Women entrepreneurship in developing countries: Simulation based Fuzzy Topsis approach

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Abstract

Business is still male-dominated in the twenty-first century despite women being contributing to every field of day-to-day life. In developing countries, women’s participation in economic activities is even worse. Women entrepreneurs face unique challenges in developing countries to grow and sustain their growth. The purpose of this study is to identify and rank the major challenges that obstruct women entrepreneur’s growth in developing countries like Pakistan. A Fuzzy Technique for Order Performance by Similarity to Ideal Solution (FTOPSIS) is proposed. Thus, using simulation based fuzzy TOPSIS technique, the decision criteria are quantitatively evaluated. As a result, the approach generates decision-making knowledge, and thereafter, the model can be adopted and at the same time if necessary, modified by decision makers. To demonstrate the applicability of the proposed approach, data was collected through questionnaire from women entrepreneurs in Pakistan and the results analyzed.

Keywords: Simulation approach; Women entrepreneurship; developing countries; Fuzzy TOPSIS; strategic decisions.

1. Introduction

Entrepreneurship is linked to economic growth. Entrepreneurship creates employment, new business, brings innovations, new technologies and thus contributes to the productive capacity of the country that ultimately leads to economic growth in a long time. This implies entrepreneurship is a fundamental component for growth in developed and developing economies (Dheer et al., 2019). At the same time, labor and capital is also a factor of production that contributes to the output of a country. It is interesting to observe that Global labor participation is on the decline since the 1990s (ILO, 2018). Also, women’s participation in the labor force in high-income countries increased by about 4 percentage points during the 1990–2018 period reaching its peak but it is expected to start declining in the post-2020 period. But in developing economies the women participation rate declined by 5 percentage points during the same 1990–2018 period. On the other hand, for every 10 male entrepreneurs, there are only 7 women entrepreneurs globally, with an expectation to six countries namely, Indonesia, Thailand, Panama, Qatar, Madagascar and Angola where this ratio is equal (Bosma and Kelley, 2019). Women participation in the labor force and as an entrepreneur can contribute towards higher economic growth and prosperity, in particular in developing economies, because that will not only increase the labor force in total, and also can contribute to employment generation through entrepreneurial activities. Additionally, if women are entrepreneurs then most probably, they will be financially more independent and thus can contribute more towards the wellbeing of their families and kids, and they do not have to be
dependent on the male partner for earnings. However, it is never an easy task for women to become entrepreneurs in developing countries where they face the male–centered business world (Jennings and Brush, 2013). Women entrepreneurs face may challenge and barriers that affect the growth and success rate of their business. There is a lot of scholarly literature that does discuss hurdles and challenges that women entrepreneurs face and is discussed in the subsequent section. It is important to mention that the literature do study women entrepreneurship in details but there are some literature gaps such as the ranking of challenges faced by the women entrepreneurs and is the use of the fuzzy environment for women entrepreneur’s decision making rather than using deterministic statistical or interview–based descriptive methods. Therefore, the current study intends to fill up these gaps. In fact, the purpose of this study is to identify and rank the factors that are challenging women entrepreneurs in developing countries like Pakistan. A fuzzy TOPSIS technique is applied to investigate which factor is affecting the growth rate the most to the least (Ortiz–Barrios et al., 2020). The four alternatives that affect the success of their business the most are the lack of moral support they get, their access to limited funding, the social norms and culture of the society, and other miscellaneous factors affecting their opportunity to grow for example the lack of knowledge respectively. The contribution of the study is the application of fuzzy TOPSIS in women entrepreneur’s literature and ranking the challenges faces by the women entrepreneurs in developing countries like Pakistan. The rest of the paper is organized as follows: Section 2 presents the literature review. Section 3 describes the proposed the simulation based fuzzy TOPSIS in the study. Section 4 presents main results and discussion. Finally, Section 5 summarizes the main contribution of the research.

2. State of the art

The literature focusing on women entrepreneurship or the challenges faced by women entrepreneurs is not uncommon. There are many focused areas of the women entrepreneurship scholarly literature. For example, Henry, et al. (2016) in their study proposed a systematic literature review of articles published in about 20 journals for three decades on the topic of gender and entrepreneurship. According to Henry, et al., 2016, during 1983–1992 majority of scholarly work in the subject area was of foundational nature and focused more on descriptive, exploratory nature and lacking in knowledge about feminist theories and gender. During 1993–2002, the scholarly literature on women entrepreneurship was still conventional but with more focus on measurable items (such as performance) and contrasting between male and female entrepreneurs. Finally, the period of 2002–2015 evident significant growth in the literature of women entrepreneurship especially in Africa, Asia, Sub-Sahara, and Middle East region but there was still more focus on “performance” and increased scope to networking activities, entrepreneurial orientation, risk, entrepreneurial capital, and new venture growth. Similarly, Poggesi et al., (2016) proposed a review study based on a thematic approach being applied to 250 research articles published during 2000–2014. Their study includes several themes among others financing, managerial practices, strategies, networking, etc., for women entrepreneurship. Furthermore, a review study based on 30 years of published research work from topmost journals of entrepreneurship is developed by Foss, et al., 2019. The research aimed at studying the policy implications and differential theoretical perspectives of women entrepreneurship. It is worth noting that there is abundant scholarly work on the challenges faced by women entrepreneurs. These studies can be classified based on the countries it covers, types of challenges women entrepreneurs face, the time within which these studies are undertaken, comparison of challenges faced by developed and developing countries women entrepreneurs, the comparison of man and women entrepreneurship issues, etc. For instance, Zgheib (2018) studied 102 Lebanese and American women entrepreneurs through extensive in–depth interviews to explore the push–pull drive for entrepreneurship. She concluded that Lebanese women have forced push entrepreneurship whereas, US businesswomen have voluntary pull entrepreneurship. Javadian & Singh (2012) investigated the success factors of Irani women entrepreneurs using their newspapers–based interview. Using about 30 newspaper interviews of women entrepreneurs and the common questions among these interviews, this study identified the common challenges faced by these successful Iranian women entrepreneurs. These factors include self–efficacy, risk–taking, stereotyping, societal culture and tradition on Iranian women entrepreneurs. They concluded that negative stereotypes and Iranian traditions are the major barriers for successful Iranian women entrepreneurs to overcome. A similar kind of study could be found from Maden (2015) for Turkish women entrepreneurs using 10 semi–structured interviews from four different organizations in Turkey. The study concluded that Turkish women entrepreneurs share common personality traits as they were being persistent, determined, patient, mentally strong, visionary and innovative. Additionally, finding and managing finances were the most important challenges for Turkish women entrepreneurs. Some similar kind of studies includes: Lerner, et al. (1997); Hisrich & Ayse Öztürk (1999); Roomi & Parrott (2008); Jamali (2009); Rehman & Azam Roomi (2012); Khan & Jantan (2018); etc. Some studies are focused on a single factor that influences entrepreneurial intentions. For instance, religion may encourage or discourage entrepreneur intentions in particular in conservative environments. In this regard, Rehan, et al. (2019) studied the influence of Islamic values and practices on entrepreneurship intentions using about 1,900 Pakistani university students sample using structural equation models and
concluded that Islamic practices and values positively influence entrepreneurial intentions. However, it may be noted that Rehan, et al. (2019) were based on both, male and female university students. While, Balachandra, et al. (2017) studied the impacts of investors stereotyping behavior using men-and—women owned ventures while studying about 200 pitches of 1-minute duration for venture capital undertaken during the 2007–2008 period in a top—tier northeastern university in India. The study concluded that investors' behavior is partially driven by gender—based stereotyping (Balachandra, et al., 2017). Studies that combines various kind of factors and challenges for women entrepreneurs are or studies that discuss the success factors of women entrepreneurs are also plentiful. For example; AW (2017) developed a review study that discusses the challenges faced by women entrepreneurs in developing and developing countries using studies from literature on subject matter covering developing (like Bangladesh, India, Pakistan, etc.) and developed countries (like Australia, Norway, Singapore, etc.). The study concluded that the challenges are faced by women entrepreneurs in developing and developed countries. In countries like Canada and USA it is the stress, limited business experience and access to capital, whereas in countries like Bangladesh and Pakistan it is harassment from government and private sector, women stereotyping to be the best for housework rather than business, etc., are some of the major challenges that hinder women entrepreneurial growth. A rather not very recent review study by Buttnerr & Moore (1997) studied 129 women entrepreneurs that left the organizations for becoming entrepreneurs. Accordingly, the most important success factor was their desire to challenge and self—determination to balance work and family responsibilities. Additionally, the women switch from job to becoming entrepreneurship due to issues like discrimination, blockage of career development and organization dynamics. Tripathi & Singh (2018) used 125 academic papers that were published during 1980—2017 in top—ranked Journals of entrepreneurship and identified 15 barriers that women entrepreneurs confront in India. These 15 barriers were further reduced to 10 barriers after feedback from the industry expert and later on, it was ranked using Decision—making trial and evaluation laboratory (DEMATEL). Accordingly, these barriers include, lack of motivation, financial and business experience, access to infrastructure and technology, balancing work and family life, etc. There are many studies that discuss either one or more barriers to women entrepreneurship covering different geographic regions around the world. Some of these studies include: multiple barriers (Sharma, 2013; Chawla & Sharma, 2016)), risk—taking by women entrepreneurs, finances (Brindley, 2006; Irwin & Scott, 2010; Sandhu, et al., 2012), career progression (Ismail & Ibrahim, 2008; Chowven, 2007), ICT (Mathew, 2010), are few studies on similar theme. In the context of Pakistan, there are scholarly studies that do discuss the challenges that women entrepreneurs face. For example, Roomi & Parrott (2008) studied the gender—related factors, in particular, that of associated with veil and honor that may influence Pakistani women's entrepreneurial capabilities. The study was based on data of about 250 women entrepreneurs across five major cities of Pakistan and was based on their in—depth and one—to—one semi—structured interviews. The study concluded that the female face gender—neutral challenges such as lack of management skills, restrictive government regulations, access to capital at initial phase of business (Coleman, 2002) reported similar kind of findings along with studying the risk behavior of women entrepreneurs in the UK) along with gender—based additional challenges such as veil, honor, in addition to discriminatory attitude by the financial institution in provision of capital for business. At the growth stage of business, the big challenge for women entrepreneurs was to prove their credibility to both their customers and suppliers. In another study, Roomi, (2006) also reported similar kind of challenges for women entrepreneurs in Pakistan in addition to including lack of access to ICT, training, production inputs and assistance from government departments. Other issues that also may influence women entrepreneurs in Pakistan include lack of encouragement from family members, in particular, the male, networking that is based on religious beliefs that men are superior to women. Goheer, (2003) developed a report based on 150 Pakistani women entrepreneurs' surveys that were running a business from dedicated business premises with employing at least 5 employees and were located in one of the three cities namely Islamabad, Lahore, and Rawalpindi. The study among other things also highlighted the challenges and constraints faced by the women entrepreneurs in Pakistan. Accordingly, these constraints include, gender—bias such as people not being cooperative towards women, the aptitude of male towards working women, marketing issues such as attracting customers, family and social issues such as not supportive family and household engagement, finances constraints like lack of capital availability, and government regulations not being supportive. This is evident from the above discussion that the literature on women entrepreneurship and also the barriers to women entrepreneurship are abundant, however, there are still some literature gaps such as: mostly the earlier studies are based on qualitative interviews discussing cases of women entrepreneurs and based on that identifies the factors that are challenging for them. Furthermore, the earlier studies that are based on quantitative statistical methods, treat gender as a variable had also limitations (Wu, et al., 2019). Also, in qualitative/quantitative studies once the various challenges were identified there is no way to rank these challenges, thus making it less useful in setting priority for policies in a specific direction for improving the entrepreneurial eco—system in a particular country or region. In the context of the methodologies of the studies applied in literature, in particular, those using
gender as a variable (the quantitative studies), ignore the context and issues associated to the entrepreneurial environment and using only deterministic approach (Wu, et al., 2019). The use of the deterministic approach is not suitable given that women’s entrepreneurial environment is uncertain and unclear. The use of the Fuzzy environment approach may be more efficient in uncertain environments (Wu, et al., 2019). The use of a fuzzy environment approach is not new to the entrepreneurship literature. For instance, Kraus, et al. (2018) proposed a review study on the application of fuzzy–set qualitative comparative analysis in the field of entrepreneurship and innovation during 2005–2016 based on 77 published journal articles. However, the application of fuzzy theory in conjunction with multicriteria decision methods (MCDM) is not so common. Some scholarly studies that are based on fuzzy MCDM and are focused on entrepreneurship and gender issues include (Crespo, 2017; Amrita, et al., 2018; Wu, et al., 2019). The fuzzy set theory was applied by Crespo (2017) for studying cross–culture differences in the entrepreneurial activity of men and women while using data of 77 different countries. The study concluded that there is not a single culture that promotes entrepreneurship. Furthermore, different level of economic development in a combination of national culture encourages different configurations that may lead to higher entrepreneurial activities. