Demographic characteristics of donors: an exploratory and confirmatory factor analysis in health care of Iran

Sara Aghababa[1], Amir Ashkan Nasiripour[1],*, Mohammadreza Maleki[2] and Mahmoodreza Gohari[3]

[1]Department of Health Services Management, Science and Research Branch, Islamic Azad University, Tehran, Iran
[2]Department of Health Services Management, Iran University of Medical Sciences, Tehran, Iran
[3]Department of Biostatistics, Iran University of Medical Sciences, Tehran, Iran

It is a competitive advantage for a charity to know the demographic characteristics of the potential donors. For this purpose a cross-sectional survey with purposive sampling was conducted. Two factors, non-financial and financial characteristics, were extracted using exploratory factor analysis, explaining 68% of the total variance. The proposed model fitted well and all indexes on confirmatory factor analysis exceeded the standard values. Considering a combination of these factors, health care charities can identify potential donors and formulate different strategies for financial and non-financial donors. This classified model delineates a vision to provide charitable giving.

Keywords: Charitable giving, confirmatory factor analysis, demographic characteristics, donors, exploratory factor analysis.

AFTER more than 30 years of effort to access 'health for all', this concept has remained a challenge for all governments[1]. In this regard, the World Health Organization (WHO) has declared the third sector organizations as the health-care financing units in their health schemes[2]. These organizations play an important role in health-care services[3] for protecting the poor[4]. Health-care industry could potentially absorb these philanthropic and charitable resources raised by third sector organizations[5]. Therefore, to obtain universal health coverage, donors are considered as external partners who could help the financing systems[6].

As stated earlier, support from donors is vital for charitable organizations[7]; however, only few studies have focused on this issue in Iran[8]. According to a report provided by Charities Aid Foundation in 2012, Iran ranked 12th among 153 countries in giving behaviours and was placed first within the South Asian region. World giving index has shown that Iranians are likely to donate money, volunteer time and help strangers[9]. Surprisingly, old manuscripts also substantiate that ancient Iranians had a defined system for charitable donations. Afterwards, with the arrival of Islam, these foundations continued in the form of waqf[10] and their numbers increased. Overall, donating is a prevalent cultural and religious practice in Iran. In retrospect, evidence from academic studies indicates that limited attention has been paid to donors in the eastern[7,11,12] and Islamic[13] countries. In addition, due to the cultural differences of these countries, further regional researches need to be conducted[14].

There is ample evidence demonstrating that demographic characteristics influence the identification of donors. For instance, many researchers concentrate their efforts on age, which is demonstrated to have positive relationship with identifying the donors[15,16]. Another characteristic is gender difference[17,18]. Married people are more likely to donate than those single[12,19,20], which shows the additive synergy between couples. Moreover, the level of education also plays an important role[21–23]. Employment is also associated with charitable giving[24,25]. From an economic point of view, the ability of selecting wealthy people and leading them to a charity can be a reason for success in sustainability. In the literature, studies showing the positive effect of income[26] dominate those showing the negative effect of income[27]. Ethnicity and race were also elucidated in the previous studies[28]. However, in recent years religion has played a small role in directing these charitable contributions[29].

Consequently, identifying the donors is essential for effective fundraising efforts[30]. Personal characteristics have been introduced as a moderator factor, which could weaken or strengthen the effect of mechanisms involved in driving charitable giving[31]. Recent studies have focused on one or more independent variables, such as age, gender, education level, income, etc. Despite previous attempts to find charitable characteristics[12,21,32], recent studies have emphasized the importance of improving these features[13]. Yet how fundraisers target potential donors is the question of many studies as well as the executive managers[33,34]. In general, studies explaining how to detect donors are scarce. Thus, developing an integrated model for detecting factors that influence the identification of donors to health charities would meet this requirement.

This research was a part of a major study titled 'identification, recruitment and retention of donors' model in Iran health care'. The present study aimed to determine the effective factors in identifying the donors in health charity of Iran.

This cross-sectional survey done in 2014 involved of health charities practitioner in Iran. A questionnaire was developed to determine factors affecting the demographic characteristics of charitable donors.

Based on scanning the literature of the donors using keywords in this domain along with expert opinions via semi-structured interviews of experience and specialty, a draft questionnaire was designed. The questionnaire consisted of five-point Likert-type scale, with 1 representing

*For correspondence. (e-mail: nasiripour@srbiau.ac.ir)

completely unimportant to 5 completely important for each item. Ultimately, this questionnaire helps find to what extent and with how much importance, health-care charities select their donors based on the demographic characteristics. In the first part, background characteristics such as sex, age group, educational level and working experience of the respondent sample were questioned. Part 2 comprised 10 items covering demographic characteristics in charitable domain.

Content validity was studied between the eight key experts through content validity ratio (CVR) and content validity index (CVI). Additionally, exploratory factor analysis (EFA) and confirmatory factor analysis (CFA) were conducted to determine the validity of the questionnaire in all the constructs. Internal consistency reliability of each factor was assessed using Cronbach's alpha.

From a sample of 300 eligible practitioners, about 243 fully participated. So the effective response rate was 81%. Inclusion criteria for practitioners were having academic or executive experience as well as essential knowledge in the domain of health care and charity. Exclusion criterion was a practitioner's refusal to participate in the study. The purposive samples were an appropriate choice because these participants were highly familiar with health care and charity. Due to the importance and restricted number of academic practitioners, 32 of them were selected through census sampling. The other participants were executive practitioners recruited via stratified sampling from active and related organizations in this field. The questionnaire was first directly distributed in the capital city, Tehran, and then the related organization was requested to distribute it to all provinces of Iran under the meticulous supervision of the researchers. The sample size was estimated using on-line Cochran's formula with 95% confidence level. Data were collected via self-administered questionnaire with a cover letter stating the aim of the study. The data collection phase was accomplished in over five months.

Factor analysis was carried out to identify the effective latent variables. The dataset of items was submitted to EFA using $SPSS_{22}$ software. Varimax rotation was applied to extract the principal component matrix and then the factors with eigenvalues greater than 1 were considered. Subsequently, Kaiser–Meyer–Olkin (KMO) measure was used to show the sample adequacy as well as the capability of factor analysis to extract the latent variables. Bartlett's test was also used to assess the model adequacy.

CFA was employed to verify the factor extracted using $LISREL_{8.54}$ software package. In this regard, the ratio of chi-square (χ^2/df) was calculated to decrease the influence of sample size. The values between 1 and 3 indicated the good quality of the model. According to the root mean square error of approximation (RMSEA), it is recommended that numbers below the cut-off level of 0.08 are a reasonable fit. Besides, the incremental fit index (IFI) standard which is lower than 0.90 is acceptable.

Normed fit index (NFI) and non-normed fit index (NNFI) with values greater than 0.90 indicate close fit. Finally, comparative fit index (CFI) should exceed 0.95 (ref. 35).

This work has been derived from the Ph D dissertation carried out in Health Services Management Department of Tehran Science and Research Branch of Islamic Azad University, and approved by this university. All the participants were informed about the study and were assured their responses would remain confidential and anonymous. Written informed consent was obtained from the responders by filling out the questionnaire.

In the 243 samples, men outnumbered women among the practitioners ($n = 154$; 63.37% men versus $n = 89$; 36.62% women). Background characteristics of the practitioners showed that 88 participants (35.39%) were between 31 and 40 years of age, 67 (27.57%) were between 41 and 50 years, 49 (20.16%) were more than 50 years old and 41 (16.87%) were younger than 30 years of age. In addition, the majority had a Bachelor's degree ($n = 122$; 50.20%), 88 participants (36.20%) had a Master's or Ph D degree, whereas 33 (13.57%) had associate degree or less. Besides, 134 (55.14%) practitioners had less than 10 years of work experience, 65 (26.74%) had 11–20 years, 26 (10.69%) had 21–30 years, and 18 (7.40%) had over 30 years of work experience.

The content validity of the questionnaire, assessed by the total CVR and CVI, was 0.85 and 0.90 respectively. In the phase of CVR, two items were eliminated and eight items were obtained by eight experts; accepted items had scores more than 0.75. There was no eliminated item in the CVI assessment because all of the items had a score above 0.78. Finally, the last revised version was agreed upon by the committee which entailed eight items pertaining to age, gender, marital status, religious activity, ethnicity, income, education and employment status. Additionally, the results obtained from CFA confirmed the construct validity. As for the reliability of the instrument, the Cronbach's alpha of each factor was greater than 0.70 (0.85 = first factor, 0.82 = second factor), and was considered satisfactory.

