Analysis of gender's role on voluntary tendency of potential/active volunteers via logistic regression modeling: The case of Çanakkale Onsekiz Mart University[*]

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Abstract: From economy to political administrations, education to health, environment to human rights, many problems we met have gained a global importance in recent days. Existing state systems, political parties and nation states are not adequate for solving these problems in question effectively on their own. Not only governments and local authorities but also voluntary organizations based on completely voluntary activities have significant roles in solving these problems. Effective performance of voluntary organizations depends on increasing volunteer population. Individuals' attitudes or their perception of understanding volunteerism play an important role in their contributions to voluntary organizations. The aim of this study is to determine individuals' ways of perceiving volunteerism concept and their tendency towards it. Furthermore, differences between men and women's perception and attitudes towards volunteerism concept have been examined. For this purpose, a survey has been conducted over university students of bachelor's degree. Tendencies and attitudes towards volunteerism compared to gender differences have been tested via logistic regression method. Research results reveal that women take part in voluntary activities more than men and women perceive volunteerism as "a political position" while men perceive volunteerism as "a learning atmosphere and learning process".

Key words: volunteerism; volunteerism tendency; volunteerism perception; potential/active volunteers; logistic regression modeling

1. Introduction

Since the middle of 1970, voluntary organizations having started their activities for various reasons such as peace, human rights, feminism, ecology and local administration, both fight against the bad effects of economic situation on individuals and violation of rights all over the world, and increased their effects in 1990s (Yurttagüler, 2006). Studies regard volunteerism which is being a part of a voluntary organization as an institution and sustain it in the organization gained speed especially in 2000s. Volunteerism started to work for participation of individuals in society, making them to take part in decision making and to advocate their own rights. Also they tried to

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increase the population of working power that serves for society (Yurttagüler & Akyüz, 2006).

Voluntary organizations have a great role in solving the global problems related economy to political tendencies, education to health, environment to human rights and democracy in recent days. Voluntary organizations' success in their contacts with over national organizations and nation states and in their possibility to become active actors by contributing to the social services mostly depends on increasing the voluntary population. Individuals' perception of voluntary is important as it affects their choice of being volunteers or providing voluntary participation. In this study, individuals' volunteerism tendencies and their perception of volunteerism have been presented by considering gender differences.

Recently, there are vast of works that treat of "volunteerism" and "voluntary activities participation" in literature. For example, Johnson, Bebe, Mortimer and Snyder (1998) try to determine who participate in voluntary activities and how youth volunteerism effects volunteer activities. Boraas (2003) examines the time spared to volunteerism, the number of organization which support voluntary activities, fields of activities participated by these organizations, according to fields of activities organizations in which the most participation eventuates and who often participate these activities (college graduates, college students, women). Yurttagüler (2006) tries to determine why and in which fields people would be volunteer? Francis (2009) notes norms and functions that direct college students to volunteerism. Son and Wilson (2010) investigate the impacts of genetic heritability on volunteerism in their study named Genetic Variation in Volunteerism. According to the results of their study performed on a sample of twins and siblings, it is found that genetics has no effects on volunteerism of men whereas some of volunteerism trend of women depends to gene. It is aimed to contribute this article to literature by stating volunteerism trend and perceptions of individuals in respect of their sex.

2. Concept and scope of volunteerism

Volunteerism was institutionalized and became widespread thanks to great efforts of Pierre Ceresole and Hubert Paris in 1920s. Pierre Ceresole and Hubert Paris tried to renovate Esue, a village in France near Verdun, damaged during World War I. This first international volunteerism was realized in order to renovate the village and contribute to the peace. Pierre Ceresole who contributed to compose volunteerism and make it widespread thought that if opposing countries in the war produced all together, they would gain experience beneficial to both sides. Thus, he established three voluntary organizations which have been active so far. These are International Civil Service, The Youth Action for Peace and The International Reconciliation Union (Yurttagüler, 2006).

It has been seen that definitions and attitudes towards volunteerism differ in the context of both voluntary organizations and volunteers. While voluntary organizations define volunteerism as sacrifice, a learning atmosphere and a learning process, it can be also defined as serving to society by voluntary organizations, being politic (defending a subject or taking part in decision-making process). In this context, it is significant for voluntary organizations and volunteers how to define volunteerism which has many extensive functions.

