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The level of preparedness of the schools for disasters from the aspect of the school principals

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Abstract

Purpose – The purpose is, depending on the views of principals and teachers, to determine the level of preparedness of primary schools towards prospective earthquakes from the aspect of the effectiveness of school principals; and to develop some recommendations due to the obtained results and the review of the literature.

Design/methodology/approach – In the research, the views of school principals and teachers were taken by a Likert type questionnaire, developed by the researcher herself. The sample of the research comprises all the elementary schools in the city centre of Elazig, a city in the Eastern Anatolian Region. As total 589 subjects responded the questionnaire. The data were computed by means of *t*-test, and ANOVA according to parametric or non-parametric situations.

Findings – The findings have revealed that the preparedness level of the schools are not so well for prospective disasters, and there are significant differences among the views of the subjects. In other words, the school principals were not so effective in achieving high level preparedness and for prospective earthquakes.

Research limitations/implications – This research is limited with the views of the teachers and of principals obtained in the city centre of Elazig. Therefore, observation-based researches may also be complementary for the reflection of the real life situation at schools.

Originality/value – Although Turkey is placed a very seismically active region, the attained literature review has indicated that there have not been any researches done about the preparedness of schools for the earthquakes in Turkey, yet. Therefore, this research is an original one by obtaining the views of school teachers and of principals about the preparedness of schools towards earthquakes.

Keywords Natural disasters, Earthquakes, Primary schools, Principals, Turkey

Paper type Research paper

Introduction

Dramatic increases have been witnessed in recent years in the frequency and impact of the hazardous natural disasters in the world. While one of the reasons of that increase may stem from the mal use of nature and environment by the people such as destruction of the forests, agricultural areas, fresh water sources and the like which causes a lot of floods, fires, storms and similar kind of disasters; the other stems from the inherent nature of the earth which produces lots of quakes, volcano explosions and the like. Whatever the reason, the truth is that lots of loses, injuries and damages have been experienced during these disasters, and by training the people the rate of the loses and damages may be lessened and even in some cases may entirely be prevented. For that reason, especially by UN agencies and by some developed countries, some efforts are devoted to the training of people by awakening them towards disasters and by

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training them about what they will do before, during and after the occurrence of the disasters.

Owing to the geographical location and the mal use of nature, Turkey faces lots of disasters such as floods, fires, landslides, avalanches, earthquakes, and the like every year. Especially at the end of the twentieth century, Turkey witnessed destructive earthquakes which caused lots of property and human losses. To prevent the huge destructions and to become a disaster resistant society, schools can play a pivotal role in Turkey, too.

This research was done to determine how well the schools were prepared for a prospective earthquake disaster from the aspect of the principals, based on the views of the school principals and teachers; and to make recommendations towards effective disaster preparedness based on the literature review and the research results.

The space of the research is the primary schools in Elazig, a city located in the eastern part of Turkey and is marked as one of the risky cities in respect of the occurrence of the hazardous earthquakes. The sample comprises the primary school principals and teachers in the city centre. A five scale Likert type questionnaire of 20 items developed by the researcher herself, was used to hold the views of the subjects (see the Appendix). The items were also grouped under the dimensions of "planning" "conveniences and equipment" "implementation" and "integration and culture building" according to the functions of the items. As total, 523 teachers and 66 principals responded the questionnaire items. Considering five scales of the questionnaire items, five levels were determined to interpret the responses given the items which have affirmative connotations, such as 179 and below never; 180-2.59 rarely; 2.60-3.39 occasionally; 3.40-4.19 generally; and 4.20-5.00 always. For the items which have negative connotations the scale values were reversely pointed. For the analysis of the data considering the Levene's homogeneity of the variances, parametric and nonparametric *t*-test and ANOVA were computed.

Review of the literature

It has been informed that over the past thirty years the frequency and impact of natural disasters has increased and economic damages have tripled. Domesian (1997), the officer at United Nations – International Decade For Natural Disaster Reduction (UN-IDNDR), has noted that:

> To get people think in a preventive way, and to see the links between disasters, development and environment, one needs a mind-set that is best developed at an early age. A culture of prevention is something that forms over time. Cultural approaches and paradigms must be taught early and in schools to have real success.

There are various ongoing efforts and studies to prevent disasters and to become more disaster resistant population in the world. In 1999s UN campaign focused on assessing the concrete results and achievements of disaster reduction, and promoting "a global culture of prevention for the 21st Century". It is stated that the past few decades bought with them considerable losses due to natural disasters. Beside the loses of many lives, $90,000 million economic loses occurred. During the last decade UN campaigns emphasized the topics such as "disaster prevention in schools and hospitals" "vulnerable communities" "women and children-active participants in disaster prevention" "cities at risk" "too much water" "prevention begins with information"

"disaster prevention-education and youth". On October 1999, the global event for World Disaster Reduction Day was held in Mexico City. The activities were held jointly by the Government of Mexico and UN in the frame of International Decade For Natural Disaster Reduction (IDNDR) initiative. It is stated that World Campaigns will continue in the new century under the coordination of the International Strategy for Disaster Reduction (ISDR) (UN, 1999).

In USA, federal, state and local governments have spent millions for repairing and replacing schools after the disasters. Alongside the physical damage, mental and spiritual damage have been seen among the people who have the chance of being rescued. Therefore, many states require specific disaster preparedness activities in the school systems. It is pointed out that there is much by school officials to plan for disasters, to mitigate risk, to protect the safety of students and educators, and to ensure that schools recover quickly. Federal Emergency Management Agency (FEMA) as a non-profit institution tries to help schools to strengthen themselves against disasters and become more disaster resistant. Through "multi-hazard safety program for schools" a specific plan of action for all schools is imposed. FEMA (2002) recommends the following actions for all school officials:

- identify hazards likely happen to your schools;
- mitigate against the hazards;
- develop a response plan, including evacuation route;
- plan for coping after a disaster; and
- implement drills and family education.

There are many activities realized through the World Disaster Reduction Day organization in Latin American countries and the Caribbean. It is claimed that one of the chief achievements of the Decade in Latin America and Caribbean is the promotion of an approach based on the long-term development and the birth of a culture of prevention. Especially advances in the health sector to prevent the unnecessary destruction of the hospitals and water supply and sanitary systems, is stated as a means of pride and as a good model for the other countries (Ville de Goyet, 2002).

By the year of 2000, Australian IDNDR Coordination Committee developed a strategy to support schools for the aim to build a culture of disaster prevention at schools and to raise the level of community awareness. For this aim, the representatives from emergency management and school education agencies gathered together in a cooperative effort held a workshop. At the end of that workshop four policy objectives were identified as follows:

(1) to develop and maintain a coordinated approach for enhancing community safety and emergency management through schools;

(2) to facilitate on-going working partnerships between the emergency management and school education communities;

(3) to support current school curricula in such a way as to encourage understanding and Application of Australia's agreed approach to community safety and emergency management; and

(4) to support and complement current state and territory school education initiatives in community safety and emergency management (Fitzgerald, 2001).

Newport and Jawahar (2003) insist that disaster preparedness will no be effective without the participation of the vulnerable communities and related formal or informal institutions. They state that the community participation should emphasize the steps such as contingency planning, community preparedness, task force, response mechanisms, and the like.

Turkey is placed in a seismically active region where several vehement earthquakes occurred only in the last few years. The studies for the reduction and prevention of disaster damages have gained impetus after the violent Izmit (17 August 1999) and Duzce (12 November 1999), earthquakes in which tremendous loses of lives and properties were experienced. In these two earthquakes the lose of lives as total is 18,243. As it is stated by the Management of Prime Ministry Crises Centre, considering only the primary and secondary schools, 1,387 students and 178 teachers lost their lives during these earthquakes (MPMCC, 2000). The reasons of the collapses of buildings in the earthquakes were stated as follows:

- the defects in engineering (especially in rural places the engineering services are insufficient level);
- the ineffective and insufficient supervision;
- exculpation of the architectural deficiencies; and
- the lack of demand for the earthquake safety among the public (Gurdilek, 2000)

The rapport of the Child Foundation entitled Psychological Observation and Study of the Earthquake Region between the dates of 1999-2000 stated that not only the children but also most of the people in the earthquake region had developed some kinds of psychological symptoms such as fear, anxiety, depression, aggression, and some similar others (*Cocukvakfi*, 2004).

