

SOCIAL INNOVATION: TOWARDS A BETTER LIFE AFTER COVID-19 CRISIS: WHAT TO CONCENTRATE ON

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Abstract

We know that saving lives of people is the most important issue during COVID-19 crisis, but we should not forget that due to this crisis, the quality of life for many people will change and new social needs will appear and we must be prepared for that. The main purpose of this research is to find out the areas, which are the most affected ones by the pandemic and have a direct impact on citizens' lives. This research is a quantitative study, which plans to use the opinions of business and management graduates in Iran to present the status of affected fields of better life index by COVID-19 crisis. A fuzzy TOPSIS method is used here to do this ranking. This research has ranked the most affected indicators of better life index by COVID-19 pandemic. In addition, the profile of this impact including the indicators of better life index and their change is also presented in this research. We found out that most affected indicators are Income, jobs, health, life satisfaction and education, respectively. The output of this research can be used for policy makers to start providing support on policies, infrastructures and social innovations on the most affected dimensions in order to reduce the impact of this pandemic on citizens' everyday life and their quality of life. Also using fuzzy TOPSIS in recognizing the most affected dimensions of quality of life of citizens is a theoretical implication of this research for similar ideas of future researchers. This study is a pioneer in investigating the effects of COVID-19 pandemic on dimensions of life quality of citizens. Also linking the better life index, as a comprehensive index, which has a direct impact on people's lives to social innovation is another novelty of this research. As it opens a new window for social innovators to know how they can use their innovation capacity to have higher impact on society by shedding light on the main challenges occurred in people's lives. In this research we have decided to use primary data on perceptions of citizens as waiting to get the official secondary data might take long and, on that time, we might be deep in these societal problems and it might be late to make new directions on them.

Research paper

Keywords: Social innovation; Better life index; OECD; Fuzzy TOPSIS; Iran; COVID-19

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Introduction

According to reports of United Nations, we have faced a global health crisis unlike any other crisis in 75-year history of UN (United Nations, 2020). This crisis has and will have impacts on people's lives in many dimensions and aspects. For instance, Maliszewska et al. (2020) have simulated the potential impacts of COVID-19 on gross domestic product and trade, using a standard global computable general equilibrium model. Their illustrative scenarios show that the affected countries will face a loss of income, while global GDP is declining by up to 3.9 percent, and developing countries hit the hardest (average 4 percent while some will experience over 6.5 percent as well) (Maliszewska et al., 2020).

Only as two examples on how the COVID-19 crisis has affected societies, below some facts about education and food supply are presented. Even before outbreak of the COVID-19 pandemic, the world was dealing with a learning crisis, as evidenced by high statistics on learning poverty (Kawamorita et al., 2020). After COVID-19 spread, the education system is facing a new crisis, as more than 160 countries (until 24th March 2020) have started a sort of school closure, which influences at least 1.5 billion youth and children (World Bank Education and COVID-19, 2020). The United Nations World Food Program warned that it is estimated that 265 million people around the world could face food insecurity by end of 2020 due to the COVID-19 crisis, while before the crisis it was around 135 million. However, this crisis unfolds disruptions in local and domestic food supply chains, food affordability and production, which can result in food

security risks and strong tensions in many countries (World Bank Food Security and COVID-19, 2020).

Many other issues related to this pandemic will influence (have influenced) people's life and many social needs are changing face and priority. It seems clear that the current progress of responding to social needs will not work the same, in facing the current crisis of COVID-19. Also we need to have this in mind that aftermath of a crisis, the need for social innovation will be increased and pressing (Tommasi, 2015), and the social innovation mind-set becomes a necessity to respond to this emerging and changing needs and issues in which other traditional approaches may fail to face them (De Egaña Muñoz-Cobo, 2019).

We know that social innovation is any innovative, novel and useful solution to a social issue or need, which works better than current perspectives (i.e., more efficient, sustainable, effective or just) and for which the added value firstly helps the society as whole rather than individuals (Phills, Deiglmeier & Miller, 2008). We also know that necessity is often the mother of innovation (Murray, Caulier-Grice, & Mulgan, 2010). Usually innovations start with an idea about a need, which is not met, together with an idea on how we can meet it. These needs are not always obvious and in most cases they are not easily recognized (Mulgan, 2006). However, in some cases due to changes in needs, changes in norms and behaviours, or changes in situations, we need to reconsider the needs and their priorities. It is relevant to social or better life related needs as well. Same happens when we pass the

current coronavirus pandemic and many societies will face changes in norms, behaviours and living situations.

This study helps us to illustrate and recognize the needs and problems that we are dealing with during the COVID-19 crisis or we will face after the crisis. Although we know that saving lives of people is the most important issue for now but we do not have to forget that after a while the quality of life for many people will change and new social needs will appear and we must be prepared for that. We must know where is the field with highest priority to work on, to do more innovations (social innovation) on them and fulfil the need of society. In this regard, we use the better life index defined by the Organisation for Economic Co-operation and Development (OECD, n.d) as the supporting framework for the current research. The index includes housing, jobs, education, civic engagement, life satisfaction, work-life balance, income, community, environment, health, and safety (OECD better life index, n.d). We put these eleven factors in three dimensions including social, economic, and environmental.

However, as different players in society cannot focus on all dimensions of needs for a better life for people, which is due to lack of resources such as financial, human, time and so on, we need a guideline to define their focus fields. In order to find these fields, we have used opinions of experts and fuzzy TOPSIS analysis to reach to our goal, which is identifying the most affected dimensions of people's lives and introduce them to policy makers and activists in social issues. We think, after recognizing these

fields, which show the main new needs of society, using social innovation can be among the top solutions to provide the best outcome for society.

Literature review

There are some studies on social innovation with a focus on OECD index or programs. For example, Koponen and Isopoussu-Koponen (2018) examined Finnish social innovations that have impact on citizens' lives referring to a program under OECD named PISA. Main social innovations discussed by them include compulsory education, maternity grant, free school lunch, free secondary and tertiary school, maternity clinical system and student financial aid act. In another example, Cetindamar and Beyhan (2017) have used OECD's Better Life Index to show the social benefits that innovations can bring to society and they have determined the main impact fields of activities in their research. It is accepted that any social innovation can target one of 11 above-mentioned indicators of better life index to have an impact on society (OECD better life index, nd). In order to show the relationship between these factors and social innovations, now we are going to introduce this better life index from OECD's point of view and illustrate some researches on the impact of social innovation on the factors of this index.

Housing and Social innovation: As per OECD's better life list, living in acceptable lodging conditions is one of the most significant parts of individuals' lives. Housing is basic to address fundamental issues, for example, shelter, yet it is not only an issue of four dividers and a rooftop. Hous-

ing should offer a spot to sleep and rest where individuals have a sense of security and have protection and individual space; some place they can raise a family. There are several researches that have been investigated housing in social innovation context (Heinze & Naegele 2012; Salamzadeh et al., 2013; Garcia & Haddock, 2016; Nyseth & Hamdouch, 2019; Raynor, 2019; Stieß et al., 2019). Having access to proper and affordable housing is a vital issue in different cities and countries (Wetzstein, 2017). Unlike Iran where housing and social housing are mainly provided by government, in Australia, the UK, US and Canada, providing social housing has moved from government-led mechanism to more partnerships among private, public and nonprofit sectors (Raynor, 2019).

Social innovation is also relevant in the context of affordable housing, as it is directly related to a social problem (Van der Have & Rubalcaba, 2016). With regards to housing, we consider social innovation as perplexing process of presenting new products, procedures or programs that significantly change the fundamental schedules, resources and authority streams, or convictions of the social system in which the innovation happens (Westley et al., 2014). The meaning of social innovation is different for clients, public and businesses. For clients, it is about the option for bespoke designs or being involved in the process of building the house. For Public, it is related to positive places to live and more affordable housing while for businesses, it relates to new and innovative construction teams, procurement processes or business models that promotes knowledge sharing, resource sharing and collaboration (Iuorio, Wallace & Simpson, 2019).

Income and social innovation: According to OECD better life index, although money cannot buy happiness, it is a vital means to achieve better living status and therefore better well-being. Higher income may also increase the access to better health care, higher quality education and housing. A previous study, investigated the negative impacts of inequality of income and has shared that social innovations, social justice ethics and social services can help societies to address this inequality (Daryani et al., 2011; Salamzadeh et al., 2011; Dearing, 2017). According to a research by Nguyen (2018), if we consider the concept of “increasing the minimum wage” as a major social innovation as it has all needed elements to be considered so; we can define three defined social innovation steps for it. The first step is identification of a social norm (in this case, stagnant wages) that results in an undesirable condition (in this case, inability to survive economically). The second step is to develop a deviant to disrupt that norm (in this case, increasing the minimum wage). The third step is an action to spread that deviant throughout society (in this case passing laws to increase minimum wage) (Nguyen, 2018). Bittencourt et al. (2017) performed a research on the impacts of social innovations in Brazilian context and argued that the main benefits of innovative practises in territory of Brazilian favela, are as below: increased quality of life for people involved in the projects, adults’ access to new jobs with higher income and finally women empowerment in communities (Radovic Markovic et al., 2013).