2.1 Volunteerism as "workforce"— "service based"

The information which was composed by the approaches that advocates that volunteerism should be existed and used in voluntary organizations and volunteers should be managed and benefited very well has defined volunteerism as an institution that is separate from the voluntary organizations existing in it and that aims to service. This approach, which regards voluntary organizations as working for service, also regards volunteers as cheap labor source (Yurttagüler & Akyüz, 2006).

Individuals use their information, time, talent, experience and sources to increase the life quality of the people, not from their family or friends, their own free[1] will for the aim of a voluntary organization (Güder, 2006). This is generally defined as volunteerism (Yaman, 2003). The benefit of the society or aim of citizenship are the most important things in this approach in which volunteerism is considered as sacrifice and making concessions. A volunteer is a wanted human source according to the approach for which the benefit of society is the most important issue due to organization and service (Akyüz, 2006).

As it can be understood from all these definitions, volunteerism is that individuals work for a voluntary organization without getting any profit. Working is the key word in this definition and it is emphasized. Moreover, it should be added that volunteers are the main elements of social organizations and they are required to not only work but also take part in decision making (Yurttagüler, 2006).

2.2 Volunteerism as "a political position"

It has been discussed that volunteerism is both a work power and a role contributing to individuals in realizing themselves and a constitution which can support democracy via participation. According to this approach, voluntary organizations and volunteers have both internal and external contributions to democracy. These external contributions encourage pluralism by revealing views and demands of different groups. As to internal contributions, they can be defined as individuals (volunteers) witness the process of democracy by taking part in voluntary organizations and are involved in the process of producing politics by taking part in decision-making (Yurttagüler, 2006).

2.3 Volunteerism as "a learning atmosphere and learning process"

According to this approach, it is important for volunteers to create an environment to have talents and make gains. The aim of this approach is the development of volunteers. Individuals who take part in voluntary organizations gain different talents, social statues and opportunities for working for environment that can not be provided by schools and universities. Tendency to team work, talent of versatile thought that can give appropriate responses and reactions to predetermined situations are some skills that can be acquired via experience in the context of voluntary activities (Akyüz, 2006).

Volunteerism may be thought as a mirror revealing two sides. First side creates a reflection that erodes social rights, making individuals estranged from themselves and causing them being cheap working sources; The other side creates a reflection that enables individuals to advocate their rights and to become active citizens. Consequently, defining volunteerism according to only one point of view is partly true but not certain. For instance, evaluating volunteerism as to its contributions to economy, emphasize the importance of contributions, it can also cause volunteerism to be regarded as only an institution that provides human source. Thus, it can overshadow the participant democracy ideal and even the political position of volunteerism. On the other hand, regarding volunteerism as a part of defense approach and premeditating it out of service prevents the probable participation in decision making process (Yurttagüler, 2006).

2.4 Volunteerism as "a social responsibility"

An individual is a living creature that is responsible for his family and the environment he lives in. In family, the smallest association, there are some responsibilities that individuals must take. Individuals have some responsibilities they have to take for their environment in addition to their family. They have both obligatory responsibilities and some other responsibilities that contribute to society. In other words, contributing to society

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[1] Volunteerism and Adolescence at NGOs, Numune Press, Istanbul, 2002, 1-3.

by taking part in voluntary organizations is another responsibility of individuals. In this context, volunteerism is that individual strives for completely volunteerism without making any profit in order to contribute to the solutions of the problems that societies meet.

Volunteerism is a good method of spending time in addition to being perceived as workforce-focused or service-based, a political position, a learning atmosphere and learning process and a social responsibility. Within the frame of different definitions given for volunteerism, volunteerism contains the efforts of individual works, all the public, private sector individual organizations possessor of which are judicial persons. They materialized this with the consciousness of social responsibility and these efforts are based on volunteerism. In this context, volunteerism with its general meaning is that real and judicial all people use their sources such as knowledge, talent, experience and labour for the benefit of a civil community service without expecting any economical profit. Also, voluntary is that volunteers having right to comment in the decision making.

It differs from country to country for volunteerism to become widespread and institutionalized. Likewise individuals' perception of volunteerism differs from individual to individual. Potential and active volunteers' tendency and their perception of volunteerism affect their participation to voluntary organizations. It is important for voluntary organizations to be well-informed about individuals' (active and potential) volunteerism tendency and their perception of it in order to reach the needed volunteers. Efforts of making active and passive volunteers conscious can be effective in the increase of the participation to voluntary organizations. In this context, these organizations' being active especially in the countries feel the need and their undertaking the active role in solving the problems depend on knowing active volunteers' tendency and efforts of making these volunteers conscious.

3. The analysis of gender's role on volunteerism tendency

The aim of our study is to determine potential and active volunteers' tendency according to their genders and to put forward the important factors of these individuals' contribution to (active and potential) volunteerism. Thanks to this aim, the structure of data that will be used in the research and the structure of variables gain importance statically in the modeling process. Since the dependent variable of the study is qualitative and binary variable, data will be analyzed via logistic regression.

Logistic regression analysis:

Logistic regression analysis extends the techniques of multiple regression analysis to research situations in which the outcome variable is categorical. In practice, predictions may be made for the dichotomous outcome of success-failure or improved-not improved. Logistic regression describes the relationship between a dichotomous response variable and a set of explanatory variables (Frees, 2004).

As mentioned previously, the independent variables in logistic regression can take any form. That is, logistic regression makes no assumption about the distribution of the independent variables. They do not have to be normally distributed, linearly related or of equal variance within each group. The explanatory variables may be continuous or (with dummy variables) discrete. Assumptions of logistic regression model can be summarized as following (Hosmer & Lemeshow, 2000).

- The conditioned average of the logistic regression model of $0 < E(Y\backslash X) < 1$ should be between 0 and 1.

$$P(Y\backslash x) = \pi_i$$

- The distribution of residuals of logistic regression model must be binomial distribution.
- The values of the dependent variable $Y_1, Y_2, Y_3, \ldots, Y_n$ are independent statistically. Explanatory variables are

dependent.

There are two main uses of logistic regression. The first is the prediction of group membership. Since logistic regression calculates the probability or success over the probability of failure, the results of the analysis are in the form of an odds ratio. Logistic regression also provides knowledge of the relationships and strengths among the variables (Le, 1998).

When Y variable is two optioned categorical variable for the analysis of (Y=1 and Y=0), coding can be done. When Yi variable has the probabilities of $P(Yi=1) = \pi_i = \pi_i(x_i)$ and $P(Y_i=0) = 1-\pi_i$ and Bernoulli distribution.

$$E(Y_i) = 1 \cdot \pi_i + 0 \cdot (1-\pi_i) = \pi_i$$

$$E(Y_i^2) = 1^2 \cdot \pi_i + 0^2 \cdot (1-\pi_i) = \pi_i$$

$$Var(Y_i) = E(Y_i^2) - (E(Y_i))^2 = \pi_i - (\pi_i)^2 = \pi_i(1-\pi_i)$$

For i-*th* unit, the similarity distribution is as follows.

$$f(y_i; \pi_i) = \pi_i^{y_i}(1-\pi_i)^{1-y_i} = (1-\pi_i)\left(\frac{\pi_i}{1-\pi_i}\right)^{y_i} = (1-\pi_i)\exp(y_i \ln(\frac{\pi_i}{1-\pi_i})).$$

Natural parameter is the log odd amount that $\varphi(\pi_i) = \ln(\frac{\pi_i}{1-\pi_i})$ dependent variable takes in 1 value and is called π_i logit.

Generalized lineer model formed with a logit bond is called logistic regression. Logistic regression model can be seen as in the 5th equation (Toutenburg, 2002).

$$\ln(\frac{\pi_i}{1-\pi_i}) = x_i'\beta$$

The process by which coefficients are tested for significance for inclusion or elimination from the model involves several different techniques. Each of these will be discussed below.

(1) Wald test

Wald test is used to test the statistical significance of each coefficient (β) in the model. A Wald test calculates a z statistic, which is:

$$z = (\frac{\beta}{se})^2$$

Each Wald statistics is compared with a χ^2 distribution with 1 degree of freedom. Wald statistics are easy to calculate but their reliability is questionable, particularly for small samples (Harrell, 2001). For data that produce large estimates of the coefficient, the standard error is often inflated, resulting in a lower Wald statistics, and therefore the independent variable may be incorrectly assumed to be unimportant in the model. Agresti states that the likelihood-ratio test is more reliable for small sample sizes than the Wald test (Agresti, 2002).

(2) Likelihood-ratio test

The likelihood-ratio test uses the ratio of the maximized value of the likelihood function for the full model (L_1) over the maximized value of the likelihood function for the simpler model (L_0). The likelihood-ratio test statistic equals:

$$-2\log(\frac{L_0}{L_1}) = -2[\log(L_0) - \log(L_1)] = -2(L_0 - L_1)$$

This log transformation of the likelihood functions yields a chi-squared statistic. This is the recommended

test statistic to use when building a model through backward stepwise elimination (Agresti, 1990).

(3) Hosmer-Lemeshow goodness of fit test

The goodness of fit or calibration of a model measures how well the model describes the response variable. Assessing goodness of fit involves investigating how close values predicted by the model are to observed values. The Hosmer-Lemeshow statistic evaluates the goodness-of-fit by creating ordered groups of subjects and then compares the number actually in the each group (observed) to the number predicted by the logistic regression model (predicted). Thus, the test statistic is a chi-square statistic with a desirable outcome of non-significance, indicating that the model prediction does not significantly differ from the observed. The ordered groups are created based on their estimated probability. The expected frequencies for each of the cells are obtained from the model. If the model is good, then most of the subjects with success are classified in the higher deciles of risk and those with failure in the lower deciles of risk (Hosmer, Hosmer, Le & Lemeshow, 1997).

4. Findings and discussion

In this study, population consists of the students in Biga Faculty of Economics and Administrative Sciences in COMU, who have core and elective courses in Civil Society Organizations and volunteerism area. Therefore, population is composed of students who take course, "Basics of Civil Society Organizations", and who do not take in in Biga Faculty of Economics and Administrative Sciences in COMU.

It is used Fivefold Likert Scale adopted by Yurttagüler (2006) to determine volunteerism perception of students and their volunteerism trend. In addition, it is used a form which contains four questions to specify demographic characteristics of students, whether they provide contributions to any voluntary institution or not and voluntary organizations which they prefer to be a member or provide a contribution.

In faculty curriculum, while first-year students do not take "Basics of Civil Society Organizations" in the fall semester, this course is their core course in the spring semester. This study is applied in 2009-2010 fall semester to first-year students of business and public administration departments who do not take "Basics of Civil Society Organizations" course and second-year students of same department who take this course at previous term. The first-year students are included compulsorily into the study because they do not take the course.

800 surveys were distributed by hand to all first-year and second-year students of business and public administration departments during the data collection level. 376 questionnaires who do not take course at their first year answered forms. In addition, 379 forms returned from second-year students who took the course. Consequently, 755 forms make up our mass population. In total, from 45 forms, 20 of them were not turned back and remaining 25 of forms were not taken in considerations. By interpretation and evaluation of findings, it is tried to determine the direction of perception of volunteerism trend in respect of sex of the students.

Table 1   Distributions of sex of participants

	N	%
Female	449	59.5
Male	306	40.5
Total	755	100.0

In Table 1, it is shows the distribution of sex of participants. The sample data consists of 59% (449) women and 40.5% (306) according to survey questions.

As it is seen in Table 2, whereas 218 (28.9%) woman student and 161 (21.3%) man student have been trained in respect of volunteer organizations, 231 (30.6%) woman student and 145 (19.2%) man student not. Distributions of trained and not trained students are comparable. The distribution of volunteerism trends of research participants according to their sex is given in Table 3.

According to Table 4, while participation of trained students to voluntary organizations is 15.2%, participation of not trained students to voluntary organizations is 8.5%. Participation of trained students to voluntary organizations is more than not trained students. If dependent variable supports the voluntary organizations, value of 1 is given otherwise if it doesn't support, value of 0 is given. Independent variables are the factors that are important in supporting the voluntary organizations. In this study, political ideas, social responsibility, service-workforce based volunteerism are concerned. In the questionnaire the analyses is conducted by getting the arithmetic average of these questions.

Table 2   Distributions of sex of students who has been trained in respect of volunteer organizations and those who are not trained

			Trained	Not trained	Total
Sex	Female	f	218	231	449
		%	28.9	30.6	59.5
	Male	f	161	145	306
		%	21.3	19.2	40.5
Total		f	379	376	755
		%	50.2	49.8	100

Table 3   The results of the tendency of the volunteerism students according to their genders

			Tendency of volunteerism (Giving support to voluntary organizations)		Total
			Yes	No	
Sex	Female	f	112	337	449
		%	14.8	44.6	59.5
	Male	f	67	239	306
		%	8.9	31.7	40.5
Total		f	179	576	755
		%	23.7	76.3	100

When Table 3 is examined, it is seen that women (14.8%) give more support to voluntary organizations than men (8.9%).