Two independent latent variables were identified. Preliminary statistical analysis showed that the dataset was appropriate for factor analysis (KMO = 0.860; Bartlett's test of sphericity; $P < 0.001$). The means and standard deviations of coefficients, likewise skewness and kurtosis statistics are presented in Table 1 to confirm the normality condition of each item.

Factor 1, labelled non-financial characteristics, contributed to 38.88% of the overall explained variance with a satisfactory reliability ($\alpha = 0.85$). Factor loading varied between 0.65 and 0.82. The items prioritized gender, marital status, age, ethnicity and religious activity respectively. Table 2 provides, the mean, standard deviation and factor loading of each item, detailed eigenvalue, Cronbach's alpha value and explained variance of each loaded factor.

Table 1. Statistics of factor loading

Factors	Mean	Standard deviation	Skewness	Kurtosis	Deviation coefficients Skewness	Kurtosis
Non-financial	2.97	0.96	−0.10	−0.74	−0.68	−2.40
Financial	3.54	0.96	−0.51	−0.42	−3.28	−1.34

Table 2. Results from exploratory factor analysis after varimax rotation

Item code	Item	Mean	Standard deviation	Factor loading	Eigenvalue	% Variance explained
Factor 1	Non-financial					
I2	Gender	2.78	1.20	0.82	4.30	38.88
I3	Marital status	2.84	1.18	0.81		
I1	Age	3.06	1.23	0.74		
I5	Ethnicity	2.81	1.29	0.72		
I4	Religious activity	3.39	1.18	0.65		
Factor 2	Financial					
I8	Employment status	3.63	1.09	0.85	1.11	28.88
I6	Income	3.87	1.13	0.84		
I7	Education	3.14	1.13	0.73		

Factor 2, named financial characteristics, was attributed to 28.88% of the variance and its Cronbach's alpha was 0.82. The factor loading varied between 0.85 and 0.73. The items prioritized employment status, income and education respectively. Table 2 provides the mean, standard deviation and factor loading of each item, the detailed eigenvalue, as well as the explained variance of each loaded factor.

In another phase of this study, CFA was used to test the measurement model. The proposed demographic characteristics model was parsimonious with two covariance relations set free (I3/I4 and I6/I8). All sets of indexes on CFA were over the standard values. Normed chi-square ($\chi^2/\mathrm{d}f$) fitted satisfactory (2.14). RMSEA was 0.069. In our model, IFI, NFI and NNFI obtained were 0.90, 0.98 and 0.98 respectively. Finally, CFI indicated an adequate fit of the model (0.99). Figure 1 illustrates the results of a reasonable structural model.

The present study was conducted to develop factors which can help identify charitable donors in health charities. Therefore, the study was designed to distinguish donors from non-donors. The concise and easy instrument with eight demographic characteristics could inquire two categories of information: nonfinancial and financial characteristics. This instrument was tested in terms of validity and reliability, and also examined among the Iranian health charities practitioners. Finally the model was validated for its goodness-of-fit.

Based on the results, factor 1 that related to some demographic characteristics, including gender, marital status, age, ethnicity and religious activity, was outlined as 'non-financial characteristics'. Moreover, factor 2 re-lated to monetary donations and was summarized under 'financial characteristics'. WHO has mentioned financial and non-financial resources as the requirements for the implementation of many of the proposed programmes[36]. In this regard, with a focus on setting variables, Casale and Baumann[31] used individual demographic characteristics of gender, race, age, marital status and income for their socio-demographic analysis of the US donors in the international charities. In our study the same demographic characteristics were considered, but income was separated from the rest of the mentioned items. In this regard, Kasri[13] reported age, sex, income and educational level as demographic characteristics, in conjunction with socioeconomic, psychographic and motivational/situational characteristics for studying the Islamic charities in Indonesia with the purpose of developing marketing strategies. Furthermore, another study which introduced demographic variables to distinguish donors from non-donors outlined age, marital status, ethnicity and religious attendance[28]. This study, similar to our work, employed a rather complete set of items but did not include gender, while we categorized it under non-financial characteristics.

