall efficiency. As the outcomes obtained in a company rely on a number of factors, the supervisors, staff, systems and procedures employed and also contact with the outside environment have actions, abilities and expertise. Output assessments offer two management tools in the process of enhancement in performance (Bacon, 2008; Neely, 2007; Neely, 2004; Olson et al., 1990):

- To make best use of available resources in the current circumstances: a distinction is made between real outcomes and planned effects to consider how more efficient usage of resources have been accomplished.
- In order to achieve the ideal potential without internal or external constraints, the objective is to achieve new or higher level of performance.

The relationship can be described in (Kanawayt, 2007; Akal, 1996; Olson et al., 1990) with this formula (1);

$$\text{Effectiveness} = \frac{\text{Expected Output (Outcome)}}{\text{Actual Output (Outcome)}} \quad (1)$$

In the terminology, efficiency does not demonstrate a physical connection between input and output but explores the mechanism of transformation of inputs to outputs. There may be qualitative or quantitative contrast. Efficiency is one of the performance measures, which is used to investigate the level of usage of production resources or to show how these resources can be used most effectively. Efficiency is the ratio between effective input and the actual input. It does not deal with the outputs of the system but with the resource consumption interested in tools, not objectives. It is not related to organization's targets and goals. Whatever has been carried out in the organisation, efficiency deals with using minimum resources with minimum cost? The goal of efficiency is to increase the potential resources of production (Epstein et al., 2010; Taticchi, 2010; Akal, 1996; Olson et al., 1990).

1.3. Business Development-Innovation

Two specific viewpoints should be taken into consideration in the management of innovation: Management should handle existing capital to optimize their usage. It needs to construct the future. By analyzing now, potential organizations are set up. This requires innovation, risk management and entrepreneurship. The aspects of

innovation can be summed up as follows: it involves imagination, development, improvement, risk taking, efficiency, and business (Taticchi, 2010; Performance Measurement, 2006; Jackson, 2003).

It does not go to the market with the consumer. It is not the innovation. It not only builds growth, but also improves growth. It does not always mean reduction of costs or high profits. It contains a high level of risk. There are mainly four types of innovation (Bacon, 2008; Franceschini et al., 2007; Neely, 2007):

- Product or service innovations.
- Production processes or methods innovations.
- Usage innovations
- Market innovations

2. QUALITY OF WORK LIFE: PROFITABILITY AND BUDGETABILITY

The nature of working (Quality of work life) life defines people's attitudes and perceptions despite the various perspectives of working life. The behaviors and opinions of the workers are very important for the performance of the organizations. It can be improved by Fair wage system, financial or non-financial motivation systems, job security, appropriate and modern physical work conditions, opportunity for training and promotion, participatory management and team work. The interaction between the profits and the direct expenses within an organization is productivity and competitiveness. The quickly applicable output indicator is benefit and productivity against the

other approaches. Budgeting is another type of income-to-total partnership. It may be used where successful metric or non-profit entity is not recognized as a success indicator (Bacon, 2008; Neely, 2007; Akal, 1996).

- *Productivity*: Productivity is reaching the maximum output with minimum input. Quality is the fundamental determinant of the effectiveness. It also intersects with effectiveness dimension. Innovation, quality of work life and profitability are the dimensions, which are the requirements of an organisation to continue its life in the long term. They can only appear when quality, effectiveness and efficiency are high. Effectiveness is defined essentially by quality. It intersects with the element of quality. The factors that are a long-term prerequisite for a company to continue to operate are creativity, standard of work and productivity. You should only turn up with good output, reliability and performance. The most fundamental metric of success in companies is typically efficiency, as it explicitly shows physical and monetary values. Yet subjective output factors are not evident in efficiency. The goal is to increase efficiency while reducing total costs. Output ratios ought to be measured to determine this change. It is applied to use the following performance ratios formula (2), (3) and (4) (Kanawayt, 2007; Akal, 1996; Sink, 1985):
- Worker Efficiency Ratio = ((production amount standard time) + (time spent for unmeasured work)) / (total time spent in

production)* 100

(2)

- Machine Efficiency Ratio = (real time spent in production)/(real time spent in production + time for set up, cleaning, failure and so on)* 100

(3)

- Material Efficiency Ratio = (amount of standard material / amount used) (4)
- *Total development period*: Average operating hours-spare time for causes not accountable (waiting for supplies, system malfunction, period used on other careers, electricity loss and so on). Total working hours - Leisure time because of some reasons that workers are not responsible for (wait for material, machine failure, time spent for other jobs, lack of energy, and so on) Kanawayt, 2007; Akal, 1996; Sink, 1985).
- *Limited production time*: Performance ratios are instruments which display how the work is done correctly. The primary goal in terms of productivity is to optimize the usage of the output capacities of the enterprise. The metric is, therefore, efficiency to show the current amount of production. The through the value of available production capital, the more output is gained from inputs (Kanawayt, 2007; Akal, 1996; Sink, 1985).

Performance ratios are instruments which display how the work is done correctly. The main objective is to make maximum use of the potential production capacity of the organization in an efficient

manner. But the calculation of efficiency indicates the production amount by the specified data. The higher the productive portions of the production capital, the more output is obtained from the inputs. Productivity calculated by either the total or the partial productivity is not adequate to evaluate whether different output inputs relate to development and whether the utilization of the inputs may be improved. An increase in the work force productivity ratio can be caused by the increase in the level of making use of work force or any other technological change causing a production increase (Bacon, 2008; Neely, 2007; Performance Measurement, 2006; Akal, 1996). This relation can be shown as the formula (5):

$$\text{Workforce efficiency} = ((\text{Standard working hours}) / (\text{Actual working hours})) * 100 \quad (5)$$

In manufacturing companies, which are based upon efficiency and productivity, cost is an important performance measure. Efficiency provides both production increase and cost reduction. But this cost reduction should not result in decreasing the quality of the output. This decrease in the quality will also affect the effectiveness negatively. As stated, all performance dimensions have handicaps and superiorities at different situations. The relationship between system outputs and the inputs given to produce those outputs is essentially the productivity of the system. The system is supplied with inputs in the general type of operation, money, energy, materials and data. Those resources then become outputs (goods or services) (Bacon, 2008; Neely, 2007; Akal, 1996; Sink, 1985).

2.1. Factors of Productivity Increase

Productivity increase does not only mean doing works better but also doing the right things in a better way. There are two types of productivity factors (Prokopenko, 1992): Internal (controllable) factors; External (uncontrollable) factors. The first thing to do is to define the problem areas in productivity analysis. The second step is to determine the areas that are controllable. Internal factors can be divided into two groups: Inflexible factors, Flexible factors. These factors cannot be changed easily. They contain products, technology, machinery, and raw materials (Franceschini et al., 2007; Smith, 2005; Akal, 1996; Sink, 1985).

- *Product*: Product factor productivity refers to the level of convenience of product to the specifications. Co-operation of Research and Development Marketing and Sales departments is one of the basic factors of productivity.
- *Technology*: Modern development is a high efficiency source. The usage of automation and information technologies will contribute to an improvement in the amount of products and services, product growth and modern marketing types.
- *Raw Material and Energy*: Trying to reduce resource use and energy usage will improve efficiency. Original and indirect (chemicals, gasoline, coal, new parts and packaging resources) resources may be used as a very significant productivity source.

The main aspects of material productivity can be described below:

- Useful output or energy obtained from each unit of input. This depends on the selection of the right material, quality of the material, process supervising and inspection of rejected parts.
- The use and inspection of shrinkage and wastes.
- The preliminary increase of material quality for the better use in fundamental process.
- Use of low quality and cheap material.
- Import material substitution.
- Increase in inventory turnover rate.
- Improvement of inventory management to prevent excessive inventory,
- Development of supply sources

Some descriptions of these concepts- Flexible Factors are as below (Franceschini et al., 2007; Kanawayt, 2007; Smith, 2005; Akal, 1996; Sink, 1985):

- *Human*: People are different not only in terms of their abilities but also their desire to work. The following considerations will be taken into account to improve or sustain the motivation of the population: motivation reduced whether happiness is lost or stopped.
- *Organizations and Systems*: dynamism and versatility should be given in order to deliver efficiency to the maximum level

structure. The rigidity of the organization is the general reason for low organizational productivity.

- *Methods of work*: Improved working methods are key areas for growing efficiency, especially where capital and labor intensity are inadequate. Working approaches may be enhanced by evaluating the present scenario, removing the introduction of less useful tasks and researching and finding strategies to perform less energy, time and expense work.
- (iv) *Management Styles*: Management is accountable for a large proportion of efficiency improvements, according to one view, because they are liable for the efficient utilization of certain capital.

2.2. Methods to Improve Productivity

Work-Job Analysis Incorporating process and workforce research to analyze workers' tasks, assess productivity factors. It is the synthesis of system analysis and role evaluation. It is typically used without any capital expenditure to increase the production by the land. Some descriptions of these concepts are as below (Franceschini et al., 2007; Akal, 1996; Sink, 1985, see Figure 1):

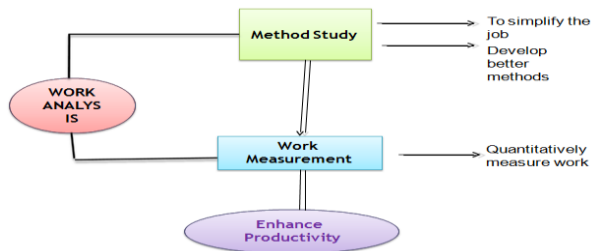


Figure 1. Components-Methods for Work Analysis (modified by author)

- *Method Analysis*: The research method records and evaluates current or planned approaches to plan and introduce simpler and more cost-effective procedures. The research findings are Process improvements, improved plant and layout, Improved material transfer, Higher quality of work life, Improvement in development and quality of the end product.
- *Work - Job Measurement*: This method determines the time needed for a well-trained worker working at a normal pace to accomplish a task. Such information is used by the management for the preparation and monitoring of output, expense, expenditure and motivational compensation systems. Most important job measurement techniques are: Job illustration, Time study, Predefined time standards, and Standard data.

2.3. Work Study - Method Study

Work study or work analysis is a method (the discipline of industrial engineering) in business administration that utilizes different methods for quantitative calculation or evaluation in work in order to maximize the amount generated by a defined quantity of resources by optimizing the usage of established resources. Time study is used to determine the time required by a qualified and well-trained person working at a normal pace to do a specified task. Objectives of Work Study are presented like this orderly: Systematically analyze the current way to do a job to develop a new and improved way to calculate the task quality by taking the time to do the task and, thus, maintaining the normal period for a skilled worker and to improve operational

efficiency. Improved efficiency by optimizing human, computer and material capital all at the lowest feasible expense to deliver good quality products/services. Some descriptions of these concepts are as below (Kanawayt, 2007; Prokopenko, 1992; Sink, 1985; Barnes, 1980):

- *Time Study*: Time analysis is used to assess the time needed for a trained and well-educated individual to accomplish a given task at a daily rate.
- *Standard Data*: They are useful for calculating the standard times of new products. Instead of doing time study for each new product, it is divided into parts, data are gathered from these parts, tolerances are calculated, and therefore the standard time for the new product is obtained.
- *Job simplification*: It is methods and procedures enhancement. The idea that says "The job will only be changed by the individual who operates on it" relies on task simplification.

The time study results in time for a person who is eligible for a job and is completely trained in the defined system to do the job while he or she is operating at a regular or typical rate. Time study tools are chronometer, calculator, tape measure, ruler, time study tables and time study form.

The normal running period is this day. There are no exceptions for the usual period for a research. It is only time for a professional technician to carry out the job whether he or she has served at a daily wage. The steps of time study are (Barnes, 1980; Prokopenko, 1992);

- Record all the information about work, workers and environment.
- Divide the work into components and define the way of doing work.
 - Analyse these components to be sure that the most effective methods and motions are used and determine the size of the sample.
- Measure the time that the worker completes each component by the aid of an appropriate tool.
- Determine effective working speed.
- Calculate normal times by using observed values.
- Determine allowances.
- Determine standard time.
- *Methods study*: thorough documentation and objective analysis of current and planned research processes as a way of simpler and more efficient technique implementation and application and cost reduction. Measurement of work:-the development of technology designed to set the time for a competent practitioner to perform a particular task at a defined level of performance.

3. PERFORMANCE MANAGEMENT FOR ABC BUSINESS

3.1. Time Study at ABC Company

Performance effects are typically measured over a long time or about 70 percent, mostly at the turn of the year, through success reviews prepared weekly and yearly. The explanations are; incorrect time requirements or production slowdowns as opposed to efficiency due to inadequate workload.

Global business rivalry forces companies to perform the best in the years to 2050. Today's managers want to achieve the best of efficiency, customer support, employee retention, responsiveness to evolving business dynamics, versatility and creativity and differentiation.

In order to achieve consistency, performance assessment and auditing processes have become even more critical in optimizing efficiency. One of this most significant tools, performance and evaluation, assessment and improvement methods, was analyzing output in the contemporary market setting.

The goal of this analysis is to provide results in the industrial sector on both of these criteria (efficiency measures) via work study (time study) and productivity analysis, two of the strategies for increasing efficiency in this ABC Electronic Business in Marmara Region, Turkey.

In order to be able to assess profitability, standard output times should be established. Cost is an essential indicator of success in production industries focused on quality and profitability. The reduction in price would also adversely impact performance. It was agreed to do a time analysis in this factory in order to solve this problem. Time research initiatives have begun in the Department of Dynamic Process.

WORK FLOW CHART		HUMAN[]	MAKINA[x]	EQUIPMENT[x]	PAGE NO: 1		
SURVEY NO: 1							
DEPARTMENT: Workstation		SUMMARY					
SUMMARY OF THE WORK: Work Flow-Work Study		FACILITY	AVAILABLE	SUGGESTED	SAVING		
AVAILABLE METHOD: X		PROCESS ○	6	-	-		
RECOMMENDED METHOD:		TRANSPORT ⇨	7	-	-		
WORKERS:		WAIT □	1	-	-		
		CONTROL □	-	-	-		
		STUCKING ▽	-	-	-		
		DISTANCE (cm)	550	-	-		
Prepared by:		TIME (Man / hours)	-	-	-		
Date:12.03.2018		COST	-	-	-		
Approving person:							
Date:							
DESCRIPTION OF WORK-PROCESS		QUANTITY	DISTANCE centimeter (cm)	TIME (sec)	SYMBOL		DESCRIPTION
CAD System with Laser Plotter			25	5.87	○	⇨	
DNC Controlled CNC Drilling-Routing			35	40.73	□		
Electroless Copper Plating(PTH)			30	155.00	□		B department
Photo Imagable Soldermask Application by Curtain Coating System			20	120.65	▽		
Electrolytic Copper and Tin-Lead Plating			60	1545.65	○	⇨	
Peelable Soldermask			45	2.65	□		
Double Sided SMD Testing			90	1.24	□		
Legend Marking			120	6.80	○	⇨	
Hot-Air-Solder Leveling			40	10.5	□		
Automatic Cut-Sheet Laminating			30	7.86	□		C department
Control				6.50	○	⇨	
Packaging			60	4.99	□		
Transporting			90	135.45	○	⇨	
Storing			70	120.50	□		
Total			550	2,043.79	6	7	1

Figure 2. Work Flow Chart-Work Study for a Department of ABC Business

As a result of this study new and correct standard times are calculated and thus performance reports can now reflect real performance of the department in Figure 2. Measurements are then continued to be performed at Computer Chip Recorded (CCR) Department and

standard times for some of the CCR's which are produced more in volume than the all other CCR's.

Time standards might have changed since:

- Workers might have been got adapted to the job.
- Production techniques have been modified.

With corrected standards:

- Planning can be done more effectively.
- Machine and worker efficiencies can be calculated correctly, thus if there is a problem it can be noticed more easily and rapidly. Cost of the product can be estimated more accurately.

The results of time studies are used for ABC Electronic Business:

- Determining schedules and planning work
- Determining standard costs and as an aid in preparing budgets
- Estimating the cost of a product before manufacturing it
- Determining machine effectiveness, the number of machines which one person can operate, and as an aid in balancing assembly lines and work done on a conveyor.
- Specification of time standards for payment to direct and indirect labor of a wage incentive.
- Regulation of time requirements for the management of cost of labor.

Effectiveness is defined essentially by quality. It intersects with the element of quality. The factors that are a long-term prerequisite for a company to continue to operate are creativity, standard of work and productivity. It should be only turned up with good output, reliability and performance. The most fundamental metric of success in companies is typically efficiency, as it explicitly shows physical and monetary values. Yet subjective output factors are not evident in efficiency. The goal is to increase efficiency while reducing total costs. Output ratios ought to be measured to determine this change. It is applied to use the following performance ratios for ABC Business as below Table 1:

Table 1. Productivity Analysis-The Results of Productivity of ABC Electronic Business

		2020	2021	2022	2023
Output	Sales Value of Products	180.000	293.000	495.000	675.000
Input	Labor	80.000	75.000	175.000	205.000
	Raw material	20.000	25.000	36.000	41.500
	Others	56.000	89.000	165.000	183.000

Table 2. Labor force, raw material and total Efficiency-Productivity Rates

	2020	2021	2022	2023
Labor Efficiency	2,25	3,91	2,83	3,29
Raw material Efficiency	9	11,72	13,75	16,25
Total Efficiency	1,55	1,56	1,32	1,57

Labor force, raw material and total productivity - Efficiency rates between 2020 and 2023 are as above Table 2.

Productivity Index = current period-year efficiency / base-year efficiency

The formula (5) is calculated Labor force, raw material and total Efficiency-Productivity Rates based on the year 2020, the productivity change in 2023 as an index.

Table 3. Efficiency- Labor Productivity, Raw Material Productivity and Total Productivity Index

Labor Productivity Index	1,46	46%	Increase Amount
Raw Material Productivity Index	1,80	80%	Increase Amount
Total Productivity Index	1,03	3 %	Increase Amount

Based on 2020, the labor productivity change in 2023 (see Table 3) increased by 46%. Based on 2020, the raw material productivity changes in 2023 increased by 80% increase. Based on 2020, the total productivity change index in 2023 increased by 3%.