At some universities like Middle East Technical University (METU) and Istanbul Technical University (ITU), the centres of Disaster Management have been established. With the coordination of Interior Ministry and the Technical University of Istanbul, some training were given to people and some other projects such as "Reconstruction of Fire Department" "Emergency Management Under the Conditions of Turkey" were initiated. Beside these projects, some conferences were organized by ITU and FEMA. A conference entitled "Good Governance and Disaster Management" was held by The Netherlands Municipality Union, and The Marmara and Straits Municipalities Union with the contribution of Interior Ministry of Turkey in Ankara on 24-25 September, 2001 (IM, 2001). Several activities were initiated by METU among them the organization of Earthquake Disaster Mitigation Conference, Community Participation Sub-project, and some training efforts may be articulated (UNDP, 2002).

Turkish Red Crescent societies and partners in the international Red Cross Movement, including the American Red Cross, have worked together to better prepare for the next crisis (Miller, 2001). The University of Bogazici Kandilli Observatory Earthquake Research Centre has initiated a training project for disaster preparedness. The aim of this project is to raise the level of earthquake awareness and preparedness of the people (UBKOERC, 2002).

There have been many projects held by local initiatives or joint ventures in Turkey. International Union of Local Authorities (IULA) and East Mediterranean and Middle East Region (EMME) has launched a project entitled "Promotion and Development of

Local Agenda 21s in Turkey" with the support of UNDP and Turkey. The objective of this project is to expand the public awareness about the disasters throughout the country (Local Agenda 21, 2004).

The Ministry of National Education published a new circular in 2005 towards the implementation of a new curriculum in the elementary schools. In this curriculum, some units have been added to some supplementary subjects related to disasters with the aim of enhancing disaster awareness (MNE, 2005).

Although several initiatives and studies have been put in use, they are not sufficient. The Government Bureau of Accounting has informed that, especially for the prospective earthquake for Istanbul the preparedness efforts are not sufficient and not efficient as well (Hurriyet, 2003a). The consequences of many researches and the opinions of many people also denotes that these efforts are not sufficient. The worst is that the cautions of many scientists, politicians and other people related to the enhancement of awareness and preparedness levels for the catastrophes have not been taken into consideration by the key persons who hold the positions to make decisions (Isikara, 2003; Yilmaz, 2003).

In Bing0l earthquake (1 May 2003), 85 children and one teacher lost their lives under the collapsed school building. This situation indicates once more that the public school buildings are not in good conditions in Turkey (Dogru, 2003). The results of a research has indicated that teachers do not find the schools safety in case of an occurrence of a hazardous earthquake. On the other hand, it has been stated that out of 42,000 school buildings only 1797 ones were tested regarding the resistance for earthquakes (AA, 2003). The newspaper of Hurriyet together with the METU initiated a company for strengthening the school buildings. The Minister of National Education also supported this company (Hurriyet, 2003b).

In recent years, the scientific studies have shown that school principals hold the number one position for the effective management of schools especially for realizing effective instruction, staff development, organizational learning, curriculum development, and building a school community together with the school environment. The school administration as an area of specialization is seen requiring additional education and exceptional human relations and leadership qualities (BLS, 2001; Devos *et al.* 1998; Lemrow, 2003; NVSD, 2002). Therefore, the principals through effective leadership may play a pivotal role for achieving a disaster resistant culture in the schools. Especially, through building an awareness towards earthquakes and ensuring a preparedness for prospective earthquakes together with the school environment, may lessen the destructive effects of the earthquakes in Turkey.

Findings and intrepration

The research findings according to the independent variables as gender, marital status, title, and work year have been tabulated; and the findings indicating significant differences among the views of the respondents have been discussed at the dimensions base such as "planning" "conveniences and equipment" "implementation" "integration and culture building" below.

Findings related to gender

The findings have (Table I) revealed that there are significant differences between the responses of the subjects for all the dimensions. In the dimension of "planning" even if

the responses of the subjects have pointed out the "generally" level, the mean value of female subjects is significantly less than the male subjects'. For the other dimensions of "conveniences and equipment" "implementation" "integration and culture building" both of the subject groups inform their views at "occasionally" level. However, the mean values reflect that female subjects' responses are significantly less than the male subjects'. This situation indicates that female subjects are less contended than the male subjects. This may be an indication of female subjects sensitiveness and concern they have felt about their children and students. However, since both of the subject groups' views realize at "occasionally" level for all the dimensions, except planning, it may be articulated that considering the conveniences and equipment, implementation, and integration and culture building, the school principals are not so effective and successful.