Jobs and social innovation: Again, OECD better life index shares that, although it is clear that having a job has obvious economic benefits, but

having a job also helps people to stay connected with their community and society, make self-esteem, and develop competencies and skills. Societies and countries with higher employment rates are also richer, healthier and more politically stable. Social innovation is a common approach in many initiatives for poverty reduction in different parts of the world. Of course, most of them are not labelled as a social innovation (Millard et al., 2016). Karnani (2017) argues that most of poverty reduction strategies and initiatives should focus on creating many jobs for poor people. On the other hand, social innovation is able to create jobs through entrepreneurship, running SMEs and in this way provide the basic needs for the poor (Fahrudi, 2020). Almeida et al. (2012) studied social innovation in a low and middle-income neighbourhood in Brazil and discussed that social innovation addresses issues of social exclusion, poverty and unemployment by empowering favela residents to create their own jobs. Lipták (2019) investigated unemployment in Hungary and stated that social innovations are playing an increasingly important role in employment expansion, minimizing the existing problems and decreasing the high unemployment rate.

Community and social innovation: As defined by OECD better life index, we all accept that humans are social creatures. Therefore, the frequency of our contact and communication with other people on one hand and the quality of our personal relationships on the other hand, are vital elements of our well-being (Salamzadeh et al., 2017). Social scientists believe that the time spent with friends will result in a lower average level of nega-

tive feelings and a higher average level of positive feelings than time spent in other ways.

Education and social innovation: On OECD better life index, it is mentioned that education plays a key role in providing individuals with the knowledge, skills and competences needed to participate effectively in society and in the economy. In addition, education can improve people's quality of life on dimensions such as happiness, political interest, civic participation and health (Radović Marković & Salamzadeh, 2012). It seems rational to many of us to see educated individuals participate more actively in politics, and in the community where they live, commit fewer crimes and rely less on social assistance. Roblek et al. (2019) worked on the Z generation and their research study poses a new conceptualization of smart technologies as social innovation. They showed that smart technologies enable them to gain interdisciplinary and multidisciplinary knowledge, to build collective intelligence, digitalization of their studies and finally to be ready for future business operations (Salamzadeh & Kawamorita, 2015). Bariakova (2019) performed a systematic literature review on social innovation in higher education systems. It showed that there is a close relationship between university innovation (which is a form of social innovation) and student employability. Elliott (2013) outlined a strategic multi-layered model for assessing the character and impact of social innovation in higher education systems, connecting social and economic benefits. This model shows how the impact of social innovation can be measured via different aspects including purpose and strategy, education and skills, business, community, and culture.

Civic Engagement: According to Definition of OECD better life index, trust in government is essential for social cohesion and well-being. We all see that today, more than any time before, citizens demand a higher level of transparency from their governments. Governments try to share information on why, how and who of their decision making with the citizens to gain or maintain their support. Better transparency is not only to uphold integrity in public sector, but also it contributes to a better governance style and output. Indeed, transparency improves public services by reducing the risk of corruption, fraud and mismanagement of public money. There are three approaches about relationship between social innovation and civic engagement that shows these two constructs are closely linked to each other. The first approach is community engagement as social innovation; in this regard, it is argued that social innovations are happening through community and civic engagements all around the world. Concerned community groups usually drive these initiatives on different social issues (Chamorro-Koc & Caldwell, 2018). Secondly, it has been discussed that civic engagement has impact on social innovation; Cervia (2019) deliberated that social innovation success relies heavily on civic engagement and civic involvement in many different aspects of social issues. Finally, in the third approach, the impact of social innovation on civic engagement is examined; for example, Ostling (2017) explained that potential benefits of social innovation such as civic rewards, cost saving and efficiency can result in more democratic opportunities for higher transparency and higher civic engagement.