CONCLUSION AND EVALUATION

Today, most leading producers realize that cost is just one aspect of calculation of efficiency. In reality, it is strongly debated that costs are used as a metric of efficiency. This is partly because of the conviction that costs are closely connected with other actions such as productivity and quality. In comparison, manufacturing prices are not

the only explicitly related consideration to the demands of the consumer. Experience shows that cost reductions have not produced concomitant quality and delivery improvements for decades, which have been almost the universal goal and often the single goal of production performance. However, paradoxically, quality improvements and the delivery time have resulted in lower costs. ABC Business uses two performance and defect levels steps. To assess the challenges on the factory floor, the terminology used by the organization to measure output is not sufficient. If the issue cannot be detected and dealt with at the onset of its incidence, it may incur significant losses. By measuring performance, the business may achieve better outcomes as the time taken to generate a given number of goods at the normal period required to manufacture them.

By measuring on a work center basis, the issues of the work center can be defined and corrective action can be taken, if the system is a malfunction, raw material insufficiency or job related problem. A considerable percentage of factory operations require intensive preparation. Because of this aspect, most workers are very familiar with the procedures and systems; their roles are set. Thus their participation in modifications in manufacturing processes can be of substantial value to the economy and business. The popular opinion of today is that the business paradigm doesn't work anymore. In reality, the policies mainly designed to decrease costs have decreased product efficiency, diminished manufacturing capacities and destroyed morality. Most of this impact is attributed to a weak understanding of

the forces that improve output performance. ABC Business has been stuck in the same way as other manufacturing firms in the past.

The key aim of the group was to increased expenses as management sees cost cutting as a survival imperative in the dynamic market environment of today. They have so far that the population that white and blue workers are inadequate. The company loses a lot of power as people who are professionals in their professions, i.e. the best of the workforce, quit first in these layoffs for the sake of cost reduction. There is no database of what is performed at a single work center, and how long it takes to manufacture per unit. The output of the organization cannot be measured without this knowledge in real time for development of increasing amount. We therefore recommend the usage of the following sheet of details. The times for each job order in each work center should be documented in a separate way. More power over the output may be obtained if this method is computerized.

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CHAPTER 4

**THE IMPACT OF FINANCIAL FAIR PLAY
CRITERIA ON THE FINANCIAL PERFORMANCE
OF FOOTBALL CLUBS: EVALUATION WITH
MULTIPLE-CRITERIA DECISION ANALYSIS**

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INTRODUCTION

Turkish football clubs have been members of the International Football Federations Association (FIFA) since 1923 and UEFA since 1962. Turkey applies the rules formulated by these institutions nationally and internationally, and takes parts in organizations of football activities. Turkish football clubs, which were initially established as associations, started to offer their shares to the public as of 2002. The first football club traded in Istanbul Stock Exchange (BIST) was "Besiktas" football club, which offered 15% of its capital to the public in 2002. It was followed by Galatasaray club, which was offered to the public in 2002, Fenerbahce club in 2004 and Trabzon Spor club in 2005.

The public offering of Besiktas club is based on the "English Model". The other three clubs used an "income-weighted" model in which only team revenues were offered to the public, without including technical staff costs in the financial statements (Findıkcı, 2015).

Publicly-traded football clubs report all their financial information in accordance with International Financial Reporting Standards (IFRS). In the study, financial statements of clubs were analysed as of the 2005 season as 2005 was a turning point for the businesses in BIST. Since compliance with International Financial Reporting Standards was required during the accession process to the European Union, financial statements were required to be prepared in accordance with IFRS as of 1.1.2005. It was an effective factor in starting its implementation as of this date in Turkey.

Financial statements prepared in accordance with international financial reporting standards increased transparency and accountability, and developed corporate management perspective. Moreover, it enabled comparable reporting in national and international terms. UEFA financial criteria established by the Union of European Football Associations anticipating these reporting standards made the importance of the subject more evident.

Professional football clubs are unusual businesses. Their performances are evaluated both by their power on the pitch and their financial power out of the pitch (Guzmán & Morrow 2007). Nowadays football, which achieved to trail millions of people in many countries in the world and is a great passion for many, has turned into an economic sector in which big budgets, transfers and agreements with exorbitant sum are talked about. According to Deloitte Football Money League report, the total revenues of the twenty clubs with the highest revenues in the world amounted to € 9.3 billion in the 2018-2019 season with an 11% increase from the previous period. FC Barcelona is in first place with € 840.8 million, Real Madrid € 757.3 million, Manchester United € 711.5 million, Bayern Munich € 660.1 million and Paris Saint Germain € 635.9 million. The report highlights that although Manchester United is in the top three, the upcoming years will be challenging (Deloitte, 2020).

The necessity for the actors of such a large sector to be financially balanced and sustainable has promoted UEFA to make some arrangements in this regard.

UEFA published FFP criteria in 2010 in order to bring financial discipline to European club football and the long-term sustainability for clubs. These regulations were periodically updated in 2012, 2015 and 2018. FFP criteria, known as "UEFA Criteria" make up the financial criteria of UEFA. UEFA brings a number of sanctions to clubs that fail to meet the minimum requirements of these criteria. There have been periods when Turkish football teams have also had difficulty in complying with these criteria, which are preconditions for participation in UEFA-organised competitions, and have been subject to some sanctions. Indeed, it is also known that many football clubs in continental Europe fail to meet the FFP criteria and are subject to UEFA sanctions every year in this context. These sanctions have caused huge revenue losses to clubs.

Football's opening from the pitch to other sectors and the increasing commercial concerns are among the reasons for the unethical growth of the football industry. This creates a risky situation not only for club management but more importantly for investors. Other than the fanatical investors who invest in their clubs, some investors make assessments by looking at the financial reports of the clubs. Financial evaluation has traditionally been based on financial ratios. However, while it is possible to make assessments between clubs based on the individual results of the ratios, it is difficult and a waste of time. And it will not always be possible to make the right decision. Considering that not all investors can have financial information, it is inevitable to analyze financial power using mathematical methods.

The aim of the study is to evaluate the impact of FFP criteria on the stability and sustainability of the financial structure of Turkish football clubs and to determine the long-term financial performance of the clubs. For this purpose, financial data belonging to 2011-2019 seasons in which FFP criteria are applied and 2005-2010 seasons before the criteria are used. For the analysis, financial performance evaluation was made with the TOPSIS and GREY methods from the 'Multiple Criteria Decision-Making Analysis' (MCDA), which is applied today in decision making and gives meaningful results. In the study, the literature review was given first, then information on methodology and analysis of Turkish football clubs and discussion on the impact of FFP criteria. Match success and financial power during analysis periods have been evaluated separately.

1. LITERATURE REVIEW

There are many studies in the literature on financial fair play subject and the process after its enactment. Generally, there are many studies approving of or criticizing FFP criteria.

Franck (2014) regards the FFP criteria as an effective way to increase the importance of "management quality" by limiting the external money injection and to shake up the long-standing football hierarchy. Peeters & Szymanski (2012) emphasize that it will bring discipline and rationality to clubs. Franck (2018) points out that with the FFP application, revenues, operating profits and own funds have increased and overdue debts have decreased in European football.

Despite positive reviews of FFP regulations, there are also many critical studies. In his study, Vöpel (2011) states that he does not view FFP as an appropriate regulation and audit costs of clubs are much more than potential benefits. According to D'andrea & Masciandaro (2016), FFP regulations are anti-competitive by nature and Franck (2018) says some clubs are unable to fulfil their obligations arising from transfer agreements as they are left out of activity midseason. According to Szymanski (2014), this situation will also endanger other clubs by creating a domino effect. FFP rules will not only enable small clubs which want to invest in the future by borrowing money but also eliminate their chances of combating against big clubs.

Sanchez, Barajas & Sanchez-Fernandez (2019) examined the relationship between profitability and sporting success in European football. They found that financial performance had a negative impact on the clubs' match score performance, whereas match score performance had a positive impact on profitability. The study concluded that UEFA's FFP rules to provide sustainability has a positive impact on the profitability of clubs.

Dimitropoulos & Limperopolos (2014) said that even though the high amounts paid to players adversely affect the profitability, they have positive effects on match scores and according to Dimitropoulos & Scafarto (2019), this was the exact reason that FFP criteria were the result of this unbelievable transfer fees paid by clubs regardless of their financial capabilities.

It was determined by analyses that match results had positive or negative effects on the psychology of individuals and also influenced the decisions of people investing in clubs (Ashton, Gerrard & Hudson, 2003) it was observed that investments without a dynamic analysis, as well as with irrational psychological emotions resulted in economic losses (Bell, Brooks, Matthews & Sutcliffe, 2012). In his study on the factors affecting the share prices of clubs, Cam (2020) emphasized that it was common in the Istanbul Stock Exchange for volume increases in the stock shares of sports clubs with expectations of winning in the last trading day of the week.

Research shows that regularly performed performance measurements have a crucial role in achieving sustainable competitive advantage. Furthermore, businesses with professional performance measurements are much more successful against their competitors (Bititci, Carrie & McDevitt, 1997). However, performance measurements designed with traditional logic prevent enterprises from successfully adapting to the competitive environment (Monjezi, Dehghani, Singh, Sayadi, & Gholinejad, 2010).

In his study, Devecioglu (2004) explored the relationship between match scores of Beşiktaş and Galatasaray clubs and investor preferences, and found that match scores reflect on the value of the stock. He also pointed out that investor preferences are also influenced by political and economic developments in the world and Turkey. In their study covering ten English football clubs, Zuber, Yiu, Lamb & Gandar (2005) examined the impact of league and cup match scores

on stock prices between 1997 and 2000. The results did not reach the expectations and it was determined that match scores have no impact on the club's stock return.

Barajas, Limeres & Gasparetto (2017) stated in their study that the information provided to fans by the clubs is based on limited economic and financial data. Multi-Criteria Decision Analysis (MCDA) was adapted to the football industry, the analysis was made for the 2012-2015 seasons performed after FFP regulations with financial ratios. It was concluded that European clubs were financially stable during the 2011/12 season when FFP rules were applied.

Dimitropoulos (2009) analyzed the profitability and the factors contributing to the performance of Greek football clubs from 1994 to 2004. Again, Chelmis, Niklis, Baourakis & Zopounidis (2019), examined the performance of Greek football clubs competing in Super League for 2012-2014 seasons in three (financial, commercial and sports) different aspects with multi-criteria decision-making methods. They reached positive results between the profitability of the clubs and their short-term success, confirming their previous works.

Ecer & Boyukaslan (2014), came to the conclusion that the financial performances of four football clubs in Turkey for 2008/6-2012/6 seasons confirmed the comments of football authorities with the results of their Grey analysis.

2. METHODOLOGY

In the study, the impact of the Financial Fair Play criteria implemented by UEFA for the first time in the 2011/2012 season, on the financial balances of Turkish football clubs was evaluated. 14 financial ratios belonging to 2004/05-2018/19 seasons are calculated based on financial data of Fenerbahce (FB), Beşiktaş (BJ), Galatasaray (GS) football clubs trading in Istanbul Stock Exchange (BIST). Financial data of the clubs for 2011/12-2018/19 seasons and pre-criteria 2004/05-2010/11 seasons were analyzed for evaluation using Multi-Criteria Decision-Making Grey and TOPSIS methods.

The study first provided information about financial ratios. Then, an analysis was made by Grey and Topsis methods. According to analysis results, financial performance ranking was made and financial balances of each club before and after FFP were discussed. The results were also compared with the match scores of the clubs.

2.1. Financial Ratios

It is important to determine financial ratios that can help parties interested in the financial status of businesses, especially investors for making decisions. Ginevičius & Podvieszko (2013) used the ratios that UEFA regards important. These ratios were also used by Barajas, Castro-Limeres, & Gasparetto (2017). The same ratios were adapted to the data of Turkish football clubs in the study.

Table 1 was prepared for the ratios and their weights in the study, descriptions of the ratios were given in light of the studies of Barajas, etc. (2017).

a. Profit Ratios; Improving the economic and financial capacities of clubs, disciplining their expense levels, managing their assets in a profitable and and efficient manner are among UEFA's goals (2012). The ratios that serve these purposes are Net Profit / Operating Profit, Operating Profit / Operating Revenues and Total Operating Revenues / Total Assets, respectively.

b. Stability Ratios: are calculated to evaluate the economic and financial stability. The low debt level is considered as financial stability.

c. Coverage Ratios: are the ratios related to adequacy of assets controlled by the company with long-term liquidity. It is also related to the goals of UEFA (2012) to preserve the proper functioning of European competitions and long-term sustainability for clubs.

d.Liquidity Ratios are the ratios that measure the ability of clubs to meet short-term payments with liquid assets.

e.Spending Level Ratios: are based on the level of wage expense level and operating costs that characterize this sector. Article 62 of UEFA (2012) FFP states that clubs' staff costs should not exceed 70% of total revenues. Therefore, this ratio connects personnel expenses (mostly sports personnel) with the main operating income. The high

result indicates that there are little discipline and rationality over the financial position of the club (UEFA, 2012).

Ratios which are required to be high in the evaluation are shown with (+) symbol, which are required to be low with the (-) symbol in Table 1.

Table 1: Indicators of Economic and Financial Sustainability of Football Clubs.

<u>Ratios and Direction</u>		WEIGHT	CRITERION WEIGHT
<u>Profit Ratios</u>			
+	NP/OP = Net Profit / Operating Profit	0,030	0,15
+	OP/OR = Operating Profit / Operating Revenues	0,060	
+	TOR/TA = Total Operating Revenues / Total Assets	0,060	
<u>Stability Ratios</u>			
-	STD/TL = Short-Term Debt / Total Liabilities	0,100	0,30
-	LTD/TL = Long-Term Debt / Total Liabilities	0,100	
+	WC/CA = (Current Assets – Current Liabilities) / Current Assets	0,100	
<u>Coverage Ratios</u>			
+	E/TL = Equity / Total Liabilities	0,080	0,20
+	NCA/TL = Non-Current Assets / Total Liabilities	0,080	
+	TA/TD = Total Assets / (Current Debt + Non-Current Debt)	0,040	
<u>Liquidity Ratios</u>			
+	Quick Ratio = (Current Assets – Stocks) / Current Liabilities	0,25	0,05
+	CSTD/CL = (Cash + Short-Term Debtors) / Current Liabilities	0,25	
<u>Spending Level Ratios</u>			
-	W/OR = Wages / Operating Revenue	0,150	0,30
-	W/TR = Wages / Total Revenue	0,075	
-	W/OE = Wages / Operating Expenses	0,075	

Source: Barajas & Sanchez-Fernandez (2017): Application of MCDA to evaluate financial fair play and financial stability in European football clubs. *Journal of Sports Economics & Management*, 7(3), 152

2.2. Evaluation of Compliance Levels of Football Clubs with FFP Rules by Multi-Criteria Decision Making Methods

Making decisions among alternatives by using several criteria is what people do many times in daily life. Evaluating the existing alternatives according to many criteria that are often contradictory and finding the best of them require multi-criteria decision-making analysis (MCDA). They are practical and useful techniques for sorting and selecting a number of alternatives (Shih, Shyur & Lee, 2007). They are regarded as objective and effective methods used widely in academic literature (Chen,2020).

In this chapter of the study, the financial performances of Fenerbahce, Beşiktaş, Galatasaray and Trabzonspor clubs were analyzed with TOPSIS and GRA methods. Later assessments were made on the findings of both analyses.

2.2.1. Grey Relational Analysis (GRA)

GRA system theory is a mathematical method first developed by Julong Deng to digitize ambiguity in 1982 and found application in many disciplines (Deng, 1982). The method has found application in many sectors as well as in the sports sector. This model, which does not require the use of a large number of data can lead to credible results. (Hui, Yang, li, lu, & Dong, 2009).

GRA consists of six steps. The financial ratios of each club for the 2004/05/19-2018/19 seasons were calculated and a step-by-step analysis was carried out. Firstly, the decision matrix was created by

placing the financial ratios of the four football clubs for the 2018/19 season in Table2.

Step 1. Decision Making Matrix (Xi)

$$X_i = \begin{bmatrix} x_1(1) & x_1(2) & \dots & x_1(n) \\ x_2(1) & x_2(2) & \dots & x_2(n) \\ \vdots & \vdots & \ddots & \vdots \\ x_n(1) & x_n(2) & \dots & x_n(n) \end{bmatrix} \quad (1)$$

Table 2: Financial Ratios of Football Clubs For The 2018/19 Season

Clups	Profit Ratios			Stability Ratios			Coverage Ratios			Liquidity Ratios		Spending Level Ratios		
	NP/OP	OP/OR	TOR/TA	STD/TL	LTD/TL	WC/CA	E/TL	NCA/TL	TA/TD	Quick R	CSTD/CL	W/OR	W/TR	W/OE
FB	-5,844	-0,032	0,548	0,547	0,453	0,217	-0,247	0,055	0,753	1,255	0,129	0,478	0,434	3,424
BJ	-5,127	-0,066	0,787	0,818	0,182	-1,102	-0,415	0,196	0,585	0,466	0,072	0,575	0,448	0,531
GS	0,177	0,154	0,779	0,755	0,245	-2,538	-0,160	0,627	0,840	0,265	0,206	0,343	0,337	0,407
TS	-0,598	0,227	0,839	0,568	0,432	-7,324	-0,473	0,459	0,527	0,120	0,100	0,219	0,210	0,287

Step 2. Creating the Comparison Matrix.

Reference series is the value determined for all the criteria as $x_0 = (x_0(1), x_0(2), \dots, x_0(j), \dots, x_0(n))$. Table 1 shows the symbol (+) for the biggest best criteria and (-) for the smallest best criteria. Accordingly, a comparison matrix is created in Table 3 by writing the reference series on the first row of the decision matrix.

Table 3: Comparison Matrix

	Profit Ratios			Stability Ratios			Coverage Ratios			Liquidity Ratios		Spending Level Ratios		
Clups	NP/ OP	OP/ OR	TOR/ TA	STD/ TL	LTD/ TL	WC/ CA	E/TL	NCA/ TL	TA/TD	Quick R	CSTD/ CL	W/OR	W/TR	W/OE
Ref.	0,177	0,227	0,839	0,547	0,182	0,217	-0,160	0,627	0,840	1,255	0,206	0,219	0,210	0,287
FB	-5,844	-0,032	0,548	0,547	0,453	0,217	-0,247	0,055	0,753	1,255	0,129	0,478	0,434	3,424
BJ	-5,127	-0,066	0,787	0,818	0,182	-1,102	-0,415	0,196	0,585	0,466	0,072	0,575	0,448	0,531
GS	0,177	0,154	0,779	0,755	0,245	-2,538	-0,16	0,627	0,84	0,265	0,206	0,343	0,337	0,407
TS	-0,598	0,227	0,839	0,568	0,432	-7,324	-0,473	0,459	0,527	0,12	0,1	0,219	0,21	0,287

3.Steps. Normalization Process and Normalized Matrix

Both the business management and investors aim for high liquidity and profitability and low debts. 3 possible situations can be encountered in normalizing the data set: If the aim is to obtain a better or greater value, formula number (2), and if the aim is to obtain a smaller or lesser value, formula number (3) and if it is to obtain an optimal value, formula number (4) is used.

$$x_i^* = \frac{x_i(j) - \min_j x_i(j)}{\max_j x_i(j) - \min_j x_i(j)} \quad (2)$$

$$x_i^* = \frac{\max_j x_i(j) - x_i(j)}{\max_j x_i(j) - \min_j x_i(j)} \quad (3)$$

$$x_i^* = \frac{|x_i(j) - x_{0b}(j)|}{\max_j x_i(j) - x_{0b}(j)} \quad (4)$$

For this purpose, a normalized matrix was prepared using Equations 2 and 3 and Table 4 was arranged.

Table 4: Normalized Matrix

Clups	Profit Ratios			Stability Ratios				Coverage Ratios			Liquidity Ratios	Spending Level Ratios		
	NP/OP	OP/OR	TOR/TA	STD/TL	LTD/TL	WC/CA	E/TL	NCA/TL	TA/TD	Quick R	CSTD/CL	W/OR	W/TR	W/OE
FB	0,000	0,114	0,000	1,000	0,000	1,000	0,723	0,000	0,723	1,000	0,427	0,273	0,060	0,000
BJ	0,119	0,000	0,821	0,000	1,000	0,825	0,186	0,247	0,186	0,305	0,000	0,000	0,000	0,922
GS	1,000	0,753	0,792	0,232	0,768	0,635	1,000	1,000	1,000	0,127	1,000	0,653	0,469	0,962
TS	0,871	1,000	1,000	0,923	0,077	0,000	0,000	0,707	0,000	0,000	0,208	1,000	1,000	1,000

Step 4. Calculating the Absolute Value Table

In Table 5, the absolute values table was arranged. The aim of this table, which was organized using equation 6, is to calculate the distance between normalized values and reference values. The absolute value $\Delta 0i(j)$ between x_0^* and x_i^* is found:

$$X_i^* = \begin{bmatrix} \Delta_{01}(1) & \Delta_{01}(2) & \dots & \Delta_{01}(n) \\ \Delta_{02}(1) & \Delta_{02}(2) & \dots & \Delta_{02}(n) \\ \vdots & \vdots & \ddots & \vdots \\ \Delta_{0m}(1) & \Delta_{0m}(2) & \dots & \Delta_{0m}(n) \end{bmatrix} \tag{6}$$

Table 5: Absolute Values Table

Clups	Profit Ratios			Stability Ratios				Coverage Ratios			Liquidity Ratios	Spending Level Ratios		
	NP/OP	OP/OR	TOR/TA	STD/TL	LTD/TL	WC/CA	E/TL	NCA/TL	TA/TD	Quick R	CSTD/CL	W/OR	W/TR	W/OE
FB	1,000	0,886	1,000	0,000	1,000	0,000	0,277	1,000	0,277	0,000	0,573	0,727	0,940	1,000
BJ	0,881	1,000	0,179	1,000	0,000	0,175	0,814	0,753	0,814	0,695	1,000	1,000	1,000	0,078
GS	0,000	0,247	0,208	0,768	0,232	0,365	0,000	0,000	0,000	0,873	0,000	0,347	0,531	0,038
TS	0,129	0,000	0,000	0,077	0,923	1,000	1,000	0,293	1,000	1,000	0,792	0,000	0,000	0,000

Step 5. Calculation of GRA Relational Coefficient Matrix

The relation coefficient was 0.5 when calculating according to equation (7). ξ is the distinguisher coefficient in the formula. It is also calculated as $\Delta min = \min \min j \Delta 0i(j)$.

$$\gamma_{0i}(j) = \frac{\Delta_{\min} + \xi \Delta_{\max}}{\Delta_{0i}(j) + \xi \Delta_{\max}} \quad (7)$$

Table 6: Gray Relation Coefficients Matrix

Clups	Profit Ratios			Stability Ratios			Coverage Ratios			Liquidity Ratios		Spending Level Ratios		
	NP/OP	OP/OR	TOR/TA	STD/TL	LTD/TL	WC/CA	E/TL	NCA/TL	TA/TD	Quick R	CSTD/CL	W/OR	W/TR	W/OE
FB	0,333	0,361	0,333	1,000	0,333	1,000	0,643	0,333	0,643	1,000	0,466	0,408	0,347	0,333
BJ	0,362	0,333	0,736	0,333	1,000	0,741	0,381	0,399	0,381	0,418	0,333	0,333	0,333	0,866
GS	1,000	0,669	0,707	0,394	0,683	0,578	1,000	1,000	1,000	0,364	1,000	0,590	0,485	0,929
TS	0,795	1,000	1,000	0,866	0,351	0,333	0,333	0,630	0,333	0,333	0,387	1,000	1,000	1,000

Step 6. Calculating Relationship Degree

$$\Gamma_{0i} = \frac{1}{n} \sum_{j=1}^n \gamma_{0i}(j) \quad (8)$$

At the final stage of the analysis, grey relational degrees (GRD) are determined using the grey relational coefficients calculated. At this stage, the degree of gray relation was calculated in two ways. First, calculations were made according to the financial ratios' weights and ranked. Second, the ranking was done by taking the weights of all the ratios as equal. A similar ranking was obtained.

Table 7: Results of the GRA (Calculating GRD According to the Weight of Criteria)

Clups	Profit Ratios %15			Stability Ratios			Coverage Ratios			Liquidity Ratios		Spending Level Ratios			gID
	NP/OP	OP/OR	TOR/TA	STD/TL	LTD/TL	WC/CA	E/TL	NCA/TL	TA/TD	Quick R	CSTD/CL	W/OR	W/TR	W/OE	
FB	0,333	0,361	0,333	1,000	0,333	1,000	0,643	0,333	0,643	1,000	0,466	0,408	0,347	0,333	1,837
BJ	0,362	0,333	0,736	0,333	1,000	0,741	0,381	0,399	0,381	0,418	0,333	0,333	0,333	0,866	1,671
GS	1,000	0,669	0,707	0,394	0,683	0,578	1,000	1,000	1,000	0,364	1,000	0,590	0,485	0,929	3,308
TS	0,795	1,000	1,000	0,866	0,351	0,333	0,333	0,630	0,333	0,333	0,387	1,000	1,000	1,000	2,516

Table 8: Results of the GRA (Calculating GRD Taking Criteria At Equal Weight).

Clups	Profit Ratios			Stability Ratios			Coverage Ratios			Liquidity Ratios		Spending Level Ratios			GID
	NP/OP	OP/OR	TOR/TA	STD/TL	LTD/TL	WC/CA	E/TL	NCA/TL	TA/TD	Quick R	CSTD/CL	W/OR	W/TR	W/OE	
FB	0,333	0,361	0,333	1,000	0,333	1,000	0,643	0,333	0,643	1,000	0,466	0,408	0,347	0,333	0,54
BJ	0,362	0,333	0,736	0,333	1,000	0,741	0,381	0,399	0,381	0,418	0,333	0,333	0,333	0,866	0,50
GS	1,000	0,669	0,707	0,394	0,683	0,578	1,000	1,000	1,000	0,364	1,000	0,590	0,485	0,929	0,74
TS	0,795	1,000	1,000	0,866	0,351	0,333	0,333	0,630	0,333	0,333	0,387	1,000	1,000	1,000	0,67

The results of the study made with GRA (Calculating GRD According to the Weight of Criteria) are shown in Table 9. Table 9 shows the performance indicators and performance ranking of Fenerbahçe (FB), Beşiktaş (BJ), Galatasaray (GS) and Trabzonspor (TS) football clubs from 2004/05 to 2018/19 seasons.

Table 9: Grey Relational Analysis and Performance Ranking of Four Football Clubs for the years 2004/05-2018/19.

Clups	FB		BJ		GS		TS	
Sezon	Score	Seq	Score	Seq	Score	Seq	Score	Seq
2019	1,837252	3	1,671494	4	3,307616	1	2,515926	2
2018	1,71372	3	2,839617	2	2,878334	1	1,655482	4
2017	2,167457	3	2,683826	2	1,671485	4	2,858568	1
2016	2,353931	3	2,133479	4	3,020557	1	2,557267	2
2015	1,991106	3	1,919128	4	2,962946	1	2,763922	2
2014	2,435179	2	1,616726	4	3,189987	1	2,313478	3
2013	3,063741	1	1,868578	4	2,39539	3	2,403874	2
2012	3,082799	2	1,582724	4	2,209857	3	3,242753	1
2011	3,540189	1	1,580176	3	1,425604	4	2,258333	2
2010	3,657169	1	1,692636	3	1,460845	4	2,362569	2
2009	2,384154	1	-0,62109	4	1,629431	2	1,283333	3
2008	3,475108	1	1,587176	4	2,195863	2	2,042531	3
2007	3,339114	1	1,382777	4	2,314086	3	3,225752	2
2006	2,567628	3	1,480336	4	2,268422	2	3,347031	1
2005	2,849351	2	1,690614	3	1,876184	3	3,168875	1

While Fenerbahçe club ranked first in 2007-2011 seasons before FFP, it declined to second and third ranks after FFP. And Galatasaray club rose to the first rank after FFP, although with ups and downs. A more detailed evaluation was made after the TOPSIS analysis.

2.2.2. Technique for Order Preference by Similarity to an Ideal Solution (TOPSIS)

Yu (2014) argued in his study he made with TOPSIS that the model is a cautious and risk-preventing decision-making method for decision-makers. Dadelo, Turskis, Zavadskas & Dadeliene (2014) developed a methodology with the TOPSIS method in selecting clubs and arrived at consistent results with expert opinions. According to Hajkowicz & Higgins (2008), when data is properly handled, there is no significant difference among preference rankings conducted by different methods (MCDA).

Basic concept of method is m alternatively multiple criteria decision make method as m pointed (alternative) geometric system in n sized (parameter) area. TOPSIS method consists of steps mentioned below.

Since the decision matrix showing the financial ratios of football clubs for 2018/19 seasons is shown in Table 2 in GRA method, it is not included here as the first step of TOPSIS analysis.

Step 1. Forming Normalized Decision Matrix (R).

Normalized Decision Matrix was calculated by using A matrix elements and Equation (9).

$$A_{ij} = \begin{bmatrix} x_{11} & x_{12} & \dots & x_{1n} \\ x_{21} & x_{22} & \dots & x_{2n} \\ \cdot & \cdot & \cdot & \cdot \\ \cdot & \cdot & \cdot & \cdot \\ \cdot & \cdot & \cdot & \cdot \\ x_{m1} & x_{m2} & \dots & x_{mn} \end{bmatrix} \text{ and } r_{ij} = \frac{x_{ij}}{\sqrt{\sum_{k=1}^m x_{kj}^2}}$$

$$R = \begin{bmatrix} r_{11} & r_{12} & \dots & r_{1n} \\ r_{21} & r_{22} & \dots & r_{2k} \\ \cdot & \cdot & \cdot & \cdot \\ \cdot & \cdot & \cdot & \cdot \\ \cdot & \cdot & \cdot & \cdot \\ r_{n1} & r_{n2} & \dots & r_{nk} \end{bmatrix} \quad (9)$$

(r_{ij} : i : 1,2,...N; criteria number j : 1,2,...K; alternative number.

Table 10: Normalized Decision Matrix

	Profit Ratios			Stability Ratios			Coverage Ratios			Liquidity Ratios		Spending Level Ratios		
	NP/OP	OP/OR	TOR/TA	STD/TL	LTD/TL	WC/CA	E/TL	NCA/TL	TA/TD	Quick R	CSTD/CL	W/OR	W/TR	W/OE
Clups														
FB	-0,749	-0,114	0,367	0,401	0,651	0,028	-0,355	0,069	0,547	0,916	0,474	0,561	0,587	0,978
BJ	-0,657	-0,232	0,527	0,600	0,261	-0,141	-0,597	0,244	0,425	0,340	0,265	0,676	0,606	0,152
GS	0,023	0,544	0,521	0,554	0,351	-0,324	-0,231	0,780	0,610	0,193	0,755	0,403	0,455	0,116
TS	-0,077	0,799	0,562	0,416	0,621	-0,935	-0,681	0,572	0,383	0,088	0,367	0,257	0,284	0,082

Step 2. Forming of Weighted Normalized Decision Matrix (V).

In this step firstly weighted values (w_i) about evaluation factors are

determined ($\sum_{i=1}^n w_i = 1$). W_j : as for each j . criteria, relative weight

values of elements of normalized decision matrix according to purpose are found, (Monjezi, Dehghani, Singh, Sayadi, & Gholinejad,

2010). And then, V matrix is formed by multiplying elements in the R matrix each column with W_i value

V matrix;

$$V_{ij} = \begin{bmatrix} w_1 r_{11} & w_2 r_{12} & \dots & w_n r_{1n} \\ w_1 r_{21} & w_2 r_{22} & \dots & w_n r_{2n} \\ \cdot & & & \cdot \\ \cdot & & & \cdot \\ \cdot & & & \cdot \\ w_1 r_{m1} & w_2 r_{m2} & \dots & w_n r_{mn} \end{bmatrix} \quad (10)$$

$W_1 = -0,102$ $W_2 = 0,070$ $W_3 = 0,138$ $W_4 = 0,138$ $W_5 = 0,132$
 $W_6 = -0,096$ $W_7 = -0,130$ $W_8 = 0,116$ $W_9 = 0,137$ $W_{10} = 0,10$
 $W_{11} = 0,13$ $W_{12} = 0,133$ $W_{13} = 0,135$ $W_{14} = 0,093$

Table 11: Weighted Normalized Decision Matrix (V)

	Profit Ratios			Stability Ratios			Coverage Ratios			Liquidity Ratios		Spending Level Ratios		
	NP/OP	OP/OR	TOR/TA	STD/TL	LTD/TL	WC/CA	E/TL	NCA/TL	TA/TD	Quick R	CSTD/CL	W/OR	W/TR	W/OE
Clubs														
FB	0,0765	-0,01	0,0507	0,0552	0,0856	-0,003	0,046	0,008	0,075	0,098	0,0616	0,074	0,08	0,091
BJ	0,0671	-0,02	0,0728	0,0825	0,0344	0,013	0,078	0,028	0,058	0,037	0,0344	0,09	0,08	0,014
GS	-0,002	0,038	0,072	0,0762	0,0462	0,031	0,03	0,091	0,084	0,021	0,0982	0,053	0,06	0,011
TS	0,0078	0,056	0,0776	0,0573	0,0816	0,09	0,089	0,066	0,053	0,009	0,0477	0,034	0,04	0,008

Step 3. Ideal (A+) and Negative Ideal (A-) Solution Determining

In 3th step, ideal A^+ and ideal A^- solution sets were formed with the assist of equation (11) and (12). A^+ set calculated according to largest value of each column of V matrix, A^- set calculated according to smallest value of each column of V matrix.

$$A^* = \left\{ (\max_i v_{ij} \mid j \in J), (\min_i v_{ij} \mid j \in J') \right\} \quad (11)$$

$$A^- = \left\{ (\min_i v_{ij} \mid j \in J), (\max_i v_{ij} \mid j \in J') \right\} \quad (12)$$

A+ = 0,076 0,056 0,078 0,083 0,086 0,090 0,089 0,091 0,084
0,098 0,098 0,090

A- = -0,002 -0,016 0,051 0,055 -0,034 0,003 0,030 0,008 0,053
0,009 0,034 0,034 0,04 0,008

Step 4. Calculating of Separation Measures

Distance between alternatives is found by n Sized Euclidean Distance approach. Positive ideal solution of distance of alternatives S^+ and negative ideal solution distance S^- were calculated via equation 13 and 14.

$$S_i^* = \sqrt{\sum_{j=1}^n (v_{ij} - v_j^*)^2} \quad (13)$$

$$S_i^- = \sqrt{\sum_{j=1}^n (v_{ij} - v_j^-)^2} \quad (14)$$

$S^+ = \{ 0,156; 0,179; 0,171; 0,171 \}$

$S^- = \{ 0,101; 0,079; 0,018; 0,034 \}$

Step 5. Calculation of Relative Closeness to Ideal Solution (C)

Each of decision point closeness to ideal solution according to equation 15;

$$C_i^* = \frac{S_i^-}{S_i^- + S_i^*} \quad 0 \leq C_i^* \leq 1 \quad (15)$$

Table 12: 2018/2019 Year Closeness Values to Positive Ideal Solution C⁺

C	Scor	Number
FB	0,393	1
BJ	0,307	2
GS	0,095	4
TS	0,165	3

C_i^* Value is ranged between $0 \leq C_i^* \leq 1$, (Balioti, Tzimopoulos & Evangelides, 2018). When $A_i=A+$, it is equal to C_i^* and when related decision point to ideal solution is $A_i=A+$, $C_i^* = 0$. This is showing that absolute closeness of related decision point to negative ideal solution.

Step 6. Grading of Companies According to Their Points and Performances

Alternatives are determined decision grade by descending order according to C_i . Alternative which have highest C_i are chosen, (Zolfani & Antucheviciene, 2012).

3. FINDINGS AND EVALUATION

GRA and TOPSIS analyses for the financial ratios of Fenerbahce (FB), Beşiktaş (BJ), Galatasaray (GS) ve Trabzon Spor (TS) football clubs in Istanbul Stock Exchange between 2004/05-2018/19 seasons were made. "T" in Table 13 shows the TOPSIS results and "G" the GRA results. "S" is the match scores of clubs by year.

