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Prof. Dr. Efkan UZUN
Niğde Ömer Halisdemir University,TURKEY
Orcid: 0000-0002-4419-0243

Journal Administrator /Assistant Editor

Sibel ÇAĞIR
Orcid: 0000-0002-8312-1152

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Contact

Yildiz Technical University, Department of Social Education Davutpasa Campus

34220 Esenler / Istanbul, TURKEY

Yıldız Teknik Üniversitesi Davutpaşa Kampüsü Eğitim Fakültesi Sosyal Bilgiler

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Journal Administrator /Assistant Editor: *Sibel ÇAĞIR*

Phone: *0531 404 17 57*

e-mail: johasseditor@gmail.com

cagirsibel@gmail.com

web: https://dergipark.org.tr/tr/pub/johass

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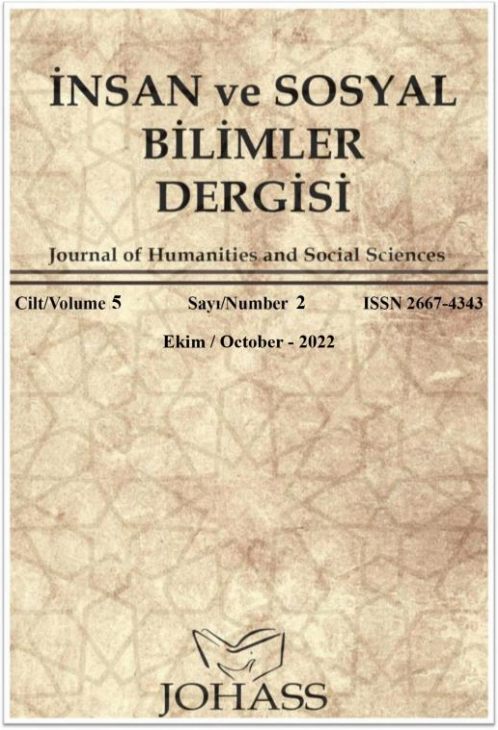

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Perspective on Child Labor Situation in terms of Occupational Health and Safety: The Case of Turkey

Kaan Koçali
Istanbul Gelişim University, Istanbul Gelişim Vocational School, Occupational Health and Safety Department
kkocali@gelisim.edu.tr
Orcid ID: 0000-0002-1329-6176

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Perspective on Child Labor Situation in terms of Occupational Health and Safety: The Case of Turkey

Kaan Koçali [1]
Istanbul Gelişim University, Istanbul Gelişim Vocational School, Occupational Health and Safety Department

Abstract

Child labor is a common social problem today. Short and long term policies are being developed for the solution. While the short-term goal is to improve the current situation and make it more suitable in terms of occupational health and safety (OHS), the long-term goal is to completely eliminate this problem. Within this scope; statistical calculations on child labor were made using the data of the Turkish Statistical Institute (TURKSTAT) for the year 2020. A general framework about the current situation of Turkey has been formed by preparing a risk analysis tables under seven headings. It has been determined that child labor takes many forms depending on the type of work done, age and gender, whether they work independently or with their families. It has been observed that the number of working boys is higher than the number of working girls and the reason why boys are exposed to more work accidents is due to the fact that they work more in the industry. In the study, it was considered that only child workers registered in the Social Security Institution (SSI) were examined. It should be aimed to create safer workplace environments in terms of OHS by making legal arrangements in order to protect these children and that children working informally are not a social problem for Turkey. For these purposes, the results of the research were evaluated, and the things to be done about ensuring child labor and OHS in Turkey and solution suggestions were presented.

Keywords: Child, child worker, child labor, work safety, occupational health and safety.

Research Article

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[1] Corresponding author:
Assistant Professor
kkocali@gelisim.edu.tr
Orcıd ID: 0000-0002-1329-6176

Introduction

Child labor is a problem that is not only a national but also a worldwide issue that is still relevant today. Children have always been involved in the labor force throughout history. While contributing to family work in jobs that are relatively easy and suitable for their age before the industrial revolution, this situation has taken on a different character with the change of working understanding, place and methods with the industrial revolution. Work done in factories with mass production has resulted in the employment of not just men, but also women and children. Employers requested increased women's and children's labor during this time. This situation has brought with it the exploitation of children who are in a vulnerable situation in the labor market (Edmonds, 2008).

Turkey and other countries around the world are undergoing significant economic and social transformations. The economic change and crisis that has been going on since the 1970s continues to spread, accompanied by growth that does not create jobs. As a result, while unemployment rises, labor wages fall, and poverty deepens and spreads. Poverty and cheap labor increase child labor participation in the economic circulation process. As a result of the convergence of production relations to the early periods of industrialization, similar changes occur on the labor side (Griffin, 2014).

The historical development of occupational health and safety, as in our country and around the world, has occurred in parallel with the development of business life. The Industrialization Movement, which gained traction in the early years of the Republic, resulted in some safety and health issues. To address these issues, many legal regulations on occupational health and safety standards have begun to be established. Child labor is a social issue that necessitates a multifaceted solution. Policies, methods, and practices for combating child labor should be developed in collaboration with various institutions such as education, social security, and health services. In order to find a solution, both short-term and long-term goals must be considered. The situation of child labor in terms of worker health and safety is examined in this study. Throughout the study, the conceptual framework, legal regulations, and general situation of child labor are mentioned first, followed by an evaluation of the situation of child labor in Turkey in terms of occupational health and safety through studies. The new liberal economic policies that followed, without a doubt, necessitated the implementation of appropriate education policies. Both the education sector as an element of the market mechanism and the training of the human element in education processes in a way that will respond to the needs of this functioning forces the economy-employment policies and education policies to take a guided form by intertwining. In this context, the gradual implementation of compulsory 12-year education and vocational and technical education practices in our country may have a negative impact on the child labor force being drawn into the market mechanism (Jafarey & Lahiri, 2002; Dehejia & Gatti, 2005; Edmonds & Pavcnik, 2005; Koçali, 2021a).

On the other hand, some child groups appear to have become more disadvantaged because of the mutual interaction of social and cultural norms with changes in education and the economy. In general, children who face discrimination based on economic and gender differences are more involved in the labor force. In a nutshell, poverty, social transformation, forced migration, changes in the education system, social and cultural norms, and so on. As a result of these factors, both the number of working children and their working conditions are increasing. This numerical increase, combined with the deterioration of working conditions, makes it unavoidable to question and debate the occupational health and safety of children who must work (Güzel, 2016).

It should not be forgotten that the majority of occupational accidents are preventable, and we can prevent them by instilling a culture of occupational health and safety in every

aspect of our society and lives (Koçali, 2018; Koçali, 2021b). First and foremost, safe working environments must be provided, existing occupational health and safety conditions must be improved, and comprehensive and applied occupational safety training must be provided to employees at all levels (Koçali, 2021c).

Work and Children

Although the concept of "child labor" is widely used, there is no globally accepted definition of the concept. The fact that child labor is a very complex phenomenon does not make it possible to make a single definition covering all aspects. The definition of child labor is based on an economic or scientific analysis as well as a social, cultural or political discipline. For this reason, child labor is seen as a social structure that differs according to history, economic structure, education system, customs, actors, current situation and purpose. In this respect, child labor, which refers to the inclusion of children in the labor market at a young age, is among the most important social problems (Chaubey, et al., 2007).

When approached from this social and historical perspective, it can be argued that definitions of "child" and "child labor," which are isolated from social and cultural contexts and do not take into account geographical distribution between rural and urban areas or gender differences, should be questioned (Kuschnereit, 2001). As a result, discussing concepts with economic dimensions such as child workers, child labor, and child labor in relation to a definition of childhood embedded in social and cultural contexts will be more inclusive and explanatory (Efe & Uluoğlu, 2015).

It can be seen that the definition of child labor varies depending on the socioeconomic and cultural differences of each country. When it comes to the status of being considered a child prior to the concept of child labor, Article 1 of the United Nations Convention on the Rights of the Child states that *"...any person up to the age of eighteen is considered a child, except in the case of coming of age at an earlier age*." (Sungur and Kurumaral, 2017). The United Nations International Children's Fund defines (UNICEF, 2019) child labor as "*work that exceeds the minimum working hours and is harmful to the child, depending on the age of the child and the type of work*" (ÇSGB, 2017a). According to ILO Convention No. 138, which is one of the main conventions on child labor, the minimum age for employment is 15 (ILO, 2015). Accordingly, the ILO defines those "who work under the age of 15 to contribute to the household budget or earn a living as working children or child workers, while those aged 15-24 are called young workers" (Avşar and Öğütoğulları, 2012). The ILO concept of child labor is often defined as "work that deprives children of their childhood, potential and dignity and harms their physical and mental development" (ILO, 2021).

UNICEF has made a definition of child labor similar to that of the ILO. In this sense, according to UNICEF, child labor is activities that limit children's access to education and harm the child's physical, mental and social development (UNICEF, 2020a). Essentially, UNICEF has expanded the ILO's definition of child labor by emphasizing the importance of domestic labor for children in addition to economic work. In this case, child workers can be listed as follows to UNICEF (UNICEF, 2020b).:

- Children between the ages of 5 and 11 engaged in any economic activity or housework for 28 hours or more per week;
- Children between the ages of 12 and 14 who engage in any economic activity other than light work of less than 14 hours per week or housework for 28 hours or more per week;
- They are children between the ages of 15 and 17 who work in any dangerous job (Chaubey, et al., 2007).

In Article 2 of the Urgent Action Convention on the Prohibition and Elimination of the Worst Forms of Child Labor No. 182, the ILO (International Labor Organization) stated that

the concept of child can be applied to anyone under the age of 18 (ILO, 1999; ILO, 2002; Avşar & Öğütoğulları, 2012). Child labor is defined as the employment of children in jobs that prevent them from developing mentally and physically, or that prevent them from finishing their childhood (ÇSGB, 2017a). The International Labor Organization makes a more detailed distinction in a report prepared to reduce the number of child workers (ILO, 2016; ILO, 2017). The ILO includes three definitions in this report: working children, child workers, and children working in dangerous jobs. The concept of child labor or working child, according to the report, is broad, flexible, and statistical. There are short-long-term, paid-unpaid, legal-illegal, with or without market relations, occasional or irregular work within the scope of this concept, but domestic work is excluded. In this context, the term "working child" refers to children who work at least one hour per day for seven days out of the week. In this context, one could argue that the ILO concept of working child ignores common and gender-based household chores (ILO-UNICEF, 2019; ILO, 2020a; ILO, 2020b). However, in Turkey and other countries where the traditional childhood approach is dominant and poverty is prevalent, the working child group that should be highlighted is the children who work in the home and as unpaid family workers.

The European Union's "Council Directive on the Protection of Young People at Work" (EU Directives, 1994) has divided individuals under the age of 18 into three groups as "young person", "child" and "adolescent". According to Article 3 of the Directive, “young person” is used to define people under the age of 18, “child” is used to define people under the age of 15 or at the age of compulsory education according to national legislation, and “adolescent” is used to define people between the ages of 15-18, who are not subject to compulsory education according to national legislation (Yayla, 2017).

There is no clear statement about the child phenomenon in Turkey's legal regulations. In legal regulations, the term “small” is used instead of “child” (Gören, 1984). According to the Turkish Civil Code, anyone under the age of 18 is considered a child. Studies focusing on the relationship between the concept of child and working life often distinguish between "child labor" and "working child". Besides referring to the child as the subject of an employment contract with a wage worker, the concept of child labor is considered in relation to wage labor and thus excludes children who are not involved in this relationship. In this case, there is a need for a much more comprehensive concept when it comes to working or doing any work for unpaid children. In this framework, “child labor” has been proposed as a more inclusive concept that includes child workers but excludes paid labor, and is defined as “children working in jobs that hinder the child's education and adversely affect their physical, emotional, mental, moral and social development”. “Child worker” is defined as “working children” (Günöz, 2007). Although such a set of concepts is used, phrases such as “female worker (girl)” and “male worker (boy)” are not preferred when the concept of “child worker” refers to child labor. In this context, it is clear that the concept of “child labor,” which is an economic concept, indicates a more technical and acceptable quality, whereas the concept of “working child” indicates a harder and more unacceptable feature, at least in developed societies. It could be argued that the use of such a concept is avoided in this context by rejecting a type of society in which children are not workers and children are workers. However, in today's neoliberal societies, official and unofficial reports reveal that the majority of children working formally and informally are employed in conditions that are comparable to adult workers in the true sense of the word.

When viewed from the perspective of the framework developed thus far, the concepts of childhood, child worker, working child, young worker, are concepts with historical and social contexts, so a childhood concept that is compressed to biological age ranges is blind to differences, whereas among children, regional and social gender, particularly gender, is blind to differences. It is important to emphasize that there are discriminations based on cultural

differences (Yıldız, 2007). Furthermore, while different regulations categorize children in different age groups in the context of their various working and business relationships, the United Nations Convention on the Rights of the Child which is one of the fundamental elements about children at the international level, states that all persons up to the age of 18 are included in the definition of child. As a result, the distinction between children and young workers, as in the definitions of child workers, young workers, apprentices, and similar definitions, serves no other purpose than to distract and legitimize the employment of children, particularly children in economic relations.

General Status of Child Labor in Turkey

It needs to be noted that all types of legal studies in the field of occupational health and safety will benefit our country and society. However, it should be noted that the goal is to ensure that the required regulations do not remain only on paper and that the implementations are adopted by the employee-employer-state (Koçali, 2021b)

In Turkey, laws regulating working life can be found in both the Labor Law and the Code of Obligations. Considering the historical process, despite the fact that our transition from an agricultural country to an industrialized one has resulted in new regulations, the agricultural sector is primarily where children are employed (Koçali, 2021d). One of the reasons that children who are still employed in agricultural work gain weight is because Turkey is a developing country. Seasonal agricultural workers are included in agricultural labor with their children, according to the Turkish Statistical Institute (TURKSTAT) Children with Statistics 2012 Report (TURKSTAT, 2013), and this rate accounts for 44 percent of total child labor.

Article 50 of the Turkish Constitution is undoubtedly the most important regulation on the subject in Turkish national legislation. According to this, "*no one can be employed in jobs that do not match their age, gender, or strength*" and children, women, and people with physical and mental disabilities must be protected in the workplace. Employees' rest rights are also covered in the aforementioned article.

In the regulations made in our legislation regarding the "*age of employment and the prohibition of employing children*" it is stated in Article 71 of the Labor Law that children under the age of 15 cannot be employed, but by adding the statement. Children who have completed the age of fourteen and have completed the compulsory primary education age; they can be employed in light jobs that will not prevent their physical, mental, social, and moral development and the attenuation of their physical, mental, social, and moral development and the attenuation. Children who have not completed the age of fourteen can be employed in arts, culture and advertising activities that will not prevent their physical, mental, social and moral development and the attendance of those who continue their education to school, provided that a written contract is signed and a separate permission is obtained for each activity. In the continuation of the same article, the regulation made in the employment period of children attending school was changed to "pre-school children and those attending school." According to Article 38, *"the working hours of preschool children and children attending school during the education period can be at most two hours a day and ten hours a week, out of the education hours…"*

"*Before the employment of children and young workers between the ages of 14 and 18 (including 18), they are examined by the workplace doctor, Social Security Institution (SSI), health center, government or municipal physicians, and it is reported that their body structures are durable according to the nature and conditions of the job,"* according to Article 87 of the Labor Law. It is stated that the health examination must be repeated every six months until they reach the age of 18, to determine whether there is any inconvenience in

continuing to work, and that the reports must be kept at the workplace and shown at the request of authorized officers.

Article 85 of the same law states that "*young workers and children who have not completed the age of 16 and workers who have not received vocational training related to their work*" cannot be employed in heavy and dangerous jobs. According to the law, which jobs will be considered as heavy and dangerous jobs, and what kinds of heavy and dangerous jobs can be employed by women and young workers who have completed the age of 16 but have not completed the age of 18, should be determined by a regulation prepared by the Ministry of Labor and Social Security (ÇSGB), taking the opinion of the Ministry of Health. These articles of the Labor Law were repealed by the Occupational Health and Safety Law No. 6331 dated 2012 and new regulations were introduced instead. In Article 3 of Law No. 6331, a young employee is defined as "*an employee who has completed the age of fifteen but has not completed the age of eighteen*". When compared with the 87th article of the Labor Law, it is seen that the law numbered 6331 narrows the group of young workers to those aged 16-18. When this change is approached from an optimistic point of view, it can be interpreted as the exclusion of children between the ages of 14 and 15 from working relationships. However, the real situation shows that children aged 14-15 and younger are also taking part in working life more and more, just like those in the 16-18 age group.

In Turkey, we see working children in almost every industry. Children working in industry, commerce, and services in cities are working intensively in agriculture in rural areas as a result of the migration to big cities. However, the large number of children working on city streets attracts attention (ÇSGB, 2015; Coşkun & Yolcu, 2016). For the majority of the working hours, one of the jobs here has more than 40 jobs. The agricultural sector is one of the worst in the country for seasonal migrant and agricultural labor in the workplace and in the environment, where occupational diseases and accidents are most prevalent. Statistics show that the products derived from the evaluation of children in the study of a very large group in the field of education (ÇSGB, 2017b). In Turkey, the number of unregistered working children is a structure that can be realized through the widespread use of unregistered employment. The montages created for the care of indifferent children are updated on a daily basis (Gülçubuk, 2012). Working on the street, heavy and dangerous jobs in small and medium-sized enterprises, and mobile and temporary agricultural work for wages, excluding family work, are among the worst forms of child labor in our country (Gerşil, 2017). It is possible to argue that data on child labor do not accurately reflect reality in all of its dimensions. One of the factors influencing this is the existence of the informal sector. It is claimed that the number of children working in various capacities in the informal sector, which is not included in official statistics, is much higher. The reasons for this are that children are suitable for unskilled labor and are employed for long hours at low wages in informal employment, where their employment is legally prohibited or limited (Baştaymaz, 1990; Çoban, 2015; Kömürcü & Avşar, 2016).

When focusing on the causes of child labor, many studies conducted both in the world and in Turkey show poverty as the main cause of child labor (Admassie, 2002; Yıldız, 2007; Karaman & Özçalık, 2007; Yılmaz, 2008; Gürses, 2009; Kahraman & Sallan Gül, 2015; Öngel, 2017). The view that poverty increases child labor is also accepted by some economists around the world. In their study, they argue that certain economic events or policies in low-income and poor countries may have ambiguous effects on child labour. It is stated that these countries, which need more workers due to globalization, ignore the employment of child workers as well as adults in order to meet the labor demand (Basu, 1998; Edmonds & Pavcnik, 2005; Blunch & Verner, 2001; Nkamleu, 2006; Abdullahi, et al., 2016).

Method

Many developing countries, including Turkey, are said to be incapable of eliminating child labor at the outset. Most of the time, the child's need for income makes it impossible to prevent the problem. As a result, policies are being developed to prevent the worst forms of child labor and to improve working conditions for children. Although this method has a risk of encouraging child labor there are some who believe that regulations and policies are needed to improve the current situation.

Working conditions and jobs for children can vary widely. Some of them may be light, while others may be very heavy. Similarly, while some working environments are beneficial to one's health, others are not (Duyar, 2013). Child labor, which means cheap labor for employers (Baştaymaz, 1990) beginning to work at a young age brings with it disadvantages such as more health problems, getting sick more frequently, and a lower quality of life compared to those who begin working later in adulthood. Child laborers started in agriculture and progressed to the industrial sectors in subsequent years. They work in industry in Turkey, particularly in small-scale industrial enterprises that are subjected to harsh conditions. Children working in these types of workplaces are more difficult to detect than children working on the street because they are generally small and self-contained. Children are vulnerable to workplace and working conditions risks because the working conditions of small-sized enterprises are generally below standards (ÇSGB, 2017c; Erbaş, et al., 2020) In terms of occupational health and safety in workplaces, there are negative tables, the majority of which are small-scale workshops. There is no workplace doctor in this type of workplace, and no health and safety information is provided. Inadequate ventilation, noise, and a dusty environment endanger children's health (ÇSGB, 2015). Working children bear burdens and responsibilities that are both physically and psychologically unsuitable for them. Fear of being scolded or angered by one's boss or bosses has a negative impact, particularly in the business world (Fidan, 2004).

Depending on the nature and conditions of the job, children in the process of physical and mental development who work in places that are not appropriate for their physical and psychological age and development have a negative impact on their future health, safety, and psychological status (Kolk &Tulder, 2002). Long working hours are among the most heinous forms of child labor. Meal breaks are usually only a few minutes long. Working children spend this time of their lives commuting between work and home, with little time for activities that fulfill the requirements of being a child (TİSK, 1997). Various studies on child labor in Turkey have attempted to identify the problem's social, economic, and cultural dimensions. In this context, the numerical data of child labor, its sectoral distribution, family situations, reasons for working, working styles, work accidents, and workplace conditions, as well as the abuse they are subjected to, were investigated (Yıldız, 2007). To mention some of them; The findings obtained in Fişek's study (Fişek, 2017) examining the occupational accidents that child workers are exposed to in SMEs are remarkable. According to the research, 34 percent of children between the ages of 13-18 working in industrial sites suffer an accident. On the other hand, it has been observed that the probability and frequency of exposure to occupational accidents in children is much higher than that of adults.

Studies in the national literature focus on street children; those who focus on children employed in seasonal agricultural work and their labor; those in the context of informal employment and income tax; those who approach in terms of legal legislation and children's rights; those who approach as a result of the inequality of income distribution in Turkey; child labor as a problem is diversified as those within the scope of solution proposals and strategies to combat it, and those that are dealt with in the context of refugee child workers (Karataş, et

al., 2016; Gülçubuk, 2012; Gümrükçüoğlu, 2014; Karaman & Özçalık, 2007; Küçükkalay, et al., 2000; Avşar & Öğütoğulları, 2012; Erbay, 2013; Efe & Uluoğlu, 2015; Güzel, 2016).

On children working in the furniture industry, child workers are engaged in jobs that are prohibited under heavy and dangerous work regulations. On the other hand, it has been determined that the required periodic examinations for job compliance were not performed prior to employment. Because these children are not covered by the social security system, a significant number of them do not seek treatment in a hospital after an occupational accident. Many agricultural activities are hazardous to one's health. Children working in this line of work, in particular, require special protection in terms of occupational health and safety. In this regard, concluded in their study on the worst forms of child labor that children who work seasonally in the cotton harvest are severely harmed by the harsh working conditions. This situation has a negative impact on both their physical and psychological development. On the other hand, the study draws attention to the fact that children do not enroll in school or are deprived of the necessary education to improve their future situation because they must leave to work (Gülçubuk, 2012). According to the statistics, 3.4 percent of child workers have been injured or disabled, 2.4 percent have experienced discomfort due to workplace conditions, 33.8 percent have been over-tired, and 1.2 percent have been exposed to violence or ill-treatment. Although these are the rates reflected in official records (TURKSTAT, 2013) the fact that children refrain from mentioning work accidents and injuries also contributes to these low rates. Children, on the other hand, do not have enough information about the health risks associated with work. There is a link between the accidents to which child workers are subjected and the actual work, working hours, and access to information about protection. As children's daily working hours increase, so does the rate of occupational accidents. Although this situation is more common in child workers who do the main job (as opposed to those who fetch), their lack of experience also increases the risk (Akya & Atak, 2004). Special protection and control of children in the workplace is also a difficult issue in Turkey. The fact that the number of work-related fatalities in our country (TURKSTAT, 2017) is higher than in EU countries raises legitimate concerns in this regard.

Model and Data Collection Tools

Child employment as an important issue in Turkey as it is for every developing country; population, education is a subject closely related to the concepts of economic development and social development. Data on child labor injuries and deaths are generally available from national statistical centers in countries and from existing public health data systems. However, limited information can be obtained about anatomical injuries, medical care, and treatment in public health data systems, while little information can be provided about the conditions surrounding injuries and deaths (Yıldırım & Şimşek, 2008; Gürbüz & Şahin, 2014).

In Turkey, although there is a lot of research on the causes and consequences of child labor, there is almost no research directly on child labor deaths in the literature. Child labor injuries and deaths, which directly deprive children of their right to life, are generally discussed in studies involving adults in the literature, but are not examined under a separate heading. In addition, most of the data used in many studies have been obtained from official sources and cover a limited sample (Marlenga, et al., 2017; Weichelt, et al., 2019).

Due to the inadequacy of official data and studies on child labor deaths in Turkey, clear information about the characteristics and causes of child labor deaths is not available. For this reason, there is a need for research to determine why and how work accidents that cause child worker deaths occur in order to reduce child labor and child worker deaths. Answers were sought about what child labor means in Turkey, how many child labor in Turkey, working with child workers and the risks they may experience at work.

It is possible to see the dimensions of child labor from statistical data. Child labor surveys were conducted by the Turkish Statistical Institute with the technical support of the ILO/IPEC (End Child Labor Programme) in order to establish a database on children working in Turkey, to reveal the sectors, working conditions and socioeconomic status of working children. Within the scope of the research, the data of the Turkish Statistical Institute (TURKSTAT) and the Social Security Institution (SSI) for the year 2020 were used. The population of the study is all 5–17 year olds registered in Turkey. By examining on an annual basis; The numbers of boy, girl and total child workers are shown one by one. In order to draw a general risk table under seven headings, the number of child workers, their educational status, reasons for working, in which sectors they work, worker status, workplace environment and workplace risks were examined one by one. Results are presented in tables as both number and percentage (in parentheses) calculations.

Findings

Number of Child Labors

The Turkish Statistical Institute's Child Labor Force Survey and Household Labor Force Survey, both administered to children aged 5-17 at the end of 2019 (TURKSTAT, 2020) were examined together as part of the scope of the study. In terms of scope and method, this study differs from previous Child Labor Researches. These differences are due to changes made in the Household Labor Force Survey structure in 2014, as well as the inclusion of the 5-17 age group, on which the International Labor Organization bases its child labor surveys. In Turkey, the number of children aged 5-17 is estimated to be 16 million 457 thousand, accounting for 20.3 percent of the non-institutional population. The number of children in the 5-11 age group is estimated to be 9 million 12 thousand, the number of children in the 12-14 age group is 3 million 796 thousand and the number of children in the 15-17 age group is 3 million 649 thousand (TURKSTAT, 2021).

Table 1. *Non-Institutional Population and Children Engaged in Economic Activities (x1000)*

Gender	Age, group and gender	Non-institutional population	Children engaged in economic activity	Employment rate (%)
Boy	5-11	4,626	24	0.5
	12-14	1,948	77	4.0
	15-17	1,876	407	21.7
Girl	5-11	4,386	8	0.2
	12-14	1,848	37	2.0
	15-17	1,773	167	9.4
Total	5-11	9,012	32	0.4
	12-14	3,796	114	3.0
	15-17	3,649	574	15.7

Table 1 shows the number of child workers at 5-11, 12-14 and 15-17 age groups. 24 thousand (0.5%) of 4 million 626 thousand boys aged 5-11, 8 thousand (0.2%) of 4 million 386 thousand girls; 77 thousand (4.0%) of 1 million 948 thousand boys aged 12-14, 37 thousand (2.0%) of 1 million 848 thousand girls; 407 thousand (21.7%) of 1 million 876 thousand boys and 167 thousand (9.4%) of 1 million 773 thousand girls are actively working. When the number of child workers in the total workforce is examined; 32 thousand (0.4%) of 9 million 12 thousand children aged 5-11, 114 thousand (3.0%) of 3 million 796 thousand

children aged 12-14 and 574 thousand (15.7%) of 3 million 649 thousand children aged 15-17 were calculated.

Education Status of Child Labors

Table 2 shows the status of working of children aged 5-14 and 15-17. 80 thousand (1.4%) of 5 million 785 thousand boys and 25 thousand (0.5%) of 5 million 464 thousand girls are working aged 5-14 who attending school. Also 253 thousand (16.3%) boys aged 15-17, 115 thousand (7.8%) girls are not working aged 15-17 who attending school.

When the status of working of child workers attending school in the total workforce is examined; 105 thousand (0.9%) of 11 million 114 thousand children aged 5-14 and 368 thousand (12.2%) of 2 million 647 thousand children aged 15-17 were calculated. 21 thousand (2.7%) of 789 thousand boys and 20 thousand (2.6%) of 770 thousand girls are working aged 5-14 who attending school. Also 154 thousand (47.2%) boys aged 15-17, 52 thousand (16.9%) girls are not working aged 15-17 who attending school. When the status of working of child workers not attending school in the total workforce is examined; 41 thousand (2.6%) of 1 million 559 thousand children aged 5-14 and 206 thousand (32.4%) of 634 thousand children aged 15-17 were calculated.

Table 2. *Status of Working of Children (x1000)*

Gender	Age group	Attending school (%)			Not attending school (%)			
		Not working	Working	Total	Under the age of school	Not working	Working	Total
Boy	5-14	5,705 (98.6)	80 (1.4)	5,785 (100.0)	595 (75.4)	173 (21.9)	21 (2.7)	789 (100.0)
	15-17	1,297 (98.7)	253 (16.3)	1,550 (100.0)	-	172 (52.8)	154 (47.2)	326 (100.0)
	Total	7,002 (95.5)	333 (4.5)	7,335 (100.0)	595 (53.4)	344 (30.9)	175 (15.7)	1,114 (100.0)
Girl	5-14	5,439 (99.5)	25 (0.5)	5,464 (100.0)	564 (73.3)	186 (24.2)	20 (2.6)	770 (100.0)
	15-17	1,350 (92.2)	115 (7.8)	1,465 (100.0)	-	257 (83.1)	52 (16.9)	309 (100.0)
	Total	6,789 (98.0)	140 (2.0)	6,929 (100.0)	564 (52.3)	443 (41.0)	72 (6.6)	1.079 (100.0)
Total	5-14	11,144 (99.1)	105 (0.9)	11,249 (100.0)	1,159 (74.4)	359 (23.0)	41 (2.6)	1,559 (100.0)
	15-17	2,647 (87.8)	368 (12.2)	3,015 (100.0)	-	429 (67.6)	206 (32.4)	634 (100.0)
	Total	13,791 (96.7)	473 (3.3)	14,264 (100.0)	1.159 (52.9)	787 (35.9)	247 (11.2)	2,193 (100.0)

It was observed that 473 thousand (3.3%) of 14 million 264 thousand (100%) attending school children were working but 13 million 791 thousand (96.7%) were not working. 247 thousand (11.2%) of 2 million 193 thousand (100%) not-attending school children were working but 787 thousand (35.9%) were not working and 1 million 159 thousand (52.9%) were under the age of school.

Working Reasons of Child Labors

Table 3 shows the reasons of working of children aged 5-14 and 15-17. According to the table, 9 thousand (8.91%) working boys in the 5-14 age group work to contribute to the household, 73 thousand (72.28%) to help the household's economic activity, 14 thousand (13.86%) to learn a job or have a profession, 4 thousand (3.96%) to meet their own needs, and 1 thousand (0.99%) for other reasons. 120 thousand (29.48%) working boys aged 5-17 work to contribute to the household, 110 thousand (27.03%) to assist the household's economic activities, 144 thousand (35.38%) to learn a job or have a profession, and 33 thousand (8.11%) to meet their own needs.

8 thousand (17.78%) working girls in the 5-14 age group work to contribute to the household, 35 thousand (77.78%) to help the household's economic activity, 1 thousand (2.22%) to learn a job or have a profession, and 1 thousand (2.22%) to meet their own needs. 30 thousand (17.96%) working boys in the 5-17 age group work to contribute to the household, 40 thousand (23.95%) to help the household's economic activity, 89 thousand (53.29%) to learn a job or have a profession, and 8 thousand (4.79%) to meet their own needs.

Table 3. *Reasons of Working of Children (x1000)*

Gender	Age group	To contribute household income (%)	To help in household's economic activity (%)	To learn a profession and building skills for job (%)	To support him/herself (%)	Other (%)	Total (%)
Boy	5-14	9 (8.91)	73 (72.28)	14 (13.86)	4 (3.96)	1 (0.99)	101 (100)
	15-17	120 (29.48)	110 (27.03)	144 (35.38)	33 (8.11)	-	407 (100)
	Total	128 (25.20)	184 (26.22)	158 (31.10)	38 (7.48)	1 (0.20)	508 (100)
Girl	5-14	8 (17.78)	35 (77.78)	1 (2.22)	1 (2.22)	-	45 (100)
	15-17	30 (17.96)	40 (23.95)	89 (53.29)	8 (4.79)	-	167 (100)
	Total	39 (18.40)	75 (35.38)	90 (42.45)	9 (4.25)	-	212 (100)
Total	5-14	17 (11.64)	108 (73.97)	15 (10.27)	5 (3.42)	1 (0.68)	146 (100)
	15-17	150 (26.13)	150 (26.13)	232 (40.42)	41 (7.14)	-	574 (100)
	Total	167 (23.19)	259 (35.97)	247 (34.31)	46 (6.39)	1 (0.14)	720 (100)

Among the reasons for working children, "helping the household's economic activity" ranks first with 35.9 percent (259 thousand) , followed by "learning a job, having a profession" with 34.31 percent (247 thousand) and "contributing to household income" with 23.19 percent (167 thousand) and 6.39 percent (46 thousand) work to support themselves.

Economic Activities of Child Labors

Table 4 shows the information about the branch of economic activities in which working children aged 5-14 and 15-17. According to the table, 58 thousand (57.2%) working boys between the ages of 5-14 work in agriculture, 15 thousand (15.1%) in industry, and 28 thousand (27.7%) in the service sector. 85 thousand (21.0%) working boys between the ages of 15-17 work in agriculture, 126 thousand (31.0%) in industry, and 195 thousand (48.0%) in the service sector.

36 thousand (79.6%) working girls between the ages of 5-14 work in agriculture, 2 thousand (4.0%) in industry, and 7 thousand (16.4%) in the service sector. 42 thousand (25.4%) working girls between the ages of 15-17 work in agriculture, 27 thousand (16.4%) in industry, and 97 thousand (58.3%) in the service sector.

It was observed that 328 thousand (45.5%) in the service sector, 321 thousand (30.8%) in agriculture and 171 thousand (23.7%) in industry of 720 thousand (100%) working children.

Table 4. *Branch of Economic Activity of Children (x1000)*

Gender	Age group	Services (%)	Agriculture (%)	Industry (%)	Total (%)
Boy	5-14	28 (27.7)	58 (57.2)	15 (15.1)	101 (100.0)
	15-17	195 (48.0)	85 (21.0)	126 (31.0)	407 (100.0)
	Total	223 (43.9)	143 (28.2)	141 (27.8)	508 (100.0)
Girl	5-14	7 (16.4)	36 (79.6)	2 (4.0)	45 (100.0)
	15-17	97 (58.3)	42 (25.4)	27 (16.4)	167 (100.0)
	Total	105 (49.4)	78 (36.8)	29 (13.7)	212 (100.0)
Total	5-14	35 (24.2)	94 (64.1)	17 (11.7)	146 (100.0)
	15-17	292 (51.0)	128 (22.3)	153 (26.8)	574 (100.0)
	Total	328 (45.5)	221 (30.8)	171 (23.7)	720 (100.0)

Workplace Locations of Child Labors

Table 5 shows the information about the workplace locations of children aged 5-14 and 15-17. According to the table, 58 thousand (57.2%) working boys between the ages of 5-14 work in the field/garden, 40 thousand (39.8%) in regular workplaces, and 3 thousand (3.0%) in mobile, irregular or market places.

On the other hand, 83 thousand (20.4%) working boys between the ages of 15-17 work in the field/garden, 305 thousand (75.0%) in the regular workplace, and 18 thousand (4.5%) in the mobile, irregular, or market place. 36 thousand (79.6%) working girls between the ages of 5-14 work in the field/garden, while 9 thousand (20.3%) work in a regular workplace. 42 thousand (25.4%) working girls between the ages of 15-17 work in the field/garden, 121 thousand (72.3%) in the regular workplace, and 4 thousand (2.2%) at home.

Table 5. *Type of Work Place of Children (x1000)*

Gender	Age group	Field/ garden (%)	Regular/ fixed place (%)	Mobile, irregular or market place (%)	At home (%)	Total (%)
Boy	5-14	58 (57.2)	40 (39.8)	3 (3.0)	-	101 (100.0)
	15-17	83 (20.4)	305 (75.0)	18 (4.5)	-	407 (100.0)
	Total	141 (27.7)	346 (68.0)	21 (22.0)	-	508 (100.0)
Girl	5-14	36 (79.6)	9 (20.3)	-	-	45 (100.0)
	15-17	42 (25.4)	121 (72.3)	-	4 (2.2)	167 (100.0)
	Total	78 (36.8)	130 (61.3)	-	4 (1.7)	212 (100.0)
Total	5-14	94 (64.1)	50 (33.9)	3 (2.1)	-	146 (100.0)
	15-17	125 (21.8)	426 (74.2)	19 (3.2)	4 (0.7)	574 (100.0)
	Total	219 (30.4)	475 (66.0)	22 (3.0)	4 (0.5)	720 (100.0)

It was observed that 219 thousand (30.4%) in the field/garden, 475 thousand (66.0%) in regular workplaces, 22 thousand (3.0%) in mobile, irregular or market places and 4 thousand (0.5%) at home of 720 thousand (100%) working children.

Employment Status of Child Labors

Table 6 provides information on the employment status of children aged 5-14 and 15-17. According to the table, 25 thousand (24.5%) working boys in the 5-14 age group are paid or daily wage workers, 2 thousand (1.5%) are self-employed, and 75 thousand (74.0%) are unpaid family workers. On the other hand, 295 thousand (72.4%) working boys between the ages of 15 and 17 are paid or casual workers, 1 thousand (0.3%) are self-employed, and 111 thousand (27.3%) are unpaid family workers. 10 thousand (22.2%) working girls between the ages of 5-14 work for a paid or casual wage, while 35 thousand (77.8%) are unpaid family workers. 126 thousand (75.5%) working girls between the ages of 15-17 are paid or casual workers, 1 thousand (0.6%) are self-employed, and 40 thousand (23.9%) are unpaid family workers.

Table 6. *Status in Employment of Children (x1000)*

Gender	Age group	Regular or casual employee (%)	Self employed (%)	Unpaid family worker (%)	Total (%)
Boy	5-14	25 (24.5)	2 (1.5)	75 (74.0)	101 (100.0)
	15-17	295 (72.4)	1 (0.3)	111 (27.3)	407 (100.0)

	Total	319 (62.9)	3 (0.5)	186 (36.6)	508 (100.0)
Girl	5-14	10 (22.2)	-	35 (77.8)	45 (100.0)
	15-17	126 (75.5)	1 (0.6)	40 (23.9)	167 (100.0)
	Total	136 (64.2)	1 (0.5)	75 (35.3)	212 (100.0)
Total	5-14	35 (23.8)	2 (2.0)	110 (75.2)	146 (100.0)
	15-17	421 (73.3)	2 (0.4)	151 (26.3)	574 (100.0)
	Total	455 (63.3)	4 (0.5)	261 (36.2)	720 (100.0)

According to their employment status, 455 thousand (63.3%) works for regular or casual employee, 261 thousand (36.2%) as unpaid family workers, and 4 thousand (0.5%) are self-employed.

Workplace Conditions of Child Labors

Table 7 shows information about the risks that working children face in terms of occupational health and safety and the workplace environment. When the factors that negatively affect physical health in the workplace are examined, 93 (12.9%) children work in an extremely hot/cold or extremely humid/non-humid environment, and 78 (10.8%) children are exposed to chemicals, dust, smoke, or harmful gases. Working children were subjected to difficult postures or movements, as well as carrying heavy loads, in 10.1 percent, while 10.0 percent were subjected to noise or severe shaking. It has been determined that 46 (6.4%) children face the risk of an accident in the workplace, and 33 (4.6%) children face the risk of eyestrain or visual focus. While 9 (1.3%) working children were injured or disabled at work, 32 (4.4%) were children witnesses to an injury or disability at work. While 4 (0.6%) of those who experienced any discomfort as a result of workplace working conditions, 16 (2.2%) of those who witnessed this situation. While only 1 (0.1%) working children are subjected to physical, verbal, or ill-treatment at work, 11 (1.5%) children have witnessed such behavior.

According to statistics, men are more likely than women to be involved in non-fatal work accidents, and men account for the great majority of fatal work accidents (Hoskins, 2015; Rommel, et al., 2016). So far, studies focusing explicitly on gender variations in work accidents among children have been rare, and findings on gender trends have been mixed. Turner et al. (2015) found no gender differences in micro accidents in a more recent investigation. Only a few research have looked at the risk factors for child work accidents using multivariate analysis. These studies demonstrate that gender is not a risk factor in and of itself, but that work-related characteristics are the most important predictors of risk. Those studies, however, are based on perceived (or expected) work dangers rather than the actual hazards that cause the accidents. Even while sharp objects and material that burns have been identified as among the most common causes of accidents, studies on the real risks, or causes, of child work accidents are limited (Frone, 1998; Zierold & Anderson, 2006; Hobbs, et al., 2006; Rasmussen, et al., 2011). The results of this study support previous studies and Table 7 show the details about boy and girls children workers work accidents.

Table 7. *Workplace Conditions of Children (x1000)*

Unfavorable factors that affect/could affect		**Boy (%)**	**Girl (%)**	**Total (%)**
Any injuries	Exposed	8 (1.6)	1 (0.5)	9 (1.3)
	Witnessed	20 (3.9)	12 (5.7)	32 (4.4)
Any discomfort arising from the working conditions in the workplace	Exposed	4 (0.8)	-	4 (0.6)
	Witnessed	10 (2.0)	6 (2.8)	16 (2.2)
Exposure to physical, verbal violence or unpleasant behavior	Exposed	1 (0.2)	-	1 (0.1)
	Witnessed	7 (1.4)	4 (1.9)	11 (1.5)
Exposure at work that affect physical health	Eye strain and visual concentration	30 (5.9)	2 (0.9)	33 (4.6)
	Chemicals, dust, fumes, smoke or gases	62 (12.2)	16 (7.5)	78 (10.8)
	Noise or strong vibrations	65 (12.8)	7 (3.3)	72 (10.0)
	Working in an extremely hot/cold or in an excessive humidity/no humidity environment	80 (15.7)	13 (6.1)	93 (12.9)
	Difficult work postures or work movements and handling heavy loads	56 (11.0)	17 (8.0)	73 (10.1)
	Risk of accident	43 (8.5)	2 (0.9)	46 (6.4)

Result and Discussion

The main purpose of this research is to present the current situation of child workers, who play an active role in the business world, by drawing a general framework within the scope of occupational health and safety, and to present the risk picture of the current situation in Turkey under seven different headings.

Child labor is a complex social problem that affects the entire world. To begin with, there are various legal definitions of what the concept is and who it applies to (Kines, et al., 2011). The methods of struggle evolve independently of one another, and the desired results cannot be realized in practice. The situation in Turkey is similar to this. There are many regulations on child labor in our legislation, but these regulations are not in sync with one another.

From a social and historical perspective, the definitions of "child" and "child labor", which do not take into account the geographical distribution or gender differences between rural and urban areas and are isolated from social and cultural contexts, need to be questioned (Kuschnereit, 2001). There is no clear expression regarding the child phenomenon in Turkey's legal regulations. The term "little" is used instead of "child" in legal regulations (Turkish Civil Code, 1926). It is possible to see children working in almost every sector in Turkey. Children working in industry, commerce and service sectors in the cities work intensively in agriculture in rural areas (Gülçubuk, 2012). Working conditions and jobs for children can vary greatly (Duyar, 2013). Child labor means cheap labor for employers who start working at a young age (Baştaymaz, 1990) and brings disadvantages such as more health problems, more frequent

illness and lower quality. Various studies on child labor in Turkey have tried to identify the social, economic and cultural dimensions of the problem. In this context, the numerical data of child labor, its sectoral distribution, family situations, working reasons, working styles, work accidents and workplace conditions and risk situations they are exposed to were examined.

The data available on the scope of child labor in Turkey is insufficient. Statistics have become out of date. On the other hand, the fact that our country's unregistered sector has the highest rate of child labor is the most significant impediment to fully understanding the situation. In terms of worker health and safety, the situation of child workers, who are involved in various aspects of working life, also paints a bleak picture. Children who work in the most heinous forms of child labor in the agricultural sector are denied all forms of control and protection in small-scale workshops that operate haphazardly in urban areas.

To solve this problem, a multidimensional approach is required. To begin, it is critical not to leave any gaps in the legal dimension and to make the necessary arrangements in the contradictory articles. Controls should be tightened and sanctions should be imposed in the informal sector, where child labor is common. Child labor is not a problem that can be solved solely through legal means. In this regard, it is necessary to be determined in order to eliminate the dynamics that contribute to the emergence of the problem and to raise social awareness.

It has been observed that there are many causes of child worker accidents in Turkey. Among the main causes of child worker accidents, the following issues were identified: the inadequacy of the family's economic situation, the characteristics of the region where they live, the lack of supervision of the state, especially in small and medium-sized enterprises, the fact that many families see the work of the child as normal and the lack of sufficient information about the harms of child labor, and the families and employers while employing children. failure to take precautions against possible hazards, most families employing their children in prohibited jobs and the child does not supervise the workplace, children do not have sufficient knowledge, skills and experience about the work they do, and they do not have the knowledge and power to protect themselves in case of work accidents. It has been observed that the right to life of children is not adequately protected by both the family and the state. Similarly, it has been understood that neither the family nor the business owners have taken adequate precautions for the safety of working children in the workplace, and that the state has not implemented strict controls and sanctions.

As a result of the research, a general framework about child labor in Turkey was drawn with the numerical data obtained. An up-to-date awareness on this issue has been created by clearly demonstrating the situation of child workers in working life. In particular, risk tables were created and the situation of child workers was revealed with the examinations made under each subject. Although a multidimensional approach is needed to solve the problem of child labor, there is no gap in the legal dimension and the necessary arrangements are made in contradictory articles, it seems that the most important solution is to tighten the controls and impose sanctions in the informal sector where child labor is common.

Child labor is not a problem that can only be resolved through legal means. In this regard, it is necessary to determine the dynamics that contribute to the emergence of the problem and to increase social awareness. In this context, the rights of children who need to work should be legally defined by ensuring coordination between the ministries of work, health and education, and all other segments, especially children, should be trained on this issue. Children should be taught that they do not have to do every job assigned to them and that they have the right to refuse any job assigned to them. Until the economic and social conditions that force children to work improve, they and their families should be informed

about the accidents, diseases and risks they encounter, and practical studies should be carried out (Einarsdottir, et al, 2015; Einarsdottir & Snorradottir, 2020a)

Employing occupational health and safety specialist personnel will only be beneficial within the scope of the Occupational Health and Safety Law if it is combined with a course that will be included in the school curriculum, educate students on occupational health and safety during the school process, raise awareness, and create sensitivity. When viewed through the lens of the educational process, it is clear that this issue is more critical for the children of families who work in seasonal agriculture. Until the economic and social conditions that force these children to work improve, they and their families must be educated about the accidents, diseases, and risks that they face, and practical studies must be conducted (Neuman, 2006; Rasmussen, 2011).

In comparison to the European Union, the most significant shortcoming in Turkish legislation is that children who are forced to work are not considered subjects of rights, and there is no special legal regulation that places them at the center. In this context, the rights of children who must work should be legally defined by ensuring coordination between the ministries of labor, health, and education, and all other segments, particularly children, should be educated on the subject. Children should be taught that they do not have to do every job that is assigned to them and that they have the right to refuse any job that is assigned to them. However, children in Turkey, the European Union, and other parts of the world should, first and foremost, be provided with economic and social conditions in which they will not be forced to work and will have the opportunity to play and develop themselves in all aspects (Nielsen, et al, 2016; Bravo, et al, 2020; Einarsdottir & Snorradottir, 2020b).

Based on the results of this study, this study covers a limited time. For this reason, there is a need for studies conducted over a wider period of time in order to obtain a historical summary of child labor accidents in Turkey. Child labor accidents were analyzed only through media reports in this study. Comparative qualitative research should be conducted on whether child worker accidents increase as a result of improving the income level, education and social conditions of child workers living in provinces where child worker mortality rates are high. Many parameters affecting the causes of child labor accidents should be evaluated together and research should be conducted on the factors that lead children to work life. In places where child labor is intense, children and their families should be given comprehensive training on children's right to life and education, and research should be conducted on how education changes child labor in the long run.

Suggestions for practitioners based on the results show child labor is not uniform, but takes many forms, depending on the type of work children do, the age and gender of the child, whether they work independently or with their families. Because of this complex nature of child labor, there is no single strategy that can be used to eliminate it. Tackling child labor requires long-term coordinated action involving government and many stakeholders. The link between child labor and education, although clearly defined, is not implemented at the policy level by governments. Existing policies that provide space to create parallel education systems and deprive currently employed or potential child workers from education should be changed and more inclusive education policies should be implemented. Projects with comprehensive social protection approaches that encourage schooling should be produced. One of the most serious factors in the failure to reduce child labor is legal loopholes. Gaps in the labor law must be filled and the sanctions must be convincing. Urgent measures should be taken especially for children working in the agricultural sector, and policies should be developed so that these children do not break away from education and social life. Workplaces should be inspected more frequently in order to prevent child labor and the amount of fines to be applied should be increased when evidence of child labor is found. Neither child labor policies nor sophisticated OHS policies in the Turkish tradition adequately

safeguard children from workplace injuries. All stakeholders must take greater responsibility for preventing child work accidents. Employers must limit preventable job hazards for both girls and boys, and offer appropriate safety gear and training for unavoidable hazards. In addition, parents must educate the young about the dangers that come with working as a child, as well as how to deal with them. The establishment of an uniform measurement of the prevalence of child work accidents, as well as whether the gender pattern of the accidents has changed over time, should be the subject of future research.

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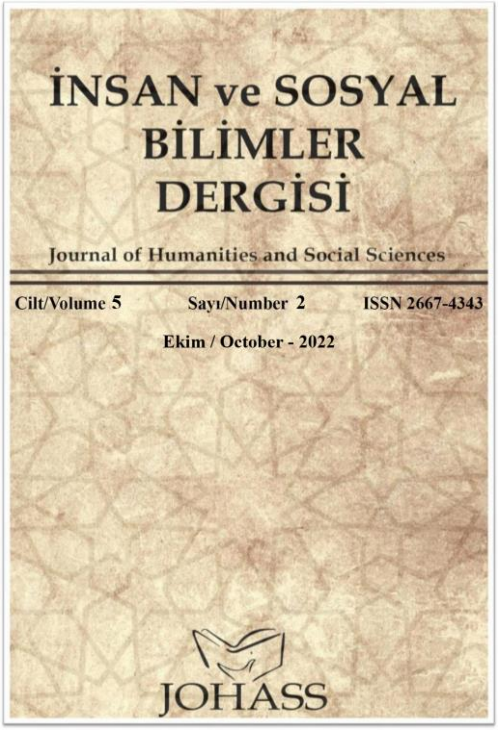

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Epistemophily and Women's Temporality in Jeanette Winterson's Sexing the Cherry

Şebnem Düzgün
Ankara Science University, Faculty of Humanities and Social Sciences, Department of English Translation and Interpretation
Assoc. Prof. Dr.
duzgunsebnem@gmail.com
Orcid ID: 0000-0002-0467-1018

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Epistemophily and Women's Temporality in Jeanette Winterson's *Sexing the Cherry*

Şebnem Düzgün[1]

Ankara Science University, Faculty of Humanities and Social Sciences, Department of English Translation and Interpretation

Abstract

Jeanette Winterson's *Sexing the Cherry* (1989) offers a feminist interpretation of history by using epistemophilic language and a circular time structure as alternatives to epistemological patriarchal language and linear temporality. Epistemophilic language is used in the novel to argue that history is cyclical, fluid, and continuous, and there are not strict divisions between private and public histories, or between the past, present, and future. Winterson evaluates the personal histories of characters within the public history to remove the hierarchy between the private, which is associated with the feminine, and the public, which is associated with the masculine. Moreover, she depicts history as a subjective notion as each character reinterprets and re-evaluates history from their own perspectives. Characters that deviate from the dominant epistemologies emphasise the subjectivity of history by looking at history from a subjective, feminine perspective. In the light of the discussions on epistemophily and women's temporality, mainly referring to the arguments of Julia Kristeva, this study aims to demonstrate that Winterson's Sexing the Cherry challenges patriarchal epistemological language that favours singularity and linear temporality based on separation and divisions by describing history as a subjective recreation of the past which flows into the present and future.

Keywords: Jeanette Winterson, *Sexing the Cherry*, epistemophily, epistemology, women's temporality.

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[1] Corresponding author:
Assoc. Prof. Dr.
duzgunsebnem@gmail.com
Orcıd ID: 0000-0002-0467-1018

Introduction

Jeanette Winterson's *Sexing the Cherry* (1989) uses a circular time structure and "epistemophilic" language that favours diversity and flexibility to offer an alternative to paternalistic historical writing that uses linear temporality and epistemological language based on singularity and uniformity. The novel has a cyclical time structure in which public and private histories of the seventeenth and twentieth century are intermixed. It is principally set in the seventeenth century, a time of upheaval which witnessed such dramatic public events as the execution of Charles I and the conflict between the Puritans and the supporters of monarchy. However, the public history of the seventeenth century is narrated within the private stories of the protagonist Dog Woman, a childless, lonely woman who earns her living by dog-fighting, and Jordan, the boy adopted by Dog Woman. Set in the seventeenth century, the first scene of the novel introduces the reader to Jordan, who tells his personal, dream-like story about how he saw his own face before him at night in a foggy weather. However, in the final part of the novel, which is titled "Some Years Later," the reader is moved to twentieth-century London and encounters two new narrators: Nicolas Jordan, a young man who has an ambition to travel around the world with a ship, and a female activist, who protests the pollution of water with mercury. The two come together and decide to burn the factory responsible for the contamination of water. Meanwhile, the reader goes back to the past with the narration of Dog Woman, who evaluates how the plague breaks out after the king's execution, and the London fire of 1666, two important public events of the seventeenth century, from her own subjective perspective. The novel ends with the narration of Jordan, who speculates about the unity of the future, the present and the past while leaving the burning London with his mother. As can be noticed in the novel's structure, time in *Sexing the Cherry* moves in a circular line in which the past and future are intermingled. Accordingly, history is not depicted as something which progresses in a linear line, following chronological order. In the light of the discussions about epistemophily and women's temporality, this study aims to show that Jeanette Winterson's *Sexing the Cherry* uses epistemophilic language, which favours subjectivity, flexibility, and variety, to defy patriarchal epistemological language that imposes singular, uniform historical facts, based on linear temporality, to justify and sustain male dominance.

The literature review shows that Jeanette Winterson's *Sexing the Cherry* has been mainly discussed within the framework of postmodernism, historiographic metafiction, and gender relations. For instance, Langland (1997) studies the feminist poetics and politics in *Sexing the Cherry* and argues that the novel challenges the conventional cultural meanings people attribute to material body, which becomes a site of gender discrimination, and to time by using "narrative practices [which] disrupt conventional ideas of sequence, linearity, time and duration, the very concepts upon which the natural world is founded in the Creation stories" (p. 105). Kırca (2009), on the other hand, reads the novel as a historiographic metafiction in which facts and fictions are mingled deliberately and "the existence of a female narrator who not only catalogues the historical events but interprets them from her marginal position, allows a reading of the text as a means of voicing the untold histories of women as the marginalized other" (p. 64). Malhotra (2013) also makes a postmodernist reading of the novel and points to the relationship between the self, time, and space by arguing that the self is "able to transcend time and space in the construction of a new concept of time and space as flexible and at the command of the self" (p. 481). Moreover, Sancheti (2018) examines postmodernist politics in *Sexing the Cherry* and claims that "objective" historical facts are reinterpreted by individuals from their subjective perspectives, thus "historical narrative becomes postmodernist historiography by inverting the gaze from a bird's eye view record to a subjective and particularized one" (p. 11). Differing from the previous stories, this study

focuses on the examination of the epistemophilic language and women's temporality in *Sexing the Cherry*. Thus, it is important to explain and discuss the epistemophilic language and women's temporality. Epistemophilia is a term coined by Freud to relate "the human urge to gain knowledge" to the child's interest about sex (Rudberg, 1997, p. 182). Freud (1997) argues that "the sexual instinct of looking and knowing" are interrelated and the child's pleasure in looking forces him to know and explore the female body (p. 60). Accordingly, mental development of the child is induced and determined by sexual drive, which urges him to see and know the body of the opposite sex (Klein, 2011, p. 188). On the other hand, epistemophily introduces subjectivity into this deterministic psychoanalytic outlook and explores "the existence of a subjective zone" where "a creative authentic self-formation" is ensured by the emotional and spontaneous actions of individuals (Baggio, 2010, pp. 2, 1). Therefore, although epistemophily pertains to "a profound desire for thinking," it is distinguished from epistemology that searches for definite, universal meanings (Fiumara, 2014, p. 20). Unlike epistemology, it is inclusive in that it celebrates differences. In *Spontaneity: A Psychoanalytic Inquiry*, Gemma Corradi Fiumara (2009) suggests that epistemophily denotes "diversity, complexity and spontaneity," thus epistemophilic statements are not oppressive and they "do not claim to be sources of authority," (p. 47). For instance, epistemophilic statements underline the possibility of various meanings and realities created by different subjects having different perceptions. Epistemophily is also based on "a passion for radical listening" and asking the right questions to discover the variety of creation, as well as to "understand and accept, perceive limits and make connections, [and] allow confrontation" (Fiumara, 2009, p. 103). While epistemophily is open to discussions and enquiry, epistemology is restrictive, for epistemological knowledge is constituted as "the only legitimate way of knowing" and inquiries deviating from dominant epistemologies, like the questions directed by women, are subjugated, ignored, or rejected (Fiumara, 2003, p. 134). Rejection of the unorthodox questions, in turn, prevents productivity and creativity; therefore, epistemophilists, like Derrida, believe that questions should be asked, listened and answered "in an integrated epistemic outlook" (Fiumara, 2003, pp. 134, 135). Furthermore, epistemophillic language represents things without distorting or reshaping their "structure[s] in an alien language," for it does not aim to create a homogenous and hierarchical thought system advocated by classical philosophy (Fiumara, 2014, p. 23).

The second term articulated in this study is women's temporality. Kristeva discusses women's temporality with reference to the debates on women's language. In "Women's Time", Kristeva (1981) examines women's struggles to find a new language to define their unique identities and experiences. She maintains that although the first-wave feminists fought for equal socio-political and economic rights for women, it was the second-wave feminists who directed issues, such as the uniqueness of female identity, and the "plural, fluid, in a certain way nonidentical" nature of feminine experiences (Kristeva, 1981, p. 19). Since the demands of the first generation of feminists for political, economic, and professional equalities were achieved, the second generation focused more on the discussions about the distinctness and uniqueness of each individual, thus they extended feminist agenda by including "sexual equality, which implies permissiveness in sexual relations (including homosexual relations), abortion, and contraception" (Kristeva, 1981, p. 21). They argued that females are specific, and consequently each woman has her own individual identity (Kristeva, 1981). However, even in socialist states, based on an egalitarian ideology, woman could not appear as a distinct character but as a non-existent and inessential creature (Kristeva, 1981).

According to Kristeva, not only socio-political discourse but also Freudian separatist attitude were influential in the relegation of female subjectivity. Freudianism underlines "sexual difference" and "the difference among subjects" and articulates the language of "separation" in which meaning is constituted through "an articulated network of differences"

(Kristeva, 1981, pp. 20, 23). Kristeva (1981) maintains that while women reject separation and the language of detachment, men "magnify both and … attempt to master them" (p. 23). Moreover, in the Freudian psychosocial order women feel degraded and ostracized for they are excluded from taking essential roles in the symbolic paternal structure in which they are only expected "to maintain, arrange, and perpetuate this sociosymbolic contract as mothers, wives, nurses, doctors, teachers" and they are "left out of the sociosymbolic contract, of language as the fundamental social bond" (Kristeva, 1981, pp. 23-24). This, in turn, led women in art and human sciences "to shatter language, to find a specific discourse closer to the body and emotions, to the unnameable repressed by the social contract" (Kristeva, 1981, pp. 24-25). In so doing, they aim "to nourish our societies with a more flexible and free discourse" so that they can give voice to the frustrations of the female sex, as well as, "the enigmas of the body, the dreams, secret joys, shames, hatreds of the second sex" (Kristeva, 1981, p. 32). However, "avant-garde" feminists, such as Valie Export, Cindy Sherman, and Francesca Woodman, who value differences, pay attention that women's language constitutes "a fluid and free subjectivity;" thus, it is not totalizing but open to reveal "the singularity of each woman, and beyond this, her multiplicities, her plural languages, beyond the horizon, beyond sight, beyond faith itself" (Kristeva, 1981, p. 33). Hence, the third-generation feminists challenge the conventional heteropatriarchal hegemonic discourse that views language "as a universal and unifying tool, one which totalizes and equalizes," and, instead, they address the notions of singularity, diversity, and relativity (Kristeva, 1981, p. 35).

Kristeva (1981) relates the problem of language to the discussions about temporality.

She specifies the existence of two types of temporality: "the time of linear history, or *cursive time*" and "the time of another history, thus another time, *monumental time*" (p. 14). Sociocultural groups, like young European people and women, are defined "especially according to their role in the mode of reproduction and its representations" (Kristeva, 1981, pp. 14-15). Women are related more to "*space*" rather than "*time*, becoming, or history," because they are thought to be "the *space* generating and forming the human species," and they are constituted as "nourishing, unnameable, anterior to the One, to God" (Kristeva, 1981, pp. 1516). Accordingly, women's time is characterized by "repetition and eternity" as it has "cycles, gestation, the eternal recurrence of a biological rhythm which conforms to that of nature," still it has a unity and regularity in itself for it is associated with "extrasubjective time, cosmic time" (Kristeva, 1981, p. 16). In these respects, women's time is related to monumental time which is "[a]ll-encompassing and infinite," in that it does not have splits or breaks (Kristeva, 1981, p. 16). Women's temporality is also linked to cyclical myths of resurrection, like the myth of the Virgin Mother, who "does not die but moves from one spatiality to another within the same time" (Kristeva, 1981, p. 17). Men's temporality, on the other hand, is linear and it is "both civilizational and obsessional," for it is the time of history and it progresses on a lineal stratum that signifies "departure, progression, and arrival" (Kristeva, 1981, p. 18). Therefore, while linear time is like a narrative that has a beginning and ending, cyclical, or monumental time is like the individual memories of the hysteric that transcend the strictly controlled masculine temporality (Kristeva, 1981). Defying the oppressive structure of men's time, cyclical, or monumental time enunciates "the multiplicity of female expressions and preoccupation" (Kristeva, 1981, p. 18). However, linear time, having a socio-political aspect, imposes the values accepted by nations, and ignores women's subjective psychological and corporeal realities (Kristeva, 1981). Hence, feminists turned towards "the archaic (mythical) memory," and joined in "the cyclical or monumental temporality of marginal movements" to surpass the limits inflicted on women's subjectivity by linear temporality (Kristeva, 1981, p. 20).

Sexing the Cherry: A Feminine Interpretation of His-Story by Using Epistemophilic Language

Janette Winterson's *Sexing the Cherry* handles the issues of language and time in terms of gender relations. Abolishing the divisions between the past, present, and future, which are imposed by totalizing epistemological language, the novel shows that different temporal units flow into one another rather than starting and ending at a certain point, as it is suggested by men's linear temporality. Accordingly, Winterson's work suggests that the chronological order, which patriarchal epistemological language enforces, is not natural for history is not present in human mind in an ordered, fixed, and stable way (Kristeva, 1981). For instance, Dog Woman's narration moves forward and backward arbitrarily throughout the chapters. In the second chapter, Dog Woman remembers Jordan as a three-year-old boy and in the same chapter, she suddenly starts to talk about Jordan as a mature man sailing her down the Thames. In the fourth chapter, her narration once again moves to Jordan's childhood, and she remembers him as a boy who "made paper boats … [and] came home to [her] with his boats broken and his face streaked with tears" (Winterson, 2001, p. 19). The first and the penultimate scenes are also arranged in a circular structure. The novel starts and ends with the same scene in which Jordan narrates his encounter with his own face at night in a foggy air. The repetition in narrative, which is peculiar to women's temporality, suggests that time does not have a definite beginning or end and it constantly repeats itself, like women's bodies going through cyclical temporal processes, such as gestation and menstrual cycles (Kristeva, 1981).

Challenging the conventional epistemological understanding of time as an entity that has intervals and units, *Sexing the Cherry* depicts time as an indivisible and flowing "temporal modalit[y]" (Kristeva, 1981, p. 16), in which the past, present and future join one another. Jordan, the male narrator from the seventeenth-century, explains that time exists in human mind in a unified form: "The future and the present and the past exist only in our minds, and from a distance the borders of each shrink and fade like the borders of hostile countries seen from a floating city in the sky" (Winterson, 2001, p. 144). The unity of time is also explained through such fantastic scenes as the emergence of Tradescant, another character from the seventeenth century, in the narration of Nicholas Jordan, who lives in the twentieth century. Tradescant tells Nicholas "[t]hey are burying the King at Windsor today," pointing at Charles I's burial (Winterson, 2001, p. 121). At this point the past, present and future are linked: the twentieth century is a future time for Tradescant and a present time for Nicholas, and the burial of the king is a past event. In this way, the novel deconstructs the structure of paternal temporality that makes a linear progress and claims that time flows backward and forward in human mind without any disruption or division.

Questioning the traditional narrative structures and the reliability of historical narratives, *Sexing the Cherry* demonstrates that official history recreated in historical works cannot be impartial completely. For instance, *The Boys' Book of Heroes* imposes an image of hero through its cover on which "there were ships and aeroplanes and horses and men with steel jaws" (Winterson, 2001, p. 116). The book depicts a hero as a male persona who should be skilful enough to control a ship, plane, or a horse. As the book has a patriarchal epistemological discourse, there is no place for heroines and it only talks about the successes and victories of great men: William the Conqueror, Christopher Columbus, Francis Drake, and Lord Nelson (Winterson, 2001, pp. 116-117). Nicholas Jordan parodies such historical works which attribute stereotypical characteristics to heroes: "If you're a hero you can be an idiot, behave badly, ruin your personal life, have any number of mistresses and talk about yourself all the time, and nobody minds. Heroes are immune. They have wide shoulders and plenty of hair and wherever they go a crowd gathers" (Winterson, 2001, pp. 117-118). War films also provide uniform models of heroic figures: "War films are full of men in tin hats

talking in terse sentences. They play cards round folding tables and lean over to each other from their bunk beds. They jump out of trenches ... with their machine guns" (Winterson, 2001, p. 118). As these historical works are the products of patriarchal epistemological discourses, they focus on brave and strong men, the superior, ruling race, doing heroic deeds while ignoring "small men" who "always get killed" (Winterson, 2001, p. 118). Therefore, the objectivity of such texts is questionable.

Sexing the Cherry also shows that each person perceives the past from a different angle; therefore, history is always reconsidered and revised, which contradicts the patriarchal epistemological understanding of history as a static, unalterable phenomenon. Therefore, the novel adopts a feminine discourse that endorses subjectivity and diversity. In *Sexing the Cherry*, the reader looks at the historical events of the seventeenth century from a subjective, female perspective. It is Dog Woman, who refers to the historical developments of her age:

> One morning, soon after the start of the Civil War that should have been over in a month and lasted eight years, Tradescant came to our house looking for Jordan. I was shouting at a neighbour of mine, a sunken block of a fellow with slant eyes and a nose to hang a hat on. This cranesbill was telling me that the King was wrong to make war on his own people (Winterson, 2001, p. 26).

Dog Woman cannot be objective when she talks about the Civil War because it is her personal belief that makes her claim that it is not the king but those who go against him are in wrong. Therefore, she depicts her neighbour who is against the king with such negative words as "a sunken block of a fellow with slant eyes and a nose to hang a hat on" and "[t]his cranesbill" (Winterson, 2001, p. 26). The fact that Dog Woman evaluates historical events from a subjective point of view creates a conflict between her subjective narrative and so-called objective version of normative official history. For instance, Dog Woman accuses only the Puritans of closing the theatres in London. However, the official history writes that the hostility of the Puritans towards theatres, which were considered to be places of corruption, is one reason of the closure of the theatres in London in 1593, but there are other reasons (Browne, 2012). The Church, the City of London Officials and upper-class London citizens objected to theatres due to the eruption of the Bubonic plague and the rise in crime because of the plays having fighting and drinking scenes (Browne, 2012). The subjective evaluation of past events from a feminine perspective that is critical of the oppressive Puritan regime, in turn, creates an alternative discourse against the epistemological discourse that imposes single, uniform truths about official linear history.

Although *Sexing the Cherry* proposes an alternative feminine vision against epistemological patriarchal view, it is not based on a hierarchical relationship between personal and official versions of history, but, rather, it offers various views on the past to show that history does not consist of a single truth. As Dog Woman looks at the historical events from the perspective of a Royalist, she claims that the war between Scotland and England broke out due to the brutality of the Scottish, who rejected to be converted to Anglicanism. However, history books do not take part with the either side and write that the Scottish War has both religious and legal aspects since Charles I not only wanted to model the Scottish Church on the Anglican orders, but also to introduce English legal system to Scottish courts (Reid, 1999). Moreover, while Dog Woman talks about historical events, she has superstitions and religious fears, which prevents her from being objective. She believes that "[i]t is bad luck to kill a king" (Winterson, 2001, p. 70). Therefore, she considers the plague that emerged after the execution of Charles I as a divine punishment: "God's judgement on the murder of the King has befallen us. London is consumed by the Plague. The city is thick with the dead" (Winterson, 2001, p. 138). Though she believes that God punished people for having executed the king, historical records claim that the plague was caused by the rats

transported from the foreign cities to London on ships (Kohn, 2001). She regards London fire also as a sign of God's anger with the citizens:

> On September the second, in the year of Our Lord, sixteen hundred and sixty-six, a fire broke out in a baker's yard in Pudding Lane. The flames were as high as a man, and quickly spread to the next house and the next. … But it was a sign, a sign that our great sin would finally be burned away (Winterson, 2001, pp. 142-143).

As a superstitious person, Dog Woman reads the fire as a means of purification from the sin of executing a king. However, historians claim that the Great Fire was caused by the fact that "[t]he summer of 1666 was hot and dry" (Bucholz & Ward, 2012, p. 319). Accordingly, the novel gives voice to a woman who interprets history from her subjective perspective by using an epistemophilic language, which merges various, contradictory truths, including official and personal facts, as an alternative to totalizing paternal epistemological language that attempts to degrade and repress the voices of females in the male-oriented society (Fiumara, 2003; Kristeva, 1981).

Debating over women's temporality that is related to "female subjectivity," and women's subjective experience of time as a modality moving through cycles (Kristeva, 1981, p. 17), Winterson's *Sexing the Cherry* uses epistemophillic language that represents difference, multiplicity, and flexibility. In so doing, it offers an alternative to patriarchal epistemological language which imposes single, unifying meanings, values, and propositions. The possibility of the existence of conflicting and paradoxical truths is articulated by Jordan, who ruminates on the shape of the world: "The earth is round and flat at the same time. This is obvious. That it is round appears indisputable; that it is flat is our common experience, also indisputable" (Winterson, 2001, p. 81). Jordan claims that the two facts are true because the earth is shown as round in "the globe," but it appears as flat and two-dimensional on "the maps" (Winterson, 2001, p. 81). Accordingly, he believes that historical truth is also not fixed or absolute as it changes based on personal perceptions. While narrating the same story told by Fortunata, a fantastic character, he notices that he and Fortunata tell their stories from their own perspectives: "[W]hat we told you is true, although it is not" (Winterson, 2001, p. 95). Since they produce their own versions of the past, Jordan believes that neither version can be called totally wrong or true. This instance enables Jordan to recognize that each individual creates a different history and a different truth by interpreting the past from their own perspectives. Therefore, he claims that he and his friends will tell different stories about their journey to wild places: "When we get home, men and women will crowd round us and ask us what happened and every version we tell will be a little more fanciful" (Winterson, 2001, pp. 101-102). These examples show that there is not a single, universal historical fact as history is unstable and personal, which defies patriarchal, epistemological discourse that imposes a fixed, uniform temporality.

Exploring epistemophilic language and feminine, monumental temporality that favour unity and harmony against divisions and breaks, *Sexing the Cherry* resolves the public-private dichotomy created by epistemological historians. The novel shows that traditional historical works dealing mainly with the public lives of people and their relations with the outer world while ignoring the inner, private lives of individuals. In *Sexing the Cherry,* the conventional mythological tale about the rape of Artemis is narrated from a different perspective. While traditional story focuses on the act of rape and Artemis's subsequent revenge on Orion, her rapist, Fortunata's feminine version dwells more upon the thoughts and emotions of Artemis and her inner experiences:

> She wants to lie awake watching the night fade and the stars fade until the first grey-blue slates the sky. She wants to see the sun slash the water, but she can't stay awake for everything; some things have to pass her by. So what she doesn't see are the

> lizards coming out for food, or Orion's eyes turned glassy overnight (Winterson, 2001, p. 133).

Using an epistemophilic language, Fortunata studies the reflections of the acts of rape and murder occurring in the outer world on the private world of Artemis, who wants to forget anything which reminds her of Orion. In this way, she brings together the personal and public so as to create a wider temporal and spatial area for readers to evaluate the violation of Artemis and the murder of Orion. Fortunata's tale that gives little impression on the heroine's relationship with the outer life is contrasted with *The Boys' Book of Heroes*, which mostly gives information about the public achievements of famous male heroes and the official records about their birthday, education, profession, or marriage rather than their subjective, emotional experiences. For instance, Francis Drake is introduced as a famous historical figure born in 1540 in Devon (Winterson, 2001). He is said to be "[n]otable for his defeat of the Armada" (Winterson, 2001, p. 117). However, nothing is said about his feelings or emotions. Accordingly, epistemological language employed in describing Drake conflicts with the epistemophilic language used by Fortunata for it imposes undebatable, universal truths about the historical subject and creates an emotional distance between the hero and the reader. Moreover, it depicts the hero as a public figure and ignores his private self, thus drawing a strict line between the personal and public.

Since feminine epistemophilic language provides a platform for the discussions of different elements, ideas, and topics, including the ones dispelled from oppressive, heteropatriarchal epistemological language, Winterson's *Sexing the Cherry* adopts an epistemophilic approach, discussing the relationship between fiction and historical reality. It removes the barriers between fiction and truth and argues that the two are so merged with one another that there is no clear-cut line between them. Therefore, the novel has an inclusive, epistemophilic language which examines "diversity" and "complexity," rather than ignoring subjective facts or fictive truths and suppressing them under historical facts (Fiumara, 2009, p. 47). For instance, the historical events, like the Civil War, the restoration of the monarchy, the Plague, and the Great Fire of 1666, are situated among the fictional stories, like the tales of the Twelve Dancing Princesses, or the stories about the silver city and a town suffering from a plague of love. The border between the real and fiction is displaced in the court scene where Charles I is tried and sentenced. Dog Woman and Jordan, who are fictional characters, attend the king's trial, which is a real, historical event, and see the king before them "in his velvet hat, with no jewels about him but his Star of the Garter" (Winterson, 2001, p. 69). Moreover, the novel draws parallels between the real and fictional worlds. The imaginary love plague that consumes a whole town is paralleled with the real plague occurred in seventeenthcentury London. Furthermore, Nicholas Jordan's and the female activist's plan to burn a factory for polluting water is paralleled with London fire of 1666, which is assumed to have been sent as a punishment from God. In this way, *Sexing the Cherry* dismantles the fictional-real dichotomy, which prevents it from being a work of history that has a linear epistemological narrative with divisions and discussions on single historical facts.

Winterson's *Sexing the Cherry* adopts the strategy to draw parallels between seventeenth- and twentieth- century socio-economic issues to challenge epistemological patriarchal language that creates divisions between the past, present, and future. For instance, it shows that class discrimination is a common problem both in the seventeenth and twentieth centuries. Since Dog Woman is a poor woman belonging to the lower class in the seventeenth century, she wears "a poor woman's dress," and her best dress is "the one with a wide skirt that would serve as a sail for some war-torn ship" (Winterson, 2001, pp. 22, 65). Moreover, she earns her life by "enter[ing] [her] dogs in the races and fighting" (Winterson, 2001, p. 13). Therefore, she experiences the difficulties of being a poor woman, but it is when the Plague breaks out that she becomes very aware of the disparity between the lower and upper classes.

A grave digger tells her that as many people die of the Plague, only the rich get a proper burial, and the poor are just burnt: "There is no way but burning. The grave-diggers have no strength left, there are too many for them. Only the moneyed may be buried. For us [the common people] it is the pit" (Winterson, 2001, p. 139). Social hierarchy is not present only in the seventeenth century but also in the twentieth century. The woman activist, who protests ecological problems, comes from a poor, working-class family, and she spends her early years "in a council flat" as her family could not afford to live in a comfortable house (Winterson, 2001, p. 128). Accordingly, although Dog Woman and the female activist live in different historical periods, they are tied by a common socio-economic problem, namely class discrimination, which blurs the temporal distance between the seventeenth and twentieth centuries.

Sexing the Cherry uses epistemophilic language also to underline the close relationship between early colonisation of the seventeenth century and twentieth-century capitalism. In the late nineteenth and early twentieth centuries colonisation had a political aspect since English rulers sought the ways to expand their imperial boundaries (Said, 1994). However, in the sixteenth and seventeenth centuries colonisation was regarded "as part of the foundation of capitalism and commerce" because "[it] was economically motivated and politically disinterested" (Fitzmaurice, 2003, p. 192). In the novel, English travellers go to exotic places for economic and commercial aims. For instance, the first banana is brought to England by Thomas Johnson, who exhibits the rare fruit in public and "charge money for a glimpse of the thing" (Winterson, 2001, pp. 12, 100). Jordan, on the other hand, returns with gold and pearls from Barbados, an island country in the Caribbean, which has been a British colony nearly for 300 years (Elias & Elias, 2000; Winterson, 2001). These are seventeenth-century capitalist enterprises as the travellers take the rarities and material wealth of the colonies to make an economic profit. The modern-day capitalism develops in a parallel line with the early colonisation. In the twentieth century, the developed countries exploit the undeveloped countries for their economic and commercial interests, which is protested by the woman activist: "[At the World Bank] [m]en in suits are discussing how to deal with the problem of the Third World. They want to build dams, clear the rain forests, finance huge Coca-Cola plants and exploit the rubber potential" (Winterson, 2001, p. 122). The woman activist protests also the capitalist greed responsible for diseases and the destruction of natural environment. Therefore, she camps near the Thames, which is polluted by mercury, but her protest is not welcomed by Jack, a capitalist-minded man who thinks that the protestors "[are] holding up progress and industry and the free market" (Winterson, 2001, p. 137). Showing that socio-economic problems of the past continue in the twentieth century, the novel breaks the boundaries between the past and future and challenges patriarchal epistemological language, which endorses linear temporality, based on breaks and discontinuities, against women's temporality, which suggests continuity and repetition, to create a male-oriented history.

Result and Discussion

As the literature review shows, scholars, including Langland, Kırca, Malhotra, and Sancheti, have mainly studied postmodernist elements and gender relations in Jeanette Winterson's *Sexing the Cherry*. While Kırca (2009) has read *Sexing the Cherry* as a historiographic metafiction, in which the female narrator gives voice to women's suppressed personal histories, Sancheti (2018), Langland (1997), and Malhotra (2013) have respectively examined the postmodernist poetics, the feminist poetics and politics, and the connection between the self, space, and time to show how the novel challenges conventional historical narratives based on impersonal, uniform, and universal historical facts arranged in strict

chronological order. Distinguished from the previous arguments, this study has examined epistemophily and women's temporality in *Sexing the Cherry*, and it has concluded that the novel employs epistemophilic language and women's temporality associated with repetition, fluidity, and continuity to challange paternal epistemological language that endorses men's linear temporality based on divisions and creates single, totalizing historical truths to maintain patriarchal hegemony.

Sexing the Cherry displays that history cannot be narrated from a single, objective perspective as it is re-evaluated from various, subjective perspectives of individuals with different socio-economic backgrounds. In the novel, such factors as gender, social class, and political views, make characters interpret official, public history from conflicting, divergent angles. As each character produces their own versions of history, paternal epistemological language, which aims to create single, invariable truths, is challenged. Moreover, *Sexing the Cherry* studies the personal histories of the characters within a political, socio-economic, and historical context in order to defy epistemological paternal discourse that creates strict divisions and hierarchies between the public life of men and the private life relegated to women. In this way, it shows that public and private histories are not two separate things, but they are intermixed.

Sexing the Cherry also questions men's linear temporality based on breaks and shows that the past, present and future are not separated as they flow into one another by using a non-linear and cyclical narrative with no chronological order. Therefore, it shows the twentieth century as the continuation of the seventeenth century rather than treating them as two different ages. Based on the cyclical temporal structure associated with women's time, which rejects detachment and favours fluidity and unity, the novel concludes that the roots of the socio-political and economic conflicts of the twentieth century can be traced back to the seventeenth century; thus, it is impossible to detach the past from the present, or future. Discussing about the subjectivity, multiplicity, flexibility, and continuity of history, Winterson's *Sexing the Cherry* defies traditional patriarchal historical writing, which is characterised by oppressive epistemological language and rigid linear temporality.

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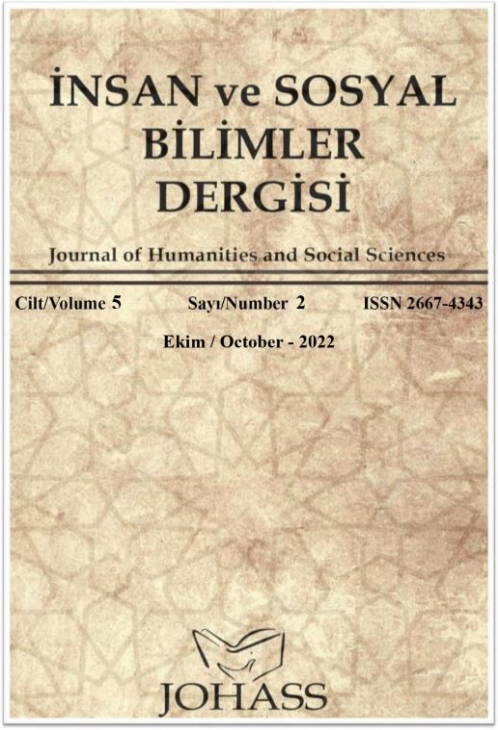

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Fan Tokens as A Financial Source and Digital Marketing Tool in Football: An Analysis with The Entropy-Based Waspas Method

Mehmet Can DEMİRTAŞ[1]
Kırklareli University, İ.İ.B.F. Department of Management
mehmetcan.demirtas@klu.edu.tr
Orcid ID: 0000-0002-4116-2415

Çağatay ORÇUN[2]
Dokuz Eylül University, İ.İ.B.F. Department of Management
cagatay.orcun@deu.edu.tr
Orcid ID: 0000-0001-7413-6099

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Fan Tokens as A Financial Source and Digital Marketing Tool in Football: An Analysis with The Entropy-Based Waspas Method

Mehmet Can Demirtaş[1]
Kırklareli University, İ.İ.B.F. Department of Management

Çağatay Orçun[2]
Dokuz Eylül University, İ.İ.B.F. Department of Management

Abstract

Considering that the revenues of the five most important leagues in Europe reached 15.6 billion euros in the 2020-2021 season (Deloitte, 2022), it is clear that the competition in football, whose global economic weight is gradually increasing, is no longer just limited to the sporting field but has expanded to include financial and marketing efforts. The concept of "token" is taken as a tool that can display fan-oriented experiential and financial efforts combined in the context of current developments, which will be seen as the reflection of the digitization process on football. This study analyzes the activities of 'fan tokens' belonging to thirty-six different football clubs listed on the coinmarketcap.com crypto asset instant information platform, in terms of market value, 90-day return, change from the highest value (1 Year), number of exchanges traded and watchlist. (watch list)", it aims to analyze by using Entropy in the determination of criterion weights and WASPAS methods in the multi-criteria decision-making process. The global reach of the football economy and the extent of the audience it appeals to reveal the necessity of studies to be carried out in the relevant field. Therefore, as a result of this study, which was prepared with the aim of contributing to the literature for current practices, the fan token with the highest efficiency value belongs to the 'Paris Saint-Germain' club, and the related club is followed by the 'Lazio' and 'Santos' clubs; it has been determined that the club with the lowest efficiency value is 'Bayer 04 Leverkusen'.

Keywords: Finance of football, football marketing, fan token, WASPAS method.

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[1] Corresponding author:
Ass. Prof. Dr.
mehmetcan.demirtas@klu.edu.tr
Orcid ID: 0000-0002-4116-2415

[2]*Asc. Prof. Dr.*
cagatay.orcun@deu.edu.tr
Orcid ID: 0000-0001-7413-6099

Introduction

In the historical sense, football has a long history. In Britain, it was formalized in 1863 (Giulianotti, 2012). Football has evolved into the most valuable media product of the modern era and now means much more to fans than just watching 22 teammates compete in a sport for 90 minutes (Goksyr & Olstad, 2012). So much so that the economic magnitudes produced by national and international organizations serve as evidence that football has evolved into a business. The English Premier League, one of the most important football leagues in the world, contributes £3.6 billion to the treasury through clubs and federations, as well as employing for 94,000 people through football, 686,000 people participating in the tourism movement to follow the matches in the stadium during the season, and the fact that it provides support of £7.6 billion to the national income brings into account the economic dimension provided by football (premierleague.com, 2022). Similar to this, the financial strength of the competing soccer clubs enables them to leverage their fan bases to meet their revenue goals; in terms of perceived brand values, it positively affects the level of competition with its competitors in many countries. The brand phenomenon makes it possible for a product or service to stand out in the minds of its target customers and generate repeat business, emerges as a uniquely competitive tool with its economic value. In terms of the football market, this issue is considered an important variable. In this context, defining the current state of the economic dimension of the world's most valuable football club brands has the potential to give an idea about the competitive side of the football economy. Table 1 presents the numerical data of the world's most valuable football club brands.

Table 1. *The Most Valuable Football Clubs in the World in terms of Brand Value in 2022*

Number	Football Club	Country of Origin	Brand Value (Billion $)	Financial Valuation
1	Real Madrid CF	Spain	1.768	AAA+
2	Manchester City FC	England	1.539	AAA
3	Barcelona FC	Spain	1.536	AAA+
4	Liverpool FC	England	1.475	AAA+
5	Manchester United FC	England	1.450	AAA+
6	FC Bayern Munich	Germany	1.286	AAA
7	Paris Saint-Germain	France	1.191	AAA-
8	Tottenham Hotspurs FC	England	1.012	AAA-
9	Chelsea FC	England	0.991	AAA
10	Arsenal FC	England	0.919	AAA

Source: https://brandirectory.com/download-report/brand-finance-football-50-2022-preview.pdf Date of access: 28/06/2022.

When Table 1 is examined, it is seen that the total value of the ten football clubs with the highest brand value is approximately 11.25 Billion $, and the clubs in the list have a very strong structure in terms of financial valuation. The support of the fans to the club plays an important role in the emergence of the brand value of Real Madrid, which is included in the table as the most valuable club in the world, as well as the sports achievements from football and other sports branches. For instance, according to Real Madrid's 2020–2021 annual report, the club has 91,701 members, 64,831 of them are adults who pay a 149.19 € membership fee and give the team a direct income of about 10 million € annually; despite having a season without fans due to the Covid-19 pandemic, it is stated that they have an operating income of 653 million € and they pay 242.9 million € in tax to national and local authorities (Real Madrid, 2022). In this perspective, it is clear that fan involvement and fan-focused finance

strategies are equally important to the growth of football teams' financial structures as athletic achievement. Given that football has a financial value, the level of devotion and loyalty of the fans to their clubs is regarded as a highly crucial component. In this regard, Mutlu & Şahin (2014) state that the fan ties of individuals to football clubs develop from their social environment, especially within the framework of the influence of the 'father' figure in the family. At the same time, the fans have internal motivations such as "supporting the team, identification with the team, the pleasure of use, social attraction and shopping pleasure" (Ayhan et.al., 2017) for purchasing some products with their club's logos. The link between the team and the fans, which is very difficult to compare with another sector as the focus of commercial marketing activities, can therefore be considered to be acquired with football from birth. Çoban (2008), on the other hand, argues that it is insufficient to discuss football only in the context of economic or sportive issues. According to the author, football is considered a factor that has a high impact on the shaping of consumption culture; it can be seen as a tool that political parties and candidates use in obtaining positions of power or opposition in the process of realizing political goals. Therefore, the place of football in marketing should not be perceived only as selling the products of football clubs or as support for fans (Mert, 2009: 130), it should be considered that many different products or services are subject to marketing through football and therefore to consumption.

There are football marketing initiatives that football clubs can utilize to increase their financial potential in an environment of growing competition, as well as marketing initiatives through football that open up the possibility of generating cash by incorporating many industries into football. The concept of marketing through football can be defined as "the use of sports (soccer) by individuals or businesses in marketing their products or the use of sports (soccer) as a means to attract the attention of potential customers both directly and indirectly" (Serarslan, 2020: 1). In this sense, marketing through football can be considered as the emphasis of football clubs' efforts to create cash from industries other than their primary operations. In this regard, the effects of the fan phenomenon on clubs should not be ignored. Because marketing through football is part of the effort of marketing to communicate with target audiences. To increase the interaction of digital financial investment enterprises with their target audience and to expand the digital investor portfolio, digital financial instruments that have diversified in recent years have become the subject of marketing through football. As a result, the "token" is used in marketing through football as a digital investment tool where both the club and the fan as an investor can gain money or specific privileges, going beyond simply physically channeling the outcomes of being a supporter to items or services. The use of diversification strategies, in addition to conventional income generation techniques, is at the heart of "token" marketing through football. This allows football clubs to participate in digital investment markets, which have drawn attention from all over the world as a result of digitalization. In this context, "token" is a financial instrument; it takes place in financial transactions as a part of a system (Fındıklı & Saygın, 2021: 60) that allows parties to transfer assets in a secure environment without the need for intermediation of a third party, to carry out e-commerce in a reliable environment as a need of the digitalized global economy. In this context, "Initial Coin Offerings (ICOs)" or token sales—which are currently accessible to investors—are smart contracts built on blockchain-based distributed ledger technology that are intended to raise external funding by issuing coins or tokens. They are seen as a way to enter the blockchain (Momtaz, 2020: 975). However, the fact that the system is based on blockchain protocols also allows the investment to be maintained without intermediaries and is still independent of many international regulations (Andres et al., 2022: 1).

Unlike traditional investment instruments, "tokens" can contribute to the provision of three different benefits (Howell et al., 2020: 3927); First, "to provide income without giving operational control to the system creators with the start of the system" second; "token holders

or potential customers can finance the development of the platform by speculating about the future value of the token"; and third, "the value of the token is realized by providing access to a future good or service and creating customer commitment". Investors have three different token alternatives in their token-based investments. These alternatives can be specified as follows (Lambert et al., 2022; Momtaz, 2020; Fındıklı and Saygın, 2021):

- *Utility Tokens:* They are the most widely used tokens that aim to support and develop a consumption-based ecosystem without giving ownership rights to their investors.
- *Security Tokens*: They are defined as tokens with investment vehicle features. It offers its investors the right to pay cash and, under certain conditions, to vote.
- *Payment Tokens*: They are payment tools in a blockchain-based ecosystem.

It is seen that businesses have shown increasing interest in "tokens" as an alternative financing source in recent years. According to Momtaz (2021: 1), 661 startups globally in 2017 made "token" issuance, while in 2018 this figure rises to over 4500. In this context, football clubs did not remain indifferent to the relevant developments, and the football club located in many different continents around the world realized token supply to realize digital investments through their clubs and provide alternative income.

This study considers the fan token data of 36 different football clubs listed on the "coinmarketcap.com" instant information platform and evaluates the fan tokens with the data obtained. In the study, Entropy and WASPAS Methods, which are among the multi-criteria decision-making methods, were used to perform the ranking for fan tokens. The main reason for the preference of the WASPAS Method is that there is no similar study in the literature on fan tokens and therefore the original contribution is presented. Therefore, the study aims to make a meaningful contribution to the field by undertaking an effort to evaluate a financial instrument that is currently used in the digitalization process for the economic development of football based on efficiency. It is determined that there are not enough studies in the literature within the scope of the related subject, thus it is aimed to fill an important gap in the literature. In the following sections of the study, the activities of football clubs in the token market are evaluated and the findings of the analysis carried out within the scope of the data obtained for tokens are shared.

Fan Tokens of Football Clubs in Turkey

Fan tokens are defined as crypto assets that work with the 'Chiliz' ($CHZ) infrastructure and are prioritized by the 'Socios.com' platform, issued to increase the interaction between sports clubs and their fans, to give the fans a voice and to offer them various advantages (Paribu, 2022). Fan tokens offer advantages such as providing the right to vote for team decisions through ownership, participation in special programs, VIP experiences, special raffles and award ticket ownership (socios.com, 2022). As a result, holders of fan tokens are given preference while utilizing the special services provided by the team they support, and football teams convert their conventional marketing strategies into experiential ones by utilizing digital content via the appropriate tokens. In this way, it enables the integration of fans in the market to increase the level of interaction not only with on-field experiences but also by including off-field and other periods. In terms of relevant interactions, it is possible to explain the privileged experiences offered and realized by fan tokens as follows (Paribu, 2022):

- The football team's locker room, team bus design, and the selection of the first eleven of the friendly matches,
- Presenting on-field and stadium tour experiences during the pre-match warm-up processes of football players on match day, such as Juventus 'Walkabout Experience' and 'Rome Golden Experience' examples,

- Participation in various competitions and award programs,
- Ownership of match tickets, signed jerseys and souvenirs,
- Establishing a communication network with token holder fans.

Chen & Wu (2022) state that consumers' image perception of any brand has a significant effect on the level of loyalty, and that the level of loyalty related to the experiences they have is also positively affected. Therefore, football clubs use the position of their existing brand images on their target audience through fan tokens to increase their loyalty levels based on experiential marketing efforts carried out specifically for the token-holder fan. Additionally, Do Carmo et al. (2022) found that if customer loyalty is directly and positively affected by emotional experiences and the phenomenon of advocacy is explained on an intensely emotional basis, the marketing value of token applications can be understood more clearly. Thus, fan tokens create an application that creates value in terms of the development of both the financial and marketing capabilities of football clubs. The mentioned advantages encourage many football clubs to have fan token applications in Turkey as well as in the world. Table 2 presents various information about football clubs holding fan tokens in Turkey.

***Table 2**. Football Clubs with Fan Tokens in Spor Toto Super League and 1st League*

	Football Club	League	Token Name	Platform
1	Galatasaray A.Ş.	Super League	GAL	Socios
2	Fenerbahçe A.Ş.	Super League	FB	Paribu
3	Trabzonspor A.Ş.	Super League	TRA	Socios
4	Medipol Başakşehir FK	Super League	IBFK	Socios
5	Alanyaspor	Super League	ALA	Socios
6	Gaziantep Futbol Kulübü A.Ş.	Super League	GFK	Socios
7	MKE Ankaragücü	Super League	ANKA	Bitci
8	Vavacars Fatih Karagümrük	Super League	FKSK	Bitci
9	Kayserispor	Super League	KYSR	Bitexen
10	Giresunspor	Super League	GRS	Bitexen
11	Demir Grup Sivasspor	Super League	SVS	Bitexen
12	Adana Demirspor	Super League	DEMIR	Bitexen
13	Antalyaspor	Super League	AKREP	Bitexen
14	Atakaş Hatayspor	Super League	HATAY	Bitexen
15	Yeni Malatyaspor	1st League	YMS	Bitexen
16	Sakaryaspor A.Ş.	1st League	SKRY	Bitexen
17	Çaykur Rizespor A.Ş.	1st League	RIZE	Bitexen
18	B.B. Erzurumspor	1st League	ERZ	Bitexen
19	Tuzlaspor	1st League	TUZLA	Bitexen
20	Gençlerbirliği	1st League	GBSK	Bitci
21	Yılport Samsunspor	1st League	SAM	Socios
22	Adanaspor A.Ş.	1st League	ADANA	Bitci
23	Bodrumspor A.Ş.	1st League	BDRM	Bitci
24	Altaş Denizlispor	1st League	DNZ	Bitci
25	Göztepe A.Ş.	1st League	GOZ	Paribu
26	Altay	1st League	ALTAY	ICRYPEX

Source: https://coinmarketcap.com/tr/currencies/ Date of access: 24/07/2022

Although it is stated in Table 2, it is seen that 26 of the football teams competing in the Super League and 1st League in Turkey have launched fan tokens. Football teams in Turkey's lower levels have been located, despite the fact that it is not shown as data in the

table (Afjet Afyonspor, Kocaelispor, Bursaspor, Vanspor) also perform fan token supply. However, it is possible to talk about the existence of clubs in the top two levels of professional leagues in Turkey for fan tokens. It is evaluated that 14 of the 19 clubs competing in the Super League and 12 of the 19 clubs competing in the 1st League undertake efforts to realize the integration of the fan club on both an experiential and financial basis. It contributes to the democratization of football with the participation of the fans in club decisions, as well as the income of football clubs through fan tokens; With the creation of experiential areas, meaningful developments in loyalty levels are ensured by strengthening the bond between the club and the fans.

The realization of the fan token applications carried out by football clubs in Turkey in the style of "usage tokens" allows an emotional investment decision to be taken that appeals to the fan club bond, unlike short-term investment decisions. Beyond simply possessing a token, fans will be able to participate in the fan token ecosystem as a living entity and experience the events of many fans' fantasies (Bitexen, 2022). Therefore, the fan token's price fluctuations as a financial instrument will be influenced by both the fans' willingness to retain ownership of the token's prospective benefits and the football club's sportive achievement. However, within the scope of this study, the analysis of fan tokens as a financial investment tool is carried out on a financial basis, since it is very difficult to determine the quantitative equivalents of experiential benefits.

Method

The main purpose of this study is to evaluate the effectiveness of fan tokens as digital financial tools owned by football clubs through the Entropy-based WASPAS Method. The fact that the Entropy method used in the determination of the criterion weights and the WASPAS method used in the ranking gave consistent results in the studies in the literature is the main reason for their preference in this study. For the the study, the data is obtained from the fan token values of 36 different football clubs, which are actively invested on the "coinmarketcap.com" platform, on 05/07/2022. The aim of the study to produce solutions through the multi-criteria decision-making method necessitates the evaluation of the obtained data within the scope of the criteria. In the criterion determination process, the literature focused on identifying alternatives for crypto investments was used. In the relevant literature; Arıkan Kargı (2022) uses 7 criteria as “annual average return, total market value, security infrastructure, transaction speed, supporting institutions, change from the highest value and the number of exchanges traded; Katrancı & Kundakçı (2020), on the other hand, detects 10 criteria as "Coin Team / Developers, Annual Average Return, Total Market Value, Roadmap, White Paper, Security, Transaction Speed, Supporting Institutions and Organizations, Change from the Highest Value, Number of Stock Exchanges Traded". Genç et al. (2018), states that the most important main criterion that users pay attention to or attach importance to in choosing cryptocurrencies is “total market value”, the second criterion is “the number of exchanges traded” and the third criterion is “market value cumulative score”. Therefore, in the selection of criteria in the study, relevant studies were taken into account, and it was decided to use 5 different criteria in the process of evaluating the alternatives: "market value, 90-day return, change from the highest value (1 Year), number of exchanges traded and watchlist". The relevant criteria are shown in Table 3.

Table 3. *Evaluation Criteria Used in the Scope of the Study*

Criteria Code	Criteria	Criteria Basis
$\mathbf{K_1}$	Market Value	$

K_2	90 days return	%
K_3	Change from highest value	%
K_4	Number of exchanges traded	Number
K_5	Watchlist	Number

In order to examine the fan token alternatives using the WASPAS Method, the weights of the criteria in the study need to be established. The study's objective criterion weight determination was accomplished using the entropy method.

Entropy Method

'Entropy', which was first defined as a measure of disorder in a system by Rudolph Clausius in 1865, was applied in the field of thermodynamics; it was developed by Shannon in 1948 for use in information theory and is frequently used in fields such as engineering, economics, and finance (Orçun, 2019: 444; Zhang et.al., 2011:444; Zou et.al., 2006: 1020). In addition, according to Bostancı & Ocakçı (2009: 31), the 'Entropy' method can be used even in the realization of objective inferences such as aesthetic evaluation. For this reason, it is considered that the entropy method is used by many different fields of science. The Entropy method is used to determine criterion weights in multi-criteria decision-making methods (Özdağoğlu et. al., 2017: 346). Although the method has advantages such as the individual decision maker does not need to rank the criteria and the relative weight of each criterion can be determined by simple calculations, it has an application process consisting of 5 stages (Erol & Ferrell, 2009: 1196-1997; Karami & Johansson, 2014: 523- 524). In the first step of the method, a decision matrix consisting of xij values of alternatives (Ai) and criteria (cj) and represented by D is formed (Equation 1).

$$\begin{matrix} & c1 & c2 & \dots & cj \end{matrix}$$

$$D = \begin{matrix} A_1 \\ A_2 \\ \dots \\ A_i \end{matrix} \begin{bmatrix} x_{11} & x_{21} & \cdots & x_{1j} \\ x_{21} & x_{22} & \cdots & x_{2j} \\ \cdots & \cdots & \cdots & \cdots \\ x_{i1} & x_{i2} & \cdots & x_{ij} \end{bmatrix} \quad (1)$$

In the second stage, to eliminate the differences in the scales, the normalization of the decision matrix (pij) is provided by operating in equation 2.

$$p_{ij} = \frac{x_{ij}}{\sum_{i=1}^{m} x_{ij}} \quad \forall\, i, j \quad (2)$$

In the third step, the entropy values (Ej) of the criteria are calculated with the help of equation 3. The "k" value in the equation is a coefficient defined as (ln(m))-1.

$$E_j = -k \sum_{i=1}^{m} [P_{ij} \ln P_{ij}] \quad (3)$$

In step 4, the dj uncertainty is calculated using equation 4 as the degree of differentiation.

$$d_j = 1 - E_j \quad (4)$$

In the 5th step, the calculation of the weights (wj) of the criteria is carried out with the help of equation 5.

$$w_j = \frac{d_j}{\sum_{j=1}^{n} d_j} \quad (5)$$

For the logarithm function used when calculating the entropy values of the criteria to give a healthy result, it is necessary to transform the negative values into positive values (Ayçin and Aşan, 2018: 2085). Since the 90-day return (K_2) and the change from the highest value (K_3) used in the study were negative for some fan tokens, a positive correction was applied. This process was carried out using the Z-Score (standard score) standardization method (Zhang et al., 2014: 3). In the first step of the Z-score method, the values in the decision matrix are transformed using equation 6.

$$z_{ij} = \frac{x_{ij} - \overline{X}_j}{\sigma_j} \quad (6)$$

Then, with the help of equation 7, the data is converted to positive values. The closeness to (min z_{ij}) is important in determining the variable A, and the closer the value to A, (min z_{ij}) is chosen, the more meaningful the evaluation result will be.

$$z'_{ij} = z_{ij} + A; \qquad A > |\min z_{ij}| \quad (7)$$

WASPAS Method

WASPAS (Weighted Aggregated Sum Product Assessment) method was obtained by combining WSM (Weighted Sum Model) and WPM (Weighted Product Model) models (Zavadskas et.al., 2012: 3-4). It is emphasized that the accuracy of WSM and WPM is below the WASPAS method as a single method and that WASPAS can be successfully applied in multi-criteria decision making problems in computer-aided systems, aiming to increase the ranking accuracy (Akçakanat et.al., 2017: 290; Ural et.al., 2018: 132). The WASPAS Method consists of 6 steps (Zavadskas et al., 2012: 3-4; Akçakanat et al., 2017: 290-292; Ural et al., 2018: 132-133):

In the first step, the initial decision matrix is created using equation (8).

$$D = \begin{matrix} A_1 \\ A_2 \\ \cdots \\ A_i \end{matrix} \begin{bmatrix} x_{11} & x_{21} & \cdots & x_{1j} \\ x_{21} & x_{22} & \cdots & x_{2j} \\ \cdots & \cdots & \cdots & \cdots \\ x_{i1} & x_{i2} & \cdots & x_{ij} \end{bmatrix} \quad (8)$$

In the second step, the normalized decision matrix is created. In this context, separate calculations are made for the benefit and cost criteria in equations (9) and (10).

Benefit Criteria: $\acute{x}_{ij} = \frac{x_{ij}}{\max_i x_{ij}}$ (9)

Cost Criteria: $\acute{x}_{ij} = \frac{\min_i x_{ij}}{x_{ij}}$ (10)

In the 3rd step, the total relative importance of the i alternatives based on the weighted sum method (WSM) is calculated with the help of equation (11).

$$Q_i^{(1)} = \sum_{j=1}^{n} \acute{x}_{ij} w_j \quad (11)$$

In step 4, the total relative importance of the i alternatives based on the weighted product method (WPM) is calculated with the help of equation (12).

$$Q_i^{(2)} = \prod_{j=1}^{n} \acute{x}_{ij}^{w_j} \quad (12)$$

In the 5th step, the calculation of the total importance of the alternatives is carried out with the help of equation (13) by taking the equal contributions of the weighted total and weighted product models.

$$Q_i = 0{,}5Q_i^{(1)} + 0{,}5Q_i^{(2)} = 0{,}5\sum_{j=1}^{n} \acute{x}_{ij}\, w_j + 0{,}5\prod_{j=1}^{n} \acute{x}_{ij}^{w_j} \quad (13)$$

The sixth and final stage involves calculating the overall relative importance of the alternatives. Alternatives are ranked with the help of equation (14). λ (lambda), included in the equation, takes a value between 0 and 1.

$$Q_i = \lambda\, Q_i^{(1)} + (1-\lambda)\, Q_i^{(2)} \qquad (\lambda=0,\ 0{,}1,\ \ldots,\ 1) \quad (14)$$

Findings

In the process of evaluating the findings of the study, first of all, within the scope of the fan tokens included in the analysis, the steps of the Entropy and WASPAS Methods are shown respectively. The initial decision matrix required to use the respective methods is shown in Table 4.

***Table 4**. Initial Decision Matrix for Fan Tokens*

Number	Fan Token	K_1	K_2	K_3	K_4	K_5
		Max	Max	Min	Max	Max
1	PSG	19335553	-57,77	-89,84	18	28332
2	LAZIO	18533302	-52,84	-93,96	21	12502
3	SANTOS	16926953	-36,37	-86,99	19	8432
4	CITY	15829560	-71,28	-87,75	13	13758
5	BAR	15741762	-57,63	-86,35	9	20680
6	PORTO	14046281	-67,07	-87,71	20	8532
7	MILAN	9036364	-59,92	-82,43	9	12114
8	INTER	8033466	-61,82	-81,19	3	3566
9	GAL	7873663	-34,53	-85,18	7	10698
10	ATM	6687530	-52,3	-87,05	10	12212
11	ASR	6479275	-26,78	-74,31	12	8537
12	JUV	4925191	-42,2	-81,51	14	13129
13	TRA	4338560	-77,34	-81,52	4	4135
14	FB	4096316	-31,54	-82,86	1	3357
15	VCF	3173761	-44,34	-74,24	2	1467
16	AFC	2911858	-51,19	-78,02	4	3083
17	GOZ	1663316	-68,73	-75,45	2	1768
18	LUFC	862161	-65,26	-98,59	1	474

19	IBFK	782954	-7,91	-52,92	1	1165
20	MENGO	774023	-82,31	-94,18	2	2269
21	SCCP	761544	-44,97	-99,79	1	1575
22	EFC	604482	-59,16	-77,28	1	603
23	AVL	533320	-60,69	-85,46	1	748
24	YBO	502377	-53,77	-93,95	1	1327
25	GALO	488578	-60,14	-91,44	1	693
26	SPFC	428455	-57,67	-87,21	1	633
27	SAM	358270	-60,47	-96,71	1	408
28	STV	334799	-60,55	-93,74	1	811
29	APL	304118	-63,94	-93,15	1	915
30	CAI	214144	-47,09	-99,61	1	1117
31	UCH	178844	-62,93	-99,69	1	1362
32	LEG	174131	-61,12	-91,19	1	647
33	DZG	141483	-42,28	-79,23	1	430
34	NOV	70050	-65,49	-91,87	1	856
35	FOR	55139	-46,55	-93,18	1	545
36	LEV	51864	-64,81	-95,11	1	351

The Entropy Method was used in the study to determine the criterion weights required for the application process of the WASPAS Method. However, as can be seen in Table 4, K_2 and K_3 criteria have negative values. Therefore, it is considered necessary to correct the negative values with the Z-score method as indicated in equations (6) and (7) in the study. After the correction, the standard deviation values of the data did not change in the matrix; A value of 1.9 for the K_2 criterion; for the K_3 criterion, it was determined that the A value was found to be 1.37, and therefore, it was seen that the operation performed did not have a negative contribution to the data set. The decision matrix obtained as a result of the Z-score correction process is shown in Table 5.

Table 5. *Adjusted Decision Matrix for Fan Tokens*

Sıra	**Fan Token**	**K_1**	**K_2**	**K_3**	**K_4**	**K_5**
		Max	Max	Min	Max	Max
1	PSG	19335553	1,675562	1,064776	18	28332
2	LAZIO	18533302	2,010408	0,627715	21	12502
3	SANTOS	16926953	3,129048	1,367112	19	8432
4	CITY	15829560	0,757965	1,286489	13	13758
5	BAR	15741762	1,685071	1,435005	9	20680
6	PORTO	14046281	1,043908	1,290733	20	8532
7	MILAN	9036364	1,529535	1,85085	9	12114
8	INTER	8033466	1,400487	1,982393	3	3566
9	GAL	7873663	3,254021	1,559122	7	10698
10	ATM	6687530	2,047084	1,360747	10	12212
11	ASR	6479275	3,7804	2,712243	12	8537
12	JUV	4925191	2,733075	1,948446	14	13129
13	TRA	4338560	0,34637	1,947385	4	4135

14	FB	4096316	3,457101	1,805234	1	3357
15	VCF	3173761	2,587727	2,719669	2	1467
16	AFC	2911858	2,122475	2,318675	4	3083
17	GOZ	1663316	0,931161	2,591308	2	1768
18	LUFC	862161	1,166843	0,136551	1	474
19	IBFK	782954	5,062048	4,981355	1	1165
20	MENGO	774023	0,008808	0,604376	2	2269
21	SCCP	761544	2,544937	0,009252	1	1575
22	EFC	604482	1,581154	2,397177	1	603
23	AVL	533320	1,477236	1,529419	1	748
24	YBO	502377	1,947242	0,628775	1	1327
25	GALO	488578	1,514592	0,895043	1	693
26	SPFC	428455	1,682354	1,343774	1	633
27	SAM	358270	1,492179	0,335987	1	408
28	STV	334799	1,486745	0,651053	1	811
29	APL	304118	1,256497	0,713642	1	915
30	CAI	214144	2,400947	0,028346	1	1117
31	UCH	178844	1,325096	0,01986	1	1362
32	LEG	174131	1,448031	0,921564	1	647
33	DZG	141483	2,727642	2,190315	1	430
34	NOV	70050	1,151221	0,849428	1	856
35	FOR	55139	2,437624	0,710459	1	545
36	LEV	51864	1,197406	0,505719	1	351

Based on the data in the corrected decision matrix, the Entropy method is used to determine the weights for the criteria determined for the evaluation of fan tokens within the scope of the study. The stages of the Entropy method are included under the relevant title of the study, and the criteria weights obtained as a result of adapting the relevant stages to the data set are shown in Table 6.

Table 6. *Fan Token Evaluation Criteria Weights*

Criteria Code	Criteria	Criteria Base	Weights
$\mathbf{K_1}$	Market Value	$	0,311144011
$\mathbf{K_2}$	90 days return	%	0,056250154
$\mathbf{K_3}$	Change from highest value	%	0,107832582
$\mathbf{K_4}$	Number of exchanges traded	Number	0,253337709
$\mathbf{K_5}$	Watchlist	Number	0,271435545

When Table 6 is examined, the criterion with the highest level of importance among the criteria in the study is the market value with 31.1%, while the criterion with the lowest level of importance is determined as the 90-day return with 5.6%. In the process of realizing the purpose of the study, it is aimed to use the WASPAS method, so after the criterion weights are determined, the analysis stages for the relevant method can be started. The first step of the WASPAS method is to create a normalized decision matrix by using equality (9) and equality (10) within the scope of benefit and cost criteria by using the corrected decision

matrix in Table 4. The matrix obtained as a result of the application of the method is shown in Table 7.

Table 7. *WASPAS Method Normalized Decision Matrix*

Number	Fan Token	K_1	K_2	K_3	K_4	K_5
1	PSG	1	0,331005	0,008689	0,857143	1
2	LAZIO	0,958509	0,397153	0,014738	1	0,441268
3	SANTOS	0,875432	0,618139	0,006767	0,904762	0,297614
4	CITY	0,818676	0,149735	0,007191	0,619048	0,485599
5	BAR	0,814136	0,332883	0,006447	0,428571	0,729917
6	PORTO	0,726448	0,206222	0,007168	0,952381	0,301144
7	MILAN	0,467344	0,302157	0,004999	0,428571	0,427573
8	INTER	0,415476	0,276664	0,004667	0,142857	0,125865
9	GAL	0,407212	0,642827	0,005934	0,333333	0,377594
10	ATM	0,345867	0,404398	0,006799	0,47619	0,431032
11	ASR	0,335096	0,746812	0,003411	0,571429	0,30132
12	JUV	0,254722	0,539915	0,004748	0,666667	0,463398
13	TRA	0,224383	0,068425	0,004751	0,190476	0,145948
14	FB	0,211854	0,682945	0,005125	0,047619	0,118488
15	VCF	0,164141	0,511201	0,003402	0,095238	0,051779
16	AFC	0,150596	0,419292	0,00399	0,190476	0,108817
17	GOZ	0,086024	0,183949	0,00357	0,095238	0,062403
18	LUFC	0,044589	0,230508	0,067752	0,047619	0,01673
19	IBFK	0,040493	1	0,001857	0,047619	0,04112
20	MENGO	0,040031	0,00174	0,015308	0,095238	0,080086
21	SCCP	0,039386	0,502748	1	0,047619	0,055591
22	EFC	0,031263	0,312355	0,003859	0,047619	0,021283
23	AVL	0,027582	0,291826	0,006049	0,047619	0,026401
24	YBO	0,025982	0,384675	0,014714	0,047619	0,046837
25	GALO	0,025268	0,299205	0,010336	0,047619	0,02446
26	SPFC	0,022159	0,332347	0,006885	0,047619	0,022342
27	SAM	0,018529	0,294778	0,027535	0,047619	0,014401
28	STV	0,017315	0,293704	0,01421	0,047619	0,028625
29	APL	0,015728	0,248219	0,012964	0,047619	0,032296
30	CAI	0,011075	0,474303	0,326374	0,047619	0,039425
31	UCH	0,009249	0,261771	0,465842	0,047619	0,048073
32	LEG	0,009006	0,286056	0,010039	0,047619	0,022836
33	DZG	0,007317	0,538841	0,004224	0,047619	0,015177
34	NOV	0,003623	0,227422	0,010892	0,047619	0,030213
35	FOR	0,002852	0,481549	0,013022	0,047619	0,019236
36	LEV	0,002682	0,236546	0,018294	0,047619	0,012389

The third step of the WASPAS method is to determine the total relative importance of the i alternatives based on the weighted sum method (WSM). Equation (11) is used in the

realization of the relevant application. The significance ranks of fan tokens based on the weighted sum model are shown in Table 8.

Table 8. *Significance Ratings Based on Weighted Sum Model*

Number	Fan Token	K_1	K_2	K_3	K_4	K_5	Θi(1)
1	PSG	0,311144	0,018619	0,000937	0,217147	0,271436	0,819282
2	LAZIO	0,298234	0,02234	0,001589	0,253338	0,119776	0,695277
3	SANTOS	0,272385	0,03477	0,00073	0,22921	0,080783	0,617879
4	CITY	0,254726	0,008423	0,000775	0,156828	0,131809	0,552561
5	BAR	0,253313	0,018725	0,000695	0,108573	0,198125	0,579432
6	PORTO	0,22603	0,0116	0,000773	0,241274	0,081741	0,561418
7	MILAN	0,145411	0,016996	0,000539	0,108573	0,116059	0,387579
8	INTER	0,129273	0,015562	0,000503	0,036191	0,034164	0,215694
9	GAL	0,126701	0,036159	0,00064	0,084446	0,102492	0,350439
10	ATM	0,107614	0,022747	0,000733	0,120637	0,116997	0,368729
11	ASR	0,104263	0,042008	0,000368	0,144764	0,081789	0,373193
12	JUV	0,079255	0,03037	0,000512	0,168892	0,125783	0,404812
13	TRA	0,069815	0,003849	0,000512	0,048255	0,039615	0,162047
14	FB	0,065917	0,038416	0,000553	0,012064	0,032162	0,149111
15	VCF	0,051072	0,028755	0,000367	0,024127	0,014055	0,118376
16	AFC	0,046857	0,023585	0,00043	0,048255	0,029537	0,148664
17	GOZ	0,026766	0,010347	0,000385	0,024127	0,016938	0,078564
18	LUFC	0,013874	0,012966	0,007306	0,012064	0,004541	0,050751
19	IBFK	0,012599	0,05625	0,0002	0,012064	0,011161	0,092275
20	MENGO	0,012455	9,79E-05	0,001651	0,024127	0,021738	0,06007
21	SCCP	0,012255	0,02828	0,107833	0,012064	0,015089	0,17552
22	EFC	0,009727	0,01757	0,000416	0,012064	0,005777	0,045554
23	AVL	0,008582	0,016415	0,000652	0,012064	0,007166	0,04488
24	YBO	0,008084	0,021638	0,001587	0,012064	0,012713	0,056086
25	GALO	0,007862	0,01683	0,001115	0,012064	0,006639	0,04451
26	SPFC	0,006895	0,018695	0,000742	0,012064	0,006064	0,04446
27	SAM	0,005765	0,016581	0,002969	0,012064	0,003909	0,041288
28	STV	0,005388	0,016521	0,001532	0,012064	0,00777	0,043274
29	APL	0,004894	0,013962	0,001398	0,012064	0,008766	0,041084
30	CAI	0,003446	0,02668	0,035194	0,012064	0,010701	0,088084
31	UCH	0,002878	0,014725	0,050233	0,012064	0,013049	0,092948
32	LEG	0,002802	0,016091	0,001083	0,012064	0,006199	0,038238
33	DZG	0,002277	0,03031	0,000455	0,012064	0,00412	0,049225
34	NOV	0,001127	0,012793	0,001174	0,012064	0,008201	0,035359
35	FOR	0,000887	0,027087	0,001404	0,012064	0,005221	0,046664
36	LEV	0,000835	0,013306	0,001973	0,012064	0,003363	0,031539

In the next step of the method, the total relative importance of the i alternatives based on the weighted product method (WPM) is calculated with the help of equation (12). The result of the analysis carried out within the scope of the related equation is shown in Table 9.