Wiepking and Bekkers[37] introduced religion, education, age and socialization as predictors of charitable giving. Subsequently, gender, family composition and income were also identified by them[38]. Socio-economic pattern of gender, marital status, occupation, education and especially income was also revealed by Micklewright and Schnepf[24]. In our study employment status, income and education are associated with the financial characteristics. So the items of factor 2 in their work are completely
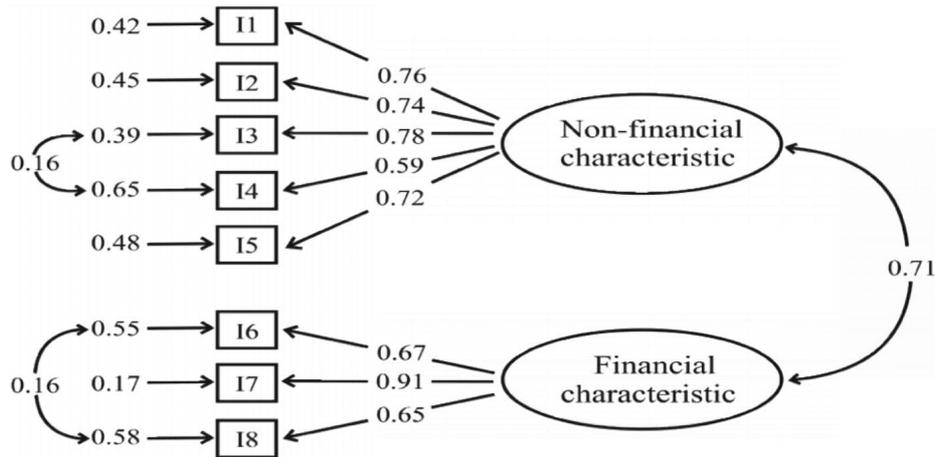
Figure 1. Confirmatory factor analysis for the two-factors model.

similar to the present study. The part of our finding related to financial characteristics was supported by studies as well. For instance, Lee and Chang[12] in an attempt to answer 'who gives to charity' stated the educational attainment and income as predictors for monetary donations in Taiwan. These variables were classified under 'extrinsic characteristics'. However, they did not point out religious activity and ethnicity in their issues. Moreover, in these studies additional related items such as age, gender, marital status, having one or more children, and empathy were included to run multivariate analysis. Shelley and Jay Polonsky[33] examined only age and gender of the donors in Australia as extrinsic moderating variables, but they did not consider segmentation of the donors. The empirical evidence from Britain also showed that characteristics affecting charitable donation include sex, age, region, household income, education and the importance given to religion[21]. Region has the same role like ethnicity in our study. In a study carried out by Srnka et al.[35], the relevant socio-demographic variables introduced were gender, age, education and income. These authors emphasized donor segmentation for the higher levels of fundraising results.

In the opinion of Iranian practitioners in health charity, among the non-financial factors, the highest factor loading pertained to the gender of a donor. Researchers indicate the importance of gender in identifying the donors[39]. Some of the previous studies have shown that women are more generous in donation[12,26]. In contrast, other studies have adverse findings[19]. Overall, in the global view of giving trend[9], women donate more money than men, whereas in the present study, Iranian men (53%) contributed more than women (48%). This result is similar to that of Kasri[13] in Islamic charity of Indonesia, where men contributed more to the charities. In contrast, in the Scandinavian countries, women participated and donated more than men[23]. Gender specification of donors is a real con-

cern for most researchers. Most of the differences between the two genders can be explained by the content of social activities in the society for women, the cultural environment, the role of women in economic development, and the image of their empowerment in the society.

Furthermore, in the factor related to financial characteristics, the first priority yielded was the employment status which is a prerequisite for financial earn. Thus employed people with civil participation seem to have a greater tendency to engage in charity. So we suggest focusing on donor groups who have jobs with higher payment levels. A similar argument was also put forward in a previous study[27]. Meanwhile, Taniguchi and Marshall[11] studied the effect of employment status on formal volunteering. Nevertheless, we considered this characteristic in the present analysis and the factor analysis classified it as a financial factor. Traditionally, charity managers focus on income to identify the donors; whereas our findings showed that other variables, particularly employment status and education, have an influence on identifying the donors as well.