Table 13: Performance Indicators of Clubs Before and After FFP According to Multi-Criteria Methods

Clups Sezon/ Metod	FB			BJ			GS			TS		
	T	G	S	T	G	S	T	G	S	T	G	S
2018/19	1	3*	6	2	4*	3	4	1*	1	3	2*	4
2017/18	2	3*	2	3	2*	4	1	1	1+	4	4	5
2016/17	2	3*	3	3	2*	1	4	4	4+	1	1	6
2015/16	3	3	2	4	4	1	1	1	6	2	2	12
2014/15	3	3	2	4	4	3	2	1*	1	1	2*	4
2013/14	4	2*	1	2	4*	3	1	1	2	3	3	4
2012/13	4	1*	2	1	4*	3	3	3	1	2	2	9
2011/12	2	2	2+	4	4	4+	3	3	1	1	1	3
2010/11	1	1	1+	3	3	5	2	4*	8	4	2*	2
2009/10	1	1	2	4	3*	4	3	4*	3	2	2	5
2008/09	1	1	4	4	4	1	3	2*	5	2	3*	3
2007/08	1	1	2	4	4	3	2	2	1	3	3	6
2006/07	3	1*	1	4	4	2	1	3*	3	2	2	4
2005/06	3	3	2	4	4	3	2	2	1	1	1	4
2004/05	2	2	1	4	4	4+	1	3*	3	3	1*	2
Eşitlik	60%			60%			53%			67%		

* symbol indicates the different ranking between methods. Table 13 shows the performance ranking comparison of clubs according to both analyses. Both methods led to the same results in the financial performance ranking at 60% in FB club, 60% in BJK club, 53% in GS club and 67% in TS club.

According to the comparison of the performance ranking and annual match scores of clubs, the ones on point are shown with the symbol (+). The table clearly show that there is no meaningful relationship between the financial results and the match scores.

Table14 was prepared to see the impact of the ratios on the financial strength of the clubs. This table shows the GRA ratio weights for the 2018/19 season. For this, the average weight of the ratio group of each club was found, then the averages of the ratios were calculated. Table 14 clearly shows that the importance of each ratio group is very close. This indicates that the ratios calculated in the analyses are an accurate choice. When we examine it, we can see that the impact of the TS club's profitability ratio on its financial power is high (93%), and it is at the ratio (100%) indicating the level of spending. According to Table 2, the expense level ratios obtained from the initial raw data of the club are the lowest compared to other clubs. So, TS club has the greatest ratio that is very important for UEFA to be low. However, it remains behind other clubs when looking at match scores. Despite the positive expense ratio, it brings to mind a situation that may arise from negative match scores, low wages for players or transfer difficulties.

Galatasaray club's expense level ratios (67%) are slightly higher than TS and lower than other clubs. It ranks second with its profitability size (79%), and it has assets to keep a long-term sustainability, marking UEFA's aims (100%). The club that disciplines the expense level ratios better than the FB and BJ clubs also rank first in the league. (see Table: 13).

Table 14: Gray Evaluation Table for the 2018/19 Season

Clups	Profit Ratios	Stability Ratios	Coverage Ratios	Liquidity Ratios	Spending Level Ratios
Oran Ağırlıkları	0,636	0,634	0,590	0,538	0,635
FB	0,342	4 0,778	1 0,540	2 0,733	1 0,363
BJ	0,477	3 0,691	2 0,387	4 0,376	3 0,511
GS	0,792	2 0,552	3 1,000	1 0,682	2 0,668
TS	0,932	1 0,517	4 0,432	3 0,360	4 1,000

With the introduction of FFP criteria, it will be appropriate to study the impact of these criteria on the economic and financial effectiveness of each club. In this context, Figure 1 shows the ratios of the FB Club of all years.

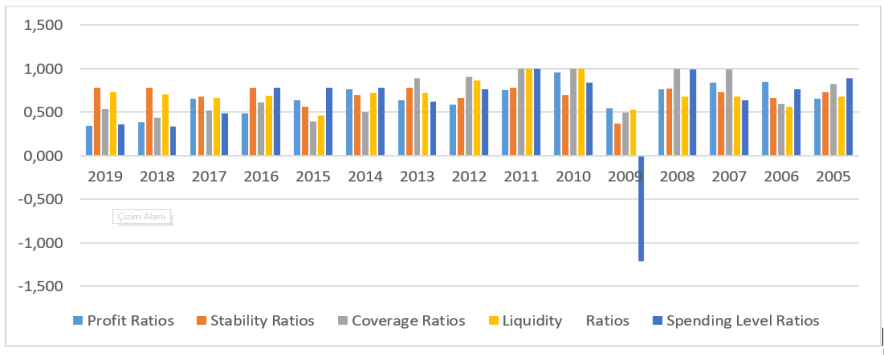


Figure 1: Financial Performance Indicators of Fenerbahçe Club Before and After FFP.

The club had very troubling indicators especially in 2009, and had slightly improved until 2013 with efforts to restructure its post-FFP obligations. Liquidity and obligation fulfilment ratios were taken under control in 2010 and 2011 seasons but troubles regarding liabilities continued in the following years. The club's coverage ratios

were optimistic in 2008 and 2007, except for 2006 and 2009, before the FFP, but the liquidity shortage was seen before FFP also.

The club's over €5 million budget deficit in the 2014/2015 season prompted UEFA to act and a four-year configuration agreement was signed until the 2019-2020 season. The club undertook to have a maximum of € 3 million deficit at the end of 2016, € 20 million at 2017 and € 10 million at the end of 2018 in its settlement agreement with UEFA Club Financial Control Body - Investigatory Chamber (CFCB-IC) in May 2016. The club was given squad restriction and a fine for not complying with the agreement in 2016. It also violated the terms of the Financial Fair Play agreement in 2018-2019 season and it decided not to participate in European Cups in 2019-2020.

After FFP criteria, ratios of profitability and meeting their obligations generally decreased. Financial indicators were significantly affected by decreasing operating incomes and increasing expenses at the same time.

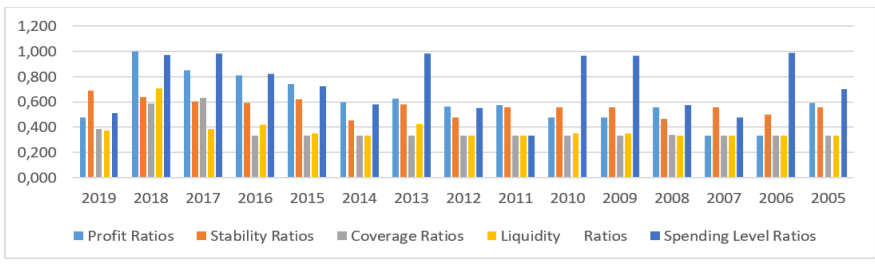


Figure 2: Financial Performance Indicators of Beşiktaş Club Before and After FFP.

FFP criteria's positive effect was reflected in the profitability ratio that was low (below 50%) before regulation until 2019. In 2015, positive increases in ratios indicating stability began, albeit slightly.

The criteria did not have a positive impact on the obligation fulfilment ratios. Similarly, very alarming liquidity ratios were also not disciplined.

Wage/Revenue ratios showing expense levels reached the most negative level in its history, seeing 66% in 2011. A management change was made in 2012. Star players also left the club to comply with FFP criteria. This was reflected in the expense level ratios at an obvious level.

The club's application for UEFA licence for 2011/12 season was referred to the disciplinary board on the grounds that it included improper statements. Because it was barred from European Cups for a year, it could not take part in UEFA's organizations in the 2012/13 season and € 200 thousand fine was a significant loss of revenue for the club.

Beşiktaş made a transfer for €22.5 million in the 2017-2018 season in Turkish football history. It was recorded as the most expensive player transfer. In 2019, this transfer negatively affected the profitability ratios of the club by 52%, liquidity ratios 47% and expenditure ratios 48%. It can be said that efforts to comply with FFP criteria were interrupted.

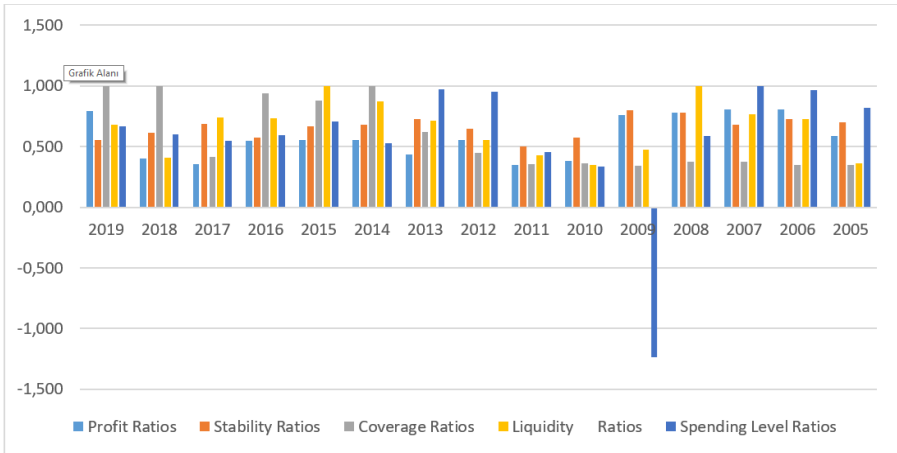


Figure 3: Financial Performance Indicators of Galatasaray Club Before and After FFP

While the profitability ratios of the club were at an average level of 75% before FFP, they started decreasing afterwards (average 45%). It increased to 79% again in 2019.

It is possible to see the positive impact of the FFP criteria on the obligations fulfilment ratios. A significant level of financial discipline was reached, especially after 2012. Troubles in liquidity ratios occurred before and after the criteria.

Expense ratios, which followed a controlled pace until 2007, hit bottom in 2009. Although it started to recover with the revenues from 2011/2012 tournaments and the increasing sponsorship revenues, it brought together higher-cost players in the following years and the fees of the players increased continuously. Managing to increase its revenue items in the 2014/2015 season, Galatasaray reached acceptable liquidity ratios. The positive rise in obligation fulfilment

was also observed in these years. The club, which failed to meet its commitments to UEFA, was barred from UEFA competitions in February 2016. The club, having suffered significant revenue loss, lost its profitability in 2017, and its payment balance deteriorated.

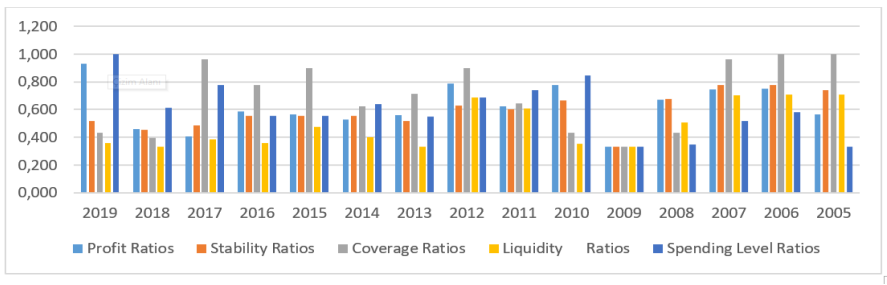


Figure 4: Financial Performance Indicators of Trabzon Spor Club Before and After FFP.

Trabzonspor's stable revenues before the criteria took a negative course afterwards. The increase in the club's debts starting in 2008 began to be disciplined in 2012. Despite the negative course of profitability, profitability and expense ratios showed a positive track in 2019. FFP criteria did not have a positive effect on the club which experienced liquidity shortages in each period.

Trabzonspor, whose financial balances were significantly disturbed in 2012-2015 seasons was closely monitored by UEFA. When it didn't follow UEFA and FFP rules in 2016, the club signed a configuration agreement with UEFA and the financial situation of the club was controlled. The club, which did not have much control in expense ratios before the FFP criteria, saw a slight recovery afterwards. However, despite high player transfers, the club had no success in leagues.

CONCLUSION

In Turkey, football clubs did not give the necessary importance to financial management before FFP criteria. There are certain reasons for this. First, the sport has an amateur background. In sports where the amateur spirit is not lost, participation and competition are more important than financial management. Another reason is that sports organizations are run on smaller and traditional budgets. And also, the different perspective for sports than the business life did not lead the focus to be on the financial management. Therefore, sportive success for Turkish football clubs is ahead of financial success. This can be characterized by the pressure of being a great football club and having ardent fans.

However, economic and financial performance is as important as sportive success for football clubs. While sportive performance means success in the national league or international tournaments, financial performance is the future and continuity of the club. As we can see in the literature, a relationship between sportive and financial success has not been established. We cannot talk about such a relationship in this study, either. However, sportive success will be achieved if the clubs reach their budget target and achieve competitive balance, reduce their debts and especially maximise the interests of investors. Sportive success can provide added value to the financial balance.

With the industrialization of football, Turkish football clubs got into high amounts of debts. Combined with the non-professional management approach in certain years, the high costs of football

clubs' technical staff led to problems of not using financing resources optimally, not paying the due debts in time and not following an effective cash management policy. Looking at the performance indicators, which were first started to be implemented in 2011 and brought their first results in the 2013/2014 season, we can say that clubs were caught unprepared for FFP instructions, and the problems in their corrupt financial structures continued. As they could not meet the FFP criteria properly, they were barred from matches and lost significant revenue.

Since reaching the goal of the criteria is actually a long-term step, it would not be wrong to say that the results can be seen more clearly in the years to come. We can easily say that Multiple-Criteria Decision Analysis methods' results were consistent with the realities of the industry. Evaluating the club performances with these methods will also help making the right investment decisions. FFP criteria can be better evaluated in the following seasons. The prospect of positive reflection of financial performance superiority on match scores is exciting.

The most important feature of this study is that it makes a long-term assessment of the financial sustainability of the clubs, not by one or several years, but by 15 years. Because management and changes in management are determining factors on the financial structure of the clubs. In addition, if the effects of economy determinants other than club control such as interest and exchange ratios are taken into

consideration, it is thought that long-term studies will enable objective evaluations.

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CHAPTER 5

**THE EFFECT OF INFORMATION MANAGEMENT
AND INNOVATION ON BUSINESS PERFORMANCE**

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INTRODUCTION

Today, businesses operate in environments where there is rapid change, competition and environmental conditions are uncertain. With changing competition conditions, consumers who become difficult to please lead businesses to make efforts to gain the upper hand. In economies where uncertainty prevails, information is the only reliable source for competitive advantage. Businesses need information to remember the past, track the present and plan the future. The effectiveness of strategic decisions, which relate to the long-term results of the activities required to determine the objectives of the businesses and to achieve these objectives, depends largely on obtaining strategic information from internal and external sources in the desired characteristics.

Considering the fact that change and development is an uninterrupted process, it is seen that in the process of pursuing Information Management and information sharing and innovation in the process of ensuring compliance with changes and developments have vital importance for businesses. It can be said that information sharing and innovation are concepts that need to be addressed together in order to improve the performance of businesses. In the light of these evaluations, the role of information sharing and innovation in the business world in which change has risen to a decisive and guiding position is emphasized and analyzed. Within the framework of this basic objective, in scope of the study, the concepts of information sharing, innovation and company performance and the relations

between these concepts are discussed in the theoretical framework. The aim of this study is to provide managers who are primarily responsible for improving the performance of businesses with information sharing that has direct effects on performance and some guiding tips in the creation and development of innovation processes and it is based on extensive literature review and interpretation of Konya industrial and commercial enterprises. For these purposes, the study consists of three parts. In the first part of the study, the concept of information and its components, the basic elements that make up the information, the properties of the information, the importance of information, the information sharing, the basic principles of information sharing, the types of information sharing, open information sharing, the implicit information sharing, the factors affecting information sharing, information management and information sharing its benefits on business are emphasized. In the second part, the concept of innovation, innovation types, innovation R&D relation, innovation speed and innovation quality concepts are discussed. In the third part, performance concept, criteria, business performance, dimensions of business performance, measurement of business performance and financial, operational performance are examined.

In the last sections, the subject of the study, the purpose of the study and the importance of the study are discussed. In line with the main purpose of the study in this analysis and evaluation process, information sharing; explicit information sharing, implicit information

sharing, innovation; innovation speed, innovation quality, firm performance; The relationship between the financial performance of the firm and the operational performance of the firm was analysed.

1. THE CONCEPT OF INFORMATION

In this first part of the study, the concept of information and its components, the basic elements that make up the information, the properties of the information, the importance of information, information sharing, basic principles in information sharing, information sharing types, open information sharing, implicit information sharing, factors affecting information sharing, information management and information sharing Emphasis is placed on the benefits it provides to businesses.

The concept of information became the basis of the evolution of humanity thousands of years ago. Discussion of information BC In the fifth century, the philosopher Socrates began with the question of the limits of information (Malhotra, 1997: 2). Information before 1880; applied to tools, processes and products. This created the industrial revolution. In the period starting from 1880 and ending with the Second World War, information started to be applied in daily life. After the Second World War, information has become the most important factor of production at the fastest rate, pushing the factors of capital and labour aside (Drucker, 1993: 32).

In the past, individuals who had physical strength, land, or a factory were considered strong. Today, the highest quality of power arises from the correct and proper use of information. In the past, information was seen as a bureaucratic requirement rather than a source of power for businesses. When we think individually and institutionally, the source of power has shifted from what has been mentioned. The main reason behind the increasing of information becoming more up to date is the increase in technological opportunities to carry out operations such as collecting, storing and processing information in recent years (Öztürk, 2005: 2).

To date, the definition of information has been made by many scientists, researchers and academicians. According to Davenport and Prusak, information, in a certain order experiences, values, information and expertise for the purpose of assembly and which provides a framework for the evaluation of new experiences and a flexible combination of information (Davenport, Prusak, and Günay, 2001: 27). Information emerges in the brains of those who know and is put into practice there. In organizations, it usually manifests itself not only in documents or cabinets, but in routine work, processes, practices and norms. Information consists of a mix of various elements, it is flexible in a certain form but it is difficult to have it in words or to understand it completely using logic terms since intuition is involved (Davenport, et al., 2001: 28). Information is in people, it is a part of human's complex and previously unknown nature (Öztürk, 2005: 3).

According to Drucker; it is defined as “information that changes something or an individual by forming a base in activities or by giving an individual or institution the ability to perform different or more effective actions”. Information is included not only in records and information banks, but also in corporate routines, processes, practices and norms. Information is structured as much as being fluid. Information is sometimes intuitive and it may not always be possible to put it into words (Drucker, 1994: 213). Nonaka defines information as justified true faith. The person justifies the correctness of his own beliefs based on his observations about the world. These observations are based on personal perspective, personal sensitivity level and individual experiences (Nonaka and Takeuchi, 1995: 15).