Health and social innovation: In OECD better life index, good health is one of the most important things to people. It also brings many other benefits, including an increase in productivity and wealth, enhanced access to the job market and education, reduced health care costs, better social relations and of course, a longer life. It is argued that if governments create an environment for social innovation, it can effectively integrate into health systems and the result will be higher impacts on all stakeholders (Halpaap, Peeling & Bonnici, 2019). Eichler and Schwarz (2019) did a systematic review and content analysis of social innovation literature to find which sustainable development goals will be addressed by social innovations. They used 17 sustainable development goals as their guiding framework and their research results showed that most social innovation case studies deal with a kind of improvement in well-being and health. Another research on a vital issue emerging from social innovation policy, which is how ICT can be used to fulfil social needs and build new collaborations and social relationships, has considered mobile technology as a social innovation in healthcare context. This research suggests that if the European Union's goal for increasing citizens' activities in healthcare is planned to achieve, mobile technology must become a part of a Pan-European social innovation approach. They concluded that only by having a healthcare system supported by this social innovation, the culture and public health status will change (Currie & Seddon, 2014).

Life satisfaction: According to OECD better life index, measuring feelings can be very subjective but it is also a useful and practical comple-

ment to some objective data on analysis of quality of life in different countries. Subjective data is able to provide an evaluation on an individual's health, income, personal fulfilment, happiness, social conditions and life satisfaction. Although personal life satisfaction is a very wide idea (Rab, 2014), in our literature review we found a lack of researches on direct relationship between social innovation and life satisfaction. On the one hand, it is showed that having a job is more likely to improve life satisfaction than having no job. However, such findings could be further substantiated by proving that life satisfaction is lowest among unemployed people (Böhnke, 2005). Both jobs and employment are discussed on previous sections. On the other hand, it is debated that the concepts of well-being, welfare, wellness, happiness, and life satisfaction are all closely related to quality of life. There are several studies on the impact of social innovation on quality of life (e.g., Andersen & Bilfeldt, 2017; Periac et al., 2018; Husar & Ondrejicka, 2019). Oganisjana et al. (2018) deliberated that Social innovation improves wellbeing and inclusion and increases the collective power and resources in societies. Therefore, it is of utmost importance to promote social innovation processes in any society and understand different aspects of it and how they are linked to life satisfaction of citizens.

Safety and social innovation: According to what has shared by OECD better life index, Personal security is a core element for the well-being of individuals and includes the risks of people being physically assaulted or falling victim to other types of crime. These issues may lead to physical pain, anxiety, post-traumatic stress and even loss of life and proper-

ty. One of the biggest impacts is the feeling of vulnerability. University of Melbourne started a new social innovations programme named MABL (Mobilising change Alliance for Better Lives). This project claims that social innovation tackles the most pressing social issues affecting the safety and wellbeing of people. This project tries to use some processes and principles to develop, design, test and scale some innovative solutions to improve wellbeing and safety of Australian adolescents and children to have some impacts at scale (Wise, 2016).

Work life balance: According to OECD better life index, finding a suitable balance between work and daily life is a challenge that all workers face. Families are also affected by this concept. It is necessary for all family members to find a balance between work and family commitments and personal life (Salamzadeh et al., 2014). Governments and businesses can help in solving this issue by encouraging supportive and flexible working procedures, making it easier for everyone to find the balance easier.

Environment: OECD better life index shares that, the quality of our local living environment has a direct impact on our health and well-being. An environment with good situation improves mental wellbeing, is a source of satisfaction, allows people to recover from their daily life stress and to perform some kind of physical activities. It is mentioned that having access to green spaces is a part of quality of life. We need not to forget that economies do not rely only on healthy and productive workers, but also on natural resources like water, fisheries, plants, timber and corps. This is why protecting our environment and natural resources is a priority for both current and

coming generations. Of course, we need to consider that each country has its own environmental concerns due to differences in air and water pollution, consumption patterns, climate, industries they have and many other factors. However, some bigger issues, which are global such as climate change or ozone destruction, need wider collaborations among different countries.

There are many researches on how social innovations can have an impact on environment. As an example, Ghazinoory et al. (2020) conceptualized a model named problem-oriented innovation system, based on historical analysis of the case of US air pollution issue and how it was successfully solved by technical and social innovations. According to Biggs et al. (2010) solving environmental issues of our century needs dramatic changes on the way we see and manage our ecosystems. They mentioned that many people agree on new adaptive, collaborative and integrated approaches in ecosystem management, which increases societies' ability to sustainably handle socio-ecologic issues (Nejati et al., 2011). Biggs et al. (2010) investigated ecosystem management transformation using social innovation approach and suggested that social innovation related frameworks could provide a powerful alternative framework for promoting the transformation in ecosystem management initiatives.

Methodology

In this section, we have described the TOPSIS method that is used to rank the main elements of better life affected by COVID-19 crisis in Iranian society and data collection approach, respectively. The reason behind the

TOPSIS method is based on the idea introduced by Yoon and Hwang (Yoon and Hwang, 1980). They believed that the best alternative should be in shorter distance from an ideal solution. In this method, the distance of choice A_i from the ideal solution and from the negative ideal solution will be considered. Then, geometrically, the aim is to propose a solution with the shortest distance from the ideal solution in the Euclidean space (Salamzadeh et al, 2009). We have used fuzzy numbers used by Sooreh et al. (2011) as shared in table 1, in our research:

Table 1. Fuzzy numbers used in this research

Verbal equivalent	Fuzzy Number
Much worse	(0,0,3)
Somewhat worse	(0,3,5)
Stayed the same	(2,5,8)
Somewhat better	(5,7,10)
Much better	(7,10,10)

The Fuzzy TOPSIS method consists of the following steps:

First, we need to have the decision matrix as below:

$$\tilde{D} = \begin{bmatrix} \tilde{x}_{11} & \tilde{x}_{12} & \dots & \tilde{x}_{1n} \\ \tilde{x}_{21} & \tilde{x}_{22} & \dots & \tilde{x}_{2n} \\ \cdot & \cdot & \dots & \cdot \\ \cdot & \cdot & \dots & \cdot \\ \cdot & \cdot & \dots & \cdot \\ \tilde{x}_{m1} & \tilde{x}_{m2} & \dots & \tilde{x}_{mn} \end{bmatrix}$$

Each item in this matrix is defined following below style as a triangular fuzzy number:

$$\tilde{X} = (a_{ij}, b_{ij}, c_{ij})$$

We also need the weights in this analysis but as we assumed the same weight for all respondents, our weight is defined as below:

$$\tilde{W}_j = (w_{j1}, w_{j2}, w_{j3})$$

$$\tilde{W}_j = (1,1,1) \forall j \in n$$

On second step, we need to normalize the decision matrix (\tilde{R}) using below formulas:

$$\tilde{R} = \begin{bmatrix} \tilde{r}_{ij} \end{bmatrix}_{m \times n}$$

$$\tilde{r}_{ij} = \left(\frac{a_{ij}}{c_j^*}, \frac{b_{ij}}{c_j^*}, \frac{c_{ij}}{c_j^*} \right)$$

While in this step, c_j^* is calculated as below:

$$c_j^* = \max_i c_{ij}$$

On next step, we need to calculate the normalized weighted matrix (\tilde{V})

$$\tilde{V} = \begin{bmatrix} \tilde{v}_{ij} \end{bmatrix}_{m \times n} \quad i = 1, 2, \dots, m, \quad j = 1, 2, \dots, n,$$

$$\tilde{v}_{ij} = \tilde{r}_{ij} \cdot \tilde{w}_j$$

On next step, we need to find the fuzzy positive ideal ($FPIS, A^+$) and fuzzy negative ideal ($FNIS, A^-$) using below formulas.

$$A^+ = (\tilde{v}_1^*, \tilde{v}_2^*, \dots, \tilde{v}_n^*)$$

$$A^- = (\tilde{v}_1^-, \tilde{v}_2^-, \dots, \tilde{v}_n^-)$$

On fifth step, we need to find the distance between the values and the positive and negative ideals. Below we show how the distance between two fuzzy numbers of A and B is calculated.

$$\tilde{B} = (a_2, b_2, c_2) \quad \tilde{A} = (a_1, b_1, c_1)$$

$$D(A, B) = \sqrt{\frac{1}{3} [(a_2 - a_1)^2 + (b_2 - b_1)^2 + (c_2 - c_1)^2]}$$

So below formulas are presented to calculate these distances:

$$d_i^* = \sum_{j=1}^n d(\tilde{v}_{ij} - \tilde{v}_j^*) \quad i = 1, 2, \dots, m$$

$$d_i^- = \sum_{j=1}^n d(\tilde{v}_{ij} - \tilde{v}_j^-) \quad i = 1, 2, \dots, m$$

Finally, we need to calculate the relative closeness to the ideal solution using below formula:

$$CC_i = \frac{d_i^-}{d_i^* + d_i^-} \quad i = 1, 2, \dots, m$$

Ranking the alternatives can be done easily on this step as we can use ascending or descending order of the factors we plan to rank.