Table 9. *Significance Ratings Based on Weighted Sum Model*

Number	Fan Token	K_1	K_2	K_3	K_4	K_5	Θi(2)
1	PSG	1	0,939703	0,599449	0,961701	1	4,500853
2	LAZIO	0,986901	0,949383	0,634599	1	0,800865	4,371749
3	SANTOS	0,959451	0,973304	0,583509	0,974964	0,719666	4,210894
4	CITY	0,939648	0,898694	0,587346	0,885596	0,821949	4,133234
5	BAR	0,938024	0,940002	0,580467	0,806822	0,918095	4,18341
6	PORTO	0,905346	0,915021	0,587138	0,987716	0,721972	4,117193
7	MILAN	0,789241	0,934895	0,564755	0,806822	0,794041	3,889755
8	INTER	0,760874	0,930272	0,560589	0,610808	0,569747	3,43229
9	GAL	0,756132	0,975451	0,575298	0,757055	0,767697	3,831632
10	ATM	0,718678	0,950349	0,583803	0,828647	0,79578	3,877256
11	ASR	0,711638	0,983712	0,541957	0,867819	0,722087	3,827214
12	JUV	0,653433	0,965925	0,561635	0,90238	0,811574	3,894946
13	TRA	0,628151	0,859965	0,561667	0,656987	0,593108	3,299878
14	FB	0,617022	0,978778	0,566277	0,462415	0,560483	3,184974
15	VCF	0,569928	0,96296	0,541797	0,551181	0,447688	3,073554
16	AFC	0,554858	0,952284	0,551197	0,656987	0,547678	3,263003
17	GOZ	0,466136	0,909158	0,544629	0,551181	0,470951	2,942055
18	LUFC	0,379941	0,92077	0,748058	0,462415	0,329454	2,840638
19	IBFK	0,368718	1	0,507569	0,462415	0,420536	2,759238
20	MENGO	0,367404	0,69949	0,637197	0,551181	0,503949	2,759222
21	SCCP	0,365551	0,962057	1	0,462415	0,456404	3,246427
22	EFC	0,340202	0,936643	0,549222	0,462415	0,351699	2,64018
23	AVL	0,327199	0,933068	0,576493	0,462415	0,372883	2,672057
24	YBO	0,32117	0,947679	0,634484	0,462415	0,435664	2,801412
25	GALO	0,318399	0,934379	0,610779	0,462415	0,365233	2,691205
26	SPFC	0,305652	0,939917	0,584593	0,462415	0,356364	2,648942
27	SAM	0,289103	0,933596	0,678843	0,462415	0,316315	2,680273
28	STV	0,283072	0,933404	0,632106	0,462415	0,381158	2,692156
29	APL	0,274732	0,924612	0,62588	0,462415	0,393848	2,681487
30	CAI	0,246326	0,958911	0,886263	0,462415	0,415761	2,969676
31	UCH	0,2329	0,927381	0,920927	0,462415	0,438754	2,982377
32	LEG	0,230973	0,93202	0,608859	0,462415	0,358487	2,592754
33	DZG	0,216523	0,965817	0,554592	0,462415	0,320856	2,520204
34	NOV	0,173986	0,920072	0,614234	0,462415	0,386787	2,557493
35	FOR	0,161499	0,959729	0,626182	0,462415	0,342176	2,552
36	LEV	0,158451	0,92211	0,649561	0,462415	0,303655	2,496192

As the last step of the WASPAS method, the weights of the θi(1) and θi(2) values determined from the values in Table 7 and Table 8 and calculated according to WSM and WPM were taken using equation (13) (λ=0.5) and performance rankings for fan tokens are shown in Table 10.

Table 10. *WASPAS Method Results and Rankings Performed within the Scope of Fan Tokens*

Number	Fan Token	Score	Ranking
1	PSG	2,660067	**1**
2	LAZIO	2,533513	**2**
3	SANTOS	2,414386	**3**
4	CITY	2,342897	5
5	BAR	2,381421	4
6	PORTO	2,339306	6
7	MILAN	2,138667	8
8	INTER	1,823992	12
9	GAL	2,091036	11
10	ATM	2,122993	9
11	ASR	2,100204	10
12	JUV	2,149879	7
13	TRA	1,730962	13
14	FB	1,667043	16
15	VCF	1,595965	17
16	AFC	1,705834	15
17	GOZ	1,510309	20
18	LUFC	1,445694	21
19	IBFK	1,425756	23
20	MENGO	1,409646	24
21	SCCP	1,710974	14
22	EFC	1,342867	31
23	AVL	1,358468	29
24	YBO	1,428749	22
25	GALO	1,367858	25
26	SPFC	1,346701	30
27	SAM	1,36078	28
28	STV	1,367715	26
29	APL	1,361286	27
30	CAI	1,52888	19
31	UCH	1,537662	18
32	LEG	1,315496	32
33	DZG	1,284715	35
34	NOV	1,296426	34
35	FOR	1,299332	33
36	LEV	1,263866	36

When Table 10 is examined; in the light of the financial data that emerged during the period in which the analysis was carried out, the fan token with the highest value belongs to the Paris Saint-Germain football club; it is seen that the related club is followed by Lazio and Santos clubs, respectively. The team with the lowest level of efficiency in terms of financial performance is identified as Bayern Leverkusen.

Results and Discussion

The transformation in computer and communication technologies has led to significant changes in the competition targets of businesses as well as in social life in the last 20 years. While the digitalization process is ending the life cycles of many products and services very quickly, new and digitally developing products and services very quickly reach a marketable position on a global scale. Therefore, the digital world, as an area where competition between businesses is intensified, is seen as a target for all businesses to generate income. It can be said that the football economy, which traditionally generates income by marketing physical facilities, is taking very important steps in the digital transformation process. Especially in the post-Covid-19 period, the fact that physical (social) distances are tied to the rules, the decisions taken by the central administrations, and the football clubs, which are deprived of their main income sources (match day activities, ticket/combination sales, etc.), digital resources are at the forefront of the fields they apply for alternative income sources. In this regard, it should be noted that football clubs have a very important advantage compared to traditional businesses. As businesses in the sports industry, it can be said that football clubs have customer loyalty that is very difficult for businesses in many different industries such as retail, health, tourism and technology. Because the concept of the customer for traditional industries leaves its place in the football industry to the concept of fans, who have a very deep connection with clubs in experiential dimensions. Therefore, it is said that football clubs have several distinctive and perhaps impossible-to-imitate abilities in marketing processes with the help of the fandom phenomenon. Football clubs that want to direct this kind of loyalty to digital resources other than the purpose of generating income on a physical basis, take advantage of "blockchain" technologies, where transactions have increased in global financial markets in recent years, and take part in the realization of cryptocurrency transactions called "fan tokens" in the process of transforming fan loyalty into a digital income source. Football clubs traded in crypto markets with the fan token offer products and services for the purchase of both their fans and investors who want to carry out financial transactions on the relevant blockchain. Among the related services, it is possible to offer experiences such as the type of jersey, the design of the team bus, and the decision of the squad on the match day, which will allow the fans to establish a deeper bond with the football club and create a value-oriented change in terms of marketing. With fan tokens, both experiential value presentation is provided and the club and investor have the opportunity to earn income in the financial markets. Therefore, it is considered that the marketing efforts of football clubs that offer fan tokens for related crypto assets are very important.

This study analyzes fan tokens listed on 'coinmarketcap.com' with the WASPAS method within the scope of the criteria "market value, 90-day return, change from the highest value, number of exchanges traded and watchlist", which are used to evaluate the financial performance of crypto assets in the literature. Within the scope of the study, the criterion weights were determined by the Entropy Method to determine the effectiveness of the fan tokens, and the related analyzes were carried out considering the data of 36 different football clubs on the aforementioned crypto platform on 05/07/2022. As a result of the analysis, it was determined that the fan token with the highest activity belongs to the 'Paris Saint-Germain' club; It has been determined that this club is followed by 'Lazio' and 'Santos' clubs. It has been found that the football club with the lowest efficiency is 'Bayer 04 Leverkusen'. The fact that the total weight of the market value, the number of exchanges traded, and the watchlist criteria were 83.5% and the high values of the top tokens in these criteria were effective in obtaining these results.

The study carried out covers the results of the data obtained on a certain date. Therefore, it is considered that the results of the study only provide a cross-section for the

relevant date and cannot be generalized. In addition, the criteria that are frequently used in the evaluation of the effectiveness of cryptocurrencies were taken into account in the study, and it seems possible that the efficiency rankings may change with the use of different criteria. Finally, the criteria determined in the analysis process were weighted using the 'Entropy method' and ranked with the 'WASPAS' method. Therefore, it is possible to obtain different results with the use of different multi-criteria decision making techniques. In future studies, the title of "fan token" can be reconsidered using different constraints. As an issue that should be emphasized, it is thought that the studies carried out on the financial basis of 'fan tokens' are quite lacking in the literature, so it is very valuable to contribute through different methods and applications related to the field.

As a result, football clubs aim to increase their level of competition by implementing fan token applications and offering different product mixes to the digital market in the process of adapting to changing market conditions with digitalization. Reaching higher levels of financial performance will only be possible if football clubs channel their supporter potential to areas that will generate income, as well as their sportive success. In this context, it is considered that financial performance in football is directly and highly related to fan-oriented marketing efforts.

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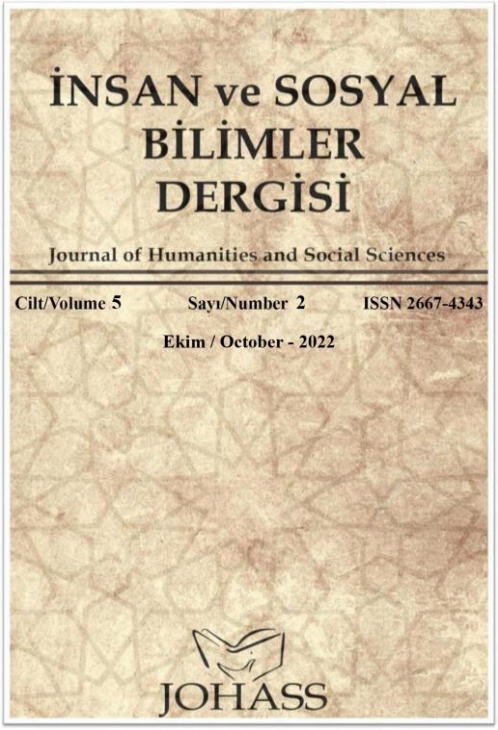

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A review on Risk Reduction Potentials of Artificial Intelligence in Humanitarian Aid Sector

Ahmet Efe[1]
IFRC, OIAI, Audit
icsiacag@gmail.com
Orcid ID: 0000-0002-2691-7517

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A review on Risk Reduction Potentials of Artificial Intelligence in Humanitarian Aid Sector

Ahmet Efe[1]
IFRC, OIAI, Audit

Abstract

Many humanitarian system bottlenecks can be overcome with the help of artificial intelligence (AI) and other complementary emerging innovative technologies. Research and investment in the development of AI tools tailored to resource-poor settings will accelerate the realization of the full potential of AI to improve global well-being. It is argued that AI algorithms and machine learning techniques have become necessary in humanitarian aid operations due to their impact on efficiency and effectiveness. The study further argues that AI has the potential to support humanitarian INGOs like the IFRC and recommends that current risks, including those related to ethical issues and privacy concerns, should be addressed so that they are not deployed at the expense of humanity. Various analyzes and evaluations are made in this direction, claiming that critical issues such as need assessment, estimation, method determination, field monitoring, auditing, and reporting in humanitarian aid are to be realized through innovative technology with relatively less resources allocated. That is why the practical and efficient use of humanitarian aid funds spent by relevant institutions has become a critical issue. In this study, the applicability of AI to humanitarian aid is evaluated in terms of technical capability under the Emergency Social Safety Net (ESSN) program operated by IRFC Türkiye.

Keywords: Humanitarian aid, artificial intelligence, smart systems, non-discrimination, neutrality, disaster recovery

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[1] Corresponding author:
Dr. CISA, CRISC, PMP, Senior Auditor
icsiacag@gmail.com
Orcid ID: 0000-0002-2691-7517

Introduction

The combination of intelligent machine understanding with intelligent program software paved the way for the great achievements reached today in AI. In the 1970s, the science of artificial neural networks emerged and in the following years, deep learning studies were continued in AI studies. Afterwards, studies were carried out on how the increasing uncertainties in the economic, business, climate and political fields could overlap and respond to the applications of AI, and after the 1990s, the discipline called "*fuzy logic*" was born. Thus, AI could now be applied by thinking about solutions and making decisions on unclear issues. Afterwards, studies began on AI to solve more difficult problems, and the science of genetic algorithms emerged. Now with the AI it is aimed to develop solutions to problems that are difficult to solve in many areas from commerce to health, from space sciences to nature, and now humanitarian aid processes and public spaces meet AI technology. From unmanned aircraft to autonomous missiles, from robots that translate foreign languages to robots that do R&D, plan, and code, we are rapidly advancing in a digital transformation process. Despite the current challenges, AI holds tremendous promise for transforming humanitarian services in resource-poor environments and mitigate trending risks of inefficiency, waste, and ineffectiveness.

AI can now help farmers in developing countries identify areas prone to war and natural disasters by providing massive amounts of data analytics beforehand. Farmers can access this data with their smartphones easily. According to experts, soil and other data can be analyzed using AI, and farmers can send the results. Aid organizations are also using technologies such as AI to combat the global food shortage. Many hope that these gains will eventually reach farmers in food-stressed regions. Precision farming is a method of measuring and shaping the variability of crops in general. This farming aims to provide less waste in land management and optimize efficiency. AI and nanotechnology will then enable better management of crops and soil. The United Nations estimates that 840 million people will be affected by hunger by 2030 (Ali, 2021). To help reduce that number, researchers have set out to pursue a path that combines AI and machine learning with intelligent agriculture. Finding sustainable agricultural solutions to this problem requires bold new approaches and integration of knowledge from different fields such as materials science and informatics. AI can analyze vast amounts of data to help farmers in developing countries and local areas affected by conflict or natural disasters. Farmers can access this data via smartphones. However, developing countries lag in accessing new technologies. Even with technology, there are other hurdles. It may take a long time for new technologies to reach developing countries. Still, many hope that advanced technology will reach farmers with food security problems. Those working in aid organizations say entrepreneurs should look to places outside their home countries to develop technologies to combat global hunger and provide pertinent support. Moreover, farmers need to receive training to prevent hunger in developing countries using AI. The same methodology can be applied to humanitarian aid, relief, capacity building, development, and assistance operations.

The increase in the frequency of natural disasters and humanitarian events worldwide has led to an increase in the loss and damage that negatively affects the lives of millions of people every year. Therefore, "*risk reduction*" has become the most critical component of disaster management practices since it adds value to efficiency, effectiveness and economy of processes. In addition, risk reduction studies against natural hazards have been defined as an integral part of sustainable development, and comprehensive global programs have been developed and innovative unified planning programs have been introduced by humanitarian organizations like IFRC. However, despite of its novelty in humanitarian setting, the impact of AI is very critical in achieving strategic results with less resources.

Research and investment in the development of AI tools tailored to resource-poor settings will accelerate the realization of the full potential of AI to improve global well-being. It is argued that AI algorithms and machine learning techniques have become necessary in humanitarian aid operations due to their impact on efficiency and effectiveness. Various analyzes and evaluations are made in this direction, claiming that critical issues such as need assessment, estimation, method determination, field monitoring, auditing, and reporting in humanitarian aid are to be realized through innovative technology with relatively less resources allocated. That is why the practical and efficient use of humanitarian aid funds spent by relevant institutions has become a critical issue. In this study, the applicability of AI to humanitarian aid is evaluated in terms of technical capability under the Emergency Social Safety Net (ESSN) program operated by IRFC Türkiye. The field information and lessons learned from the IFRS Türkiye delegation through the Emergency Social Safety Net (ESSN) program, funded by the European Union Aid Agency DG-ECHO, are also used in this study. OIAI ESSN Auditors try to provide consultancy services and leadership to embed AI algorithms both in audit, management and workstreams.

The basic research assumptions of this study are the following items:

- AI can be used to reduce human error and save time.
- It is crucial to identify those who are most in need, those exposed to the most significant risk, and those who cannot survive on their own among the Syrian refugees residing in Türkiye.
- The IFRC Delegation to Türkiye has considered the ESSN program not only for the universal principles of humanitarian aid but also for the objectives of effectiveness, efficiency, and economy in all operations and workstreams.

Our research argument was formed within the framework of the above assumptions:

"*IFRC can use AI techniques and practices to reduce deviations in targets, increase its positive socio-economic impact, and eliminate unexpected exceptions*". To make correct logical, contextual and paradigmatic analysis this study starts with definitions of literature and the problems of humanitarian aid; continues to dig into the key concerns with AI applications and key application areas; understands importance of humanitarian logistics and emergency logistics planning system (ELPS); discovers the potential application of AI in preventing sexual abuse; makes discussions over humanitarian diplomacy on the axis of the IFRC and application of AI with concluding remarks.

Literature and the Problems of Humanitarian Aid

Keywords used in our study were searched in the Scholar database. As a result, it was determined that around 1950, studies were carried out. No research has been found when looking at the titles of the used ticks. According to this, in a limited search with "*humanitarian aid*" and "*artificial intelligence*," around 44,000 articles were found. However, it was understood that only 3 of them were mentioned in the article's title. Therefore, it can be said that this study can be of great value in terms of contribution to the literature. Research shows that AI and nanotechnology in the agriculture sector can provide practical solutions to the challenges and problems that threaten global food security. Moreover, this data can help determine when to grow which crops and how to tackle with. Farmers must also be trained to harness the power of AI technology and address hunger in developing countries. A study, led by researchers at the University of Birmingham, explored how precision agriculture can enable farmers to respond in real-time to changes as they grow crops using technology (Misthi, 2021).

The primary motivation for innovation in agricultural technology is to feed the global population, prevent the reduction of agricultural land and protect soil health and environmental quality. This showed how much plants absorbed the nitrogen used in the

farming process. It causes a large part of the nutrients to mix with the water and air and warm the planet. About 12% of global greenhouse gases come from agriculture, making inefficiency a severe threat to environmental quality. One out of every nine people in the world suffers from hunger, and this number is increasing day by day. Poverty is not the only reason for this. Charities use technologies like AI to fight global food security (Lee, 2018).

Swasdee *et al.* (2020) asserted that AI, Remote Sensing (RS), and Big Data have impacted society values. The usage of AI, RS, and big data analysis is quite promising because it enhances capabilities for problem-solving mechanisms. Their research investigates the rise of AI, RS, and Big Data in the context of humanitarian aid and insurgency. Zhongming *et al.* (2021) described that in any disaster humanitarian aid organizations need to determine the extent of damage to buildings in the affected location and work out which transport routes are safe to use as quickly as possible – ideally in the real-time. Aikin *et al.* (2022) have shown that data from mobile phone networks can improve the goals and objectives of humanitarian aid at the local scale if it is supported with AI algorithms. They used an approach that uses traditional survey data to train machine learning algorithms used to recognize poverty patterns in cell phone data and have demonstrated that they can prioritize assistance to the poorest mobile subscribers thanks to trained AI algorithms.

Relief supplies must be delivered to inaccessible areas quickly and effectively in case of disasters or conflicts. With these demands in mind, researchers from the German Aerospace Center (Deutsches Zentrum für Luft- und Raumfahrt; DLR) are developing and testing new AI technologies that enable drone-based analysis as part of the Drones4Good[1] project. DLR's interdisciplinary team includes researchers from security, aeronautics, and space (DLR, 2021). They are working closely with the United Nations (UN) World Food Programme (WFP), the German Federal Agency for Technical Relief (Technisches Hilfswerk; THW), the aid organization ISAR Germany and the international project Wings for Aid. Imran *et al.* (2020) described that AI for Digital Response (AIDR) is one of the AI platforms that collects and analyzes social media textual and imagery content in real-time at the onset of a disaster to gain situational awareness and actionable information. These efforts are coordinated with several regional and global partners, including UN OCHA and UNICEF (Imran *et al.*, 2020).

Humanitarian aid organizations are trying to develop various mechanisms to prevent this situation. The most important of these is the responsibility to the donors (upward accountability), and it expresses the accountability of the charities to the donors who fund them. Another control mechanism is the responsibility towards the beneficiaries of humanitarian aid (downward accountability) and envisages informing people that they have fully received their assistance. Both-sided transparency and accountability play a critical role in preventing undesirable situations in humanitarian aid work. Some of the issues that will prevent the humanitarian system from effective functioning are as follows (Bakır, 2016):

- The probability of a humanitarian project being funded by more than one donor.
- Nepotism or bias in the selection of aid workers and the distribution of aid.
- The donor avoids funding a significant aid project with government intervention or, on the contrary, must make unnecessary financial contributions to organizations and projects that many institutions donate to through government intervention.
- Aid workers in crisis areas use their positions and aid projects to benefit themselves or their families
- Losses due to carelessness in the supply, storage, and distribution of humanitarian aid

[1] See for the details: https://www.dlr.de/content/en/articles/news/2021/01/20210208_launch-of-the-drones4good-project.html

- Being careless in areas such as invoices, product, and service quality in the procurement of humanitarian aid materials.
- Abuses are likely to be committed by the host state in regions where humanitarian crises are experienced within the system: insisting on delivering humanitarian aid from abroad to the state, directing assistance to groups prioritized by governments, etc.
- It demanded cash or payments from aid convoys of irregular militias or official armed forces that manage checkpoints in areas where humanitarian aid is urgently needed.
- In the most extreme cases, non-financial corruption such as exploiting women and children in return for aid, threatening people in charge, or those in need to condone the corruption.
- National societies or local NGOs can collide with local politics or interest groups.

The above issues are the most frequent ones. But behind these there are three factors that trigger these undesirable situations, which are likely to be realized within the humanitarian aid system. It is possible to summarize these motivations as;

a) Repression or inclinations,

b) Rationalization and

c) Opportunities,

In theory, being in need or not having enough financial support to survive is related to the rationalization dimension of the misuse. Those in the aid sector and those who control the transactions to which humanitarian aid will be provided can consider their financial difficulties sufficient for corruption, thus legitimizing their actions in their world of thought. They can also block third party audits with double accounts, data anonymization and falsifications.

Another distorted result of rationalization is that the attitudes of the humanitarian aid personnel, who overspend during their duties to attract the public's attention, cause those in need who are trying to survive in crisis geographies to see themselves as having the right to exploit or steal aid. The idea that everyone is corrupt in some countries and areas and the widespread belief that things will only work that way are also reasons that pave the way for the rationalization of corruption in the eyes of individuals. Rationalization will be easier in existence of severe internal control weaknesses. That is why ethical frameworks, and their implementations should be provided by organizational setting alongside with tree lines of defense embedded in internal control system.

Accountability in the humanitarian system should not be considered a process that can only be limited to fulfilling the state's legal procedures or the ministry to which it is affiliated. A civilian institution must have accountability mechanisms for that community. This can be done individually by informing the donor in different ways, or it can be achieved through annual publications for the whole community.

When humanitarian organizations apply ethical values and standards of behavior without compromise, most of the problems caused by individual mistakes are prevented. The most crucial problem is the problems that may arise from the problematic countries where the crisis regions are located. With the guidance documents to be prepared to overcome these problems, humanitarian aid workers become prepared in advance about how to act in case of any situation. Humanitarian principles should be supported by digital principles and could be together reflected to explainability matrix in terms of strategies, alignment, stakeholder expectations, legislative compliance and internal regulations.

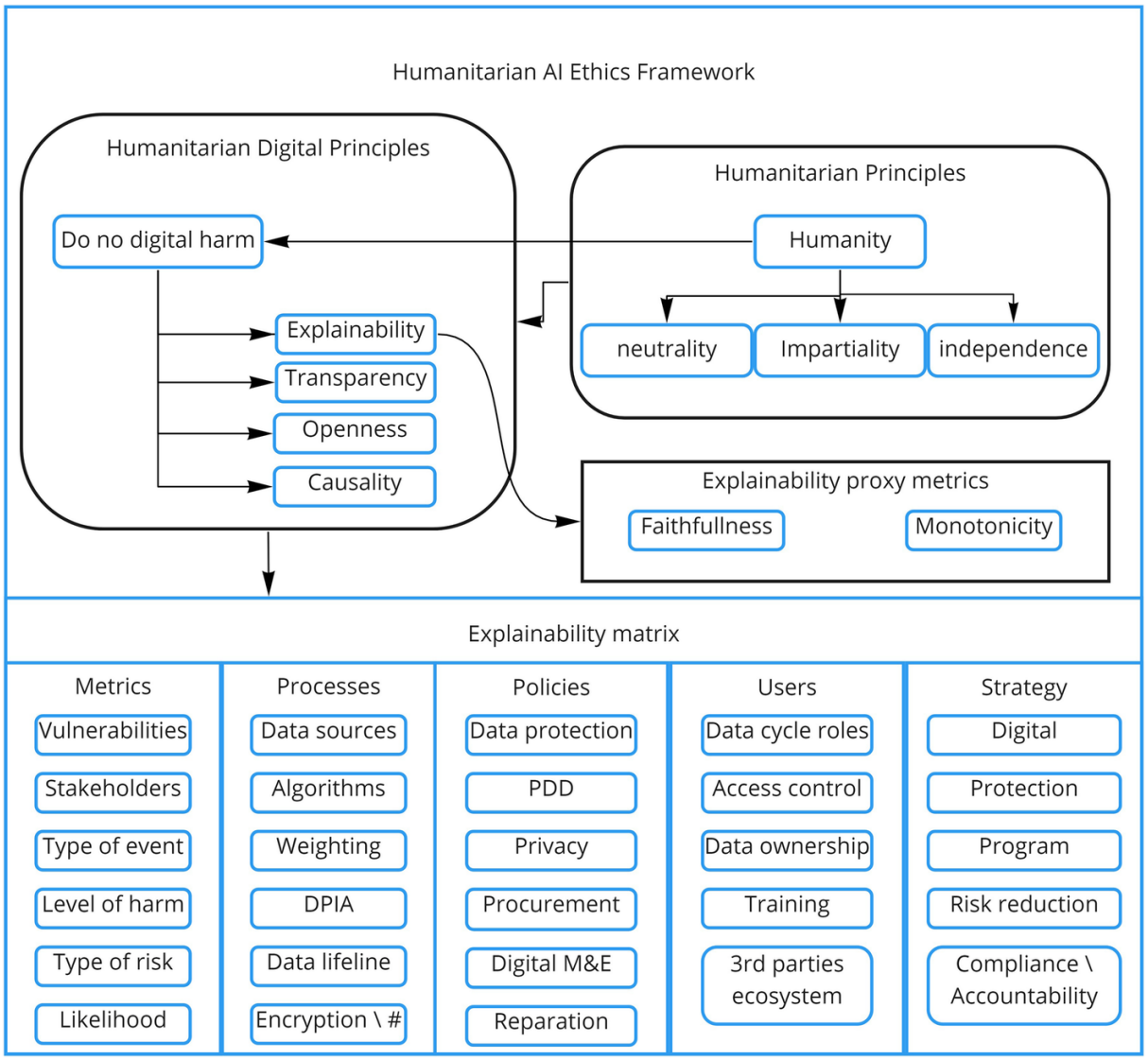

Figure 1. Ethics Framework for AI in Humanitarian Sector
Source: (Coppi et al. 2021)

Concerns with AI Applications and Key Application Areas

The mechanization of war technologies is widely criticized, primarily due to ethical concerns. However, it is stated that it is possible to develop AI by considering such sensitivities. Ronald Arkin, who has been working with the US Department of Defense for many years, states that robots, free from feelings such as anger and stress or momentary inattention and developed with an emphasis on human values, can behave much more ethically than humans (Arkin, 20156). Unmanned wars could be waiting for us with the impact of international competition, the integration of AI on the battlefield is making progress faster than ever before. So, what will be the changes that this technology, which the leading countries cannot give up despite all the discussions, will bring? What awaits us? With AI in attack and defense systems, wars where borders disappear, and people are not involved may be waiting for us. They will be able to wage war themselves with the help of vehicles such as aircraft, drones, or submarines under the control of high-tech AI, sensors placed in the region, and their algorithms (Pandya, 2019). Machines, which can instantly detect the slightest movement in the enemy field, will be able to intervene much faster than when they are under the control of humans. For example, AI-controlled drones can find soldiers injured in conflict

areas. Uncrewed aerial vehicles are also expected to be used for oil exploration, protection of the continental shelf, control of migration routes, prevention of human traffic, and smuggling (ThinkTeck, 2020). China Dominates Airspace with AI. Robot soldiers, shown as more advanced technology, will help people in field missions, especially in determining strategies and humanitarian aid organizations' search and rescue works. Soldiers on the battlefield will act much healthier by feeding on the data collected by both drone and robot soldiers. Processing this data; that is, it may be a matter of time before we meet machines that act on the information transmitted by the data and make decisions to attack or withdraw. This means that people play a much more backward role in wars. It is thought that AI, which also helps the army with cyber security, may design special weapons and even warplanes in the future (Joshi, 2018). China uses drones, which can carry mortar shells, grenade throwers, and machine guns, can also come together and carry out coordinated attacks. When the commander receives an attack order from the soldier, the drones that take off automatically hit the locked target coordinated and return to the main base (Peck, 2019). Sky Hawk, another uncrewed aerial vehicle of China that cannot be detected by radar, has significant potential, although it is in the development process. Sky Hawk, which can travel long distances at high altitudes and warn the army by a reconnaissance in the conflict zone, like the US B-2 bomber, will share this data by communicating with other human-crewed uncrewed aerial vehicles. It is stated that this type of technology, which can communicate with both human-crewed and crewless aerial vehicles, will accelerate target identification, increase attack power, and reduce casualties (Huang, 2019). Israel and Russia are also working for fully autonomous weapons the Israeli army is also investing in autonomous, that is, self-managed drones with AI. The GOSHAWK drone system, specially developed to destroy kites and balloons used for arson in the Gaza Strip, detects an arsonist device as soon as it takes off with optical sensors; immediately takes off, destroying the threat. This whole process takes place from start to finish without human intervention (Staff, 2018). Marker, the war tank-sized earth robot introduced by Russia in a video in March 2018, seems to change the balance on the ground. In the two-minute video released, we see Marker and a soldier fighting shoulder to shoulder on the battlefield. It is predicted that the operators who manage these drones today will be replaced by fully autonomous AI (Axe, 2019). The USA will have tanks that can "see" ahead one of the countries that have made the most significant investment in this technology is the USA. In a statement made at the beginning of 2019, the US military announced that the only way to counter some weapon systems was to use AI (Cox, 2019). Two government companies have collaborated with AI to strengthen the defense system (Roth, 2019). However, talking about the most up-to-date and advanced ones is necessary. Boeing aims to develop vehicles that can move autonomously in sea, space, and air. The company's most notable product is the RQ-21A Blackjack, an uncrewed aerial vehicle that can fly to an altitude of 19,500 feet and fly approximately 16 hours a day. The vehicle can obtain a view by processing the image and video data with AI technology; it can drive itself by seeing its front (Naval, 2019). The US military has called on the defense industry for AI rifles enhanced with facial recognition technology (Malewar, 2019). Russia announced that it would double its investment in AI (Apps, 2019). In other words, the countries that rule the world will continue to increase their investments in this technology. This makes us think that robot soldiers, which can only be seen in sci-fi movies, warplanes that can hit targets without human intervention, and rifles that can "recognize" people are not that far away.