Information has always meant power: power to live, power to adapt, power to succeed in a difficult environment (Buckman, 2004: 5). According to Awad and Ghaziri, information is the understanding gained through experience or work. It is also the accumulation of facts or rule. Information is specific, it cannot be transferred from one problem area to another, it is used at a certain time, and then that information may not be needed. Information depends on values, beliefs and trust. Information develops with successful experiences and then the experience turns into expertise (Güçlü and Sotirofski, 2006: 5).

It is possible to increase these definitions. When the background of definitions is analyzed, it can be said that information has two structures; process-oriented and result-oriented (Çapar, 2003: 257). If

these approaches are considered under a general framework, it can generalize as following for the concept of information:

- Data and information form the basis of information,
- It occurs when the information passes through the rational filter and is interpreted rationally,
- Form the basis of actions that will underpin all areas of life such as decision making, planning, comparison, evaluation, analysis, prediction, diagnosis etc,
- Data is about past decisions, informatics is about present time and information is about future decisions (Aktaş, 2003: 5).

When analyzing the concept of information for businesses, it can be said that information has a “strategic” importance in ensuring continuity. Individuals, businesses and nations who use information strategically can be one step ahead of their competitors. In order to use this opportunity, businesses need to combine the information with all their internal and external activities. At the same time, continuous production of information will always keep important opportunities on the agenda in the future-oriented work. Therefore, information plays a decisive role, not impressive, for businesses (Barca, 2003: 6). Data and information concepts closely related to the concept of information are explained below.

1.1. Data

The data constitutes the initial stage of the concept of information (Mısırdalı, 2006: 15). Data is the recording of transactions in an unprocessed manner depending on the purposes. Data can be defined as unresolved and uninterpreted observations, unprocessed facts. In modern institutions, data is stored in technological systems and often does not constitute meaning or content (Barutçugil, 2002: 56). All businesses need data, so each business needs to determine the number and type of data it needs to generate information (Ghaziri and Awad, 2005: 36).

Data alone does not mean anything. The data express separate objective facts about events. It includes all kinds of notation of various cases. Generally, raw information is considered as a preliminary material that needs to be analyzed and made available in later processes. Data are objective facts about events and are not related to each other. Data is the recording of the structured transactions in an institutional context. In modern institutions, data is stored in technological systems. In this way, the first entry of the data into the system was through the finance, accounting and marketing departments. This process has been carried out centrally until recently. The current trend is to localize the compilation of data and investigates the cost, speed, and how much data the system can carry. Quantitatively, businesses evaluate data management in terms of cost, speed, and capacity. Questions such as How much does it cost to capture or search for a piece of data? How long can we get the data

into our system or until when can we access the data in the system? The capacity of our system is suitable for storing data? are tried to be answered (Mısırdalı, 2006: 16) In qualitative measurements, time, suitability and meaning are important. Can we access the data when we need these measurements? Is it really the data we need? Whether the data we receive make sense to us? are the questions that businesses try to find answers. The most useful definition of data in terms of workplaces is “records of transactions performed in certain formats”. While all organizations need data, some industries are highly dependent on the data. These are units such as banks, insurance companies, public service organizations, and social security institutions. On the basis of these “data cultures” record keeping takes place and an effective data management is essential for the success of these organizations. The job of these institutions is to keep millions of transactions accurate and useful (Barutçugil, 2002: 57).

Sometimes businesses just accumulate lots of data because they're just about facts and therefore look like scientific precision. The more data is collected, the more objectively it is thought that the right decisions will emerge from them. The more data is collected; objectively accurate decisions are thought to emerge from them. However, this view is wrong at two points. First, collecting excessive data can make it difficult to identify and use what will work between them. Secondly and more importantly, data are not meant to be meaningful on their own. Data only describes some of what is happening, there is no evaluation, no comment, and they do not provide a reliable basis for

decision making. Data may be among the facts that will be the basis for decision making, but data cannot tell you what to do. The data does not give an idea of the importance of it or whether it will work. Data is important for organizations because it is an indispensable raw material for creating information (Davenport et al., 2001: 28).

1.2. Knowledge

Knowledge is formed as a result of the data obtained through a certain process, in other words, derived from the data. An edited dataset represents knowledge. However, the data should have importance and purpose. (Drucker, 1994: 35). Knowledge is making data meaningful and useful for a particular user (James, Chen, ve Cropanzano, 1996: 38). Information is meaningful, it has purpose, it is related to the subject, and it is shaped for a specific purpose. Knowledge reaches employees and managers via network connections, internet or e-mail (Ghaziri and Awad, 2005: 36). It gives a perspective to interpret information, events and objects and is an essential element for creating information. Knowledge affects information by contributing to it (Nonaka ve Takeuchi, 1995: 16).

Knowledge is a collection of processed, meaningfully aggregated data (Davenport et al., 2001: 28). It is the reorganization of the data after it is equipped with relations and purposes. In order to transform the data into knowledge form, it must be classified, calculated, corrected, directed to the purpose and summarized. The purpose of the knowledge is to change the buyer's thoughts on a subject, to have an impact on its assessment or behaviour. Knowledge that has a much

richer content than data is written, verbal or visual message. Like any message, there must be a sender and a receiver for the knowledge to be transferred. Knowledge aims to influence the perception and judgment of the person receiving the message. From this point of view, the recipient himself decides whether the message is knowledge or not by considering the effect it has on him. The purpose of the knowledge is to change the buyer's thoughts on a subject, to influence their evaluations or behaviour. Knowledge has to form the receiver; should make a difference in perspective or understanding, knowledge is the data that makes a difference. Knowledge travels throughout the organization through hard and soft communication networks. The harsh communication network is visible, has a certain infrastructure. These are cables, transport vehicles, satellite receivers, mailboxes, addresses and e-mailboxes. Among the messages transmitted through these networks, electronic mail messages, traditional mail messages, packages and internet messages can be counted. Soft communication network is less visible. It runs by itself. Someone giving you a copy or a copy of an article written on it "for your information" is an example for communication with the soft communication network (Davenport, et al., 2001: 29).

1.3. Relationship of Information with Data and Knowledge

Data, knowledge and information concepts are often confused with each other. While data is a less controversial concept; the concepts of information and knowledge are often confused. While data expresses separate, objective facts about events, information refers to the edited

dataset, usually in the form of a document or a message that is visual or auditory (Mısırdalı, 2006: 17).

Unlike data, knowledge has meaning; that is, it has "relationships and purpose". The knowledge not only has the potential to shape the receiver, but also has a form and is organized for a purpose. When the source adds meaning to it, the data turns into knowledge. Data is transformed into knowledge by adding value in various ways, while adding value to the data, it is transformed into knowledge: (Öztürk, 2005: 5).

Although the knowledge has a richer content than the data, it is based on data. Data transforms into knowledge at the end of a process and in this process, a value is added to the data in various ways. The main difference between them is that the knowledge contains a comment, thereby helping the user to make a synthesis. There are some mental processes in adding value to the data. These mental processes are listed below (Gupta, 1996: 14);

- Purpose Orientation: It is to know for what purpose the data is collected.
- Categorization: It is to know what data is suitable for analysis or its basic components.
- Calculation: It is the analysis of data mathematically or statistically.
- Correction: It refers to the data to be free from errors.

- Summarizing: It can be expressed as summarizing the data in a short and concise way.
- Knowledge, like data, does not have a complete function in decision making. However, it forms the basis for the decisions to be taken. Therefore, good knowledge should have certain features. These features are briefly tried to be summarized below (Öztürk, 2005: 4).
- Subjectivity: The meaning of knowledge differs from individual to individual. The value and usefulness of knowledge is largely subjective.
- Interest: Knowledge should be relevant and relevant only to the decision maker.
- Timing: Knowledge should reach the right person, at the right place and at the right time.
- Accuracy: Knowledge should be free from errors. Accuracy is the main feature to look for in knowledge, because if the knowledge is not correct, it causes wrong decisions.
- Correctness of Knowledge Form: The usefulness of knowledge for the decision maker depends on its correctness. In other words, knowledge should be in a way that people who will benefit from that knowledge can understand and use.
- Competence Level: It refers to the decision maker's ability to solve the problem sufficiently by using knowledge.
- Accessibility: Decision maker should be able to access knowledge easily (Mısırdalı, 2006: 5).

When the knowledge is compared according to the data, it is seen that it has a wider content. It is seen that the information has the widest scope and there is no time limit.

1.4. Features of Information

Information basically has two important features. The first is that the data, which is the raw material of the information, does not make sense alone, but it can gain meaning after processing. The second is that information, which is the processed form of data, reduces uncertainty regarding administrative decisions (Eleren and Kurt, 2001: 122).

Other features of the information are listed below (Arbak and İlter, 1995: 74):

- Information should be accessible: By law and other regulations, it is ensured that information is public. Information should be accessible to everyone, and organizations make it easier by flowing information. Various communication channels (public announcements, TV, media etc.) can be used to provide information flow. However, it should be kept in mind that transparency can reduce the effectiveness of education, as education deficiencies can limit the ability of individuals to access, use and interpret information. The important thing is to ensure that everyone has access to information under equal conditions.
- The information should be relevant: The information should be clear enough to clarify the issues to be accessed. However, it

will not be easy for information to be relevant because it is subjective. Because different interest groups focus on different topics and the information they need is different. In addition, the density of information can make it difficult to separate the required information from the whole.

- Information is qualified and reliable: The basic features that ensure the quality of information can be listed as being clear and understandable, timely, complete and continuous. However, basic standards regarding the quality of information should be established and whether international standards, auditors or institutions that establish the standards should be monitored as the most basic method of ensuring reliability. Functions related to the acquisition of information and its suitability in the formatting of the information deemed appropriate will allow for comparison and allow users of information to evaluate changes in data that change over time (Öztürk, 2005: 6). According to another definition, the characteristics of the information are listed as follows (Barutçugil, 2002: 58):
- Information is dynamic. An action takes place as a result of the information acquired. If information is not used, it is ineffective, and information is only revealed when it is used.
- Information is complex. It is formed as a result of the combination of various elements and the relationship established between these elements.
- Information is personal and dependent on circumstances. Information takes shape according to the person who reveals or

uses it. With this feature, the value of information varies from person to person and it is very valuable for people who need it.

- Information is an open system. It is constantly in contact with its environment. With this feature, it can both renew and improve itself and affect its environment.
- Information is among the production factors of businesses today. However, it has some features different from traditional production factors (natural resources, capital and labor). These features are (Mısırdalı, 2006: 6):
- Information has the ability to be produced continuously as a production factor and is handled and managed as an unlimited resource.
- Information constantly renews itself.
- As information is very easily divisible and shareable, it is not a scarce resource like other production factors.
- As information is very easily divisible and shareable, it is not a scarce resource like other production factors.
- Information can be carried easily, especially through communication tools. Therefore, it is fluid and is a very easy production factor.

In addition, the information must be accurate, current, standard, flexible, not duplicate, be in the desired form, satisfy needs and be shareable (Arbak ve İltter, 1995: 71).

Experience, settled facts, complexity, judgment, common sense rules, intuition, values and beliefs are other features of information.

Experience is information that develops and accumulates over time. Davenport and Prusak explain these features as follows; the settled fact is to know exactly what it should be. The complexity is that the information does not have a precise structure to exclude what does not fit it. The judiciary is to decide not only in the light of what is known about new situations and information, but also about new situations that will respond to new situations and information. Common sense rules and intuition, taking lessons from previous experience, observed errors and trials, are to create suitable solutions for problems against new situations. Values and beliefs integrated with information determine what the owner sees, what he internalizes, and what conclusions he draws from his observations (Davenport, et al, 2001: 28).

1.5. Fundamental Elements of Information

In order to understand the information better, the elements that make up this concept should also be examined. These elements are tried to be summarized below (Davenport et al., 2001: 28):

Experience: Experience lies in the origin of the information. Relevant to the happenings and things done by time, experience provides the advancing of the information and helps us to see and understand new events by the light of the past. Shortly, experience provides individuals a historical perspective to make them perceive the recent situation or to make them understand. This factor explains why experienced individuals are chosen first in the organizations. They

have the ability of presuming problems before they happen and solve them even after they occurred.

Evaluation: Information not only evaluates the new formations but also develops and evaluates itself against new formations. Accordingly, information is a living system, because information is changed and developed in the result of the relations with the environment. In this means it has been separated from the dogmatism.

Values and Beliefs: Values and beliefs determine what the person who creates and uses the information sees, how they perceive what they see and how they make a judgment from them. Thus, it can be explained why people react differently to the same events.

Common sense and intuition: Common sense and intuition can be explained by experience. Experienced people can find short-cut solutions by using old solution ways when they encounter new problems similar to the ones they previously solved. People can reach to these solutions quickly without knowing how it occurred. Therefore, it has a reflex feature and does not refer people to analyze every time (Mısırdalı, 2006: 18).

1.6. Organizational Information Sharing

Information sharing, which is one of the concepts included in information and business research, is considered as a dimension of the information transfer process in information management.

It is stated that the most important element of information sharing in businesses is individuals and individual information (Nonaka and

Takeuchi, 1995: 62). Information management process of each business operates in accordance with its own structure and common point of these processes is the sharing of information. Today, creating and sharing information in businesses is a critical factor for the success and competitive advantage of businesses (Mısırdalı, 2006: 27). The business provides the biggest support to be successful from the information sharing. Besides there is an important connection between information sharing levels of businesses and their performances (Mesmer-Magnus ve DeChurch, 2009: 536). The success of businesses in the information sharing strategy largely depends on their ability to coordinate resource management. The establishment of the information sharing system and its learning as behaviour is related to the common perceptions of the participants. Continuing learning efforts of employees to develop and create new business practices improve their information sharing skills. Most scientists believe that such behaviour changes are important for innovative practices in the workplace (Taş, 2011: 118). Information sharing is important for businesses to gain competitive advantage (Dağlı, 2007: 9).

In the information sharing process, information is shifted among individuals. In this context, it is meant that information is given by one person and received by another person through the sharing process. In general, in the sharing process, while somebody gains something from shared, someone loses something as a result of this process. Moreover, the fact that information is an abstract entity

causes it to be handled differently from concrete assets in terms of sharing. In other words, while the value of tangible assets tends to decrease as they are used, on the contrary, information increase as is shared and used, and even when not used, its value decreases. Information sharing can be defined as the transfer of information from one place, from one person, from one property to another. Sharing information is more important than the availability of information resources in businesses (Yeniçeri and Demirel, 2007: 222).

Information sharing involves two or more intermediaries and has a source and destination. And information sharing process can be defined as sending the information arranged according to the sender's information and receiving it by another person. Although the acquisition of information by the recipient in this process is based on the sender's information, the information received is not the same, the interpretation process is personal and regulated by the current information and identity of the recipient. The main reason that the information changes, while replacing between the sender and the recipient, is that the information is subjective, in other words, personal. By the sharing of information; it is expressed that through effective communication, information flows towards those who search for information, learn information or need knowledge. Therefore, information sharing can take place not only between the individuals, but also between the individual and the group, between the group and the individual or groups (Mısırdalı, 2006: 28).

Information sharing is basically considered as making the information available to other employees in the business. However, information sharing is often confused with knowledge sharing. The main difference between them is; in information sharing, it is necessary for the receiver to produce information, while it is not compulsory to produce new information in knowledge sharing. Information is substantial for businesses, but not only the content of the information, but also the renewal process. It is generally accepted that information is renewed, transformed into a new form and becomes a valuable element as long as it is transferred and shared. Information sharing primarily leads to the creation of information within the business. Moreover, unlike other concepts, information sharing is thought to emphasize the activities that are accepted as behaviours towards mutual transfer of information among employees in businesses (Aktaş, 2003: 10).

The organization needs information in solving problems or creating new products in businesses. Organizations need to quickly create information and use this specialized information to market their products. In this way, businesses are able to produce new goods and services faster in line with the needs of their consumers and gain strategic competitive advantage over their competitors. In addition to the fact that information sharing is important for businesses, it has a special importance among those working in business. Individuals sharing their information serve the purpose of verifying and reinforcing their information. In other words, as a result of sharing, the

individual evaluates his own information with the information obtained from the other individual. This information is in line with the self-evaluation feature. It also provides the opportunity to correct individuals' misperceptions and interpretations about the facts and facts at the origin of their information. In addition, sharing information with other individuals brings together different information, affecting each other, causing new information to emerge, thereby increasing the information of individuals (Barutçugil, 2002: 13).

1.7. Fundamental Principles of Sharing Information

Information sharing is the activity of transferring or disseminating information from one person, group and organization to another person, group and organization. This definition broadly covers the sharing of both implicit and explicit information. Therefore, information sharing is complex. Information, which is a valuable asset in an intense competitive environment, is not shared occasionally and randomly, and it is very important to whom and when they will share this information. Information should be actively distributed to those using the information in the business. Because the rotation speed of information is becoming increasingly critical for the competition of businesses (Öztürk, 2005: 7). Communication and information sharing technology work in business cultures that are based on trust rather than just fear. There may be no direct relationship between the level of people's willingness to work together and the level of trust that existed in the organization at that time.

In a trust-based business environment to be provided in information businesses, communication and information sharing technologies create more trust, open communication channels, increase organizational learning and encourage information sharing. Thus, development cycles that follow and support each other are created. In these cycles, it can only be realized with the principles of information sharing. These principles (Barutçugil, 2002: 60);

- Establishing an organizational structure that will effectively acquire, share and implement information practices and establish appropriate processes,
- Creating a culture that supports learning and implementation of what has been learned,
- Doing everything possible to ensure effective communication
- Providing information workers with a big picture that will challenge them, giving vision
- Recognizing the right of the employees to have a say in their work
- Creating an environment that strengthens trust relationships
- Rewarding managers for guiding and educating their employees
- Celebrating and rewarding the capture, sharing, and use of information as an entertainment
- Focus on people, not on technology
- Taking time to think and evaluate
- Creating a positive emotional environment

1.8. Types of Information Sharing

1.8.1. Explicit Information Sharing

It is ready-to-use information in a specific format; it can be formed in matters such as scientific formulas, product features, text, graphics, pictures, computer programs, diagrams, tables, procedures, etc. The explicit information can be easily shared through information technologies as generally accepted information (Demirel, 2007: 17). The more sufficient explicit information is in the business, the more information that is reflected in the product, and the participating information would be sufficient and provides a competitive advantage. Explicit information also includes sharing all kinds of information that can be documented, archived and coded (Nonaka and Takeuchi, 1995: 16).