We have used TOPSIS to rank most affected dimensions of better life index, which directly influences the citizens' lives quality. In order to provide results with higher quality we have used fuzzy approach in our TOPSIS analysis. In this research, we have divided factors to three main

categories including economic, social and environmental dimensions. Under economic dimension, we have three factors namely housing, income and jobs. Under environmental dimension, we have air and water quality and finally under the social dimension, which is the biggest dimension, we have below factors: education, civic engagement, health, life satisfaction, safety, work-life balance and community. In order to find experts to get their opinions on the changes on each factor due to COVID-19, we have gathered opinions of management graduates who are familiar to this context. We have used snowball sampling and the final number of gathered questionnaires is 185. We have done some refinements on these questionnaires to remove the outliers and finally, 181 questionnaires entered our analysis part as we removed four outliers from our data.

Results

In this section, we provide some demographic information about our respondents, a general diagram on the effects of COVID-19 on Iranian citizens' lives in three dimensions including economic, social and environmental and finally ranking the most affected factors of a better life index in Iranian society. As it was mentioned earlier, our samples are taken from business and management graduates in Iran. Distribution of the respondents according to their gender looks rational as 52 percent are female and 48 percent are male. Also on their age range, majority of them (53 percent) are 30 to 40 years old and next big group is 40 to 50 years old with 24 percent of our samples. So overall, 77 percent of respondents are from 30 to 50 years

old. After removing the small number of respondents who are not employed anywhere, below, in figure 1, you can see the sectors our respondents are working in. It is clear that majority of them are from business sector (69 percent), followed by government sector (28 percent) and lowest value is related to non-profit sector with only 3 percent of our respondents.

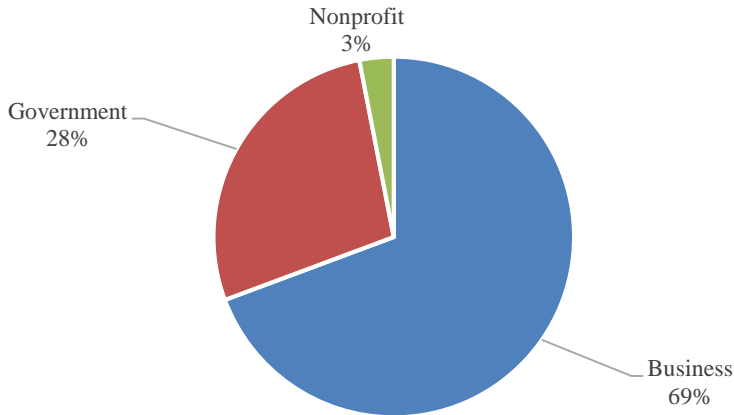


Figure 1. Sector distribution of the respondents

On the industry in which our respondents are working for, as it is shown in figure 2, 78 percent are working in service industry and 22 percent in manufacturing industry.

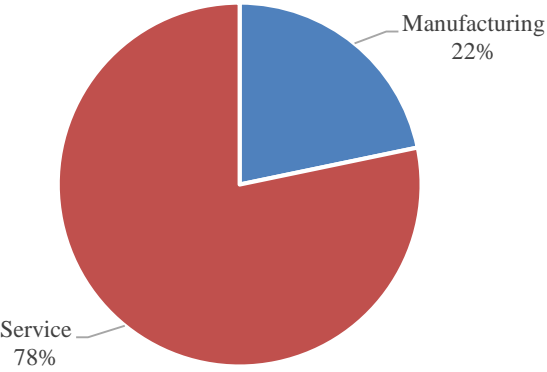


Figure 2. Industry distribution of our respondents

On work experience of our respondents, as it is shared on figure 3, the biggest group is 5-15 years of work experience with 44 percent of the respondents, followed by 15 to 30 years of experience with 31 percent of them. Also 6 percent have more than 30 years' experience, so it is clear that they are experienced enough to have a valid opinion about our research questions.

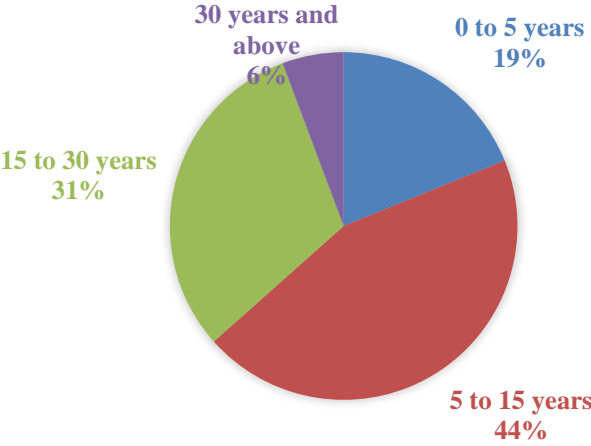


Figure 3. Work experience

Also on another question in this part, 92 percent of respondents shared that they are aware or somehow aware of macro policies of the government on facing COVID-19 crisis in Iran and only 8 percent of them said that they are not aware of detailed policies of the government in this regard. Finally, to get a better picture of their organizational exposure to changes due to COVID-19 crisis, we found out that 84 percent of them have faced some kind of change in their organizational policies and procedures and 31 percent of them are among the teams working on these policy changes. Therefore, we can count them as policy makers of their organizations.

Considering this demographic information, it shows that they have enough experience and expertise to be chosen as our research's respondents. Below you can see the big picture of the responses received from our respondents on how COVID-19 has affected different aspects of their better life index. In order to show the status better, we have presented the opinions in three dimensions of economic, social and environmental in figure 4. It is clear that the effects on environmental dimension is a positive effect but on two other aspects, the changes and effects are serious and they need some kind of intervention as the majority of the responses are showing a situation "much worse" and "somewhat worse" compare to the time before this crisis.

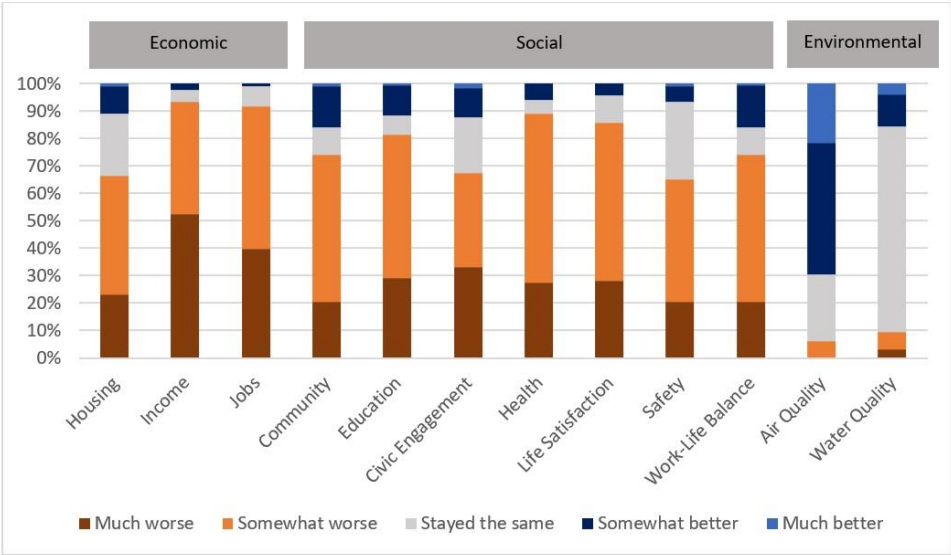


Figure 4. overall profile of the responses on 12 dimensions of better life index

Below we have shared the output of the fuzzy TOPSIS analysis. On first step, we have presented the final values for each of our 12 dimension in this research in table 2. Then in table 3, we have shared the normalized fuzzy values to calculate distances to positive and negative ideals.

Table 2. Fuzzy numbers for 12 factors

	LFi	MFi	UFi
Housing	5.751381	5.767956	5.751381
Income	4.176796	4.19337	4.176796
Jobs	4.458564	4.475138	4.458564
Community	5.662983	5.662983	5.662983
Education	5.19337	5.209945	5.19337
Civic engagement	5.541436	5.558011	5.541436
Health	4.872928	4.872928	4.872928
Life satisfaction	4.939227	4.977901	4.966851
Safety	5.723757	5.740331	5.723757

	LFi	MFi	UFi
Work life balance	5.662983	5.701657	5.690608
Air quality	9.154696	9.19337	9.18232
Water quality	7.906077	7.944751	7.933702

Table 3. Normalized fuzzy numbers for 12 factors

	NLFi	NMFi	NUFi
Housing	0.626354	0.628159	0.626354
Income	0.454874	0.456679	0.454874
Jobs	0.48556	0.487365	0.48556
Community	0.616727	0.616727	0.616727
Education	0.565584	0.567389	0.565584
Civic engagement	0.60349	0.605295	0.60349
Health	0.530686	0.530686	0.530686
Life satisfaction	0.537906	0.542118	0.540915
Safety	0.623345	0.62515	0.623345
Work life balance	0.616727	0.620939	0.619735
Air quality	0.996992	1.001203	1
Water quality	0.861011	0.865223	0.864019

In table 4, we have summarized the distances and relative closeness to positive ideal, which is our criteria for ranking.

Table 4. Final output of fuzzy TOPSIS and rankings

Rank	d+	d-	CCi
Income	0.544525	0.455476	0.455475
Jobs	0.513839	0.486162	0.486161
Health	0.469314	0.530686	0.530686
Life satisfaction	0.459691	0.540316	0.540312
Education	0.433816	0.566186	0.566185
Civic engagement	0.395909	0.604092	0.604091
Community	0.383273	0.616727	0.616727
Work life balance	0.380871	0.619136	0.619132
Safety	0.376054	0.623948	0.623947

Rank	d+	d-	CCi
Housing	0.373045	0.626956	0.626955
Water quality	0.136594	0.863419	0.863408
Air quality	0.001871	0.9994	0.998132

As it can be seen in table 4, two factors in environmental dimension are having the best situation and there are almost no issues on air and water quality, even according to the opinions of our respondents there are improvements in this dimension. It seems that two other factors namely housing and safety are also not that much critical for Iranian citizens. On the other hand, two main issues, which people have faced with, are income and jobs as they have been affected by COVID-19 crisis the most and both these factors are among economic factors. The third critical factor is health followed by life satisfaction, education and civic engagement and all these factors lay in social category. It shows that as we assumed in our research, social innovation can be introduced as an approach to solve these issues. Of course, first two factors are also related to many social innovation initiatives as shared in literature review section of the current article.

Discussion and Conclusion

In this research, we have used “better life index” developed by OECD as a framework to evaluate the quality of citizens’ lives. We need to share that there are many different frameworks in this regard including indirect measures but “better life index” includes factors, which have a direct impact on quality of people’s lives, and it is easy to see this direct impact by individuals in society. We have categorised these factors in three dimen-

sions namely economic, social and environmental only have a more detailed categorization on these factors so players who plan to work on solving these issues can better recognize if it is related to their field of activities or not. In this regard, our finding shows that environmental dimension even has improved a bit due to this COVID-19 crisis and movement control orders. However, two other dimensions (economic and social) are influenced a lot and there are serious issues here to solve. Usually in OECD better life index, researchers use secondary data to do the analysis but in our case waiting to see the national statistics may take long and people might be in a very more critical situation until then. Therefore, we decided to use primary data and get the perceptions of citizens to see which dimension is more affected by this COVID-19 crisis. We may suggest future researchers to cross check these results with the secondary data when it is published nationwide.

We found out that the most affected factors by COVID-19 in OECD better life index are respectively, income, jobs, health, life satisfaction and education. So, as it was shared in this article, using social innovation can be one of the best options to start to work on these emerging challenges. It is understood that players in social innovation are diverse including governmental, business and non-profit (NGO) sector; we can call for some new ideas mainly on above-mentioned 6 dimensions as social innovation has the potential to solve these challenges or make improvement in order to improve the quality of life of affected or vulnerable parts of the society.

In order to come up with new social innovations in these fields we recommend Iranian government and local governments including city coun-

cils and municipalities to facilitate the activities of non-profits and businesses to play an impactful role in solving these challenges by passing supporting laws and regulations or allocating their available budgets to support new innovative initiatives in these fields. Governmental organizations and bodies who are in charge of these fields of activities (income, jobs, education and health) can also speed up their activities to solve these issues before the situation gets out of control. They also need to think on cross sector partnerships to improve their capacity and have a higher level of impact on the society and citizens' lives. On the other hand, businesses who are active in these fields now can recognize the importance of their activities more. They need to increase their productivity, think about new partnerships, new business models, new products/services and new strategies to solve these issues faster. In addition, businesses that spend their CSR fund on social issues and concerns can use the results of our research to spend their funds on a more critical field.

Usually the non-profit or NGO sector is super active in their field of interest as they have many values and deeper perceptions about the issue they are working on. They also have a high potential to come up with social innovations, so we also suggest this sector to work more on those six emerging challenges due to COVID-19. To think more on new cross sector partnerships and to find new sources shared by other sectors to help them have a faster and more effective impact on society. These sectors and solutions can also share their capabilities to start new institutions to solve these wicked problems caused by COVID-19 crisis and these new institutions are one of

the most important types of social innovations. Overall, this research tries to shed more light on the new challenges due to COVID-19 crisis and we believe that policy makers, executives and even interested individuals can use our results to be of a help to their society to recover itself from the current effects of this pandemic. We also suggest future researchers to go deeper in each of these six main challenge fields to find out more detailed areas that need improvement.

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