



Strategic analysis of household hazardous waste reduction

¹Reza Ganjali, ²Zahra Negaresh, ³Mohammad Taghipour

¹ Department of Safety, Health and Environmental Engineering, Faculty of Engineering and Industrial Safety, Institute of Higher Labor Education, Qazvin, Iran

²Department of Safety, Health and Environmental Engineering, Faculty of Engineering and Industrial Safety, Institute of Higher Labor Education, Qazvin, Iran

³ Sohrvardi Institute of Higher Education, Qazvin, Iran

ABSTRACT: The discussion of household hazardous waste management became important since the potential dangers of their entry along with other wastes into the urban waste flow on human health and the environment were revealed. In the metropolitan city of Tehran, household hazardous waste is buried in the processing and disposal complex due to lack of proper and efficient management and without taking any action on it. In this research, an attempt is made to study the strategies, plans, facilities and equipment used in the management of household hazardous waste, as well as the current flow of urban solid waste in Tehran and also according to the ruling system on waste management and the position of household hazardous waste in it, it should help recycling.

KEYWORDS: household hazardous waste, valuable dry waste, strategy.

1. INTRODUCTION

The presence of some hazardous waste materials in household waste, although it may be a small percentage of all these wastes, but this amount, in case of entering the urban waste stream, requires purification and decontamination before entering the final stage, i.e. sanitary burial. In addition to the large cost that will be spent on doing this work. If it is not implemented, it will have many environmental consequences and risks for human health. In the current waste management of Tehran city, this category of waste is considered a part of urban solid waste, but on the other hand, due to having at least one of the properties of toxicity, pathogenicity, explosive or flammability, and corrosiveness, they are considered a part of hazardous waste which makes it inevitable to consider a special position for the management of this category of waste under the title of household hazardous waste management.

2. STATEMENT OF THE PROBLEM

The increase in urban population, the development of industry, the change in consumption patterns, the tendency to seek welfare and many other factors and indicators have caused us to witness the growing trend of environmental pollution and its complications directly and indirectly in life. Some of these environmental and health pollutions or the consequences and complications resulting from it can be irreparable. In the metropolitan city of Tehran, with a population of over 10 million people, more than 7000 tons of waste or urban waste are produced daily, which can upset the ecological and ecosystem balance of this city. In order to deal with this huge volume of wastes and solve the environmental problems caused by them, identify their composition and benefit from new urban solid waste management systems and use methods and technology appropriate to the type and amount of wastes, with The approaches of reducing production, separation at the origin and increasing the capacity of processing and recycling make it inevitable. Currently, the composition of waste in Tehran is more than 60% wet waste and 40% dry waste. (Materials Recycling and Conversion Organization, 1387, physical and chemical analysis of waste in Tehran). In the meantime, the discussion of those household product residues that are known as hazardous household waste due to having at least one of the dangerous properties such as toxicity, explosive or flammable, corrosiveness and reactivity is also very important. According to the physical analysis of waste carried out in 2087 by the Tehran Municipal Materials Recycling and Conversion Organization and the 2.1% share of this waste from the total urban waste in Tehran, it can be acknowledged that about 4,670 tons of hazardous household waste are generated annually by citizens along with other Household waste is thrown away. Therefore, the management and disposal of these wastes should be done according to the principles of management and disposal of hazardous waste materials and mainly with the approach of reduction from the source of production, so that the environmental risks of these wastes can be reduced as much as possible.

3. IMPORTANCE OF THE RESEARCH

The increasing trend of household hazardous waste production and its lack of proper and legal management in the metropolis of Tehran, regardless of the fact that these wastes constitute 2.1% of the urban waste in Tehran regions,

the need to achieve correct management solutions in all its stages (production, storage, collection, transfer, processing and disposal) is necessary. For this purpose, first by identifying and classifying these wastes and providing information on their quantity and quality, methods of storing them on site, reducing their production and replacing them with safer substitutes, reusing and recycling them, machines and Identified the tools needed to neutralize them and by presenting proposed management solutions to the relevant bodies of Tehran, he acted to eliminate its weaknesses and shortcomings.