Explicit information becomes rule-based information when it is coded into rules, routines, and procedures. Explicit information that is formalized and systematic can be converted into value by using it effectively in production. Individuals need informal relationships in order to interact with each other, to exchange views, to learn from each other, to discuss important issues for the organization from time to time (Aydintan, Göksel, and Bingöl, 2010: 18). Explicit information can be shared by verbal communication (Köseoğlu, Gider, and Ocak, 2011: 29).

Knowledge technologies and documents can be used in sharing explicit information in businesses. Employees can access this information whenever necessary and easily transfer this information to

each other. It also deals with explicit information, objective, rational and technical information. In this context, databases, organizational charts, user guides, procedures and policies can be given as examples of explicit information (Mısırdalı, 2006: 18).

1.8.2. Implicit Information Sharing

Implicit information includes talent and technical information. Implicit information can be shared to provide intrinsic motivation, such as socialization and friendship. It argues that an individual can gain implicit information and personal experience through social interaction. Implicit information is personal and shared through social interaction. For this reason, it states that social relationship facilitates the sharing of implicit information among those working in the organization. The difficulty of imitating implicit information by competitors makes it a very important resource for sustainable competitive advantage. The contribution of the implicit information of the individual to the success of the team cannot be measured precisely (Aydintan, et al., 2010: 15).

Implicit information, which cannot be acquired at a given moment, is a concept that can be felt, known but not transferred in the minds of individuals. The reflection or transfer of sparks in the inner world of individuals to the outer world is not easy. The core of the implicit information and the transmission centre is the individual. Implicit information, unlike explicit information, is revealed by action or behaviour other than being verbal or written. It is gained with a long-term accumulation and experience. It cannot be acquired and shared

instantly as it is not won at a certain moment. Implicit information is information derived from the experiences of individuals in their daily lives. Therefore, it expresses an individual-specific operational value (Bolat, 2007: 12).

1.9. Factors Affecting Information Sharing in Businesses

There are many factors that affect information sharing. These factors cause loss of information that tries to act within the organization as it slows down the transfer or bans it completely (Öztürk, 2005: 22).

Since these factors play a supportive role in terms of sharing information, businesses need to know these factors and use them as a tool to guide individuals towards volunteering and collaborative behaviour. In order to achieve this, it is essential to establish factors that support information sharing in the business. Otherwise, the environmental or individual environment required for the sharing of information will not be created and the information will continue to be monopolized by individuals (Mısırdalı, 2006). Employees and managers in businesses may occasionally behave negatively against information sharing for various reasons (Yeniçeri & Demirel, 2007). The reason why people are imprisoned or hiding the information in themselves rather than sharing their information is usually multidimensional (Altındış & Ağca, 2011: 31). Some of these dimensions are explained in subtitles.

1.9.1. Culture

Culture is one of the main factors affecting information sharing. Accordingly, organizational culture can be considered as the main factor that supports individuals' information sharing and affects their voluntary behavior. In the most general sense, culture means different ways of living that different groups of people have. According to another definition, culture; it is expressed as all of the logical and emotional features shared attitudes, behavior, habits, principles and similar in a society, group or business. In this respect, culture causes both societies and groups to develop similar behaviors. In this way, culture provides a relationship between individuals who are members of the same society or group (Mısırdalı, 2006: 19). If people do not have a common culture and do not speak a common language, they will not share their information (Demirel, 2007: 20).

Cultural factors that prevent the sharing of information within the business and even cause the information to decrease, are called 'frictions'. Table 1 shows the frictions encountered in businesses and the solutions of these frictions (Davenport and Prusak, 1998: 30).

Table: 1 The Frictions Encountered in Businesses and The Solutions of These Frictions

Frictions	Solutions
Lack of Trust	Relationships with face-to-face meetings should be improved and an environment of trust should be created.
Different cultures, different languages and different reference groups	Common ground should be created through training, discussions, publications, teams, task rotation.
No time and no place to gather; not knowing exactly what is efficient working	Time and place should be reserved for information sharing: for example; fairs, chat rooms, conference reports.
Gaining status and rewarding those who keep the information to themselves	Performance evaluation and rewarding should be based on sharing information.
Insufficient comprehension capacity of receivers.	Employees must be trained to be flexible; they should be given time to learn, and people who are open to new ideas should be recruited.
The belief that information is a privilege granted to certain groups.	Non-hierarchical approach to information should be supported; it should be emphasized that the quality of ideas is more important than the status of the source.
Intolerance to mistakes or requests for help	Innovative mistakes and cooperation must be accepted and rewarded; people should be prevented from losing their status because they do not know everything.

Source: Davenport and Prusak, 1998: 30.

When the table is analysed, it is seen that there is a lack of trust among the employees in the businesses, status anxiety, and information sharing barriers caused by the failure to accept the mistakes. In order to overcome these obstacles, face-to-face communication should be provided among employees through training or discussions, and successful ones should be rewarded and encouraged.

1.9.2. Organizational Communication

Communication is the prerequisite for establishing relationships among individuals. Accordingly, if there is no communication between individuals, it is not possible for individuals to understand each other. In general, communication refers to a process for two people to understand each other by sharing their feelings, thoughts and information. People communicate in order to be together with others, to understand them, to express and influence themselves, to socialize. In short, communication provides mutual agreement and sharing, establishes a connection between people and increases its importance with this feature (Mısırdalı, 2006: 19).

1.9.3. Information Technologies and Systems

Despite the fact that information sharing requires more than technology, information technologies and systems have a special importance as the main factor providing the fastest spread of information. Technology is both the machinery-equipment that converts the raw material into the final product, and the mental and analytical processes used to transform information into product information, and form the basis of the current developments. Information technologies that are based on the communication infrastructure and enable the processes such as recording, storing data, generating information through a certain process, accessing, storing and transmitting this produced information effectively and efficiently; it affects the development of individuals, organizations and countries. Information technologies emerge as a power that determines "success

or failure" in the world of businesses and becomes a part of information management (Öğüt, 2001: 5).

1.9.4. Manager and Leader

There are two types of managers, "formal" and "non-formal", and these are important as another factor affecting information sharing in businesses. Accordingly, the formal in the business is called the manager, while the non-formal is called the leader. The concept of manager is the person who tries to reach the goals through others, the concept of leader is It refers to the person who determines the goals of the group he/she is affiliated with and affects the group members in line with the goals and leads them towards behaviour. Today, the manager needs to have leadership features in order to manage the business effectively. In other words, if a manager has the leadership skills and qualifications, he can achieve the goals of the business more easily and successfully (Şimşek, 2006: 55).

1.9.5. Motivation

Motivation can be defined as acting with their own wish and desires to achieve a certain purpose. Accordingly, motivation is used as a tool for individuals to act voluntarily in sharing information. The motivation that drives individuals for a specific purpose is motivation. From a business perspective, motivation means all of the forces or mechanisms that enable business members to start working, to continue working, and to perform their duties voluntarily. Motivation, which is the purpose of motivation, is expressed as the sum of the

efforts made to continuously move people towards a certain direction (Özalp, Besler, and Oruç, 2012: 42).

1.9.6. Organizational Structure

The organizational structure includes the adjustment of employees and jobs for the fulfilment of jobs in the organization. In order for the results of information management applications to be successful, it is necessary to examine whether the organizational structure carries the necessary conditions. In general terms, organizational structure refers to the determination of tasks and responsibilities and the establishment of behavioural links between them. There are two types of organizational structures: centralized and decentralized organizational structures. Centralized and decentralized organizational structures influence information sharing differently. Centralized organizations bureaucratic management style can prevent the production of new information, while decentralized, flexible organizational structures encourage information sharing. Organizations that want to succeed in information sharing should prefer a flattened organizational structure, which has a flexible nature and which does not show a classical form of hierarchical structure. This is because similar statuses show positive sharing in information sharing and benefit by increasing the level of information sharing. However, information can be perceived as a power among individuals in different steps, so it is not desirable to share it (Dinçer, 1992: 32).

1.9.7. Human Resource Management and Policies

The human element is the basis of Information Management. But as descriptive industry research has shown, many information management initiatives tend to neglect humanitarian issues. Similarly, many scholars have studied the importance of cultural and humanitarian issues in information management literature. However, Human Resource Management has an important place in human-centered information management issues. In leading organizations and industries, Human Resource Management is seen as one of the strategic advantages. Information and human resources are considered as leverage of competitive advantage in today's businesses. Without people's mental creative power and energy, resources cannot be transformed into products or services. People are the resources that provide the efficiency, quality, innovative and creative quality of a business (Barutçugil, 2004: 28).

1.9.8. Benefits of Information Sharing to The Business

The effectiveness of Information Management in a business is directly proportional to the capacity of that business to generate new information and share information. In this respect, it is accepted that there is a close relationship between sharing information and company performance. Therefore, the prerequisite for the ability of information management to give the business the upper hand is that they share the information they have. Information sharing primarily increases the potential of existing information by exposing the information that is hidden in individuals and processes. This enables the business to lead

change, adapt and achieve sustainable competitive advantage (Mısırdalı, 2006: 18)

1.9.9. Leading and adapting to change

Today, the greatest change in human history is taking place and everything is changing very quickly. The Transfiguration and differentiation observed in nature, individuals, societies and businesses at the end of a certain period of time is called change. In this context, it can be said that change constitutes the characteristic of each structure. One thing that is certain for the whole world is that it has faced years of hard-to-understand changes (Drucker, 1993: 35). However, businesses act to protect their current status due to their structure. In particular, the fact that the speed of change expresses uncertainty, that is, the inability of the business to know the result of change, may cause it to preserve its structure more. In order to succeed in the new economic system, new businesses, new business processes, new industrialists, new customers need to be discovered instead of reorganizing the old ones (Drucker, 1993: 36). It is known that the information that exists in processes and individuals can only be revealed and used when it is shared and thus a value can be generated. Therefore, it is possible to maintain the continuity of businesses by creating information and passing it on to new generations (Davenport and Prusak, 1998: 27).

1.9.10. Competitive Advantage

Ensuring competitive advantage depends on businesses giving extra value to their customers. In short, if the business can offer surplus value to the customers, unlike its competitors, it can only become superior in the competition. For this reason, the company will reduce the cost of this product while producing quality goods in line with customer requirements or introduce new goods or services that are different from its competitors (Tekin, Güleş, and Öğüt, 2006). According to classical thinking, there are five basic competitive forces that cause businesses to achieve higher-than-normal profitability in their industry. If the business gains power in one or more of these, it can achieve competitive advantage. These powers are potential competitors, the bargaining power of customers, the bargaining power of suppliers, the threat of substitute goods, and competition between competitors. It is easier for the business to achieve competitive advantage if possible competitors are not involved in the industry where the business is located. In addition, the number of consumers and alternative businesses that can buy raw materials or semi-goods while producing goods may give the business the advantage in competition. In addition, the lack of any other good that can be substituted for the goods and services offered by the business and the lack of competition in the sectors that the business is concerned with causes it to excel in the competition (Dinçer, 1992: 62).

It is necessary to use the information to become valuable. As can be seen in the information management process, there is the fact that information is first shared in order to come into use. In contrast to other material beings, information increases as it is shared, i.e. thoughts give rise to new thoughts, shared information enriches the person to whom it is given, but it does not diminish anything from the information giver. In this respect, there is no end to the potential of a business to generate new ideas from its information when all the conditions that support information sharing are met (Davenport and Prusak, 1998: 28).

1.10. Information Management

One of the most important problems in the transition from industrial society to Information Society has been the rapid change in technology and management techniques and the uncertainty created by this change. In a world where the only thing that is certain is uncertainty, and in the economy, it has become an accepted fact that information is the only reliable source of continuous competitive superiority. The correct management of information and the development of appropriate strategies are important for organizations (Uriarte, 2008: 11). When markets change, when technologies develop, when competitors increase, and when products become obsolete almost overnight, businesses that succeed are consistently creating new information, spreading that information widely throughout the organization, and innovating to rapidly use that information in new technologies and products. These activities are

considered to be the basic qualities of “knowledge-creating and managing” business whose only job is to continuously innovate. In order to gain a better understanding of information management, which will prepare business for future competitive conditions and make them successful in their innovation efforts, it is useful to first examine the concept and address its features (İraz, 2005: 247).

It is quite difficult to make a single common definition for information management. The most important point to note here is that information management does not mean technology. Although information technology provides the most convenient tools for Information Management and Information Management does not mean technology only.

In simple terms, information management can be defined as a whole of strategies and processes for creating, finding, obtaining and mobilizing information to increase competitiveness. In other words, Information Management is a systematic process of how information can be created, obtained, used and managed to achieve organizational goals. Information management plays a crucial role in expanding organizations into larger circles and succeeding in their activities (Lytras, Damiani, and De Pablos, 2008: 3). The meaning of Information Management in terms of an organization is to exist or not exist in the market. The most important goal that all business organizations strive to achieve is long-term sustainable growth and a reasonable profitability that is acceptable in the business. It is a well-known fact that this can be achieved through customer satisfaction and

loyalty. The most basic way to ensure customer satisfaction and loyalty is to develop and use exceptional products and services and business processes that exceed their expectations (Barutçugil, 2002: 35).

Information management focuses on such topics as processes, measurements, assessments and transformation of investments related to intellectual capital. Intellectual capital is the human and customer capital owned by the company (Güçlü and Sotirofski, 2006: 351).

In this sense, managers need to have sufficient information resources to ensure customer satisfaction. However, today it is known that managers are forced to make decisions under uncertain conditions without all the data they need, and they cannot adequately reflect on the true value of information in these decisions. Business managers need to add the value of information to their decisions so that they can be prepared for changes in the external environment and provide better alternatives for customers before competitors. Information workers in businesses can help managers and play an active role in reducing the degree of environmental uncertainty the business may face (İraz, 2005: 250).

1.10.1. Information Management Process

As a result of each organization's own information definition, information management processes also differ in terms of organizations. For this reason, knowledge management processes have been studied differently in academic studies. In the study, different

studies were first addressed and basic processes were tried to be addressed based on these. According to one view, the information management process can be examined in four stages. These include identifying a lack of Information, developing or purchasing information, sharing information and evaluating information. The difference between the information that the organization needs and the information that the organization has in accordance with the objectives of the organization constitutes the lack of information. Developing or purchasing information refers to the organization's access to information in accordance with the determined lack of information. Information sharing; it means that the necessary information should be shared by the employees of the organization at the necessary time. Evaluation of information is also important for determining the lack of information. It refers to the use of shared information to benefit (Mısırdalı, 2006: 29).

In another view, the information management process consists of five core activities. These are: acquisition of information, innovation of information, protection of information, Integration and distribution of information (Uit Beijerse, 1999: 39).

Obtaining information involves monitoring and analysing all available open information in order to do something. In this process, organizations acquire information through research and organizational learning. Innovation in information is the process of expanding the information created by individuals as an organization and giving it a precise shape as part of the organization's information network. In this

process, the individual is treated as the basic element that produces information, and the assumption that information is created as a result of the interaction between implicit information and explicit information is accepted.

Protection of information is important to protect the creativity and interest of information holders. Legally it involves the protection of intellectual property rights. It also includes contracts on the right to savings for protection of information if employees leave the organisation. The integration of information is the process of integrating the information and information obtained by individuals with their own information. Distribution of information; open information is easily shared with information technologies. However, the sharing of implicit information is a social process and can be shared with the relationships between individuals (Mısırdalı, 2006). There are also views that address the information management process in three stages. Accordingly, the process of information management is information acquisition, information sharing and information use. Information acquisition should not be understood information acquisition. This process refers to the creation of implicit information as a whole with information technology. Information sharing refers to the person who needs information to obtain information. This process enables rapid increase of information. Unused information does not create value. Therefore, the function of the information is fulfilled by its use.

According to Alavi, the management process is classified as the production of Information, Classification of information, sharing of information and using information.

Table: 2. The Information Management Process

Information Production and Its development	Information Classification, Storage	Information Sharing	Information Use, Assessment
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Source: (Alavi and Leidner, 2011: 52)

As can be seen in the Table 2, the transformation of the information produced in the business by sharing it with the right people at the right time is an indication of an effective information management process.

1.10.2. Benefits of Information Management

In today’s world, one of the most important issues that organizations preparing for the future, trying to sustain and maintain a competitive advantage should consider is managing the information produced within the business and not be copied by other businesses and being able to demonstrate its benefits in a meaningful way while doing so. Putting or quantifying the benefits of information management directly into it, is often a difficult task. However, thanks to information, within an organization, some important processes such as education, training, or gaining experience on the job are justified, which is the biggest spending item in many companies. These expenditures are very rarely quantified or monitored. In addition, there may be no concrete reason for these expenditures. Information loses its value if it is not focused on and continuously updated. The benefits

of information management can be listed as follows (Canbazoğlu, 2005: 10):

- *Prevention of loss of information*: by creating an organizational memory, a critical information loss that may occur due to retirement, downsizing, employee dismissals and changes are prevented and allows the organization's critical expertise to be maintained.
- *Better decision-making*: determines the type and quality of superior information needed to make effective decisions and enables access to information. As a result, decisions can be made more quickly and in quality and at lower levels within the organization.
- *Adaptability and flexibility*: provides the basis for employees to become more dominant, offer innovative solutions, work with less direct oversight and become less involved in their work. As a result, it allows employees to work in cross-functional groups and thus increase their morale within the organization.
- *Competitive advantage*: helps the organization to fully understand its current and potential customers, market and competitors, thus identifying competition gaps and opportunities.
- *Asset development*: improves the capabilities of the organization so that legal protection over intellectual property can be added to capital. Otherwise, patents, trademarks, licenses, copy rights and trade secrets may not be applied at the right time. This

means lower levels of legal protection and less market value for intellectual property.

- *Product improvement:* allows the organization to add information to products and services. Thus, the perceived value of the product by the customer directly increases depending on the degree and quality of the information added to the product.
- *Customer management and satisfaction:* helps the organization focus on both its customers and the services it provides. With increased information for customers, questions, requests and complaints from customers can be responded to more quickly. With access to a common “customer problems and Solutions” database, similar problems can be more easily dealt with.
- *The value of investment in human capital increases:* the value of investments made in the recruitment and training of employees increases by sharing information, capturing and transmitting behavioural information (Íraz, 2005: 252).

2. INNOVATION

In this second part of the study, the concept of innovation, types of innovation, the relationship between innovation R & D, innovation speed and innovation quality are discussed.

2.1. Concept of Innovation

Innovation, a word derived from the Latin ‘innovatus’, means “the introduction of new methods in the social, cultural and administrative environment”. Webster describes innovation as a ‘new and different

result'. Today, as a technical term embedded in our language and world languages, innovation, as emphasized in the dictionary, refers more to the result of innovation than to itself; an economic and social process dependent on differentiation and change (Elçi, Karataylı, and Karaata, 2018: 25). Innovation has been described for the first time by economist and policy scientist Joseph Schumpeter as “the driving force of development.” Written in 1911 and translated into English in 1934, Schumpeter's innovation in his book; “a new quality of an existing product or a product that doesn't yet know the customers placing on the market, the implementation of a new production method, opening a new market of raw materials or semi-finished products and the presence of a new source of supply of having a new organization of an industry” is defined as. He also underlines that entrepreneurs upset the balance in the market with their innovative roles and create constant dynamism in the economy (Schumpeter, 1934: 5).

The information economy is an economy shaped on the basis of innovation. One of the main concepts that ignites the new economy is “innovation”, which envisages the continuous renewal of products, systems, processes, marketing and people (Kavak, 2009: 618).

Innovation is a particular function of entrepreneurship. Innovation is when the entrepreneur produces prosperity by creating new resources, or by increasing the potential for use of existing resources (Drucker, 1994: 40). Guide issued by the OECD and Eurostat Oslo Manual of innovation “new or significantly improved products (goods or

services) or process, a new marketing method, or new organizational method in business practices, workplace organisation or external relations internal implementation” of the form described in (OECD, 2005: 2). Innovation is to develop and implement different, different, new ideas. These ideas can be developed to solve previously unresolved problems or to respond to previously unmet needs. Innovation is often the result of combining existing items or information in a different way. The activities of making many existing products and services more beautiful, more useful and useful to more people also fall under the scope of innovation (Aygören, 2009). Innovation in itself is not a separate activity and covers all processes of Science and Technology activity. What is expected from innovation is that in science and Technology activity an idea becomes useful in terms of theory, action and outcome, and that this benefit comes with a marketable, concrete output. In other words, innovation is not a simple meaningful renewal, it is a process starting from the theoretical stage of renewal that includes the product of innovation and accepts the quality of marketing (Kavak, 2009: 620).

Innovation is more of an economic and social concept than a technical statement. Innovation (innovation) is the introduction of a new product, process or service to the market. Innovation alone means more than new information. For businesses, innovation stands for” a new potential for action or a new source of wealth." Innovation is a concept of English origin and the term “invention”, which means invention in English, is expressed as the potential to turn into

commercial gain. It is a concept called “innovation”, and “invention” in Turkish (Bozkurt and Taşçıoğlu, 2007: 112).

Above all, innovation is an economic process. In the end it could be a product, it could be a service, it could be a more advanced management model. There is no room for coincidence in innovation. First, it is necessary to create the necessary information. R & D (research and development) and innovation should not be confused. Not every research leads to innovation, even if it results positively. However, the development of innovation cannot be expected until the R & D level rises. Research is important for the development of innovation (Üstel and Kabatepe, 2006: 32). According to the OECD, innovation is to transform an idea into a marketable product or service, a new or improved method of manufacturing or distribution, or a new social service. Innovation is a special tool of entrepreneurship. It is an act that bestows resources on creating a new capacity to build prosperity. Not a science or technology, but a value (Durna, 2002: 5)

The reasons for innovation in the business include; being recognized and perpetuating innovation, having a wide range of products to choose from, having the hope and desire to increase profits, keeping business morale high and creating organizational environments conducive to creativity where further innovation can be made. There may also be reasons for employees such as attracting talented and willing employees to the business and keeping them in the business, giving all employees the opportunity to enjoy their work and make

sense of their work, and motivating them against the business by asking them to help solve the business problems (Çeliksa, 2008: 8)

Non-business causes are divided into market-related and social causes.

- Market reasons are based on concerns such as being a leading company, maintaining the lead, maintaining technical superiority over competitors, being the sole seller of a product in the market.
- Social reasons are to satisfy consumers who expect change, to prove the social usefulness of business in the face of public bodies, and to make a positive impression on the public who have doubts about big businesses. 57% of European countries are looking for innovative products and services and doing important work towards innovation (Üstel and Kabatepe, 2006: 18).

Innovation is the development of individual and societal needs (Health, rest, work, transportation, etc.) allows it to be met at a better level. Innovation is also essential to the entrepreneurial spirit. After all, every new initiative is born at the end of a process aimed at bringing about a certain innovation. Moreover, all initiatives need constant renewal in order to maintain their competitive power (Göker, 2000). Today, costs are no longer the only determinant of competitive advantage. many factors, such as speed of responding to the needs of the market, shortening of product life, quality of product and service, design, development of new products and services, production of products and services according to customer requirements and new

management and organizational models are also involved and far more important than costs. All these factors require innovation. This is the way to enter new markets, increase existing market share and increase competitiveness (Elci, 2007). The higher the innovation capability of a business, the more the firm can sustain its life for many years (Burgelman, Maidique, and Wheelwright, 1996)

2.2. Types of Innovation

In literature, innovations have been subjected to many different classifications according to their degrees, areas and characteristics (Yavuz, 2010: 12). According to MacCarthy, innovation meets in 3 classes (Çeliktaş, 2008: 13);

- The fact is that a product that have never been until today.
- Products that present significant differences compared to existing products.
- New product for any firms but not new in the market.

Starting from the fact that innovation is not only an economic system, but also a social system that eliminates inequality, provide employment, contribute to the protection of environment, the concept of social innovation is now in foreground (Elçi, 2007: 17).

Geoffrey Moore describes 8 types of innovation. These are disruptive strategic innovation, application innovation, new product innovation, process innovation, experience innovation, marketing innovation, business model innovation, structural innovation (Kırım, 2006: 16).

2.2.1. Product Innovation

It can be defined as launching a new good or service or making significant developments in the content or the purpose of good (Çeliktaş, 2008: 14). These developments can be in specifications, components, software or other functional features. Product innovation enables the use of new information or technologies or can be based on the use of an existing information or technology in new combination. Development of a different and new product; or making changes, differences and innovation in the existing product and placing this product on the market is called “product innovation” (Elçi, 2007: 18).

2.2.2. Service Innovation

Innovation in service sector is different from manufacturing sector. New or significantly a being changed service approach, innovation or differences in delivery and distribution of service, the use of new technologies in the delivery of service lead to service innovation. Such innovations require companies operating in the service sector to demonstrate their technologies and organizational capabilities, as well as increase their human resources skills and restructure according to the conditions (Elçi, 2007: 18).

2.2.3. Marketing Innovation

Marketing innovation is to use new marketing methods with great changes in product design, packing, distribution and pricing. Marketing innovation aims to shift customer needs to the new market or to move to a new position. With the aim of increasing the sales of

the company, it is realization of different and new designs (in the product or packing), development and implementation of different marketing methods or improving the existing ones (Çeliktaş, 2008: 15).

2.2.4. Organizational Innovation

It is to carry out the business practices in the workplace organization or external relations with a new organizational method. Organizational innovation aims to increase the performance of the company by reducing the administrative costs or transaction costs, job satisfaction and thus increasing the productivity of labour or reducing the cost of supply. It is development of new working methods or using the existing methods adapted to the company conditions. Business does not just innovation by developing and differentiating their products and services. In order that an business can gain competitive advantage and maintain it, it must develop, differentiate and renew its working and operating methods. This development, differentiation and renewal activity is called organizational methods (Elçi, 2007: 19).

2.2.5. Process Innovation

It is to apply a new or significantly improved production method or distribution method. This may include changes in production or distribution technique, technical equipment and software. Process innovation aims to reduce unit production costs or distribution costs. Process innovation is the development of a different and new

production or distribution methods or the existing methods to be improved (Çeliktaş, 2008: 16).

2.2.6. Business Model Innovation

The concept of business model started to enter the business agenda after 1990s. Despite its many uses and many definitions, a clear and satisfactory definition has not been made yet. Considering that everyone knows something about the subject, it is considered sufficient to give one definition below. The business model is the scenario of how to make money in any trade. Business model “innovation” is the story of innovations and differences to be developed on the most basic value chain of every business. The value chain of a company consists of two main parts in general terms; the first part includes the steps to something like design, raw material supply, and manufacturing. The second part includes all activities related to selling something such as finding customers, reaching them, selling, distributing the product, and selling the product and service. A new business model is a process for designing and implementing business activities that have not been considered on the phases of making or selling or on both (Kırım, 2006: 17).

2.3. Innovation and R&D Relationship

State, private sector and university collaboration is inevitable for the innovation system to operate in all dimensions and successfully. In this triple spiral, some studies are carried out and support programs are carried out by the Under secretariat of Foreign Trade to contribute

to the innovation processes of the companies, based on the view that public institutions should support the innovation activities of companies, prepare the ground for university – industry cooperation, and allocate resources for R&D and technological developments. It is getting harder every day for business to keep up with change. However, companies that pay attention to R&D and innovation activities will always be ahead (Morgan, 1972: 14).

The subject of innovation is a concept closely related to R&D. But we shouldn't confuse these two. It should be considered that R&D studies are not required for every innovation, and that every R&D study will result in successful innovation. Even EU is experiencing the difficulties of not being able to turn them into efficient innovation even though its R&D work is high and it tries to find a solution. Although R&D is a system related to innovation, it is not exactly the same thing. It can be thought that using only internal resources for innovation is not only insufficient but also unnecessary (Çeliktaş, 2008: 19).

2.4. Speed and Quality of Innovation

Innovation is broadly defined as the conversion of information into economic and social benefit. Therefore, it is a whole of technical, economic and social processes. The desire for change is the product of a culture identified with openness to innovation and an entrepreneurial spirit. Innovation is a very important competitive tool for business as it increases efficiency and profitability, enables new markets to enter and enlarge the existing market. Economies in which productive,

profitable and have an high competitive edge advance, develop and gain competitive advantage on a global scale. The speed of innovation is defined as the measurement of changes carried out and perceived by the business in both the product and the associated business elements. By measuring the innovation speed in business; ensuring innovation control, providing correction of innovation management as structuring innovation capability is possible by knowing the innovation speed of business and enabling comparison with competitors (Dinçer, 1998: 32).

One of the important features of the global competitive environment is that it requires “making quick decisions and acting fast”. Therefore, businesses have to use technology in order to get out of such competition – intensive environments with the least loss. The innovation and self-development capacity of businesses will give them a competitive edge. Porter says that in order to be successful, today’s businesses need to gain competitive advantage. To gain an advantage in the competition, it is necessary to constantly research.

Michael Porter talks about five factors to achieve and maintain competitive advantage.

- The business should apply development, innovation and changes to new competitive methods.
- All activities in the development and use of a product should be redesigned and new ways should be found.
- By making continuous improvements in the value system, the possibility of imitation should be reduced.

- Business resources must constantly improve.
- A global competitive strategy should be pursued in order to gain advantages and eliminate the disadvantages in the national market (Eryol, 2009: 32).

Thanks to innovation, businesses can adapt to constantly changing market conditions, differentiate and develop their products and services, and offer them to the market as preferred by costumers, thereby preventing their competitors. In other words, innovation is one of the most important ways to increase the competitiveness of the business. The first step to achieve innovation in businesses is to guide employees on what kind of innovation the businesses needs. The aim may be to add value to products and services that costumers are looking for, to speed up deliveries or to bring a difference to their marketing strategies. A clear message about the goal will make everyone focus on the same point. Another important issue is to ensure the sharing of information and the continuity of communication from the top to bottom and from the bottom to up so that the employees can express their opinions easily. In addition, employees' feeling of belonging to their companies will motivate them to produce new ideas for their business and the company they work for. Employees should be able to see hoe their work affects the performance and profit of the business and their performance should be rewarded. In addition, looking at innovation as a risk, and tolerating certain errors, is an important part of encouraging employees to come up with new ideas. Finally, the processes that no

longer contribute to the business should be abandoned, and the time and labour due to these processes should be eliminated (Köseoğlu et al, 2011: 81).

The quality of innovation is the relative importance of the consumer in the consumption system in terms of physical, psychological and social satisfaction. This is also a feature that causes one brand to choose one another in the benchmarking of alternative brands. In addition, the relative superiority of a good helps to determine its position in competition space. Appropriateness of innovation is the degree of compliance with the elements present in the consumer consumption system, the current value system, past experiences and needs. Relative weakness or relative strength in suitability can also affect the degree of acceptance of innovation. This can reduce the duration or decision stages of the consumer decision process. Innovation quality is a concept related to understanding and using innovation. The “incomprehensibility” that innovation contains physically and symbolically may affect its acceptance relatively negatively, while the incomprehensibility of its use can also affect consumer satisfaction relatively negatively. This is also related to the relative degree of problem solving of the consumer. In intricate innovations, the consumer may be in a relatively intense problem-solving situation. It can also reduce the consumer’s motivation and interest in the related goods, brands or marketing program. On the other hand, this may also be a reason for risk. As the level of risk of innovation such as economic, physical, socio-psychological, functional etc. increase, the

acceptance degree of the target consumer and especially the audience may decrease and the acceptance period may increase.

Business has to get the opinions of not only the R&D unit or management, but also all of the employees of the company for innovation. Everyone working in the business has an idea about every part of the business and its process, especially the department they work for. Many of these ideas can turn into monetary value for the business. For this, a business culture should be created that will encourage employees to generate new ideas. The way to do this is to provide time and opportunity for employees to try and develop their ideas (Eryol, 2009: 34).

The existence and continuity of innovation quality is important in terms of sustaining the existence of businesses both in the short and long term. Studies to determine the quality of innovation at the business level are focused on determining the criteria that determine innovation and firm performance. Since the 1980s, many different measurement tools have been developed for monitoring innovation and measuring performance. The purpose of the measurement tools is not to achieve a certain innovation score, but to monitor the innovation process, to identify the errors that occur in this process and to ensure an effective innovation process.

3. THE CONCEPT OF PERFORMANCE

In this third part of the study, performance concept, criteria, business performance, dimensions of business performance, measurement of business performance and financial, operational performance are examined.

The word performance is defined as the quantity of goods or services produced in a certain time period and can be expressed as a result of the relationship between the concepts of “activity”, “efficiency”, “output”, as well as the motivation and interaction of the individual (Hall, Schneider, and Nygren, 1970: 70). Although there are many studies on performance, it is seen that there is no common definition regarding the concept of performance (Ağca and Tunçer, 2006: 82). In general terms, performance is a quantitative and qualitative explanation of what an individual, a group, or a business that accomplishes a business can achieve, in other words, where it can achieve the intended goal for that business. Performance, which is also expressed in terms of success and performance, is that the employee performs the work in accordance with the characteristics and abilities defined for him within acceptable limits (Boylu and Sökmen, 2011: 32). According to another definition, it is a whole set of goods, services or thoughts that have been put forward in order to fulfil the task and fulfil the purpose in a way to meet the pre-determined rules and measures within the framework of the task to be performed (Konovsky and Pugh, 1994: 94). The performance of the business

determines where it will be in the future, in which position and size it wants, and in which areas it will direct its resources (Koçel, 2003: 33).

Today, in order to reach the targets about human resources under increasing competition conditions, a performance management system accepted by every segment should be established and this should be made operational by the business (Akdoğan and Demirtaş, 2009: 139). The concept of performance is handled in three different dimensions. These are personal performance, group performance and business performance. Since the subject of this study is business performance, the definition of performance will be discussed from this perspective. On the other hand, operating performance is very difficult or define precisely because it can have different meanings according to different processes. For this reason, different definitions are used in the study. The performance of a system is its output or work result in a given time result. This result is the degree of fulfilment of business objectives or duties. In this context, business performance can be defined as an evaluation of all efforts made to achieve business objectives (Zerenler, 2011: 112).

A successful performance evaluation ensures the development of the business. It is of great importance in terms of knowing the success levels of managers and employees in the business, learning the reasons of their failures, and increasing their success in the long term (Kara, 2010: 110). In order to improve business performance, the current situation of the business is addressed with its strengths and weaknesses, and the current situation is revealed. Secondly, the

answer to the question of where we could have been is sought. Thirdly, we look for answers to the question of what we have achieved and it is evaluated the possibilities of performance improvement. Finally, assuming that all existing internal and external constraints have disappeared in the long run, the business behaviour is evaluated according to the current situation and an answer is sought to the question of where we should be. These four key questions enable us to better analyze business performance (Akdoğan and Demirtaş, 2009: 13). As long as businesses carefully analyse both financial and non-financial environmental factors related to the global business and business areas, in addition to internal data, operating profitability will increase, so businesses can survive (Ağca ve Tunçer, 2006: 83).

Performance measurement emerged in the 1900s with the applications of Dupont and General Motor's financial ratios and budget control methods and businesses have used these measures for 80 years (Çetinkaya, 2007: 17). In 1980 and afterwards, in addition to financial criteria, the need to consider non-financial criteria has emerged in the performance measurements of business (Barker, 1995: 15). The 1980s and 1990s were years when the importance of performance evaluation increased. Changing market dynamics in today's business world has revealed the opinion that market-oriented indicators such as competitiveness are required in addition to financial performance indicators in evaluating business performance (Eroğlu, 2004: 31).

3.1. Performance Criteria

Efforts should be made by managers, staff and working groups in order for the business to achieve its goals. In order to fully understand the performance level of the business, it is necessary to make many evaluations at the customer and community level. In addition, the goal of performance is related to the objectives of maintaining, improving or improving the same level of performance. The period of time for the performance has to be reached can be from short term to long term. Performance appraisal methods may differ because they have qualitative / quantitative or subjective / objective values (Benligiray, 1999: 39). In addition to this, the business that wants to reach its goals must keep its performance at the highest level. Accordingly, certain criteria should be taken into account in terms of which level the business or personnel will maintain its performance.

These; effectiveness, efficiency, quality, efficiency, quality of work life, innovation, profitability, budget and profitability and budget ability can be listed (Ağca and Tunçer, 2006: 80). Tangen, who approached this system from a different perspective, tried to make an explanation with the three -P model (productivity- profitability - performance) and efficiency is included in the scope of input and output to this model. Profitability is seen as the relationship between output and input and is under the influence of the price factor. Performance includes non-cost factors such as quality, speed, distribution, flexibility as well as profitability and efficiency. While efficiency has been linked to creating value for consumers,

effectiveness has been explained to resource use by correlating how to better use inputs in the transformation process (Tangen, 2002: 112).

3.2. Dimensions of Performance Criteria

In researches conducted to examine business performance, it has been observed that there are different dimensions of business performance criteria. When the studies on the subject are analyzed, it is seen that there are no general valid criteria and performance evaluation is made in accordance with various criteria. (Şimşek, 2006: 60) The main criteria used in measuring the criteria of business performance are as follows;

Productivity: It is measured the level of utilization of resources or how these resources are used. Productivity is about tools, not goals. It is an indicator of how well a business is done in businesses, that is, whether it is done with the least amount of resources in the most accurate way and at the lowest cost (Akal, 2005: 18).

Quality: Significant technological innovations and information technologies brought by the century have faced important opportunities and threats along with global competition. In the environment, the concept of quality is no longer an accessory that is attached to the product behind the production process, it is a dimension that ensures the efficiency of the resources, provides ease of use to the products and services, complies with the production and needs of the customers, and requires the understanding of production and service. Thus, it sees as a performance dimension that enables

business to fulfil their public responsibilities positively and quality control systems are developed by considering that the business should be able to examine the quality in the production process (Taş, 2011: 31).

Effectiveness and Efficiency: Effectiveness and efficiency are concepts which complete each other. Effectiveness is determined as a result of the activities carried out by business to achieve their defined goals. The realized output and the expected output are measured with each other (Akal, 2005). Whether the outputs lead to the expected results is measured by effectiveness indicators. If a certain output will show the desired results, it will lead to the results when these outputs are used effectively (Yenice, 2006: 36).

Customer Satisfaction: It refers to the process intended for understanding the customer needs and providing products or services to meet these requirements. Within the scope of customer satisfaction, future expectations of customers and values for available services should be considered (Oral, 2005: 35).

Quality of Working Life: With the formation of the quality of working life, it is aimed to provide long-term effectiveness and efficiency of business. Thus, while the company achieves its main goals such as profitability, growth and continuity, the conditions under which the personnel will operate efficiently will be provided (Kaymaz, 2003: 38).

Flexibility: It can be expressed as the degree of adaptation of new businesses and behaviours so that the information can be used against unexpected situations under changing conditions (Barutçugil, 2002: 27).

Innovation: In the performance evaluation process, it is to contribute to the improvement of the working environment and the quality of life of the employees in the business enabling the creativity of the personnel by developing the products or services of the business by applying this creativity (Ağca and Tunçer, 2006: 110).

Profitability and Budget Compliance: Profitability is the oldest format that does not change and does not lose importance in the development process of the performance understanding. Budget compliance assessments include the process of measuring, developing, taking corrective measures and creating performance plans for future periods (Benligiray, 1999: 82).

3.3. Business Performance

In businesses, performance concepts show a constantly developing and changing process until today. In this process, new understanding of performance that gained importance and gained more importance has taken place. This development briefly, from the traditional management approach aiming the highest production and high profit at the lowest cost, as a requirement of today's competitive conditions, the satisfaction of the customer, quality, innovation, etc. It can be explained as a transition to management approach targeting the

organization of the future by focusing on many different criteria (Akai, 2005:19). Until the latest of 1970s, while trying to be determined the performance of public and private sector organizations by paying attention to the economic and efficiency factors, While the performance of private sector organizations is tried to be determined by taking into consideration the economic and productivity factors, efficiency and quality have become an element of the concept of performance in parallel with the developments in the private sector since the early 1980s. In this process, the change that the most and directly affects to the management is “marketing revolution-orientation towards the customer.”

In short, this development is dominated by the understanding that “our job is to produce what the market wants” instead of the sales approach in the understanding of “sells whatever the business produces”. This “transition from sales to marketing” approach, the customer is the person who determines the business of the business. This development brought the concept of “marketing” and “efficiency” to the agenda. The last point reached in the development process of performance understanding in businesses is “new competition” and a new management approach called “the organization of the future”. The view that dominates this understanding, in purpose of increasing the competitiveness of the business and adapting to the future, is to select the appropriate products and technology, to shape the organizational structure and to select and train human power according to them (Akai, 2005: 20).

3.4. Dimensions of Business Performance

The dimensions of business performance according to the balanced measurement card model published by Harvard Business Review magazine in 1992 by Kaplan and Norton; it consists of financial dimension, customer dimension, internal process dimension, learning and development dimensions (Kılınç, Mesci and Güler, 2008: 48). In his article published in 2009, Uygur also examined the financial dimension, customer dimension, internal process dimension, and learning and development dimensions. The works of Kueng and Krahn in 1999 include financial dimension, customer dimension, innovation dimension, social dimension and employee dimension. In their articles published in 2008, Kuşlivan and Eren analysed business performance in terms of consumer size, financial dimension, organizational dimension, social dimension and employees. Business performance can be analyzed in consumer dimension, financial dimension, organizational dimension, and social dimension and employee dimensions;

- Consumer-related dimension: When the article on business performance is examined, variables such as service quality (Brown, 2001: 32), customer satisfaction (satisfaction), customer complaints, customer loyalty, image and reputation of the business in the eye of the consumer, market share it is examined.
- Employee-related dimension: Employee-related dimension creates variants such as ability to keep qualified employees in

the business, ability to attract qualified employees for the business, job satisfaction (satisfaction) of the employees, employee loyalty to the company, employee productivity, general relations between the employees, executive team and employees, workforce turnover rate and absenteeism of staff.

- **Organizational Dimension:** Within the scope of organizational dimension, there are variables such as increase in market share, increase in sales, development of new goods and services, and increase in the number of overnight stays.
- **Social Dimension:** The employment level created by the business the service offered and the variety of markets addressed, the rights provided to the consumers, the environmental sensitivity level of the business are examined in a social dimension.
- **Financial Dimension:** Net profit margin, net profit, financial performance in general, capital return rate, increasing in operating profit, increasing in operating income are financial dimension variables (Gül, et al., 2012: 42)

3.5. Financial and Operational Performance

Measurement of business performance; It is a series of transactions that determines to what extent the business have reached their predetermined targets and it composes determining the performance targets constitutes a stage of the performance management process consisting of performance measurement, feedback and motivation stages (Zerenler, 2011: 38). The interest in performance measurement

and evaluation, which started with Taylor's productivity measurements at the beginning of the twentieth century, continues with a continuous increase trend until today. Classic performance metrics often focus on financial metrics such as profit and efficiency. They are insufficient on some issues since these criteria are based on traditional management accounting system, However, in order to the companies to be managed successfully, at least two points should be emphasized, the first of which is not only the financial indicators but also the control stage in the indicators of other areas of the businesses. Thus, a table which be a more balanced or shows the total status of the business will be obtained. The second point is the requirement to establish a link between strategies followed with the indicator showing the performance or success of the business. Performance criteria consist of financial and operational criteria. As mentioned before, performance criteria based on the traditional accounting system that businesses have used for many years create some problems. Especially financial criteria, which these are criteria that are historical and retrospective, unpredictable, standard, which do not perceive the changes very quickly, presented in a collective and summary form and do not fully reflect the value of intangible assets (Akgül, 2004: 34). The better the business performance (operational performance) it starts from product supply and until the product reaches its consumer, the result is an improvement in the sales, cash flow, profitability (financial performance) of the business.

4. INFORMATION SHARING, INNOVATION AND BUSINESS PERFORMANCE RELATIONSHIP

According to Peter F. Drucker, in new economic, information is primary source in terms of individuals and community. Information goes to waste when it is not managed well since it is not seen in the balance sheet. Information is among the assets owned by the institution. Assets owned by the institution are handled in two groups, concrete and abstract. In the second one, there are rights of institution, established relationship by it and accumulation of information. The information institution, seen among the assets, is an indication that the investment in information should be the same as the importance given to other assets. Reasons why information is more important than in the past (Uhl-Bien, Tierney, Graen, ve Wakabayashi, 1990: 72) are factors such as change in global economy, merger of product and service at one point, maintaining competitive advantage, development of computers networks.

According to Durker main reasons why information becomes increasingly important can be expressed as increasing competition in the markets and increasing the rate of innovation in global market, the majority of the industries creating prosperity which is intensive-information, since businesses turn to reductions on staff with competitive pressure, the emergence of the need for substitution of informal information and figural methods and early quitting which is led to loss of information.

The need to manage increasing complexity with small and medium-sized businesses gaining resources from foreign countries, changes in strategic guidance result in loss of information in a specific area, experiencing new developments in markets where information assets are traded, (Development and diversification of electronic commerce with the emergence of the internet.), competing of businesses on the axis of information and a large part of the business is based on information and the need for lifelong learning is inevitable can be counted among other reasons. (Drucker, 1994:30)

Businesses need to constantly change and renew their products, services and production methods on order to survive in a rapidly changing competitive environment. Therefore, innovation has a great place in the success and development of businesses and in this context, innovation is recognized as an important source of economic growth, increasing employment and quality of life. While technological development and innovation lead to macro-level economic growth, micro-level businesses lead to increased profits and market share. In other words, externalities and overflows resulting from investments made by each firm for technological innovations and inventions eliminate the declining return, resulting in increased returns for the overall economy, thereby causing long-term growth. Businesses operating in a global competitive environment where new technologies are developing at very short intervals, market elements are constantly changing, products are rapidly obsolete, and competitors are constantly growing, are developing new alternative

strategies in line with market expectations in their management philosophy and values, goals and strategies, organizational structure and processes. Businesses that will shape their activities with innovation have to take steps that require being different in all innovations they will make. (Bozkurt and Taşçıoğlu, 2007: 42).

Innovation is a powerful competitive weapon, a decisive way for businesses to gain competitive advantage, increase their profits and cash flows, and stay ahead of competitors in the industry. However, the innovation initiative also carries the risk factor. Made innovations are also a long-term performance indicator integrated with the concepts of change, creativity, development and risk taking. As the change in businesses is fast and comprehensive, managers are constantly on the lookout to create more employee loyalty and competitive advantage. Today, managers' expectations from their employees have become more complex and demanding with transformation of human resources (Gül, et al, 2012: 40).

Information is shared voluntarily or involuntarily, but this is why it occurs at different levels in each business. Sharing the information consciously in the business enables individual information to turn into organizational information. This will prevent loss of information in possible employee losses and enable to minimize the loss of the business. The transformation and sharing of information is an important phenomenon that every business and its manager wants to create a competitive advantage (Demirel, 2007: 37). One of the main reasons that prevent people from sharing information is the thought

that the person will lose power. Another reason is lack of commitment and sense of ownership to the business in employees or feeling of unwillingness caused by injustice. As can be seen, it can be said that there is a linear relationship between information sharing and organizational commitment, organizational justice and organizational trust (Özler, Ergun, and Gümüştekin, 2004: 32).

It can be thought that information sharing pioneers dissemination of innovative ideas and is critical in the emergence of innovation in the business. While employees' performance affects the business, it is also affected by everything in the business (Özdede, 2010). From this point of view, performance is both the product of individuals' interaction with each other and an element that influences that interaction. Therefore, performance functions can be analysed at very different levels. These functions are surrounded by organizational characteristic along with individuals' perceptions. Social networks provide an environment for the dissemination of information and the development of innovations. When all team members share their information with each other in a communication process through these networks, the innovation climate reaches its highest level. This special communication process consists of exchanging ideas and sharing new ideas (Turgut, 2013: 18).

Since information is a difficult concept to measure, there are very few studies examining the impact of information sharing on business performance. When the table has been examined, it has been observed that Demirel had a positive effect on the performance of the banking

sector when employees had information, use and share information inside and outside the business. In his study, Schlaak has focused on the importance of innovation and the importance of innovation degree for a successful innovation process. Little and Grimm have argued that there is right ratio between effective management of innovation and improving business performance. Erdem has explained in his study that market orientation and innovation have a positive effect on business performance. Hauschildt and Yavuz have emphasized the means & conclusion It has been determined that innovations lead to the successful realization of the marketing and thus the improvement of the marketing performance. importance of innovation in their study. It is also understood from literature review that studies on the impact of information sharing and innovation on firm performance are inadequate. Among the reasons for this; the most important limitation affecting employees' perceptions of information sharing in businesses is that businesses refrain from providing information on strategic issues such as technology transfer (Öztürk, 2005: 15). In conducted researches have been shown that information sharing among employees in businesses and satisfying employees have a positive effect on business performance (Taş, 2011: 21). At the same time, it can be said that there is a significant relationship between the businesses' orientation toward innovation by providing appropriate conditions and their business performance (Yavuz, 2010: 19).

Table: 3. Studies examining the effect of information sharing on business performance

Scientist	Schlaak, T.M. (1999)
Purpose	In his study called “degree of innovation as key variable”, SCHLAAK aimed to explain the meaning of the degree of innovation and developing a new concept for innovation speed for the innovation process and for the innovation success.
Means & Conclusion	SCHLAAK's research is based on questionnaires to applicants for the German economy innovation award (1996). On June 24, 1997, a survey was sent to 245 award-winning companies, of which 123 were returned. The meaning of the degree of innovation is explained for the success of innovation.
Scientist	Little, A.D. & Grimm, U. (1997)
Purpose	They collaborated with Arthur D. Little (SOMMERLATTE) advisory agency European Business School (GRIMM). They continued with previous research in the USA and aimed to develop new measurement of innovation and management tools about the link between the scope of work innovation management and company performance.
Means & Conclusion	It has been seen that it consists of 5 perspectives: innovation-Scorecard innovation strategy, innovation process, innovation culture, resource utilization, innovation structure. Thus, a total result was obtained about the innovation potential of companies. It had a positive effect on business performance.
Scientist	Hauschildt, J. (1997)
Purpose	In the study, it has been aimed to define many possible bases (factors) to measure technological advances
Means & Conclusion	A value has been given in the scoring model for each innovation perspective. By gathering these values, the innovation score in the total business was reached.
Scientist	Demirel, Y. (2007)
Purpose	In the study, the effect of information and information sharing performance in the banking sector has been determined. In this context, the perspectives of the managers working on information, as well as the use of information in business life, as well as the relation between internal and external information sharing and performance criteria was examined.
Means & Conclusion	It has been seen that there are positive relation between information and information sharing and performance criteria. In addition, according to the study results, information and information sharing have directly affected business performance.

Scientist	Kulakh, A. (2005)
Purpose	In the study, it is aimed to explain the obligations of the organizations to transfer their information management approaches continuously from the individual, the team, the company, the industry and the market in order to act quickly.
Means & Conclusion	In an environment where all the product start to look alike and the difference is vital for success in competition, it has been determined that it is important to transfer the information provided from the customer to all units of the organisation.
Scientist	Erdem, B. (2011)
Purpose	Relationships between market directionality, innovation directionality and firm performance have been examined.
Means & Conclusion	It has been determined that there are positive relation between market directionality, innovation directionality and firm performance.
Scientist	Yavuz, Ç. (2010)
Purpose	It has been suggested that businesses have meaningful relationship between providing appropriate conditions and turning to innovation and increasing their performance.

GENERAL ASESMENT AND CONCLUSION

Businesses established with the aim of reaching certain targets benefit from different variables to gain an advantage in a competitive environment. Innovation arises as a result of the successful implementation of organizational learning and information management in businesses. In this direction, businesses gain competitive advantage by using this advantage. In order to adapt to the environment conditions that are changing rapidly today, businesses need to consider the competitive conditions.

As a necessity of competitive conditions in the period we live, private or public businesses need high level performance in order to sustain their existence. When the organization and employees are considered as a whole that cannot be considered separately, it can be seen that the individual success level of the employees is one of the most important determinants of organizational performance. In other words, the ability of organizations to reach their goals and create competitiveness in their sectors depends on having high performance employees.

Today, the high rate of change in the competitive environment necessitates a new structure. When they have an innovative structure, they will tend to develop new ideas and approaches, take risks, lead in a competitive environment, and create continuous opportunities to adapt to changes in their field. Therefore, they will be able to make gains in performance improvement, dynamics and sustainable competitive advantage in addition to their innovation capabilities.

Organizational learning is a very important factor, especially in providing and maintaining competitive advantage. Learning organizations collect and process data from both internal and external environments and store these data as information. In such organizations, the ability to know the value of new information develops besides information is assimilated and can be directed to be used for commercial purposes. Just as organization employees can understand what they need to learn thanks to administrative efforts, they can reach the capacity to solve problems that may arise in the long run and question the current situation. Through organizational

learning, manpower can be guided by various means and management can be provided to improve organizational performance. Today's business world is quite dynamic and rapidly changing due to its nature. Organizational learning is an important element that provides competitive advantage for organizations today. It is also possible to say that organizational performance has an impact on the organization's capacity to adapt and learn to the changing environment.

Information management aims to continuously improve the organizational performance, efficiency and production level in accordance with the values and missions of the organization, at the same time it supports innovation and new information production by requiring innovation. Information management is significant in terms of providing the individual with the opportunity to produce innovative inventions or ideas about the business or to contribute to the information-value chain. All employees should share their implicit information and intellectual knowledge with other colleagues and strive to cost the organization by revealing their individual knowledge. Today, organisations must be aware of the full knowledge and ability of their employees to renew them by maintaining their competitive superiority; they must develop and benefit from these values

Today, it is an imperative for businesses to turn innovation into a company policy in order to best meet the ever-changing demands of customers and to offer goods and services that meet these demands. Innovation enables the organization to improve its performance by

providing competitive advantage with changes in the fields. At the same time, because the most important source for the realization of organizational learning is human, it is necessary to be innovative in order to be successful on behalf of attracting the attention of the employees, to be motivated and to be increased their working performance. Organizations, in the process of adaptation to the changes and developments that emerge today, attach great importance to organizational learning, information management, and innovation. Therefore, organizational learning and innovation should be evaluated together within the scope of information management in order to ensure the continuation and development of the business presence by increasing performance. In this context, organizational learning was interpreted by conducting an extensive literature review in order to reflect the interaction of innovation and information management with organizational performance. The biggest limitation in our study is that it is not based on any data. In the future studies, researches that can reveal the interaction of these components more clearly may be proposed, including more comprehensive than in the literature.

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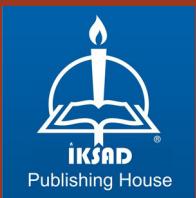
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