Table 4   The distribution of volunteerism trend of trained and not trained students

		Giving support to voluntary organizations		Total
		Yes	No	
Trained	f	115	264	379
	%	15.2	35.0	50.2
Not trained	f	64	312	376
	%	8.5	41.3	49.8
Total	f	179	576	755
	%	23.7	76.3	100

The dependent variable is giving support to voluntary organizations by woman and man students in the logistic regression model. If dependent variable gives support to voluntary organizations, it takes value 1, otherwise 0. Independent variables, however, consist of factors which have important effects on supporting the voluntary organizations. In this study, these factors are taken up as "a political position", "social responsibility" and "labor-based services".

The likelihood of the model is evaluated by Hosmer-Lemeshow test. "h_0: Model is compatible with the data" and "$h1$: model is not compatible with the data". The test statistical value according to these hypothesis is $\chi^2 = 9.006$ with the degree of freedom of 8 and $p = 0.342$. In this situation, h_0 hypothesis can be accepted. According to the likelihood test that puts forward the identification of dependent variable, the dependent variable is defined .The results according to the logistic regression analyses is in Table 5.

Table 5　Logistic regression results

Sex	Variable	B	Wald	Sig.	Exp (β)
Female	Volunteerism as a learning atmosphere and learning process	-0.106	0.430	0.312	0.900
	The service and workforce based volunteerism	-0.005	0.003	0.957	0.995
	Volunteerism as a political position	2.151	5.883	0.015	8.592
	Volunteerism as a social responsibility	-0.138	1.017	0.313	0.871
Male	Volunteerism as a learning atmosphere and learning process	-0.432	4.053	0.044	0.649
	The service and workforce based volunteerism	0.309	5.841	0.016	1.363
	Volunteerism as a political position	0.029	0.061	0.804	1.030
	Volunteerism as a social responsibility	-0.153	0.787	0.440	0.649

When Table 5 is examined, it is seen that "being labor-based services", "political stance" and "a learning environment and process" variables are found statistically significant. The variable, social responsibility will not take place in model. According to results of Odds ratio (Exp (β)), women perceive volunteerism as "a political position" according to men. On the other hand, men perceive volunteerism as "a learning environment and process". This type of perception of men (a learning atmosphere and learning process) has been effective on their participations in voluntary activities (supporting volunteerism).

5. Result

Voluntary organizations are more common in developed countries and take more active part in solving more problems as they provide mostly voluntary participation. The biggest problem these organizations couldn't activate is the lack of voluntary organizations. In order to solve this problem, these organizations should solve their problem about human resources but if we consider these organizations have difficulty in solving their own problems it is not meaningful to hope them to be active in solving global problems. In developed countries it is widely known that voluntary organizations have important role. For example, the contribution of these organizations to the employment is at an important level. In underdeveloped and developing countries the effectiveness of these organizations in solving the problems of unemployment, poverty and illiteracy is so important.

When we consider that females take more part in voluntary organizations more than males, the consciousness of volunteerism is in low level, the volunteerism can not be regarded as an entire concept, it can be seen that enough conscience in the society has not been formed. It is possible for the voluntary organizations to take active

part in solving the country's problems and human force that they need and other problems. According to the study results in increasing the voluntary participation, females play important role in potential. Around the world it is clear that the level of the participation of the females to workforce is so low and the poorest part and most illiterate part is mostly females.

In this context, there should be provide perception of volunteerism not only in the form of political position but also social responsibility and a learning atmosphere and learning process and process through consciousness effort all individuals especially women in society at national and international level.

The efforts to make conscious of the individuals who have tendency to take part in voluntary activities aren't effective in solving the problem of voluntary organizations human source only. Besides, particularly it will make possible for female to participate in work force whose current participation ratio to workforce is so low. By working in voluntary organizations that will provide learning atmosphere and process, females will increase their important skills and experience. And this will help to decrease unemployment. Shortly to know how to get the conception of tendency of volunteerism and volunteerism concept will provide multifunctional benefit for individual, social, institutional, voluntary organizational level.

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