4. A REVIEW OF RESEARCH HISTORY

- Taghipour et al. [1], studied Risk analysis in the management of urban construction projects from the perspective of the employer and the contractor.
- Mahboobi et al. [2], discussed Assessing Ergonomic Risk Factors Using Combined Data Envelopment Analysis and Conventional Methods for an Auto Parts Manufacturer. occupational injuries are currently a major contributor to job loss around the world.
- Taghipour et al. [3], studied The Impact of ICT on Knowledge Sharing Obstacles in Knowledge Management Process (Including Case-Study).
- Khalilpour et al. [4], studied The Impact of Accountant's Ethical Approaches on the Disclosure Quality of Corporate Social Responsibility Information an Islamic in Iran.
- Mirzaie et al. [5], studied The Relationship Between Social Bearing Capacities with Conflict as a Result, in the Perception of the Visiting Historical Sites
- Alamdar khoodaki et al. [6], studied Taghipour et al. [8], studied Effect of integrated marketing communication on brand value with the role of agencies reputation (including case study).
- Taghipouret al. [7], studied A Survey of BPL Technology and Feasibility of Its Application in Iran (Gilan Province).
- Seddigh Marvasti et al. [8], studied Assessing the Effect of the FRP System on Compressive and Shear Bending Strength of Concrete Elements.
- Jalili et al. [9], studied Utopia is considered to be the physical form of an ideal human society where the goals are met.
- Taghipour et al. [10], studied Insurance Performance Evaluation Using BSC-AHP Combined Technique.
- Rezvani Befrouie A et al. [11], discussed the design of high-rise building with ecological approach in Iran (Alborz Province).
- Taghipour et al. [12], studied The identification and prioritization of effective indices on optimal implementation of customer relationship management using TOPSIS, AHP methods.
- Taghipour & Yazdi. [13], studied Seismic Analysis (Non-Linear Static Analysis (Pushover) and Nonlinear Dynamic) on Cable-Stayed Bridge.
- Taghipour et al. [14], studied" Investigating the Relationship between Competitive Strategies and Corporates Performance (Case Study: Parsian Banks of Tehran)".
- Taghipour & Moosavi. [15], studied A look at Gas Turbine Vibration Condition Monitoring in Region 3 of Gas Transmission Operation.
- Rahmani et al. [16], studied Providing Health, Safety and Environmental Management (HSE) program in Metal Mining Industry (Including Case study).
- Taghipour and Vaezi. [17], studied Safe Power Outlet.
- Tarverdzadehet al. [18], studied Predicting students' academic achievement based on emotional intelligence, personality and demographic characteristics, attitudes toward education and career prospects through the mediation of academic resilience. *Scientific Journal of Education Research*, 2021, Vol. 16, Issue 65, pp.171-186.
- Azarian and Taghipour. [19], studied The Impact of Implementing Inclusive Quality Management on Organizational Trust (Case Study: Educatin).
- Ghadamzan Jalali et al. [20], studied Explain the Relationship Between Intellectual Capital, Organizational Learning and Employee Performance of Parsian Bank Branches in Gilan province.
- Mohammadi et al. [21], studied Investigating the role and impact of using ICT tools on evaluating the performance of service organizations.
- Abdi Hevelayi et al. [22], studied Predicting Entrepreneurial Marketing through Strategic Planning (Including Case Study).
- Arsalani et al. [23], studied" Investigating the Effect of Social Media Marketing Activities on Brand Awareness".
- Khorasani et al. [24], studied The Location of Industrial Complex Using Combined Model of Fuzzy Multiple Criteria Decision Making (Including Case -Study).
- Taghipour & Ahmadi Sarchoghaei. [25], studied Evaluation of Tourist Attractions in Bourujerd County with

Emphasis on Development of New Markets by Using Topsis Model.