Despite of its risks and threats, AI still is giving more benefits to humanity. According to NASA's Space Studies Institute, Goddard, from the data collected from 1880 to 2016, the average global warming is about 0.8 0 C between these years, and the warming is accelerating (Bennet, 2016). There will be drought due to global warming, the prevalence of diseases caused by climate change, an increase in flood disasters, an increase in solid hurricanes, heat

waves, forest fires, and other natural disasters, and famine because of the expansion of deserts (Mohamedou, 2014). This result is striking because it shows that there will be an increase in natural disasters. In addition, the gradual increase in metropolitan nation and population density suggests that the loss of life and property will increase in case of possible disasters. When natural or unnatural disasters occur, the first 48 hours are critical for the victims to be saved alive. In this case, it becomes crucial to mobilize all available resources.

Robots have been helping people in emergencies in recent years, and there are enough applications to say that this will continue to increase. It is thought that robots and AI can profoundly contribute to disaster and disaster management. The environment in which the disaster occurs can undergo significant structural changes, making it difficult and impossible for people to work in this environment. It is not appropriate for people to enter and research areas with risks, but surveillance and rescue of disaster victims are also required. Robots can be beneficial in such dangerous situations. People in a disaster environment are adversely affected by the depressive nature of the domain. By their nature, people cannot work productively for a long time, their minds may get tired, and as a result, they may make mistakes in their evaluations and decisions (Özen, 2017).

On the other hand, robots do not have fatigue or adverse psychological effects. They can work in areas where people and animals cannot work. When it is necessary to detect structural damage, they can collect data. They can carry vehicles that are vital for disaster victims. They can see the location. Summarizing what AI supported robots can do in a disaster environment, the following will come to mind first (Özen, 2017; Çapan, 2021):

- Early warning,
- Removal of debris,
- Area Search,
- Discovery and mapping,
- Medical assistance,
- Structural and forensic review,
- Transporting the victims and removing them from the hot zone,
- Mobile repeater,
- Providing logistic support,
- Detection or estimation of the size of the debris,
- Direct intervention

The design of robots to be used in disasters is an essential issue. Unlike other robots, they must be large enough to operate in extreme conditions, have sensor performance, and be durable. In addition, they must be able to work and communicate outside of GPS coverage or in places where there is no WiFi access. In addition, since it will interact with humans, it must be designed to communicate with both the operator and the victim. The design should consider the people's mental states in the disaster environment.

Humanitarian Logistics

Logistics is one of the key difficulties in case of conflicts or emergency situations. INGOs and national societies are investing more on logistics aspect of humanitarian context. For humanitarian aid to be effective and efficient, the logistics of humanitarian assistance should be designed in the best way, and the process should be managed correctly at every stage of the operation. From the first stage to the last stage, it is expected that the refugees will arrive at the shelter centers where they live and that the aid will be delivered by taking all the precautions in a border or cross-border aid. In terms of correct management of the process, it is concluded that success will be achieved in coordination and cooperation by separating the aids according to their types, analyzing them according to their needs, sending them to the

desired points. Those activities should be in a way that does not create waste when necessary, creating a warehouse order according to the shipping frequency of the separated goods, ensuring that the information systems reflect the stock status up to date. In this direction, it is seen that aid to refugees is not as easy as it seems. The primary purpose is to manage the process effectively and efficiently with fewer mistakes by raising awareness about what to do in the future. However, the same level of migration movement and form is not desired. This case intends to inform the countries' policies, their reactions to this situation, and the form and extent of aid. Türkiye has been providing economic development assistance to many countries, especially in Africa. The sum of official and private contributions within Türkiye's development assistance scope reached 4.3 billion dollars in 2013. This amount is low compared to developed countries may attract attention. In an environment where the USA, the world's largest economy, provides 30 billion dollars of development aid annually, it is appreciated that a developing country like Türkiye offers more than 4 billion dollars in development aid (Intel, 2020).

The Turkish Red Crescent, and other NGOs operating to deliver humanitarian assistance to immigrants and collecting aid from donors in this sense, regardless of whether they are national or international, are free of waste, aiming to find the real needy, on the spot, on time and in the right way. Specialization in providing aid is essential in minimizing the waste of resources. The most outstanding support in this process can be realized by making significant technological innovations. It is of strategic importance to find people in need and create the necessary communication environment so that their needs are met not by many institutions but by only one institution in the amount and time that will solve the problem. It should not be denied that with the synergy created between the relevant organizations, a cure can be produced for the wounds of more people with less amount. As in almost every other issue, one of our sine-qua non in humanitarian aid logistics is to increase the efficiency and effectiveness of the process with effective communication mechanisms. As a final determination and delivery of the right, Türkiye, particularly the TRC, has reached the most generous country and institution globally compared to its population. This situation should be developed and continued as an indicator of the appreciation of Türkiye (Dindarik and Fidan, 2020).

Emergency Logistics Planning System (ELPS)

The priority of disaster logistics is to ensure the survival of people and prevent loss of property and life. Disaster logistics differs from other logistics services as it is not for profit. Disaster logistics must be event-based and dynamic because the type, severity and effects of disasters are different. Effective communication, information sharing and informed decision-making play an important role in disaster logistics to supply adequate relief materials and determine the carrying capacity in the first two weeks of the disaster response phase. Otherwise, it causes improper use of resources in disaster response and an increase in mortality. With the model, it has produced quantitative solutions for the lack of communication and the inability to make the right decision, which causes problems such as the accumulation of aid materials in the event of a disaster and the inability to supply the materials that are needed (Şen, 2017).

In the late 1960s, neural networks were widely used in demand forecasting of emergency supplies as a new AI method. In other research areas of AI, the superior arithmetic precision and data processing capabilities of machines, the advantage of machine learning based on big data and deep learning algorithms are in internet-based commercial logistics, especially Google, Amazon, Alibaba, etc. It has been rapidly developed by technology companies represented by in terms of emergency resource management, government departments have many relevant social data. Because of the contradictions and risks of data

security, AI often gives systems the ability to make intelligent decisions and run automated operations without any human intervention. This procedure is based on a combination of three elements: Algorithms, regular sequences of operations applied to best perform a task based on prevailing conditions. In recent years, emergency materials demand forecasting methods have been oriented towards incorporating AI and attempting to simulate research. As a result, although great attention is paid to the rich variety of methods available in areas such as big data mining and the application of smart devices, few have focused on such an approach when seeking demand forecasting approaches for emergency resources (Tzavella et al., 2018; Zhu et al., 2016).

With the rapid development of cloud computing, internet of things (IoT), and virtual reality (VR), various smart devices such as computers and mobile phones have been used as data collection ways in the last few years. Despite the rich variety of methods available in areas such as big data mining and the application of smart devices, it has been considered in researching demand forecasting approaches for emergency resources, few studies to date have focused on such an approach (Hjorth and Kim, 2011; Tzavella *et al.*, 2018). In recent years, a combination of smart devices based on big data analytics and other traditional forecasting methods has been proposed to meet dynamic demand forecasting for emergency resources (Adiguzel, 2022).

The current functioning of the humanitarian aid system is primarily based on predetermined goods and services, not on meeting the needs of the aggrieved people in the region. In other words, the system operates according to the determined conditions. The boundaries are drawn instead of considering the wishes of societies stuck in humanitarian crises. Thus, the primary purpose of humanitarian aid, the satisfaction of those in need, is also ignored. This situation casts a shadow over the reliability and universality of the humanitarian aid system and the principles of this system, whose rules are set by the Western states (Bakır, 2016).

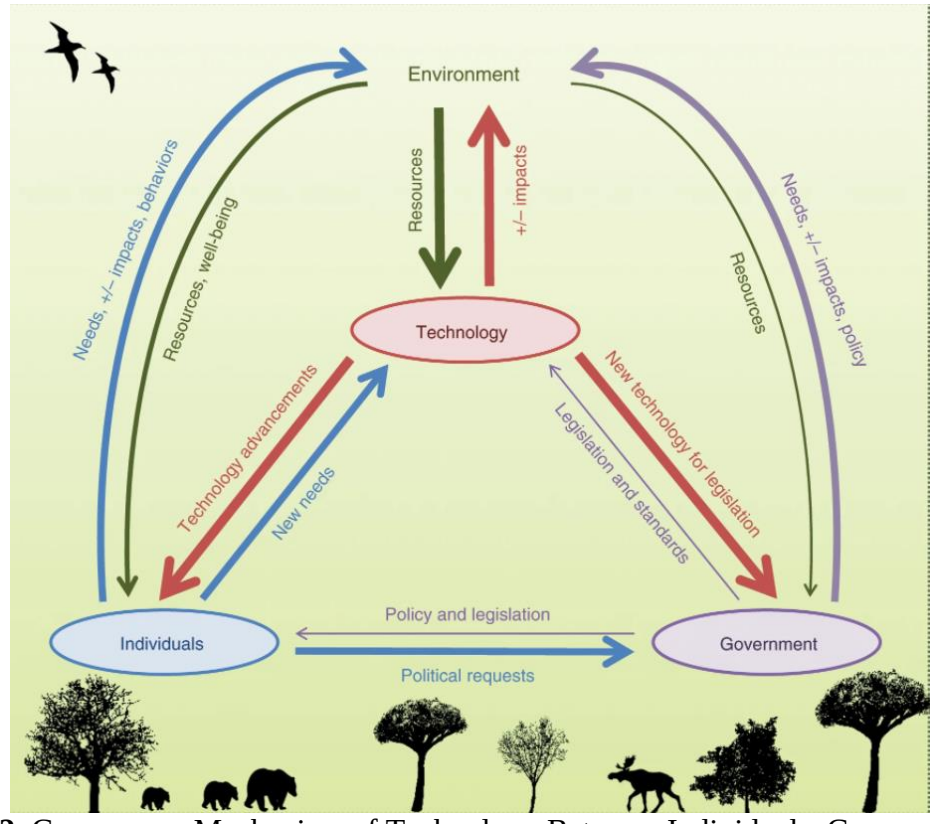

Figure 2. Governance Mechanism of Technology Between Individuals, Government and Environment Elements.

Source: (Wahl et al., 2018; Bakır, 2016).

Precision farming using AI and nanotechnology offers exciting opportunities for sustainable food production (Zhang, 2021). Using AI to help humanitarian organizations find poor areas or improve farming techniques is just the beginning. There may be dozens of other ways AI can help alleviate poverty and help develop local business. First, AI can help fill the education gaps that many poor people experience. Access to information has always been a big differentiator with poverty. We are looking at a different world to use the right tools and develop the right programs. Where children receive below-average (or no) education in schools, self-guided computer learning programs like Khan Academy can allow anyone to "*learn everything*" for free. If developers apply AI to such programs, the tools can learn from and respond to users by adapting to their specific needs. Furthermore, these programs can help even more people if translated into mobile platforms, slowly becoming universal (Meinetten, 2017).

When the studies are examined, it is understood that robots have the necessary flexibility to solve the search-and-rescue problem due to their learning and adaptation abilities. Since the disaster environment becomes non-modelable and unpredictable, it would be appropriate for the robot to be autonomous and have AI. It should ensure that the robot sensors are not affected by dust, gases, and radiation in the debris environment. The use of robots in search and rescue studies is an area where human-robot interaction is more prominent than in other applications (Özen, 2017).

Potential Application of AI in Preventing Sexual Abuse and Harassment

The most common abuse that goes unnoticed, especially in vulnerable societies, is sex. Incidents of child abuse and sexual abuse are increasing exponentially, whether online or through the physical abuse of humanitarian beneficiaries. Although childhood sexual abuse (CSA) is a worldwide phenomenon with negative long-term consequences for victims and their families and a significant economic burden to society, one of the main challenges in treating CSA is the reluctance of the victims to disclose their abuse and the reluctance of professionals in the absence of forensic evidence. it cannot be detected easily without the help of AI (Kissos *et al,* 2020).

In Montreal, the "*Botler AI*"[1] chatbot uses deep learning technique on data from US and Canadian criminal court documents and sexual harassment complaints, as it can provide free legal information and guidance for victims of sexual assault who have little knowledge of their rights. This data may enable the software to evaluate whether the user is subject to criminal law and which specific laws have been violated and may also generate an incident report that the user can submit to the relevant local authorities if they wish. AI systems like this can be encrypted, used around the clock, and programmed to provide attentive and non-judgmental responses. For example, since the encrypted report provided by a service like Botler AI can ensure the privacy of the victim, it aims to be an alternative source for complainants to be informed and freely share their experiences without fear of being prosecuted, thereby empowering its users with confidence based on concrete legal doctrine. In America, advances in AI-powered forensic DNA technology and robotics are increasing the viability of rape kits. For example, criminalists at the Oakland Police Department have developed a faster and more effective way to detect victim and attacker genealogy using AI, and new technologies are also being developed to reduce backlog in the rape kit which are accumulating incredibly for long-lasting laboratory analysis. The new robotic equipment has allowed states like Ohio to process nearly 14,000 delayed rape kits, helping indict more than

[1] For details see: https://botler.ai/

300 serial rapists (Cassidy, 2020). Thai police Lieutenant Colonel Mekhyanont developed a similar chatbot, SisBot, aiming to use AI as an alternative approach to assist victims (UNWOMEN, 2019). SisBot can also advise victims on how best to preserve evidence of the incident, and the chatbot can also assist with official police investigations. Thus, AI can illuminate the justice administration process and help victims gain vital information to navigate the legal system.

While humanitarian organizations like the IFRC try to increase controls on this issue through education and awareness, it seems difficult without technological and algorithmic assistance. In a sensitive society, digital exploitation material can also be more easily obtained due to the risky and uncontrolled environment. 16 years after the United Nations Convention on the Rights of the Child (UNCRC), child exploitation and sexual abuse is still gaining momentum over the last two decades. The definition of child abuse and sexual exploitation is not limited to physical abuse but also includes online sexual abuse. The UN 2018 report identifies 18.4 million suspected online abuse cases and notes that Child Sexual Abuse Material (CSAM) has increased over the past decade. Another study by The New York Times found that major tech companies have reported that more than 45 million images of children have been abused, and the Internet Monitoring Foundation also found that 39% of online CSAM were victims under the age of 10, of which 43% were abused. Another report by the Internet Monitoring Foundation in the UK states that online child abuse has increased by 50% during the COVID 19 quarantine and that despite the many strategies implemented to reduce child abuse incidents, international organizations are undoubtedly not achieving their goals (Aoukar, 2019).

As technological solutions are invasive, an often-asked question is "*Can AI help reduce child sexual abuse and sexual exploitation online?*". Here are some of the best AI technology that can help reduce child sexual abuse (Oriel, 2020):

1. Safer[1] – Developed by AI Company Thorn, this AI-powered tool as a tool is going forward in the plan to eliminate CSAM as it can detect images of child abuse with approximately 99% accuracy to identify, remove and report child sexual abuse material at a scale. More than 100,000 known CSAM files are said to be able to be removed while Safer is in beta and just getting started. Its services include:

- CSAM Image Classifier - Can use a Machine learning model to determine if an image is suitable for CSAM.
- Image Hash Matching - This can generate cryptographic and persistent hashes to match past CSAM hashes to identify images of sexual exploitation.
- Video Hash Matching: It can generate cryptographic and continuous hashes to match videos with past CSAM hashes.

2. Child Safe.AI[2] – As an AI platform that monitors and models the risk of child abuse on the web, this AI platform, already deployed by US law enforcement, can actively collect signals of abuse threats from online ecosystems where they are known to occur, and model this signal according to potential risk. Observing millions of conversations, content, and photo signals can help organizations reduce the risk of child abuse.

3. Spotlight[3] – Developed by Thorn, this technology can use predictive analytical logic to identify victims of child sexual exploitation and child trafficking. It is also already used by the US Federal department to solve complex child trafficking cases, as it can identify potential victims of human and child trafficking by analyzing web traffic and data collected

[1] For details see: https://safer.io/
[2] For details see https://childsafe.ai/
[3] For details see https://www.spotlight.ai/

from sex ads and escort websites. This AI-based tool was able to help identify 14,874 children who have been victims of human trafficking in the past four years.

4. AI Technology from the United Nations Interregional Crime and Justice and Research Institute (UNICRI)[1] – This technology uses AI tools and technologies to locate long-missing children, screen illicit sex ads, and eliminate risks of human and child trafficking. It can use robotic technology and is still developing.

5. Griffeye[2] – This technology can use computer vision tools such as face detection and image recognition to scan images with parameters of nudity and age and has already been deployed by US Federal agencies to detect and block CSAM.

6. Google's AI tool[3] – In 2008, tech giant Google introduced an AI tool to reduce online child abuse using deep neural networks in image processing. This technology can help rank reviewers and NGOs trying to remove abuse by prioritizing the most likely CSAM content for review. This technology can identify and flag new images of child abuse by training on real CSAM and using computer vision. It can be used hypothetically with a mixed list and helps to prioritize cases involving child sexual abuse, thereby reducing the manual workload of the researcher.

7. Cellebrite AI tool[4] – Cellebrite AI tools can use AI and machine learning algorithms to help researchers streamline the process of compiling, analyzing, and reporting evidence of child abuse.

Humanitarian Diplomacy Discussion on the Axis of the IFRC and Application of AI

Humanitarian organizations expect sustainable solutions to many global issues arising from population growth, decreases in resources, conflicts in the ecosystem, social, cultural, and economic difficulties, human rights violations, terrorism, violence, internal armed conflicts, and many other ongoing issues. The most negatively affected subject is "*humanity*" within the framework of all these problems. The efforts to find a solution to all these existing problems by both the states and the international community, but the emerging reality of not creating a concrete answer, symbolize two different sides of the coin. Internal armed conflicts, crises, and natural disasters are among the current issues that arise in quantity.

In addition, one of the important actors that come to the forefront within the framework of the concept that covers the activities of humanitarian organizations for the relevant regions with the aim of "*Preventing Human Suffering*" is the International Committee of the Red Cross (ICRC). The concept of humanitarian diplomacy, which emerged during humanitarian crises, is of great importance and priority if the focus is on the "*human*" element in the world order, which acts within the framework of realist discourse and rigid power policies in the axis of accelerating and increasing crises in the world. In this context, it is one of the most basic requirements for states, international organizations, and non-governmental organizations to act on common ground and share responsibilities with a holistic approach to make the humanitarian diploma work (Köksoy, 2017).

The "*AI for Development*" community has published several observational reports on how AI is applied in resource-poor environments. It is seen that AI applications in the field of health are insufficient in the academic literature in underdeveloped environments that are relatively poor in terms of resources and need for human resources. Expert systems can support health programs in environments where resources are scarce; for example, medical

[1] For details see https://unicri.it/artificial-intelligence-and-robotics-law-enforcement
[2] For details see https://www.griffeye.com/
[3] For details see https://ai.google/tools/
[4] For details see https://cellebrite.com/en/home/

expert systems can support physicians in diagnosing patients and choosing treatment plans, just like in high-income countries. For some conditions, if an expert is not available, they may act as a human expert, especially in resource-poor communities, so expert systems are deployed in environments where resources are already scarce. AI is already being used to predict, model, and slow the spread of diseases worldwide in epidemic situations, including in resource-poor environments. For example, since birth, asphyxia syndrome is not always predictable or preventable; cases often require prompt and skilled resuscitation in the delivery room. Researchers using this approach found that the application was 77% sensitive and 95% specific in determining the need for birth asphyxia in tertiary perinatal medicine centers (Reis et al., 2004). Another example is Dengue fever, a vector-borne disease that has spread rapidly worldwide in recent years, with about half of the world's population currently reported to be at risk (WHO, 2017). After researchers developed an innovative AI-based tool to determine whether land-use patterns in Manila are associated with dengue transmission, the AI algorithm learned how to fine-tune its model to predict dengue occurrence with increasing accuracy (Hornyak, 2017).

Neuro linguistic planning (NLP) can also be applied to a wide range of public health issues, using unstructured texts in the medical literature and data from the web to support clinical decision-making. It can also be used or analyze EMRs to monitor community health behavior. For example, NLP can improve treatment protocols to monitor health inequalities (Wieland, 2018). NLP and machine learning can also guide cancer treatments in underdeveloped settings that are low-resource or need humanitarian assistance. (Swetlitz, 2016). Researchers trained an AI application to provide appropriate cancer treatment recommendations by giving necessary explanations about patients and telling the application the best treatment options. When examining different patients, it can be said that this practice agreed with specialists in more than 90% of patients in one study and 50% in another. Therefore, AI planning can already be applied to improve primary health care delivery in environments where resources are scarce or need humanitarian assistance. These tools can be implemented in a multi-layered system (Wahl et al., 2018).

The humanitarian sector is taking the first step with AI by testing different AI/ML capabilities of different national societies, and Norwegian and Danish Red Cross Societies have realized the first AI application examples (Toplic, 2020). Turkish Red Crescent partnered with Microsoft and their partner Mart Software to build a content management system to reunite families affected by the Syrian refugee crisis (Microsoft, 2022).

The Humanitarian Principles and innovation must be aligned between civic institutions and the IFRC movement to provide services to humanity through a longer-lasting impact. Because innovation is a distributed and participatory responsibility, the role of the innovation team at the IFRC should be to bring better structured and longer-lasting impact to the adoption of these innovative technologies. The advisory role of the OIAI auditing oversight body should focuse on facilitating, nurturing, and accelerating this effort with good practice and accountability through incremental improvements to foster independent global humanitarian action. For this, capacity-building studies should be carried out to improve the AI competency levels of auditors.

Because innovation is about trying different solutions in critical programmatic areas, difficult circumstances require taking calculated risks while adopting innovative and more competent operational technology. They require innovative technologies, tailored products, redesigned processes, innovative partnerships, and funding mechanisms. These synergies must combine to continually improve and respond to changing needs and contexts by anticipating and preparing for the future transformative change for the IFRC. Like digitization and data analytics, digital health, virtual reality, and AI are at the core of this effort, including multiple departments, units, and delegations worldwide.

From the disaster relief environment, climate change, migration, social unrest, youth volunteer engagement, discrimination, gender inequality, sexual abuse, pandemic response, and detention, the challenges are increasing to the INGOs like IFRC. With the current climate change/Covid 19/Ukraine/Migration crisis, there is an increasing need to strengthen guarantees and funding to enable more intelligent operational technology to enable humanitarian practitioners to increase disaster preparedness and response. VR provides a valuable benefit over face-to-face meetings as science and academic research shows that advanced VR training results in more excellent retention and behavior change. In conflict settings, AI-based VR training for teaching International Humanitarian Law (IHL) to the military is more effective than PowerPoint presentations and face-to-face meetings. AI-powered VR environments allow for better information retention, assessment, intelligent reporting, and sharing, as digital knowledge drives behavior change and facilitates broader tools to train local actors in situations where humanitarian delivery deployments are impossible. However, humanitarian practitioners must ensure that increasingly digitized work environments are cybersecurity-safe, using big data analytics combined with AI capability, and not threaten the right to privacy from increased surveillance and monitoring.

Results and Discussion

The humanitarian system is problematic and requires practical cooperation, especially among non-governmental organizations with proper oversight, governance, and collaboration. However, due to the political concerns of the Western regimes and distrust of local institutions, humanitarian assistance is interrupted. The efforts of UN agencies and INGOs to make secure donor agreements and raise safe humanitarian funds have turned into a repressive competition and financial doubts that hinder the efficiency of the humanitarian system. However, the changes focused on humanitarian aid tools and economic costs in combating humanitarian crises should include new techniques, rather than the fundamental problems of the humanitarian assistance system. The piecemeal reforms show that the deficiencies of the existing humanitarian system are being tried to be superficially corrected. However, the aim of the change should be to bring a new definition to the concept of help. IFRC currently struggles to pave a leadership role in humanitarian aid sector by embedding innovative technology and continuous development of staff members. INGO staff like the IFRC need to be able to answer critical questions such as what exactly AI is, how it can be used, what it can offer the humanitarian industry, whether it will trigger an industry-wide digital disruption that will challenge the dominance of the largest humanitarian organizations or serve to exacerbate the North-South divide.

A future where refugees can be granted digital asylum in other countries where they can do digital work and contribute to the growth of this economy without a heavy burden on host societies is something everyone aspires to. Therefore, we need to make sure that the data we produce is ultimately used to benefit the human sector, and we should be working to improve our data analytics capability and artificial intelligence algorithms (Oroz, 2017). During the IFRC 2030[1] strategy is achieved, there should be new structure for innovative technology that let everyone know job requirements to ensure that no one falls behind critical steps. For example, to the extent that AI can be used to empower citizens and affected communities in humanitarian crises, there will be nanosatellites that screen and warn every such thing in the world in detail, allowing us to generate near-instant insights into humanitarian crises. The digital revolution can help refugees protect their rights and identities and even create safe and healthy jobs by INGOs.

[1] For details of the Strategy, see: https://www.ifrc.org/who-we-are/about-ifrc/strategy-2030

Since the humanitarian aid system, in its current form both technically and economically is insufficient to resolve humanitarian crises effectively and efficiently, it needs reforms that will renew and transform itself to comply with technological requirements. This change is related to creating more realistic and innovative approaches to reasonably preventing and mitigating humanitarian crises that exist today and are likely to emerge like Syrian and Ukrainian crisis. Emergency aid and assistance in disasters are both to save lives and to ensure the immediate normalization of post-disaster life. The value of saving human lives is priceless and providing sustainability of sustenance resources like cash-based transfers comes second. Even if it is not possible to save lives when the effects of disasters on the economy are considered, the investment needed for AI-based robots should be considered well. The support of international funds for research and development efforts on this subject should be provided without hesitancy. Studies in Türkiye are still at the initial level but has a potential to make a surge with lessons learned from ESSN practice. Considering that we frequently encounter various disasters and urgencies, it would be appropriate to accelerate resource use and research and development on AI supported processes.

Data-driven AI technologies are gradually transforming the humanitarian field as they have the potential to support humanitarian actors. They apply a paradigm shift from reactive to forward-looking approaches to humanitarian action, as AI can contribute to humanitarian action in its three main dimensions: preparedness, response, and recovery. AI technologies can support humanitarian preparedness and related project management by analyzing large volumes of multidimensional data at high speeds, identifying variable patterns in data, making probable-reasonable inferences, and providing important information about the likelihood and impact of potential risks. These logical stages can be accomplished before a crisis or humanitarian disaster strikes. AI technologies can also offer a variety of opportunities to support effective humanitarian DREF responses, CEA, MEAL and PMER processes and promote recovery programs, particularly in protracted conflict situations such as Syria and Ukraine.

According to the literature knowledge, there are several AI-based initiatives in use:

- Preparing early warning and developing possible scenarios with deployed AI systems to predict population movements,
- Anticipating emergencies before they happen and increase them with early detection, warning, and prevention mechanisms.
- Making prudent decisions and acting faster in emergencies and assistance, thanks to real-time awareness of crisis situations.
- Reaching more people with the services and information they need such as education, guidance, mentoring on legal and health information.
- Optimizing limited human resources to focus on high priority work effectively and efficiently.
- Improving results and outcomes through real-time feedback on the effectiveness of programs and make suggestions for improvements.
- Identifying property damage and missing persons by mapping the regions affected by humanitarian crises, and
- Facilitating monitoring and reporting by informing humanitarian activities in the field.

However, if these systems are used without proper oversight, they can expose individuals' personal information to potential data breaches that could result in unnecessary cybersecurity risks and unexpected fines. Accordingly, humanitarian organizations should keep in mind that there is no ready-made, "*one-size-fits-all*" AI solution that can be applied to all contexts and cash-based assistance projects to reap the benefits while outweighing the risks. They should also consider whether AI systems can be deployed in certain situations, as

such systems may do more harm than good to their beneficiaries and program stakeholders if not properly engineered. In some cases, just because technology is available does not mean it should be used in all circumstances. Thus, when deploying these technologies, it is crucial that the IFRC, as a champion INGO should try to establish adequate frameworks to strengthen ethical commitment, accountability, and transparency in the use of artificial intelligence in the humanitarian context and governance with stakeholders soon.