The main strength of the present study is that the first demographic characteristics of charitable donors has been developed in Iran. This design of characteristics has been extracted from literature review and interviews. So the model suggests useful strategies for charity organizations.

We have only studied demographic characteristics which affect the identification of charitable donors based on literature review and interviews. There might be other variables and factors which could be considered in future studies and in other contexts as well.

This study should be considered as a first step in identifying donors in health care of Iran. The findings of the present study reveal that not only an item such as income influences identifying donors, but also a complete set of characteristics should be taken into consideration. With respect to these characteristics of an individual donor,

formulating appropriate strategies for identifying financial donors is different from non-financial ones. In turn, subdivided factors can be used as a suitable means by top executive managers of health charities to improve donor solicitation and enhance charitable giving. Finally, designing a database of donors based on demographic characteristics should be considered by policy-makers. In conclusion, the present findings provide a useful view of an integrated model and will facilitate the recruitment and retention process in the future vision of health charities.

1. Allotey, P., Yasin, S., Tang, S., Chong, S. L., Cheah, J. C. H. and Reidpath, D. D., Universal coverage in an era of privatisation: can we guarantee health for all? *BMC Public Health*, 2012, **12**, 1–3.
2. OECD, Eurostat and WHO, *A System of Health Accounts*, OECD Publishing, 2011.
3. Windrum, P., Third sector organizations and the co-production of health innovations. *Manage Decis*, 2014, **52**, 1046–1056.
4. WHO, The World Health Report, Health Systems: Improving Performance, World Health Organization, Geneva, 2000.
5. Venkatachalam, S. and Saberwal, G., Bio-business in brief: a case for new drugs at generic prices from India. *Curr. Sci.*, 2012, **102**, 1375–1381.
6. The World Health Report: Health Systems Financing; the Path to Universal Coverage, WHO, Geneva, 2010.
7. Hsu, J. L., Liang, G. Y. and Tien, C. P., Social concerns and willingness to support charities. *Soc. Behav. Pers.*, 2005, **33**, 189–200.
8. Aghababa, S., Maleki, M. R. and Gohari, M. R., Narrative review of studies on charity in health care, Iran. *Hakim Health Syst. Res.*, 2015, **17**, 329–336 (in Persian).
9. Charities Aid Foundation, World Giving Index 2012, A Global View of Giving Trends, Washington DC, 2012, p. 13.
10. Stewart, S., The politics of Zoroastrian philanthropy and the case of Qasr-e Firuzeh. *Iran. Stud.*, 2012, **45**, 59–80.
11. Taniguchi, H. and Marshall, G. A., The effects of social trust and institutional trust on formal volunteering and charitable giving in Japan. *Voluntas*, 2014, **25**, 150–175; http://www.springer.com/social+sciences/journal/11266
12. Lee, Y. K. and Chang, C. T., Who gives what to charity? Characteristics affecting donation behavior. *Soc. Behav. Pers.*, 2007, **35**, 1173–1180.
13. Kasri, R. A., Giving behaviors in Indonesia: motives and marketing implications for Islamic charities. *JIMA*, 2013, **4**, 306–324.
14. Chua, V. C. and Wong, C. M., Tax incentives, individual characteristics and charitable giving in Singapore. *Int. J. Soc. Econ.*, 1999, **26**, 1492–1505.
15. Nogueira-Martins, M. C. F., Bersusa, A. A. S. and Siqueira, S. R., Humanization and volunteering: a qualitative study in public hospitals. *Rev. Saude Publ.*, 2010, **44**, 942–949.
16. Wiepking, P. and James, R. N., Why are the oldest old less generous? Explanations for the unexpected age-related drop in charitable giving. *Ageing Soc.*, 2013, **33**, 486–510.
17. Einolf, C. J., Gender differences in the correlates of volunteering and charitable giving. *Nonprofit Volunt. Sector Q*, 2011, **40**, 1092–1112.
18. Willer, R., Wimer, C. and Owens, L. A., What drives the gender gap in charitable giving? Lower empathy leads men to give less to poverty relief. *Soc. Sci. Res.*, 2015, **52**, 83–98.
19. Andreoni, J., Brown, E. and Rischall, I., Charitable giving by married couples who decides and why does it matter? *J. Hum. Resour.*, 2003, **38**, 111–133.
20. Einolf, C. J. and Philbrick, D., Generous or greedy marriage? A longitudinal study of volunteering and charitable giving. *J. Marriage Fam.*, 2014, **76**, 573–586.
21. Schlegelmilch, B. B., Diamantopoulos, A. and Love, A., Characteristics affecting charitable donations: empirical evidence from Britain. *J. Marketing Pract. Appl. Marketing Sci.*, 1997, **3**, 14–28.
22. Wiepking, P. and Maas, I., Resources that make you generous: effects of social and human resources on charitable giving. *Soc. Forces*, 2009, **87**, 1973–1995.
23. Adloff, F., What encourages charitable giving and philanthropy? *Ageing Soc.*, 2009, **29**, 1185–1205.
24. Micklewright, J. and Schnepf, S. V., Who gives charitable donations for overseas development? *J. Soc. Policy*, 2009, **38**, 317–341.
25. Havens, J. J., O'Herlihy, M. A. and Schervish, P. G., Charitable giving: how much, by whom, to what, and how. In *The Nonprofit Sector: A Research Handbook*, 2006, vol. 2, pp. 542–567; http://www.journals.elsevier.com/journal-of-public-economics/
26. Breman, A., Give more tomorrow: two field experiments on altruism and intertemporal choice. *J. Public Econ.*, 2011, **95**, 1349–1357.
27. De Oliveira, A., Croson, R. T. and Eckel, C., The giving type: identifying donors. *J. Public Econ.*, 2011, **95**, 428–435.
28. Michaud, A., Distinguishing non-donors from donors: an exploratory study of the determinants of charitable giving in Canada. MS thesis, Concordia University, Canada, 1993.
29. Ahmadi, N., *Waghf and Expantion in Health Care: Relying on Documents Dedicated to Tehran*, Avaye Omid (Research Foundation and Waghf Cultural Improvement), Tehran, 2010 (in Persian).
30. Yaghoubi, M. and Javadi, M., Health promoting hospitals in Iran: how it is? *J. Educ. Health Promot.*, 2013, **2**, 41.
31. Casale, D. and Baumann, A., Who gives to international causes? A sociodemographic analysis of US donors. *Nonprofit Volunt. Sector Q*, 2015, **44**, 98–122.
32. Bekkers, R. and Wiepking, P., A literature review of empirical studies of philanthropy: eight mechanisms that drive charitable giving. *Nonprofit Volunt. Sector Q*, 2011, **40**, 924–973.
33. Shelley, L. and Jay Polonsky, M., Do charitable causes need to segment their current donor base on demographic factors? An Australian examination. *Int. J. Nonprofit Volunt. Sector Mark.*, 2002, **7**, 19–29.
34. Yörük, B. K., Do fundraisers select charitable donors based on gender and race? Evidence from survey data. *J. Popul. Econ.*, 2012, **25**, 219–243.
35. Srnka, K. J., Grohs, R. and Eckler, I., Increasing fundraising efficiency by segmenting donors. *AMJ*, 2003, **11**, 70–86.
36. Hu, L. T. and Bentler, P. M., Cutoff criteria for fit indexes in covariance structure analysis: conventional criteria versus new alternatives. *Struct. Equ. Model.*, 1999, **6**, 1–55.
37. Wiepking, P. and Bekkers, R., Who gives? A literature review of predictors of charitable giving. Part two: gender, family composition and income. *Volunt. Sect. Rev.*, 2012, **3**, 217–245.
38. Wiepking, P. and Bekkers, R., Who gives? A literature review of predictors of charitable giving. Part one: religion, education, age and socialisation. *Volunt. Sect. Rev.*, 2011, **2**, 337–365.
39. Arabmazar, A. and Zayer, A., A model of tax support on charitable giving in Iran. *Tax J.*, 2011, **19**, 9–36 (in Persian).