- Molavi and Taghipour. [26], studied Electric car and examining the advantages of this type of car.
- Taghipour et al. [27], studied Study of the Application of Risk Management in the Operation and Maintenance of Power Plant Projects.
- Taghipour et al. [28], studied Evaluation of the Relationship between Occupational Accidents and Usage of Personal Protective Equipment in an Auto Making Unit.
- Hoseinpour et al. [29], studied The Problem Solving of Bi-objective Hybrid Production with the Possibility of Production Outsourcing through Imperialist Algorithm, NSGA-II, GAPS0 Hybrid Algorithms.
- Baghipour sarami et al. [30], studied Modeling of Nurses shift work schedules According to Ergonomics: A case study in Imam sajjad(As) Hospital of Ramsar.

5. RESEARCH QUESTIONS

The current research is based on the following questions:

1. What is the current management of household hazardous waste?
2. What is the necessary infrastructure to collect, recycle and dispose of these wastes?

6. RESEARCH METHOD

The act of research is a continuous activity to extract the truth and discover the cause and effect relationships of a problem. What is meant by the research method is actually the framework or format that accommodates the study. In this research, the methods used include library research, internet research, field study, and obtaining statistics and information from organizations in charge of waste management. In the library method by referring to documents, documents, reports, books, magazines and articles related to the research topic and in internet research by searching in the pages and sites related to the management of household hazardous waste to gather information in the direction of Knowledge and how to manage these wastes was collected. In a field study, by attending one of the dry waste management centers in Tehran city, it was possible to investigate how and how the waste management in Tehran is based on the information obtained from library and internet searches. Then, by referring to the organizations in charge of waste management and obtaining information and statistics regarding the status and condition of the subject under study in the past and at present, and by comparing the results obtained from the above research, by examining the current solutions and comparing them with the solutions obtained by the researcher, the optimal solution was selected.

7. EXAMINING THE CURRENT STATUS OF WASTE IN TEHRAN

One of the important issues and problems of urbanization is the growing trend of producing all kinds of wastes, which as a result of the indiscriminate increase in population, indiscriminate and unprincipled urban development, increased immigration, the wrongness of the common consumption pattern of citizens, etc., leads to an ever-increasing production. Waste has become in the cities. For this purpose, a solution should be thought of to solve this problem and basic measures should be taken using appropriate methods to return some of these materials to the production cycle, otherwise we will face environmental problems in the not too distant future. Currently, more than 7,000 tons of waste are produced daily in Tehran city (general statistics of waste management of Tehran city in 2017, urban services deputy area, recycling and conversion organization of Tehran municipality), among which the share of dry waste from The total production waste also reaches more than 600 tons per day (general statistics of waste management of Tehran city in 2017, the field of deputy city services, organization of recycling and conversion of materials of Tehran municipality). The significant value of separating dry waste at the source and energy production from waste in terms of environment, health and economy on the one hand and the impossibility of burying this amount of waste produced in the processing and burial complex and the necessity of sanitary and correct burial on the other hand, adopting a strategy appropriate and appropriate executive planning is inevitable for the waste management of Tehran city.

8. SOURCES OF WASTE PRODUCTION AND THEIR CLASSIFICATION

Based on the origin of production and the method of burying waste, they can be divided into the following types: (Urban solid waste management system and its control methods, 2014, p. 43)

- Homemade
- Healthcare
- Industrial and dangerous industrial
- Soil and construction debris
- Government offices
- Open areas (green spaces and parks)

8.1. Household waste

It includes normal household waste, additional materials left in cooking and nutrition processes, green space waste, fruit and vegetable waste, waste from restaurants, food stores, fruit and vegetable fields, etc. Usually, household waste is divided into three parts:

- 1- Wet waste
- 2- Dry waste
- 3- Burial or dangerous materials

8.2. Wet waste

This type of waste, which includes 61% of household waste, is food, fruit and vegetable waste. The property of high perishability, due to the humidity of about 70% in this group of wastes, it is necessary to collect them in the shortest possible time. Proper collection and storage of wet wastes during a correct management in order to recycle them can change the nature of these wastes in the form of vegetable fertilizer (compost) into a useful and usable element.