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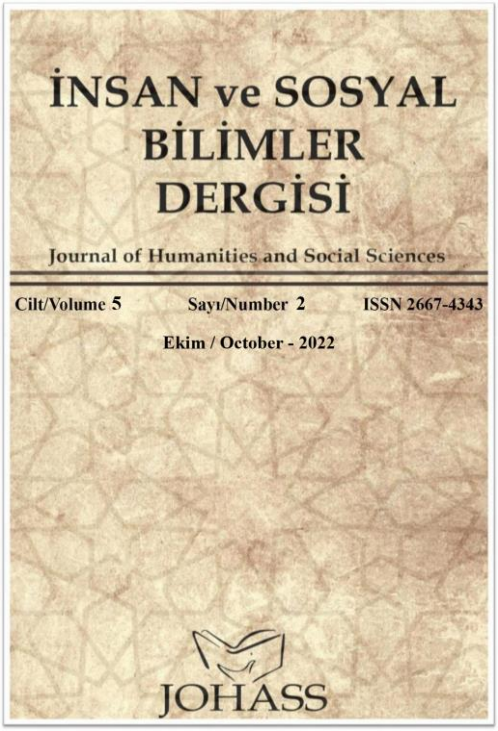

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Developing Secondary School Students' 21st Century Skills Through Online Science Education with Web 2.0 Tools *

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Hacer Efe[1]
Yıldız Technical University, Education Faculty, Science Education, PhD student
hacerefe94@gmail.com
Orcid ID: 0000-0002-2963-7879

Hatice Turan [2]
Yıldız Technical University, Education Faculty, Science Education, Master student
haticeturann96@mailadresi.com
Orcid ID: 0000-0002-6842-4710

Ünsal Umdu Topsakal[3]
Yıldız Technical University, Education Faculty, Science Education, Prof. Dr.
topsakal@yildiz.edu.tr
Orcid ID: 0000-0002-0565-7891

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Developing Secondary School Students' 21st Century Skills Through Online Science Education with Web 2.0 Tools*

Hacer Efe[1]
Yıldız Technical University, Education Faculty, Science Education
Hatice Turan[2]
Yıldız Technical University, Education Faculty, Science Education
Ünsal Umdu Topsakal[3]
Yıldız Technical University, Education Faculty, Science Education

Abstract

In this study, the effect of using Web 2.0 tools in online science lessons on middle school students' 21st century skills was examined. The sample of the research consists of 14 students (8 girls, 6 boys) studying in the 7th grade. In the study, unit topics were handled online using web 2.0 tools. The study lasted for a total of 6 weeks and a different Web 2.0 tool was introduced and applied to the students every week in practice. The model of the research is a mixed model in which quantitative and qualitative methods are combined. In this direction, as a quantitative data collection tool in the research, "21. Century Learning Skills Level Inventory" and "21st Century Skills Open Ended Questionnaire" and "Classroom Observation Form" developed by the researcher were applied as qualitative data collection tools. SPSS program was used in the analysis of quantitative data, and content analysis was used in the analysis of qualitative data. As a result of the research, it was determined that there was a significant difference in favor of the post-test as a result of the pre-test and post-test for 21st century skills. It has been determined that students show positive developments in 21st century learning and innovation skills, leadership and responsibility, problem solving, media and technology literacy, communication, cooperation, entrepreneurship and productivity themes.

Keywords: Web 2.0 tools, 21st century skills, online science education, secondary school students

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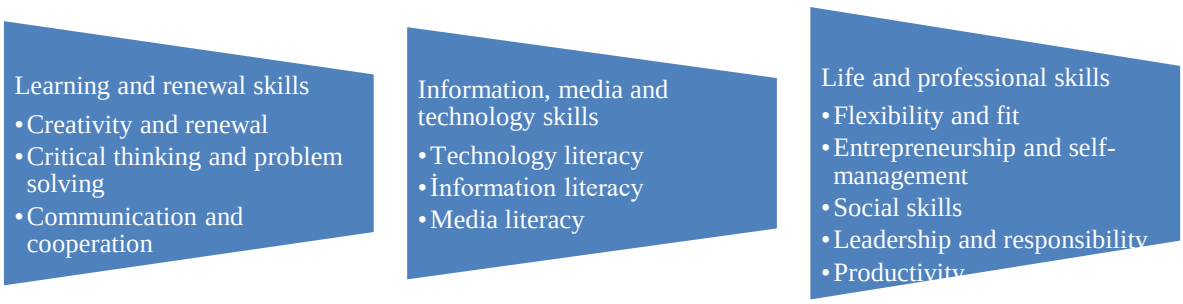
Sorumlu yazar iletişim bilgileri:
[1]*PhD student*
hacerefe94@gmail.com
Orcid ID: 0000-0002-2963-7879
[2] *Master student*
haticeturann96@mailadresi.com
Orcid ID: 0000-0002-6842-4710
[3] *Prof. Dr.*
topsakal@yildiz.edu.tr
Orcid ID: 0000-0002-0565-7891

Introduction

The 21st century we live in represents a technology-dependent and information-saturated global world. Contrary to the past, access to information has become much easier today, and therefore, a pile of unnecessary and incorrect information is formed (Vosoughi et al., 2018). Individuals are dealing with extracting the correct information they need from this information stack and evaluating it in daily life. Today, individuals who can associate and use information in the right place and with daily life, and approach the events around them with a critical perspective, can overcome the problems of the age such as knowledge, thought and literacy (Kuhlthau et al., 2007). For this, individuals need to have certain skills and competencies. These high-level skills needed in our age are named as 21st century skills (Majid et al., 2012).

21st century skills are the skills that individuals should have in today's information and technology age. 21st century skills include skills and competencies such as creative thinking, critical thinking and problem solving, active learning, learning to learn, decision making, communication and cooperation, leadership, entrepreneurship, information-media and technology literacy (Trilling & Fadel, 2009). It is generally examined under the headings of "learning and renewal skills", "information, media and technology skills" and "life and professional skills" (The Partnership for 21st Century Skills, 2013). On the other hand, 21st century skills can be divided into categories such as employability skills, survival skills, key competences, deep learning skills and necessary skills (Wagner, 2008).

Figure 1.
Classification of 21st Century Skills by P21 (Partnership For 21 Century Skills)



The education system has a great role in helping individuals acquire 21st century skills. With the education given to individuals, individuals with the necessary competence to meet the expectations of the 21st century from individuals can be raised. Accordingly, the education system aims to raise individuals who produce and share information, find solutions to problems and think critically, are entrepreneurs, have communication skills, and contribute to society in order to keep up with our age (Ahmad, 2018).

Theoretical framework

Web 2.0 tools

In education, the use of environments and tools in which individuals can become more active and develop themselves has become widespread so that they can acquire contemporary skills. With the use of Web 2.0, one of these tools, in online education, individuals are prevented from being passive individuals who only acquire information, activating them and preparing a social learning environment. The use of web 2.0 in online learning environments facilitates collaborative learning among students and with the teacher, thus providing active learning. In addition, it provides progress in learning by providing a flexible learning environment (O'Reilly, 2007). Web 2.0 tools are second generation web environments that allow individuals to produce and share information and content interactively and collaboratively (Chiou, 2012). In addition, the Web 2.0 environment is defined as the platforms where information is acquired, but also produced, shared and organized (Ajjan & Hartshorne, 2008).

Web 2.0 technologies provide a fun learning environment and allow teamwork and collaboration. In addition, these tools increase the motivation of students towards the lesson with their up-to-date content. Thus, it provides active participation and efficient learning. It enables the learning and teaching process to continue in extraordinary situations such as epidemics or disasters (Franklin and van Harmelen, 2007; Bryne, 2009; Bonk, 2009). In a study by Grosseck (2009), it was stated the topics covered are to identify potential benefits of web 2.0 technologies, to introduce the theoretical aspects of its use in higher education, to integrate it into the learning-teaching and evaluation process, and to identify possible obstacles. As a result of the research, it was stated that new generation web 2.0 technologies are spreading rapidly and web 2.0 tools should be used carefully and collaboratively.

In another study by Chawinga & Zinn (2016), university students' awareness of the use of web 2.0 technologies, the purpose for which they use web 2.0 applications, and the factors affecting the use of web 2.0 technologies were examined. 186 undergraduate students participated in the study. A questionnaire was applied to the students as a data collection tool. As a result of the research, it has been determined that students use web 2.0 technologies to access information, communicate with academicians, send homework, and stay in touch with their friends during their academic studies. Also, it has been revealed that Web 2.0 technologies are very effective on undergraduate students and academicians, it is frequently used for social networks, and there is a need for more and more qualified education to raise awareness.

Huang et al. (2013), university students' views on using web 2.0 technologies were examined. A questionnaire was implemented to 423 university students who participated in the study. As a result of the research, students stated that it had a positive effect on their learning, provided interaction between student-student and student-school, increased their level of satisfaction with the lessons, and contributed to their writing skills related to web 2.0 tools.

In a study conducted by Grosseck (2009), the issues of identifying the potential benefits of web 2.0 technologies, introducing the theoretical aspects of their use in higher education, integrating them into the learning-teaching and evaluation process, and identifying the obstacles that may arise were discussed. As a result of the research, it was stated that new generation web 2.0 technologies are spreading rapidly and web 2.0 tools should be used carefully and collaboratively.

Literature review

In another study by Aramide (2022), the contributions of digital and media literacy to information sharing were investigated. In the study, a questionnaire was applied to 190 school library personnel. As a result of the study, it was found that the participants' high level of digital and media literacy skills were effective in sharing information.

Korukluoglu et al. (2022), a curriculum supported by Web 2.0 tools for critical thinking, one of the 21st century skills, was designed, implemented and evaluated for secondary school students. Before the study, a needs analysis was carried out and the application was made for 8 weeks. As a result of the study, a significant difference was found in favor of the post-test in students' critical thinking skills.

In a study conducted by Uçar & Şaka (2022), Web 2.0 tools were used in teaching socioscientific issues. 24 science teacher candidates participated in the study. The pre-service teachers who participated in the study stated that the use of Web 2.0 tools supports effective and permanent learning and they will use them when they become teachers.

Zain et al. (2022), it was aimed to improve pre-service teachers' high-level thinking skills by using the flipped learning model supported by Web 2.0 tools. It was found that 17 pre-service teachers who participated in the study had a meaningful learning experience through active and collaborative learning activities and developed their high-level thinking skills in terms of creativity, cooperation, critical thinking and communication.

In a study by Artiningsih and Nurohman (2019), the effect of Web 2.0 tools on middle school students' 21st century skills was examined. The study is a quasi-experimental study and 127 secondary school students participated. Pre-test-post-test was applied to the students. As a result of the study, it was found that there was a significant increase in students' research skills.

Frisch et al. (2013) examined the effect of Web 2.0 tools on students' critical thinking skills, which is one of the 21st century skills. The model of the study conducted with high school students is mixed method. According to the results obtained from the tests and interviews, it was found that the experimental class experienced an increase in reasoning, systematic thinking, decision making and problem solving.

When the literature is examined, it has been found that Web 2.0 tools and 21st century skills are generally handled separately (Gonzales & Louis, 2008; Scaramozzino, 2008; Pombo et al., 2011; Vaughan et al., 2011; Alvarez, 2014; Mukhlis et al. , 2018). The research problem of this study is "How is the effect of online education applications supported by Web 2.0 tools on students' 21st century skills?" and in this direction, it is an integrated study that combines 21st century skills with web 2.0 tools. With this aspect of the study, it is expected to fill the gap in the literature and contribute to it. In the study, it is thought that online education applications supported by web 2.0 tools focused on 21st century skills of secondary school students are guiding both teachers and researchers.

Method

Model

The model of the study is mixed model. In mixed models, data is obtained, analyzed and interpreted using both qualitative and quantitative methods (Fraenkel et al., 2012). Throughout this study, qualitative and quantitative data were collected simultaneously, analyzed separately and interpreted by correlating the findings obtained at the end of the process. In this direction, the complementarity of the mixed method was used to increase the interpretability, significance and validity of the data (Creswell, 2003).

Sample and Population

The sample of the research consists of 14 (8 girls, 6 boys) students studying in the 7th grade. While determining the research sample, convenience sampling method was used. In convenience sampling, the researcher selects a sufficient number of people as a sample from among existing individuals, situations or situations. (Sedgwick, 2013). Students selected for study are students who have the opportunity to attend online classes at a private school.

Data Collection Tools

Both quantitative and qualitative data collection tools were used in the study. Developed by Gülen & Çakır (2013) as a quantitative data collection tool, "21st Century Learning Skills Level Inventory" was used. Developed by Gülen & Çakır (2013), "21st Century Learning Skills Level Inventory" is an inventory prepared to measure 21st century skills of students. The inventory consists of 33 items in 5-likert type. It was applied to 612 people in total and the Cronbach Alpha reliability coefficient was calculated as 0.81. The inventory is valid and reliable. The inventory was administered to the students before and after the implementation. As qualitative data collection tools, "21st Century Skills Open Ended Questionnaire and Classroom Observation Form" were applied. Prepared by Külegel and Umdu Topsakal (2020), "21. Century Skills Perceptions Form" by the researcher "21. Century Skills Open-Ended Question Form" and the draft form was rearranged in line with the opinions of 5 experts and took its final form. The form was applied to determine the 21st century skills of 7th grade students that emerged during the activities made with web 2.0 tools. The form consists of 12 questions. The open-ended question form was applied to the students before and after the application. The "Classroom Observation Form" developed by Atalay and Boyacı (2015) was used to identify the deficiencies in the application during the activities made with web 2.0 tools, to determine the changes in students' feelings and thoughts about the process and 21st century skills.

Collection of Data and Analysis

Wilcoxon signed-rank test, which is one of the non-parametric tests in the SPSS program, was used in the analysis of the data obtained from the quantitative data collection tool. The purpose of using the Wilcoxon signed-rank test is to compare two related measures. Therefore, in this study, Wilcoxon signed-rank test was preferred to evaluate whether there is a significant difference between pre-test and post-test scores (Trawinski et al., 2012). Content analysis was applied in the analysis of the data obtained from the qualitative data collection tool in the research. Qualitative data obtained in content analysis are converted into various themes, categories and codes (Stemler, 2000). The qualitative data obtained in this study were analyzed by two researchers using open coding. As a result of the analysis, various codes, themes and categories were reached. In order to increase the reliability and validity of the research data, student responses are given under the tables. In the content analysis, internal consistency, which is defined as the similarity, which is defined as the consensus among the coders, and the determination of the reliability, was tried to be achieved. In this study, internal consistency was taken into account and the general agreement between researchers was found to be 0.85. The reliability coefficient calculated for the qualitative data collection tools is higher than 80%, and its reliability is considered sufficient.

Findings

The quantitative and qualitative findings obtained in the study are given under separate headings.

Quantitative Findings

The quantitative findings obtained from the study are as follows:

Table 1.

Descriptive Statistics of Students' Level of Use of 21st Century Learning Skills

Group	N	X	S
Pre-test	14	3,6061	0,69479
Post-test	14	4,0606	0,53973

According to Table 1, the pretest mean score of the study group was X=3,6061; its standard deviation is S=0.69. The post-test mean score of the study group was X=4.06; its standard deviation is S=0.54.

Table 2.

Study Group 21st Century Learning Skills Level Inventory Pre-Test-Post-Test Scores Comparison with Wilcoxon Signed Ranks

Ranks	N	Rank average	Rank sum	Z	p
Negative Rank	2	5,25	10,50		
Positive Rank	12	7,88	94,50	-2,639	,008
Equally Rank	-				

According to Table 2, as a result of the analysis of the data in the research, a positive (Z=-2.639) and significant (p=.008<.05) result was obtained in terms of the level of 21st century skills.

Qualitative Findings

The qualitative findings obtained from the study are as follows:

Table 3.

Students' Answers to the Question of "What do you think should be the characteristics of a person with 21st century skills?"

			Frequency	
Theme	**Category**	**Codes**	**Before**	**After**
21. Yüzyıl Becerisine Sahip Birey	Özellikleri	Ambitious	1	4
		Very smart	1	3
		Researching	2	3
		Creative	1	3
		Open to new ideas	1	2
		Able to use technology well	-	2

	Using the internet correctly	2	1
	Using their knowledge correctly	2	1
	Curious	2	1
	Hard working	2	1
	Self-developing	1	1
	Critic	-	1
	Problem solving	-	1
	Strong communication	-	1
	Questioner	-	1
	Good observer	-	1
	Honest	-	1
	Capable of teamwork	-	1
	Self-confident	-	1
	Successful	-	1
	Entrepreneur	-	1
	Freely thinking	-	1
	Versatile thinker	-	1
	Social	1	-
	Thinking logically	1	-
	Organised	1	-
	Disciplined	1	-
	No idea	3	-

According to Table 3, it was seen that the most common answer given before the implementation in the "Characteristics" category under the theme of "Individual with 21st Century Skills" was "I don't know", and the most common answer given after the implementation was the "Ambitious" code. Considering the frequencies before and after the implementation, it was seen that the students gave more code and frequency output with a significant difference after the implementation.

Table 4.

Students' Answers to the Question of "What should be the characteristics of a leader person? Which of these traits do you have?"

			Frequency	
Theme	**Category**	**Codes**	**Before**	**After**

Leadership and Responsibility	Properties	Forward thinking	-	3
		Brave	1	3
		Self-confident	2	3
		Fair	2	2
		Hard working	1	2
		Intelligent	3	2
		Good router	4	1
		Honest	2	1
		Trustworthy	1	1
		Problem solver	1	1
		High persuasive power	1	1
		Democratic	1	1
		Open to innovation	-	1
		Adaptable to the times	-	1
		Quick decision making	-	1
		Able to motivate	-	1
		Open to criticism	-	1
		Entrepreneur	-	1
		Positive thinking	-	1
		Solution oriented	-	1
		Planned	-	1
		Leading spirit	-	1
		Educated	-	1
		Good listener	3	-
		Open minded	1	-
		Researching	2	-
		Take the initiative	2	-
		Disciplined	1	-

According to Table 4, the most common response given before the application in the "Characteristics" category under the "Leadership and Responsibility" theme was the "Good Router" code, and the most common answer given after the implementation was the " Forward thinking", "Brave" and "Self-confident" codes. Considering the frequencies before

and after the implementation, it was seen that the students gave more code and frequency output with a significant difference after the implentation. It was determined that the students made more self-evaluation after the application than before the implementation.

Table 5.

Students' Answers to the Question of "When you encounter a complex problem, what do you do to solve it?"

			Frequency	
Theme	**Category**	**Codes**	**Before**	**After**
Problem Solving	Thoughts	Trying to find the most suitable solution	6	7
		Reviewing the possibilities	1	4
		Search for the cause	5	3
		Data collection	1	1
		Trying to simplify the problem	1	1
		Do your best	1	1
		Benefit from experienced people	-	1
		Trying to solve from easy to difficult	-	1
		Looking online	-	1
		Be calm	-	1
		Consult someone with an idea	2	-
		Asking the family	1	-
		Do the first thing on your mind	1	-
		Asking the teacher	1	-
		Making hasty decisions	1	-

According to Table 5, the most common answer given before and after the implementation in the "Thoughts" category under the "Problem Solving" theme is " Trying to find the most suitable solution" code has been found. While it was observed that the students consulted others to solve problems before the implementation, it was determined that they tried to solve it on their own after the implementation.

Table 6.

Students' Answers to the Question of "Do you think you can come up with original ideas and come up with a new product? Can you explain?"

Theme	**Category**	**Codes**	**Before**	**After**
Creativity and Renewal	Yes	I produce	6	9
	No	I can't produce	6	3

	Other	I'm undecided	2	2
Total			14	14

According to Table 6, the most common answer given before and after the application in the "Yes" category under the "Creativity and Renewal" theme was the "Production" code. It was seen that the most common answer given before and after the application in the "No" category was the "I cannot produce" code.

Table 7.
Explain of Original Ideas or Products

			Frequency	
Theme	**Category**	**Codes**	**Before**	**After**
Creativity and Renewal	Positive	Making products that benefit humanity	1	4
		Designing heat-resistant shuttles to approach the sun	-	1
		Genetically altering plants to produce oxygen gas on Mars	-	1
		Making a car project with gas and pedal system	-	1
		Making a solar panel lamp	-	1
		Making a vacuum cleaner	-	1
		Discovering bacteria and plant species and finding solutions to diseases	-	1
		Developing ideas and products to solve transportation problems	-	1
		Generating new ideas about the growth, development, care and habitat improvement of animals	-	1
		Converting discarded items	1	-
		Achievement with imagination and ideas	1	-
		Ability to present new ideas	1	-
		Inventing a machine that records dreams	1	-
	Negative	I can't do it	1	1
		I don't think	6	3
		I do not trust myself	-	1
	Other	I can do it if the right conditions are met.	-	1

		If the imagination is strong	1	-

According to Table 7, under the theme of "Creativity and Renewal", there was no common code given before the implementation in the "Positive" category, and the most common answer given after the implementation was " Making products that benefit humanity." code has been found. It was seen that the most common answer given before and after the implementation in the "Negative" category was the "I don't think" code. Considering the frequencies before and after the implementation, it was seen that the students gave more code and frequency output with a significant difference after the implementation.

Table 8.

Students' Answers to the Question of "What do you know about science, science, the environment?"

			Frequency	
Theme	**Category**	**Codes**	**Before**	**After**
İnformation Literacy	Science	It's getting better every day	1	1
		Science covers science and the environment	-	1
		Scientific information depending on experiment and observation	-	1
		I like to do scientific research	1	-
		Science is an art	1	-
		Connected with science	1	-
		Diseases can be cured	1	-
		No idea	5	1
	Science	My favorite lesson	2	2
		I am interested in astronomy	2	1
		The collective name given to the sciences of physics, chemistry, biology	-	1
		Examines living and non-living things	-	1
		Explains the cause of events happening around us	-	1
		Is a science	-	1
		My most studied course	-	1
		No idea	5	1
	Environment	Our living space that we must protect	1	1

		everything around us	-	1
		our nature	-	1
		A place where living and non-living things coexist	-	1
		Polluted by industrialization	1	-
		No idea	5	1
	Other	I know as much as taught in school		1
		Environment = Nature	1	-
		Natural Phenomena and force covers most things in our life	1	-

According to Table 8, the most common answer given before the implementation in the "Science" category under the "Information Literacy" theme was "I have no idea." code, after the implementation, " No idea" code is decreasing, "Science covers science and the environment" and "Scientific information depending on experiment and observation". It has been seen that there are "I Have No Idea." code the most common response before the implementation was in the "Science" category. It was seen that the most common answer given after the implementation was the "Favorite Lesson" code. Considering the frequencies before and after the implementation, it was seen that the students gave more code output in the "Environment" category after the implementation.

Table 9.

Students' Answers to the Question of "What do you think about studies using mass media such as computers"

			Frequency	
Theme	**Category**	**Codes**	**Before**	**After**
Media Literacy	Positive	Beneficial	5	6
		Making our life easier	-	4
		Allows us to access information quickly	-	3
		Constantly evolving	-	3
		We can do research online.	-	2
		We can take a virtual tour with google maps	-	1
		Easier research than an encyclopedia	-	1
		Ability to follow technological developments easily	-	1

		Accessing information with a single call button	-	1
		Research from digital devices	-	1
		Ability to teach during the pandemic process	-	1
		Research what we're wondering	3	-
		It will be very important in our life	2	-
		Allows to communicate	1	-
		Virtual execution of many operations	1	-
		Doing good work for humanity	1	-
		Quick access to the work done	1	-
	Negative	I don't think	3	2
		No idea	1	-
	Other	The world is getting virtual	1	-
		More work is needed	-	1
		Not every information we get is correct.	1	1

In Table 9, under the "Media Literacy" theme, the most common answer given before and after the implementation in the "Positive" category was the "Beneficial" code. It was seen that the most common answer given before and after the implementation in the "Negative" category was the "I don't think" code.

Table 10.

Students' Answers to the Question of "Have you done research on mass media such as computers, television, newspapers? What would be the benefit of doing research from such sources?"

			Frequency	
Theme	**Category**	**Codes**	**Before**	**After**
Technology Literacy	Thoughts	Easy access to new information	-	5
		Quick access to information	2	5
		Find out what I'm curious about	-	2
		Research effortlessly	1	1
		Learning what I don't know	3	1
		Quick access to information	-	1

Keeping up with developing technology	-	1
Learning new information	4	-
learn more	2	-
Find out what I'm curious about	1	-
Preparing for the lesson	1	-

According to Table 10, the most common answer given before the implementation in the "Thoughts" category is “Easy access to new information” and “Quick access to information” codes the most common response after the application under the "Technology Literacy" theme. It has been determined that while the students thought of the benefit of doing research from mass media as being able to learn new information only before the implementation, they thought that they could obtain the information in a short time and quickly after the implementation.

Table 11.

Students' Answers to the Question of "Do you think you will create a more effective product when working on your own or collaborating with your friends? Why?"

			Frequency	
Theme	**Categories**	**Codes**	**Before**	**After**
Communication and Collaboration	Individual	By myself	7	5
	Teamwork	With my friends	4	7
	Other	Depends on the subject	3	2
Total			14	14

According to Table 11, the most common answer given before and after the implementation in the "Individual" category under the "Communication and cooperation" theme was the "By myself" code. It was seen that the most common answer given before and after the implementation in the "Teamwork" category was the "With My Friends" code. It was seen that the most common answer given before and after the implementation in the "Other" category was the “Depends on the subject” code.

Table 12.

Creating Effective Product While Working Individually or Collaboratively

			Frequency	
Theme	**Category**	**Codes**	**Before**	**After**
Communication and Collaboration	Individual	I'm not good at teamwork	1	1
		I'm afraid of setbacks in teamwork	-	2
		I'm afraid that my opinions will be ignored	-	1

	Teamwork gets complicated	-	1
	I like to answer questions myself	-	1
	I can use my time more efficiently	-	1
	Ability to focus on one thing in silence	-	1
	Feeling more comfortable on my own	2	-
	Inability to be fair in group work	1	-
	Not having to obey my friends' commands	1	-
	Finding it wrong to get ideas from someone else for my own product	1	-
	Developing myself by thinking about my ideas	1	-
	Inability to focus when working with my friends	1	-
	Being able to finish my work quickly	1	-
Teamwork	Complementing each other by combining our ideas	-	4
	Easier and faster progress of the process	2	2
	Together we will be stronger	1	1
	I don't like working alone	1	-
	Being able to notice and discuss the deficiencies of my ideas with my friends	1	-
Other	Depends on the subject studied	2	2
	I can cooperate if I think it will be difficult	-	1
	Individual study is more efficient when studying with a group on project assignments	1	-

According to Table 12, the most common answer given before the implementation in the "Individual" category under the "Communication and Collaboration" theme was " Feeling more comfortable on my own" code. After the implementation, " I'm afraid of setbacks in teamwork" was the most common answer. In the “Teamwork” category, the most common answer given before the implementation was “Easier and faster progress of the process” code, the most common answer after the implementation “Complementing each other by combining our ideas” code. In the “Other” category, the most common answer given before and after the implementation is “Depends on the subject studied” code.

Table 13.

Students' Answers to the Question of "Can you study in harmony with your teammates in a team effort?"

			Frequency	
Theme	**Category**	**Codes**	**Before**	**After**
Flexibility and Adaptation	Yes	I can study	5	8
	No	I can not study	6	3
	Other	Maybe	3	3
Total			14	14

According to Table 13, the most common answer given before and after the implementation in the "Yes" category under the "Flexibility and Adaptation" theme was the "I can study" code. It was seen that the most common answer given before and after the implementation in the "No" category was the code "I can not study". It was seen that the most common answer given before and after the implementation in the "Other" category was the "Maybe" code.

Table 14.

Answers to the Question of "Do you strive to produce a product that benefits humanity? What would this product be about?"

			Frequency	
Theme	**Category**	**Codes**	**Before**	**After**
Productivity	Yes	I can try	12	10
	No	I can not try	2	2
	Other	I'm undecided	-	2
Total			14	14

According to Table 14, the most common answer given before and after the implementation in the "Yes" category under the "Productivity" theme was the "I can try" code. It was seen that the most common answer given before and after the implementation in the "No" category was the "I can not try" code. It was seen that the most common answer given before and after the implementation in the "Other" category was the "I am undecided" code.

Table 15.

The Subject of the Product Designed for the Benefit of Humanity

			Frequency	
Theme	**Category**	**Codes**	**Before**	**After**
Productivity	Subject Area	Health	4	2

	Astronomy	1	2
	Environmental pollution	3	1
	Transport	1	1
	Car	-	1
	Purifier	-	1
	Food	1	-
	Robot	1	-
	Art	1	-
Other	I don't know	2	2
	Automatic pen	1	-

According to Table 15, the most common answer given before the implementation in the "Subject Area" category under the "Productivity" theme was the "Health" code, and the most common answer given after the implementation was the "Health" and "Astronomy" codes. It was seen that the most common answer given before and after the implementation in the "Other" category was the "I don't know" code.

Table 16.

Students' Answers to the Question of "Do you have any initiative to promote, disseminate and market the product you produce or will produce? How?"

			Frequency	
Theme	**Category**	**Codes**	**Before**	**After**
Entrepreneurship and Self-Management	Yes	It's possible	7	9
	No	Impossible	5	5
	Other	Maybe	2	-
Total			14	14

According to Table 16, the most common answer given before and after the implementation in the "Yes" category under the "Entrepreneurship and Self-Management" theme was the "It's possible" code. It was seen that the most common answer given before and after the implementation in the "No" category was the "Impossible" code. It was seen that the most common answer given before the implementation in the "Other" category was the "Maybe" code.

Table 17.

Students' Answers the Question of "Taking initiative to promote, disseminate and market the product to be produced"

	Frequency

Theme	Category	Codes	Before	After
Entrepreneurship and Self-Management	Product Promotion and Dissemination	Billboard	-	3
		Mass media	-	2
		Social media	2	1
		Web site	2	1
		Acquaintances	-	1
		Street lamps	-	1
		Trash can	-	1
		Public network	-	1
		Advertisement	1	-
		Magazine	1	-
	Marketing the Product	Social media phenomena	1	1
		Exhibition	-	1
		Sponsor	-	1
	Other	I don't	8	5

According to Table 17, under the theme of "Entrepreneurship and Self-Management", in the category of "Product Promotion and Dissemination", the most common answer given before the implementation was "Social Media" and "Web site" codes, and the most common answer given after the implementation was the "Billboard" code. It was seen that the most common answer given before and after the implementation in the "Marketing the Product" category was the "Social Media Phenomenon" code. It was seen that the most common answer given before and after the implementation in the "Other" category was the "I don't" code.