Findings related to marital status

The distribution of data according to the marital status of the subjects (Table II) indicates significant differences between married and single subjects' views for "planning" "implementation" "integration and culture building" dimensions, except the dimension of "conveniences and equipment". It can easily be seen that for all the dimensions, the married subjects views reflect less confirmations than the single ones. On the other hand, except the "planning" dimension in which the responses of both married and single subjects indicate "generally" level, and the "implementation"

Dimensions	Gender	*N*	Mean	SD	SE	*T*	*P*
Planning	Female	263	3.45	0.99	0.06	− 2.20	0.03
	Male	326	3.62	0.89	0.04		
Conveniences and equipment	Female	263	3.11	1.01	0.06	− 3.03	0.00
	Male	326	3.35	0.08	0.05		
Implementation	Female	263	3.16	1.01	0.06	− 3.31	0.00
	Male	326	3.42	0.93	0.05		
Integration and culture building	Female	263	3.00	1.09	0.06	− 2.25	0.02
	Male	326	3.19	0.09	0.05		

Note: $P < 0.05$

Table I.
Data distribution related to gender according to dimensions

Dimensions	Marital status	N	Mean	SD	SE	*t*	*P*
Planning	Married	489	3.49	0.93	0.04	− 2.79	0.00
	Single	100	3.78	0.91	0.09		
Conveniences and equipment	Married	489	3.22	0.93	0.04	− 1.40	0.16
	Single	100	3.37	1.01	0.10		
Implementation	Married	489	3.27	0.97	0.04	− 1.96	0.05
	Single	100	3.48	0.97	0.09		
Integration and culture building	Married	489	3.04	1.01	0.04	− 2.96	0.00
	Single	100	3.38	1.05	0.10		

Note: $P < 0.05$

Table II.
Data distribution related to marital status according to dimensions

dimension in which the responses of only single subjects indicate "generally" level, all the other dimensions realize at "occasionally" level. These findings indicate that married subjects have taken into consideration the matter more seriously than the single ones, and have not found the present situation so satisfactory.

Findings according to title

The distribution of data (Table III) have revealed that the views of the teachers and principals related to the dimensions for disaster preparedness do not significantly differ from each other. The dimensions are confirmed at "occasionally" level except "planning". However, even if it indicates a slight difference, the mean values of teacher responses are less than the principals' for all the dimensions.

Findings according to work year

There are no significant differences among the views of the subjects for work year variable (Table IV). While the dimension of "planning" has been confirmed at "generally" level, the others ("implementation" "integration and culture building" "conveniences and equipment") have been confirmed at "occasionally" level.

Results and recommendations

At the end of the analysis of findings related to the dimensions towards the preparedness for disasters, these general results have been reached:

- According to the dimensions determined as "conveniences and equipment" "implementation" "integration and culture building" the responses of the subjects related to independent variables such as gender, marital status, title, and work year, almost always denote a confirmation at "occasionally" level except for "planning" dimension which indicates "generally" level.
- For all the dimensions, the female subjects' confirmation is significantly less than the male subjects'.
- The responses of the married subjects indicate significantly less confirmation than the single ones' for all the dimensions, except "conveniences and equipment" in which even if married subjects' view reflect less confirmation than single ones' it does not create a significant difference.
- Although there are not any significant differences between the responses of the principals and teachers, the mean values of the teachers' indicate less confirmation levels for all the dimensions.
- The views of the subjects according to work year variable, for all the dimensions except the dimension "planning" realize at "occasionally" level without indicating any statistical significances.

Depending on the views of teachers and principals it can be said that the works and efforts for the preparedness towards earthquake disasters under the leadership of principals have been almost always realized at "occasionally" level for all the dimensions, except "planning" which is stated at generally level.