8.3. Dry waste

Despite the diversity that governs this group of waste materials, only about 31% of household waste has been allocated to them, which includes paper and cardboard, glass, plastic, and metals such as iron, aluminum, copper, bronze, zinc, steel, and cast iron includes. Separation of wet waste from dry waste in the same place of waste production provides the possibility of recovery of dry waste, which has a significant economic value.

- **Special waste**
About 1/2% of Tehran's waste is made up of special hazardous waste such as electric batteries, fluorescent lamps, shaving razors, gas lighting nets, etc.
- **Health and medical waste**
The wastes resulting from the activities of health and treatment centers, hospitals, clinics, doctors and dentists' offices, medical diagnostic tests are called hospital wastes or health wastes and according to the definition of the General Department of Occupational Health of the Ministry of Health, Treatment and Medical Education, they are wastes. Infectious includes all fabrics and clothing contaminated with blood, etc., and gauze and cotton used for dressings, laboratory samples and relevant culture media, plastic items such as catheters, gloves, urine bags, syringes and dialysis filters, etc.
- **Hazardous industrial waste**
According to the definition of the US Environmental Protection Agency, hazardous waste materials include waste materials or a combination of waste materials that can endanger human health and other living organisms for the following reasons.
 - 1- They are stable in nature and biologically non-degradable in the environment.
 - 2- Have a cumulative effect or destructive effects.
 - 3- Have the power of biological expansion.Hazardous wastes are generally divided into five groups as follows:
 - 1- Radioactive materials
 - 2- Chemical materials
 - 3- Biological waste materials
 - 4- Combustible waste materials
 - 5- Explosive waste materials
- **Soil and construction debris**
Soil and construction debris: solid waste materials that are obtained from activities such as construction, renovation, repair and demolition of buildings are included in the construction debris group, which includes plaster and bricks, concrete, blocks, metal parts, wood, insulation materials. It includes non-asbestos materials and materials, etc. The production of dirt and refuse in Tehran has exceeded the production of household waste in this city and has included a sheet amounting to 16 million tons per year.
- **Residue characteristics**
In order to identify the quality of solid waste in Tehran city, physical and chemical analysis of the waste was included in the agenda of Tehran Municipal Materials Recycling and Conversion Organization. The physical analyzes carried out in 2012 and 2017 have made a significant contribution in identifying the composition of Tehran's waste and as a result, providing management solutions by the organizations and institutions in charge of Tehran's waste management.

9. CLASSIFICATION OF WASTE

During this analysis, the wastes were divided into two more general and dry categories, and the dry wastes were also divided into 19 categories, which include the following:

Dry bread, plastic, PET, linoleum, paper, cardboard, iron, non-ferrous metals, rubber (as valuable dry waste) and talc, foam, cloth, glass, wood, leather, soil, Tetrapak, special and others (as waste non-valuable dry - burial waste). In the separation of special, plastic, other and talc wastes according to the analysis instructions, the following wastes are included in this category.

1 - Special waste

* (infectious and dangerous):

- baby diaper
- Sanitary pads
- Cottons contaminated with blood
- Gases used for surgeries and wounds
- Used wound adhesives
- Used sanitary napkins

Paper napkins stained with blood and...

* Waste contaminated with chemicals

Medicine bottles (syrup)

- Empty containers that previously contained laboratory chemicals.
- Tubes of toothpaste, beard paste, hair dye, etc.
- Photographic films
- Radiology films

Containers containing oxidants, varnishes, various colors, etc.

- Types of ointments

* Sharp and winning residues

- Shaving razors
- Surgical cutters
- Heads of syringes
- Types of needles
- Jars of all kinds of injectable ampoules
- Jars of all kinds of human and animal serums
- Jars containing chemicals and poisons

* Waste containing heavy metals

- Types of batteries
- Types of fluorescent lamps
- Types of insecticides
- Types of sprays and deodorants 2
- All kinds of painting and paint sprays
- Different car batteries
- Types of CDs (CDs and DVDs)
- Waste of electrical industries and repairs of radio and television, VCD and DVD players.

2- Plastic waste

- Types of plastic polymers
- PE
- Polypropylene
- Polystyrene
- Polyvinyl chloride and...

3- Other waste

- Types of labels
- Holograms
- Sheets
- Types of foils
- Types of cellophane
- Cork

In this analysis, the information related to special wastes was completed in a separate tables (Table No. 1-4) from the samples collected in the regions. The results obtained from the Tehran Municipal Materials Recycling and Conversion Organization regarding the amount of special waste from four areas 13, 2, 9 and 21 respectively located in the east, north, south and west of Tehran in the third stage of analysis in March 2018 it is presented as follows:

Table1. The results of the third stage of special waste analysis in region 13

Total Weight	Total Weight	Total Weight	Total Weight	Total Weight
9042	3453	2352	880	0
3337	1766	1321	245	0
3214	1521	723	0	950
3950	1432	518	879	1124
5481	2137	744	1651	971
8354	4515	2839	850	141
10122	5432	2000	275	2415
5242	2372	1005	0	1400
5945	3852	445	320	1321
8009	4172	1500	837	2322
4837	3415	570	351	502
67533	34067	14017	6288	11146
Percentage	50.4%	20.8%	9.3%	16.5%

Table2. The results of the third stage of special waste analysis in region 2

Total Weight	Total Weight	Total Weight	Total Weight	Total Weight
5415	3382	1115	138	780
3519	1420	1080	220	799
5735	3900	448	459	928
5529	1489	1945	945	1150
6379	2874	1980	890	635
8385	3985	2860	325	1215
4761	1890	1450	503	918
7687	2914	2383	710	1680
6550	2760	2268	409	1113
4961	1868	1718	518	857
58921	26482	17247	5117	10075
Percentage	44.9%	29.3%	8.7%	17.1%

Table3. The results of the third stage of special waste analysis in region 9

Total Weight	Total Weight	Total Weight	Total Weight	Total Weight
1795	969	723	4	99
895	67	728	48	52
2728	1594	1038	47	49
1460	220	1176	46	18
3190	1905	1127	41	117
1629	539	1016	54	20
1969	1335	410	8208	16
2258	1469	657	54	78
3689	2875	697	3	114
1818	1369	385	64	0
21431	12342	7957	569	563
Percentage	57.6%	37.1%	2.7%	2.6%

Table4. The results of the third stage of special waste analysis in region 21

Total Weight	Total Weight	Total Weight	Total Weight	Total Weight
134	49	36	49	0
779	459	314	6	0
384	79	292	13	0
306	242	64	0	0
462	286	121	55	0
70	50	20	0	0
446	358	58	30	0
115	100	10	5	0
1060	55	970	0	35
200	65	130	5	0
3956	1743	2015	163	35
Percentage	44.1%	50.9%	4.1%	0.9%

According to the results obtained from the comparison of four groups of special wastes from the four regions mentioned below, it is possible to achieve this importance that, respectively, infectious and sanitary wastes, wastes contaminated with chemical substances, sharps and sharps wastes, and wastes containing heavy metals They are the constituents of this category of urban waste.

- Infectious and sanitary waste with allocation of about (60%-40%)
- Wastes contaminated with chemicals with allocation of about (40%-20%)
- Sharp wastes and winnings with allocation of about (20%-5%)
- Wastes containing heavy metals with an allocation of less than 5%

In the general review of this analysis (Table No. 1-2), 61.3% of Tehran's waste is wet waste and the rest is dry waste. In this analysis, special wastes (both municipal and household) are estimated at 1.2% of the total wastes of Tehran city.

10. RESULTS

By looking at the general waste management statistics of Tehran city in the years 2015, 2016 and 2017 provided by the Tehran Municipal Material Recycling and Conversion Organization (Table 22-3), we find that Tehran city with the figure of urban waste production from more than 6000 areas Every day, people face one of the challenges of urban management, which in the absence of proper planning regarding the correct management of this problem, will face many environmental problems. According to the analysis carried out in 2007, the current composition of waste in Tehran is estimated as 61.3% organic waste (perishable), 31.6% valuable dry waste that can be recycled, and 7.1% non-valuable dry waste that cannot be recycled. The share of special wastes, both domestic and non-domestic, in Tehran is 2.1%.

Table5. General statistics of waste management in Tehran in the last years 85, 86 and 87 in terms of tons per day

Year	1385	1386	1387
Production of urban waste in the regions, considering wood, sludge and branches	6777	6719	6881
Collected dry waste	227	261	613
The percentage of valuable dry wastes collected from all urban wastes in the regions, except for sludge, wood and branches processing	3.3	4.5	10.5
Burial in trenches	909	808	928
	6434	6519	6630

Source: Coordination and Planning Deputy, Statistics and Information Management, Tehran Municipality Material Recycling and Conversion Organization

According to the composition of the wastes of Tehran city, if the equipment and facilities for separating wet and dry wastes from the source are provided, a great help will be made in the recycling and sanitary disposal of the wastes, and in this way, it is possible to prevent the pollution of the environment and the loss of national capitals.

Considering the six elements of urban waste management in the production, storage, collection, transfer, processing and disposal sectors, it can be said that by classifying household hazardous waste and identifying its components, only a small step in identifying sources and the amount of their production has been done. Regardless of the identification of these wastes, taking into account the approaches of reducing production and segregation at the source of waste considered by the management of the metropolitan city of Tehran in order to reduce production and consumption and as a result of producing less waste, no legal action and No action has been taken in this regard. As a result of the absence of any kind of solution and executive and legal requirement regarding these wastes, no facilities for their management have been foreseen and implemented in the departments of storage, collection, transfer and processing. These wastes, having a share of 2.1% of the total wastes of Tehran city (Physical and Chemical Analysis of Waste - Material Recycling and Conversion Organization - 2017) with a production amount of about 12,840 tons per day, are finally placed in the urban waste stream at the burial stage. And they enter the burial cells along with other wastes. By examining the current situation of household hazardous waste management in Tehran and comparing it with other countries with experience in this matter, the lack of a management position for this particular type of waste is more evident than before.

Considering the principle of sustainable development and the importance of preserving resources on the one hand and preserving the health of citizens on the other hand, it is necessary to pay attention to this issue. In the first place, the vacuum of the law and the lack of an expert and comprehensive definition of household hazardous waste will face the waste management of the city of Tehran with an implementation problem in this regard. It is necessary to establish laws and executive instructions by legal authorities such as the Majlis and the Islamic Council of Tehran to establish the management of these wastes. These laws should be able to determine the location of household hazardous wastes, which have properties such as explosiveness, reactivity, corrosiveness, and toxicity, as hazardous wastes, and require special care, and are now managed in the waste management of the city of Tehran like other urban solid wastes lead to proper management. Since the most important step in managing these wastes is complete identification and classification and having sufficient and appropriate information about the amount and quantity of these wastes, using the opinions of experts and providing an accurate definition of hazardous household wastes and its components in the waste management law can be used to eliminate this deficiency and properly implement household hazardous waste management.

11. CONFLICTS OF INTEREST

The authors declare that there is no conflict of interest regarding the publication of this article.

12. FUNDING

This research received no specific grant from any funding agency in the public, commercial or not-for-profit sectors.