Table 18.

Students' Answers to the Question of "Is group work for a purpose suitable for you? Why? How is your mutual communication with the group members while designing a product as a group?

Theme	Category	Codes	Before	After
Social and Intercultural Skills	Teamwork	Appropriate	9	7
		Not appropriate	3	2
		Depends on person	2	2
		Depends on the purpose of the study	1	3

Communication	It is good	10	7
	I have no idea	1	3

According to Table 18, the most common answer given before and after the implementation in the "Teamwork" category under the theme of "Social and Intercultural Skills" was the code "Appropritate". It was seen that the most common answer given before and after the implementation in the "Communication" category was the "It is good" code.

Findings from the observation form

Theme : 21st century learning and renewal skills

According to the researcher's observation, under the theme of "21st century learning and renewal skills", findings were obtained in the categories of "creativity and renewal skills", "critical thinking and problem solving skills" and "cooperation and communication skills".

Category 1: creativity and renewal skills: After the application, it was found that the students gave answers to curiosity about the subject, reading and researching, producing solutions, developing original proposals, producing original products, and dreaming in the category of "creativity and renewal skills".

Category 2: critical thinking and problem solving skills: After the application, in the category of "critical thinking and problem solving skills" of the students, comparison, giving examples, making similarities, summarizing the subject, making inferences, connecting information, associating with daily life, estimating the solution, It has been reached that they gave answers to giving examples, comparison, inference, making similarity, and self-criticism.

Category 3: cooperation and communication skills: After the application, it was found that the students gave answers to asking questions and sharing information in the classroom, communicating with their friends, friendly competition, listening to ideas and criticizing performance, helping and supporting in the categories of "cooperation and communication skills".

Accordingly, it was observed that there was a positive change in the students' theme of "21st century learning and renewal skills" after the application.

Result and Discussion

In this study, the effects of online education applications supported by Web 2.0 tools on the 21st century skills of 7th grade students were examined. As a result of the study, it was concluded that online education applications supported by web 2.0 tools developed students' 21st century skills. It was found that students gave more code and frequency outputs with a significant difference after the application in the themes of 21st century learning and renewal skills, leadership and responsibility, problem solving, media and technology literacy, communication, cooperation, entrepreneurship and productivity.

Similarly, in a study conducted by Alsuwida (2022), it was found that Web 2.0 tools had a significant and positive effect on 21st century skills. In the study conducted by Korukluoğlu et al. (2022), it was found that Web 2.0 tools had a positive effect on the critical thinking skills of the participants. Zain et al. (2022), it was found that teaching supported by Web 2.0 tools improved the participants' high-level thinking skills, which is one of the 21st century skills.

In a study conducted by Jose (2021), it was concluded that participation in communication, cooperation, critical thinking and creativity activities carried out through web 2.0 tools can gain participants' curiosity, patience, harmony and sociocultural awareness.

In a study by Artiningsih and Nurohman (2019), it was found that Web 2.0 tools provided a significant increase in secondary school students' research skills, which is one of the 21st century skills. Frisch et al. (2013), it was found that Web 2.0 tools provided a positive development in students' critical thinking skills, which is one of the 21st century skills. Other studies in the literature are also supportive (Banister, 2008; Tucker, 2014).

Recommendations

In this study, the subject of "reproduction, growth and development in living things" was chosen in the science lesson and Web 2.0 tools were applied and a positive result was obtained. Accordingly, it may be beneficial to implement web 2.0 tools in other educational levels. In addition, Web 2.0 tools can be used in online lessons and classroom activities, as in this study. In this study, online training activities were carried out using the web 2.0 tools Canva, Padlet, Quizizz, Nearpod, Wordwall, Kahoot, Storyboard That and Bubbl Us. It may be beneficial to provide online education by using different web 2.0 tools according to the needs of the course, the teacher and the students. On the other hand, in order to generalize the study, it may be beneficial to practice with more students and for a longer period of time.

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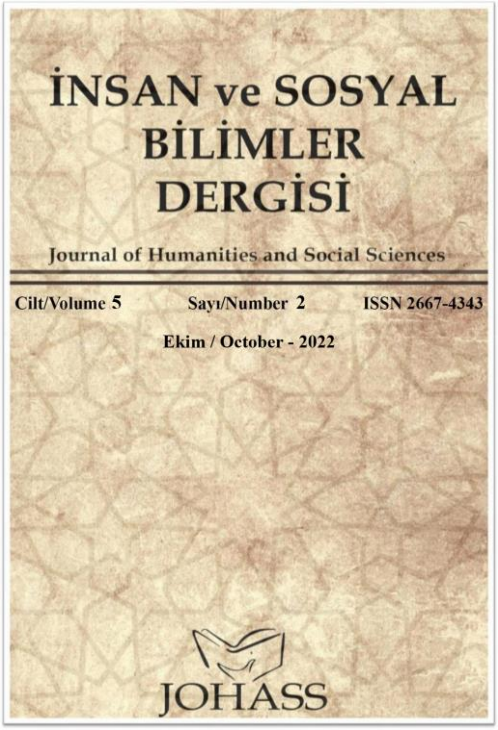

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Examples of Childbirth Education Courses for Migrant Women in The World and Turkey: Literature Review

Zülal Soylu[1]
Dokuz Eylül University, Institute of Health Sciences, Department of Nursing, Obstetrics and Gynecology Nursing PhD Program Nurse, PhD Student,
zulal_soylu@hotmail.com
Orcid ID: 0000-0002-1265-7128

Hande Yağcan [2]
Dokuz Eylül University, Faculty of Nursing, Department of Obstetrics and Gynecology Nursing
hande.yagcan@gmail.com
Orcid ID: 0000-0001-9658-0449

Dilek Bilgiç[3]
Dokuz Eylül University, Faculty of Nursing, Department of Obstetrics and Gynecology Nursing
bilgicdilek@gmail.com
Orcid ID: 0000-0001-9569-8875

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Examples of Childbirth Education Courses for Migrant Women in The World and Turkey: Literature Review

Zülal Soylu[1]
Dokuz Eylül University, Institute of Health Sciences, Department of Nursing, Obstetrics and Gynecology Nursing PhD Program

Hande Yağcan[2]
Dokuz Eylül University, Faculty of Nursing, Department of Obstetrics and Gynecology Nursing

Dilek Bilgiç[2]
Dokuz Eylül University, Faculty of Nursing, Department of Obstetrics and Gynecology Nursing

Abstract

The healthcare guidelines were prepared in different languages for migrants in hospitals of European Countries. These guidelines briefly describe referrals in-hospital and important informations and direct migrants to the addresses where they need to go. It has been determined that in America and European countries such as Germany, Switzerland and Austria, cultural identities and mother tongues of immigrant women are less barriers, equality of opportunity is provided to a certain extent, and they contribute to their use of reproductive and preventive health services. Also, they have special childbirth education courses that they conduct, counseling units and information brochures for immigrants. In counseling services, information are related pre-pregnancy care to postpartum depression were given to them. While they are giving these services in the counseling centers, they use intercultural interpreters and telephone lines, which are usually opened by midwives and supported by the municipality, to prevent translation errors. In Turkey, some state hospitals have been started childbirth education for immigrant women with the midwives accompanied by consecutive translation in Arabic since 2017. But unfortunately, these educations interrupted due to the pandemic restrictions. It is thought that the deficiency in immigrant friendly services can be overcome by increasing the available social assistance and allowances for immigrants, providing awareness trainings to increase the health literacy of immigrants, and ensuring that immigrant women have appropriate access to maternity care services. In this review, it was aimed to investigate the childbirth education for immigrant women in the World and Turkey.

Keywords: Antenatal education, childbirth, migrant, pregnants, women, care.

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[1] Corresponding Author
Nurse, PhD Student,
zulal_soylu@hotmail.com
ORCID: 0000-0002-1265-7128

[2] *hande.yagcan@gmail.com*
ORCID: 0000-0001-9658-0449

[3]*bilgicdilek@gmail.com*
ORCID: 0000-0001-9569-8875

Introduction

The bond that people develop with their environment is extremely important and meaningful for that person. Therefore, migration can be one of the important factor that damage the bond between people and their environment. Migration has become an important problem since nation states and borders have existed. Migration is defined in the literature as a phenomenon with economic, social, political and cultural causes and consequences (Dedeoğlu ve Gökmen, 2020; Ekici ve Tuncel, 2015). According to the dictionary of international migration terms, migration is the movement of a person or group of people across an international border or within a state. It is a population movement in which people are displaced regardless of their duration, structure and reason. This includes the migration of refugees, displaced persons, people who migrate for economic reasons, and people who move for different purposes such as family reunification (International Organization for Migration [IOM], Migration Terms Dictionary. No: 31, 2013).

If the immigrant; whether migration is voluntary or involuntary for various reasons, temporarily or permanently, within a country or across an international border; It is the name given to the person who moves away from the place of residence regardless of the reasons for migration or how long the stay is. The term includes many defined categories of immigrants, such as migrant workers. These include legally defined persons such as illegal immigrants; international students can be given as an example (Ekici ve Tuncel, 2015). According to the World Migration Report published by the United Nations (UN), it was revealed that there were approximately 272 million international migrants in the world in 2019, which is equal to 3.5 percent of the global population. According to the same report, 48% of these immigrants are women and most of them are in their fertile age. Their 2.8% are children between the ages of 0-4 (IOM, 2020).

The vast majority of people do not migrate across borders, rather they migrate internally within the country. However, the increase in the number of international migrants has become evident over time, both numerically and proportionally, at a faster rate than anticipated (IOM, 2020; 2022). According to the 2019 report of the UN Department of Economic and Social Affairs (UNDESA), 141 million of international migrants live in Europe and North America. The United States of America (USA), which has more than 50 million international immigrants, is the country that hosts the most immigrants in the world. The USA is followed by Germany, Saudi Arabia, Russia and the United Kingdom. India, on the other hand, is placed first in the ranking of the countries that send the most immigrants with 17.5 million international immigrants. Mexico comes after India. The number of people immigrating from Syria has also exceeded eight million due to the civil war. A large number of European countries are also among the sending countries, including Ukraine, Poland, the United Kingdom and Germany.

Since 2019, there are 5 million 876 thousand 829 international immigrants in Turkey. The war, that started in Syria in 2011, has created the world's largest contemporary refugee crisis. The majority of Syrian refugees have fled to neighboring countries such as Turkey, where currently hosts the largest number of Syrian refugees in the world, and settled as refugees/asylum seekers (Acarturk et al.,2021). According to the migration statistics announced in Turkey on March 24, 2022; the number of registered Syrians under temporary protection increased by 7 thousand 917 compared to the previous month and reached a total of 3 million 754 thousand 591 persons. One million 785 thousand 690 of these people are children between the ages of 0-18. The total number of children and women aged 0-18 is two million 661 thousand 90 (Number of Syrians in Turkey, 2022).

1. Types and Causes of Migration

There are multiple reasons for migration, including economic, natural, political and social.

Economic reasons; It is the migration of people from regions where economic opportunities are not good enough to go to regions where conditions are better. For example, in the 1960s, labor shortages emerged in many Europe and many people migrated to European countries to work (Günay et al., 2017).

Natural reasons; These are the migrations in which people leave their place due to natural disasters such as earthquake, landslide, drought, desertification, flood, volcanic eruptions. For example, the 1999 Gölcük earthquake caused people to migrate to other regions (Varol ve Gültekin, 2016).

Political reasons; These are the migrations made as a result of reasons such as war, change of country borders with political agreements. For example, after the War of Independence, the exchange between the Greeks living in our country and the Turks living there as a result of the treaty is an example of political migration. In addition, the displacement of the majority of the population as a result of civil wars in countries such as Bosnia, Kosovo, Bulgaria and Iraq after the great dissolution in the early 1990s can be given as an example of political migration (Danış, 2004).

Social reasons; It is a type of migration that occurs as a result of reasons such as education, population growth, health and safety concerns. Example of this is a person's relocation to another country or city for educational purposes (Yılmaz, 2014).

2. Consequences of Migration Affecting Women's Health

Increasing global migration in recent years has also affected our country. However, the consequences are more severe, especially for women. Immigrants face more health problems due to problems such as access to health services, treatment and care, difficulties in housing, sanitation, economic situation, lack of health insurance, malnutrition and hygiene during and after the migration process. In addition, these individuals experience significant problems in national and international counseling, basic and preventive health services, diagnosis, treatment opportunities and access to drugs. Transportation and language barriers, social and psychological stress are also among the factors that negatively affect migrant/refugee health. Nutritional disorders, dehydration, food poisoning, reproductive health problems, hepatitis A, typhoid fever, fecal-oral diseases, airborne diseases, parasitic diseases and depression can be seen in immigrants/refugees (İldam Çalım et al., 2012; Turkish Medical Association [TMA], 2016; Tuzcu ve Bademli, 2014; İlhan et al., 2016; Söğüt ve Bilge, 2021).

Differences in mother tongue and ethnic origin cause an increase in chronic diseases, previous health problems, age, gender and duration of stressors can increase negative health outcomes. The effects of migration on women and women's response to migration stress are different from men's. Immigrant women are forced to cope with social obstacles, difficulties and poverty that adversely affect their health physically and psychologically, they are exposed to harassment, rape and violence, and sometimes they can be forced into prostitution. This situation increases the risk of depression, especially by affecting the mental health of women who have been forced to migrate, and puts these women in the risk group in terms of anxiety and post-traumatic stress disorders, unwanted pregnancies, unhealthy abortions, inadequate prenatal care and sexually transmitted diseases. (Çelik ve Sevil, 2016; Hacıhasanoğlu Aşılar ve Yıldırım, 2018; İldam Çalım et al., 2012; Mardinet al., 2020; Sudhinaraset, et al., 2019; Miller et al., 2007; Tuzcu et al., 2014).

In a study conducted in California, it was revealed that one in three immigrant women experienced trauma, more than half of the women were persecuted, and the language barrier in receiving health care was a major problem (Sudhinaraset et al., 2019). In a study of Latino

immigrants in South Carolina, participants cited the high cost of services (especially emergency services), lack of health insurance, family and work responsibilities, and language barriers as primary barriers to accessing health care. They stated that translation services, social support and low-cost prescriptions are among the factors that facilitate access to health services. In the study, one participant drew attention to the size of the financial barriers by saying "but you can pay to learn about your problem, not for treatment" (Luque et al., 2018). In other studies in the literature, it has been determined that migrant women have low use of family planning and birth control, and have difficulty in accessing health services and obtaining information about which they have little knowledge about family planning. In addition, it has been determined that they lack of information about sexually transmitted diseases and are not willing to take screening tests and treatment (Islam ve Gagnon, 2016; Salisbury et al., 2016; Zielinski et al., 2015).

Migrant women are at higher risk during pregnancy and childbirth due to the difficulties created by migration and need more health care. Premature birth, pregnancy and delivery complications are seen in these women who cannot access health care services, and these women may face the risk of home birth (Yağmur ve Aytekin, 2018). It has been determined that the rate of migrant women receiving pre-pregnancy and antenatal care, giving birth in a health center is low, and they benefit less from postnatal care and reproductive health services (Islam et al., 2016). In prenatal care, the primary goal is to ensure the birth of a healthy baby, to reduce maternal risks, to identify pregnant women at risk for complications, to predict and prevent problems. It is stated that providing training to immigrant women with courses and pregnant schools raises health awareness in pregnant women, increases the mother's power to cope with pregnancy and labor problems, provides confidence during childbirth and reduces anxiety (Dinç et al., 2015).

In this article, it is aimed to examine the examples of pregnant schools conducted for immigrant women in the world and in Turkey in line with the literature.

3. Examples of Pregnant Migrant Schools in the World

As a migrant woman, it is not possible to understand the healthcare system in the country without knowing the local language, while it is quite difficult even for the local people. Especially in European countries, there are health guides prepared in different languages for immigrants. These guides briefly explain in-hospital referrals and important information and direct immigrants to the addresses they need. Thus, guides ensure that immigrant citizens, regardless of their origins and cultural characteristics, know how to take care of their health and where to go when they have health problems (Bässler, 2016; Higginbottom et al., 2015).

Compared to other countries in the world, it is seen that immigrant women are provided with health care in their mother tongue and culture respectfully more in European countries (Frauenklinik, 2022; Santépsy, 2022). As a result of the researches, it has been revealed that in countries such as Germany, Switzerland and Austria, especially from European countries, the cultural identities and mother tongues of immigrant women are less barriers, equality of opportunity is provided to a certain extent, and they contribute to their benefit from reproductive health and preventive health services. There are childbirth education classes, counseling units and information brochures in languages such as English, German, French, Spanish, Arabic, Kurdish, Albanian, Hindi, Russian, Ukrainian, Serbian, Croatian, Turkish, Tamil, Persian and Tigri (Sicilian). Counseling services are provided in all kinds of issues, from pre-pregnancy care to postpartum depression. In these consultancy centers, which are generally opened by midwives and supported by the municipality, there are intercultural translators and telephone lines where they can get consultancy services 24/7 in

their own language to prevent translation errors (Bässler, 2016; Frauenklinik, 2022; Santé Sexuelle Suisse, 2017; Pala, 2016; Mamamundo, 2022; Santepsy, 2022).

Free translation services are provided in many public hospitals in Switzerland and Germany, and instant translation service is also available over the phone. In a childbirth education for immigrants, which is carried out in the company of a midwife and cultural translator at Basel University Hospital in Switzerland, consists of a total of 12 hours (6 x 2 hours), is held between 18.00 and 20.00, and provide counseling service by phone. In this training, information is given on pregnancy, birth, breastfeeding and the first time at home with the child, and they are prepared for birth with physical exercises and relaxation methods. Amount of the education fee is covered by the participating immigrant mothers, and rest of it is covered by health insurance. In another course conducted in Switzerland, birth preparation training is given to immigrants in 19 different languages, where prenatal childbirth education classes are conducted by a midwife in six groups with the help of a community interpreter. In these trainings, information is given on the development of the baby, the mother's health, birth, parenting role, baby care, breastfeeding, useful facilities for the baby and the family (Frauenklinik, 2022; Santépsy, 2022; Panmilar, 2022).

A midwife also conducts the pregnancy training class organized with the support of the municipality in the Frauenklinik hospital in Germany, and in the training information about the pregnancy process, birth, coping with labor pains, birth positions, postpartum period, post-hospital care is given and at the end of the training maternity service and the room where they will stay after birth are visited. The course is given on weekdays between 14.00- 16.30 in Arabic, Tigrinya, Turkish, Tamil and French languages and offered for a fee. It is stated that if the migrant woman wishes, she can apply to health insurance for the course fee and a discount can be provided. According to the "Maternal Health" guide prepared in 7 languages for immigrant women in Germany, women should start childbirth education classes from the 6th or 7th month of pregnancy, and obstetricians do not take care of women who do not attend these classes (Frauenklinik, 2022; MİMİ, 2019).

In the health guide prepared by the Red Cross in Switzerland in 18 languages, it is stated that immigrant women can get free information from their midwives and doctors in the counseling units when they realize that they are pregnants, medical examinations, childbirth education course, maternity-postpartum care services at hospital and home are covered by the immigrants' health insurance and these institutions work with a partially free intercultural translator. It was also stated that immigrants should learn what kind of health insurance they have from their employers, because mothers can receive eighty percent of their prenatal salary for 14 weeks after giving birth (Swiss Red Cross, 2017).

In Austria, there is a health brochure titled "Startklar" prepared in Turkish by the State of Vienna's Ministry of Health, which contains information about preparation for childbirth, pregnancy, birth and parenthood. In this brochure has been stated that, paid counseling can be obtained from midwives in the country, the City of Vienna has family midwives that provide free services, immigrant women should apply to the hospital where they want to give birth between the 6th and 12th weeks of pregnancy, should attend the birth preparation classes at the 17th-20th weeks of pregnancy, could visit the delivery units of the hospitals, their spouses or one of relatives can accompany their childbirth, to be discharged early after delivery in hospitals is not possible, and midwife continue home visits for five days after delivery (Frauen-Vienna Women's Health Program, 2022).

A childbirth education class was designed for Spanish-speaking Latino immigrant women living in rural areas within the scope of the master's thesis prepared by Calleson and Drostin (2010) at the University of North Carolina in the USA. In this program, it is foreseen that the educators will consist of nurses and health personnel and their training will last for four months, and the weekend travel time and expenses required for training materials and

childbirth preparation class training are also taken into consideration. It has been stated that the pregnant trainings will start in the eighth month in the presence of a translator and will consist of five two-hour sessions, and will be planned for evenings or weekends.

Pregnant women can participate in these trainings alone or accompanied. Immigrant women benefit from most of the childbirth education classes at a discount, they pay a small part themselves and the rest or the whole fee is covered by their health insurance. In these trainings, there is no general regulation about at which stage of pregnancy it is appropriate to attend birth preparation training, and it is recommended to attend these trainings starting from the 5th, 6th or 7th month of pregnancy. Participation in the birth preparation course is not compulsory. Pregnancy process, relaxation exercises, breathing techniques, birth and positions, advantages and disadvantages of gynecology centers, items to be brought to the hospital, breastfeeding, newborn care and health checks, postpartum period, gymnastics and depression are explained to expectant mothers in the course. Expectant mothers can attend these courses alone or with a relative. Courses offered by midwives are also covered by many health insurances (Frauenklinik, 2022; Pala, 2016; Mamamundo, 2022).

In Kazik's (2016) study, it was stated that doulas who can speak the same language as immigrant women and have a command of their culture will increase the satisfaction of perinatal and postpartum period care of the women, and will ensure that immigrant women receive care that is sensitive and respectful to their culture by establishing a cultural bridge between them and clinical staff. As a result of the study conducted by Lutenbacher et al. (2018) by making home visits to pregnant Hispanic women in Tennessee with their peer mentors for six months within the scope of the Maternal Baby Health Outreach Worker (MIHOW) program, women's breastfeeding self-efficacy increased, they developed safe sleep practices and baby stimulation at home, their depressive symptom and parenting stress levels were decreased. Byrskog et al. (2019) conducted focus group interviews with the Hooyo Project in Sweden, in which they determined the expectations and cultural needs of Somali migrant mothers from antenatal care. and aims to provide the most appropriate care to migrant women and to improve maternal and infant health outcomes.

4. Childbirth Education for Migrant in Turkey

Refugee women in Turkey face many problems during birth and pregnancy, especially language barriers, and this reduces the quality of prenatal and postnatal care (Dağ, 2017; Aksu et al., 2021; Pregnant School, 2019).

It was determined that immigrant women experienced breastfeeding and milking problems, negative birth experience and trauma, could not communicate with health personnel at birth, and health personnel, patients and their relatives applied physical and verbal violence to each other. In addition, it is stated that these women suffer from malpractice as a result of erroneous translations due to the inability to reach interpreter support in hospitals and the use of other patients and their relatives for translation (Dağ, 2017; Aksu et al., 2021).

After determining the risks that this situation may pose, Esenler Maternity Hospital and the International Doctors Association (AID, 2019) started a Pregnant School project for refugee women in 2017 as a joint effort. Within the scope of the project, four training session, which includes question and answer sessions, were organized by midwives accompanied with Arabic consecutive translation, for pregnant women, about women's reproductive health, pregnancy, antenatal and postnatal care, mother-baby health, access to health services in Turkey and pregnancy during the Covid-19 period. By this way, it was tried to facilitate the physical and mental adaptation of the participants to the pregnancy and childbirth processes. In addition to educational services, referral and information sessions were also held for pregnant women who had medical, social support or more complicated problems during

pregnancy. The project started in 2017 and lasted until July 2019 and were reached 239 women within the scope of it. Due to the pandemic, these trainings continued to be held online as of June 2020 (Pregnant School, 2019).

There is no data in the literature about the content of the education that many immigrant women receive in units such as childbirth education class/ pregnant school, the way it is transmitted, the language and methods used, and their experiences in accessing and benefiting from health care services, positively or negatively. In order to improve the health services provided to immigrant women, it is important to receive feedback from these women and to develop modern strategies to overcome the negativities in these reports. Lack of language support, cultural insensitivity, discrimination, inadequate communication between health professionals, financial aid, and lack of legal authorization and guidelines for prenatal care services are among the most important factors that migrant women will be adversely affected by the health services they receive. Health professionals' knowledge, understanding and attitudes are a critical determinant of care, and they need to have greater cultural awareness of the needs of various refugee groups (Tortumluoğlu, 2004; Kaufmann et. al, 2020).

It is seen that prenatal care practices for migrant women are insufficient worldwide and in our country. This inadequacy can be explained by increasing the available social assistance and allowances for immigrants, providing awareness trainings to increase the health literacy of immigrants, assigning cultural doulas, making home visits, shooting informative videos-films, developing mobile applications, having tablets in the services where you can watch images about birth in their own language, It is thought that the establishment of health and parenting schools can be overcome by ensuring that immigrant women have appropriate access to maternity care services (Smith et al., 2016; Nyström et al., 2022).

Results and Discussion

As a result of the literature review, only one pregnant school opened for Syrian immigrants has been reached in our country, and it is seen that the education of immigrants generally does not go beyond what is described in the antenatal follow-up made by the physician. Although there are childbirth education classes for immigrants conducted by non-governmental organizations, municipalities and maternal and child health units in our country, it is not known because they are not included in social media and scientific articles. Besides, in many European countries, in addition to antenatal follow-up, immigrant women benefit from childbirth education classes in their mother tongue, and this education is given to women in accordance with cultural care (Pregnant School, 2022; Frauenklinik, 2022; Santépsy, 2022).

The legal and political context appears to be important in addressing the maternity care needs of migrant women. It seems imperative to universally embrace the goal of achieving optimal maternity care for all, as demonstrated by current policies. Although these opportunities are offered to migrant women in many countries, women face barriers to accessing health services such as lack of information, lack of awareness, insufficient support and failure to meet expectations. When the migrant childbirth education programs offered by the countries are examined, it has been seen that there are differences in the subjects of education, duration, trainer features, interpreter support, and pricing, and they are usually carried out in hospitals (Grauenklinik, 2022; Frauenklinik, 2022; Santépsy, 2022). In research projects, it is seen that immigrant childbirth education classes are planned in time periods focused on culture and needs, if possible with cultural doulas/migrant midwives-nurses, including rural areas, home visits, evening and weekends, as well as supporting spouse participation (Byrskog et. al, 2019; Calleson & Drostin, 2010; Kazik, 2016; Lutenbacher et

al., 2018). It is thought that the fact that the migrant childbirth education classes are held on weekdays and during working hours may cause the spouses of migrant women to not be able to attend, the partial interpreter support provided will reduce the comprehensibility of the information provided, and the paid courses may also reduce participation. As in our country, the absence of translators in obstetrics clinics will reduce the satisfaction of mothers in maternity care.

Studies show that the rate of migrant women receiving prenatal education is very low. In the study of Dadras et al. (2020), it was determined that only 36% of immigrant women received the necessary antenatal care. In addition, it was stated that among the immigrant women, those with a high level of education, good income, residing in the country for a longer period of time and having legal immigrant status received more antenatal care. In a study in which the effect of internal migration on women's health in our country was investigated, it was found that the rate of benefiting from health care services before, during and after birth increased when women migrated from disadvantaged regions to a developed region (Aksu et al., 2021). In another study, it was determined that the illegal accommodation of immigrant women prevented them from going to the necessary education classes and pregnancy controls, and that these women did not have information about antenatal care classes and courses (Phillimore, 2020).

Despite the current migrant-friendly pregnant schools and the maternity services provided, many migrant women experience negative childbirth. Communication problems experienced by immigrant women in the health care system, their unfamiliarity with the health system of the country they come from, and the discriminatory and disrespectful care behaviors of health workers negatively affect their birth experiences (Dağ, 2017). Postpartum depression is frequently seen in immigrant women due to negative birth experience, lack of social support, social isolation, language barrier, inability to express their feelings, negative experiences with health workers (forced discharge, etc.), pressure from economic problems and visa problems (Dağ, 2017; Higginbottom, et al., 2015; Small et all., 2014). Considering the current situation in our country, considering the fertility rate of migrant women, there are no adequate and adequate number of birth preparation classes for Syrians and immigrants from other countries.

According to the Turkish Medical Association (2016) report, the statements of a Syrian woman regarding the current situation in our country are as follows; "*We have a problem in healthcare. There are no female doctors. Seeing a male doctor is not in line with our belief. Sometimes we cannot explain our problem to the doctors. We have a translation problem. I realized later that someone from the previous doctor gave me a birth control pill due to a wrong translation, when he should have given me flu medicine".*

In order to improve the health status of migrant women; It is recommended to evaluate health behaviors, review their beliefs and lifestyles, and organize trainings by healthcare professionals, taking into account cultural differences in areas that are inadequate. Ensuring that immigrant women benefit from antenatal care services, accessibility and acceptability of these services is very important for maternal and infant health. Although these opportunities are offered to migrant women in many countries, women face barriers to accessing health services such as lack of information, lack of awareness, insufficient support and failure to meet expectations. Culture-based, respectful and adequate care should be provided and developed for migrant women in obstetrics clinics. Midwives and nurses should try to teach migrant women more about their rights to care, available maternity services and how to refer them. Women should be allowed to participate in care decisions. In addition, childbirth education courses given to immigrant women in their mother tongue or accompanied by an interpreter should be expanded, the expenses of these courses should be covered by the state, and migrant midwife, nurse or doula support should be provided before, during and after the

birth. It is recommended that women be guided within the hospital in their mother tongue, and brochures about the health system and necessary care should be distributed. In this way, it will be possible for immigrant women to regularly come to antenatal check-ups, have screening tests, decrease maternal and fetal mortality rates, avoid postpartum breastfeeding and depression problems, and access information and services regarding the methods required for family planning.

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