It may also be easily noticed that the female subjects' married subjects' and the teachers' confirmation levels are less than their counterparts. These results may be ascribed to the level of sensitiveness and responsibility of the female and married

Dimensions	Title	N	Mean	Mean rank	Sum of ranks	Mann-Whitney U	Z	P
Planning	Teacher	523	3.53	292.83	153,149.50	16,123.50	− 0.87	0.38
	Principal	66	3.66	312.20	20,605.50			
Conveniences and equipment	Teacher	523	3.24	294.90	154,234.50	17,208.50	− 0.03	0.96
	Principal	66	3.26	295.77	19,520.50			
Implementation	Teacher	523	3.28	291.36	152,379.00	15,353.00	− 1.46	0.14
	Principal	66	3.48	328.88	21,376.00			
Integration and culture building	Teacher	523	3.08	290.55	151,956.50	14,930.50	− 1.79	0.07
	Principal	66	3.29	330.28	21,798.50			

Note: $P < 0.05$

Table III.
Data distribution related to title according to dimensions

Dimensions	Work year	*N*	Mean	SD	SH	*F*	*P*
Planning	1-5 years	153	3.58	0.95	0.07		
	6-23 years	351	3.51	0.92	0.04	0.57	0.56
	24 years and over	85	3.61	0.97	0.01		
Conveniences and equipment	1-5 years	153	3.27	0.99	0.08		
	6-23 years	351	3.24	0.94	0.05	0.06	0.93
	24 years and over	85	3.23	0.89	0.09		
Implementation	1-5 years	153	3.39	1.01	0.08		
	6-23 years	351	3.29	0.95	0.05	0.11	0.89
	24 years and over	85	3.30	0.98	0.10		
Integration and culture building	1-5 years	153	3.11	1.07	0.08		
	6-23 years	351	3.09	1.01	0.05	0.09	0.90
	24 years and over	85	3.14	1.03	0.11		

Note: $P < 0.05$

Table IV.
Data distribution related to work year according to dimensions

subjects according to male and single ones. Because of conveying the responsibility of having a family and perhaps children, the married, subjects' expectations may be high, and female subjects' as well. On the other hand, since teachers' confirmation level is lower than the principals' this may be attributed to teachers' high expectations from the school management about providing the necessary disaster resistance community.

On the other hand, except the dimension of "planning" since the obtained results have denoted to "occasionally" level for "conveniences and equipment" "implementation" and "integration and culture building" dimensions, it may be said that the school principals cannot achieve high levels of preparedness at school towards disasters. The reasons of this situation may stem from divergent factors such as insufficient and ineffective pre and in-service training of principals about gaining leadership qualities for creating an organizational culture towards awareness and preparedness for disasters in the organizations; the attitudes and approaches of the higher level officials; the lack of sources; the hierarchical structure of the educational system which generally hinders making quick and appropriate decisions; and from societal background of the people that generally is characterized by believing in destiny.

In a country like Turkey, which has exposed to many great disasters almost every year, the level of preparedness for disasters should be considerable high. Whereas, in Turkey, especially after the destructive earthquakes in the year of 1999, the people have recently begun to gain awareness and to enhance the knowledge about preparedness towards and mitigation of disasters. So, very urgent and very effective measures should be taken and the effective training of people should be achieved by the use of divergent means.

Since, National Education System in Turkey is hierarchically structured, a great deal of decisions are made by the ministry. Therefore, to overcome the problems related to disaster management and to deal effectively with maintaining risk reduction, and sustainable human development, The Ministry of National Education should take steps for forming a disaster management centre in each school body. In that way, the decisions together with the other related institutions may be made more easily and

effectively; the training of the teachers, students, and families may be obtained; and more healthy relationships with the environment may be developed.

Schools are the most convenient places to develop a disaster resistant culture in the society. Therefore, along with the dimensions of "planning" "conveniences and equipment" "implementation" and "integration and culture building" the level of preparedness should raise to high levels. To achieve this, the following recommendations may also be given:

- To make the people develop a conscience about disaster mitigation and gain a culture for disaster prevention and preparedness in Turkey, what to be needed is to provide nation-wide policies and determinism to execute these policies. So, the government, the social institutions, the schools, and the people in general should work together collaboratively and incessantly, to be successful in the long run.
- Nation-wide training programs at schools towards principals, teachers, students, families and the like, should be generated, implemented, evaluated, and continuously should be renewed and improved. Especially the school principals who are number one person for the realization of effective instruction and management of the schools, should be trained for gaining leadership qualities to deal effectively and adequately with the issues on disaster mitigation, preparedness and management.
- The support and contribution of many institutions, associations and foundations should be sought and obtained at home and abroad. New and influential foundations should be established to work effectively with schools as well as the other private or public institutions.
- Schools should be the places where the students really can gain the awareness and knowledge of protecting the nature and environment and learn the ways of protecting themselves and the others from the disasters especially from the earthquakes that likely to occur. Therefore, not only some instructional units, but also some obligatory courses and subjects towards mitigation of the hazardous effects of earthquakes should be added to school curriculum.
- The principals should pay special efforts to create an awareness for disasters and build a disaster resistant culture at schools. The principal together with the school staff, should try to ensure that the staff, students and other personnel know how to act and behave in the case of before-during-aftermath disaster stages. To achieve this, many activities through theatres, movies may be realized; workshops, conferences, seminars and meetings may be organized; some contents may be arranged; some studies together with the institutions of higher education may be realized.
- Through the dimensions determining in that research, integration with the environment is necessary to make appropriate decisions, to implement adequately these decisions, and to follow up the executions. So, each school should constitute a school community comprising of the families, newspaper agencies, aid agencies, security guards, health agencies, and the like to realize its mission.

The issue of disaster preparedness and building a disaster resistant society entail a long time study and the participation of the whole community. Therefore, it is a

long-run struggle that involves everybody. Especially the agencies and the people as education stuff, newspapermen, public health officers, civil defence members, security officers, mayors and so many other focal authorities should work together in coordination; the realized works should share with the community; and the ongoing evaluation and renewal activities should be valued and consistent improvement should be achieved.

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Appendix. The questionnaire items

(1) The principal ensures the inclusion of some subjects that teach the way of protection towards disasters in the curriculum (P).

(2) The school stuff, the members of the school community, and the authorities of the other related institutions worked collaboratively in the development of the school plan (P).

(3) The drills related to the actions that should be done during the disasters are taken place periodically as a part of school curriculum (I).

(4) The principal ensures the participation of the teachers in the programs towards the disaster preparedness (I).

(5) There is a conscious, wide-awake school culture for preventing disasters (Int.).

(6) School personnel and students are not continuously trained on protection, evacuation, and rescue issues (I).

(7) The moveable goods are fixed to prevent the fall in case of disaster (C).

(8) "There is a mechanism at school to turn off the gas, electricity, and water automatically in case of disaster" (C).

(9) The igniting and burning substances are kept in closed cupboards and containers (C).

(10) The lacks have been determined and met for being prepared towards disasters (C).

(11) A rescue plan was not given to each teacher to be applied during a disaster (P).

(12) There are school based rescue teams in the frame of urgent rescue plan (C).

(13) There are the supplies such as blanket, battery-powered radio, tent and the like at school (C).

(14) There is not a mutual effort to enhance the level of the necessary skills and knowledge for everybody at school (Int.).

(15) The participation of the families in the disaster prevention activities cannot be achieved (Int.).

(16) The support and aid of some specialists such as doctor, engineer, electrician, etc. are obtained to be prepared for the disasters (Int.).

(17) Necessary efforts have been devoted for strengthening of the school buildings (I).

(18) There are not alarming and early warning systems at school (C).

(19) Some activities such as workshops, seminars, conferences are being realized to raise the level of awareness for disasters at school and school environment (Int.).

(20) The plans related to the stages of a prospective disaster (before, during and after) were developed at the school (P).

- planning: (P);
- conveniences and equipment: (C);
- implementation: (I); and
- integration and culture building: (Int.).

About the author

Ozmen Fatma completed her undergraduate education in the Department of English Language and Literature. She worked as an English Language instructor at the University of Firat, in Turkey. She received her graduate degree at the University of Bilkent on TESL (Teaching English as a Second Language). She then completed her post graduate study in the field of Educational Administration and Supervision in 1997. Since, then she has been working as a lecturer in the Department of Educational Sciences at the University of Firat. Supervision, Leadership, knowledge management, human resource management are some of the interest areas of her. Fatma Ozmen can be contacted at: fozmen@firat.edu.tr, ftm_ozmen@yahoo.com, fkazvin@yahoo.com