REFERENCES

- 1) Taghipour .M; Seraj. F; Amir Hassani .M; Farahani Kheirabad.S." Risk analysis in the management of urban construction projects from the perspective of the employer and the contractor". International Journal of organization Leadership. 2015, 4, 356-373.
- 2) Mahboobi .M; Taghipour .M; Azadeh.M." Assessing Ergonomic Risk Factors Using Combined Data Envelopment Analysis and Conventional Methods for an Auto Parts Manufacturer". Work-A Journal of PREVENTION ASSESSMENT '& REHABILITATION, 2020, vol. 67, no. 1, pp. 113-128.
- 3) Taghipour .M; Mahboobi .M; Gharagozlou.H." The Impact of ICT on Knowledge Sharing Obstacles in Knowledge Management Process (Including Case-Study)". Iranian Journal of Information processing and Management, 2016, 31 (4) ,1049-1074.
- 4) Khalil pour .M; Kamari. Y; Nibali Chishti.S. A; Taghipour.M." The Impact of Accountant's Ethical Approaches on The Disclosure Quality of Corporate Social Responsibility Information an Islamic Perspective in Iran". National Academy of Managerial Staff of Culture and Arts Herald, 2018, No 1,1173-1181.
- 5) Mirzaie. F; Nazari. A; Zargham Boroujeni .H; Taghipour.M." The Relationship Between Social Bearing Capacities with Conflict as a Result, in the Perception of the Visiting Historical Sites". Journal of Investment and Management, 2015, Vol. 4, No. 6, pp. 403-408.
- 6) Alamdar khoodaki .M; Naami. A; Taghipour.M." Effect of integrated marketing communication on brand value with the role of agency's reputation (including case study)". Journal of Process Engineering. 2019, 5(1):30-44.
- 7) Taghipour .M; Safari .M; Bagheri.H." A Survey of BPL Technology and Feasibility of Its Application in Iran (Gilan Province)". Science Journal of Circuits, Systems and Signal Processing, 2015, Volume 4, Issue 5, Pages: 30-40.
- 8) Seddigh Marvasti, B.; Beheshti, S.M.A.; Chegini, H.; Taghipour, M." Assessing the Effect of FRP System on

- Compressive and Shear Bending Strength of Concrete Elements". *International Journal of Innovative Research in Science. Engineering and Technology*, 2015, 4(11): 11511-11524.
- 9) Jalili, L; Ghafourian, M; Toopal, T; Taghipour, M. "Utopia is considered to be the physical form of an ideal human society where the goals are met. *Journal International Journal of Archaeology*. 2015, 3(5): 39-47.
 - 10) Taghipour .M; Vosough. A; Azizi. D; Abdi.J." Insurance Performance Evaluation Using BSC-AHP Combined Technique". *Journal National Academy of Managerial Staff of Culture and Arts Herald*. 2018,4: 112-120.
 - 11) Rezvani, B.A; Ghobadian, V.; Taghipour, M." The design of high-rise building with ecological approach in iran (Alborz Province)". *International Journal of Modern Trends in Engineering and Research*, 2015, 2(10): 455-464.
 - 12) Taghipour .M; Ganji. F; Zolfagharijoo. A; Lotfi. A; Torabi.F." The identification and prioritization of effective indices on optimal implementation of customer relationship management using TOPSIS, AHP methods (Case study: Pasargad bank)". *Management, International Technology and Science Publications (ITS)*,2020, Volume 3, Issue 4, 43-60.
 - 13) Taghipour, M; Yazdi, H." Seismic Analysis (Non-Linear Static Analysis (Pushover) and Nonlinear Dynamic) on Cable-Stayed Bridge". *American Journal of Civil Engineering*, 2015, 3(5), 129-139.
 - 14) Taghipour .M; Barzegar. P; Mahboobi .M; Mohammadi.S." Investigating the Relationship between Competitive Strategies and Corporates Performance (Case Study: Parsian Banks of Tehran)". *Management, International Technology and Science Publications (ITS)*, 2020, Volume 3, Issue 4, 13-28.
 - 15) Taghipour .M; Moosavi. A." A look at Gas Turbine Vibration Condition Monitoring in Region 3 of Gas Transmission Operation". *Journal of Environmental Science, Computer Science and Engineering & Technology(JECET)*, 2020, Vol 9, No 3, 423-432.
 - 16) Rahamni, M; Vaziri Shams, S; Abedi, V; Taghipour, M. (2021). " Providing Health, Safety and Environmental Management (HSE) program in Metal Mining Industry (Including Case study)". *International Technology and Science Publications (ITS)*, 2021, Vol. 4, Issue 3, pp.14-35.
 - 17) Taghipour. M; Vaezi.M." Safe Power Outlet". *Electrical Science & Engineering*, 2020, Vol. 02, Issue 4, pp.5-10.
 - 18) Tarverdizadeh. H; Taghipour. M; Nezamivad. S." Predicting students' academic achievement based on emotional intelligence, personality and demographic characteristics, attitudes toward education and career prospects through the mediation of academic resilience. *Scientific Journal of Education Research*, 2021, Vol. 16, Issue 65, pp.171-186.
 - 19) Azaria. R; Taghipour. M." studied The Impact of Implementing Inclusive Quality Management on Organizational Trust (Case Study: Educating). *Journal of Multidisciplinary Engineering Science Studies(JMESS)*, 2020, Vol. 6, Issue 7, pp.3376-3383.
 - 20) Ghadamzan Jalali. A; Habibi Machiani. H; Taghipour. M; Fathi Vajargah. K; Moshtaghi. S." Explain the Relationship Between Intellectual Capital, Organizational Learning and Employee Performance of Parsian Bank Branches in Gilan province. *Educational Administration Research Quarterly*, 2020, Vol. 10, Issue 2, pp.127-142.
 - 21) Mohammadi, M; Taghipour. M; Mahboobi, M." Investigating the role and impact of using ICT tools on evaluating the performance of service organizations". (2020). *Iranian Journal of Information processing and Management*, 2021, Vol. 37, Issue 1, pp.1-26.
 - 22) Abdi Hevelayi. A; Safarian Hamedani. S; Yusefi Saeed Abadi. R; Taghipour.M." Predicting Entrepreneurial Marketing through Strategic Planning (Including Case Study)". *Educational Administration Research Quarterly*. 2019, 10(2):127-142.
 - 23) Arsalani, Maryam; Esmaeilkhoo, Hamidreza; Taghipour, Mohammad. (2020). " Investigating the Effect of Social Media Marketing Activities on Brand Awareness". *International Technology and Science Publications (ITS)*, Vol. 4, Issue 2, pp.18-31.
 - 24) Khorasani, Z; Taghipour, M. (2020). " The Location of Industrial Complex Using Combined Model of Fuzzy Multiple Criteria Decision Making (Including Case -Study)". *International Journal of Innovation Scientific Research and Review (IJISRR)*. 2020, Vol. 2, Issue 7, pp.268-280.
 - 25) Taghipour .M; Ahmadi Sarchoghaei.J." Evaluation of Tourist Attractions in Bourujerd County with Emphasis on Development of New Markets by Using Topsis Model". *Science Journal of Business and Management (Science PG)*,2015, Vol. 3, No. 5, pp. 175-189.
 - 26) Moldavia, a; Taghipour, M." Electric car and examining the advantages of this type of car". *The American Journal of Humanities and Social Sciences Research (THE AJHSSR)*.2023, Volume. 6 Issue. 4.
 - 27) Taghipour .M; Vosough. A; Kazemi. N; Ahitabar.P." Study of the Application of Risk Management in the Operation and Maintenance of Power Plant Projects.". *International Journal of Business Management*, 2018, 3(3), 98-110.
 - 28) Taghipour .M; Kheirkhahan .H; Mahboobi .M; Mohammadi .M. "Evaluation of the Relationship between Occupational Accidents and Usage of Personal Protective Equipment in an Auto Making Unit". *International*

Journal of Innovative Research in Science, Engineering and Technology, 2015; Vol 4, Issue 9.

- 29) Hoseinpour, Z; Taghipour, M; Hassan Beigi, J; Mahboobi, M. "The Problem Solving of Bi-objective Hybrid Production with the Possibility of Production Outsourcing through Imperialist Algorithm, NSGA-II, GAPSO Hybrid Algorithms". Turkish Journal Of Computer And Mathematics Education. 2021, Vol. 12, Issue 13, pp.8090-8111.
- 30) Baghipour sarami, F; Bozorgi Amiri, A; Mououdi, MA; Taghipour, M. Modeling of Nurses shift work schedules According to Ergonomics: A case study in Imam sajjad(As) Hospital of Ramsar. Journal of Ergonomics. 2016, Vol 4.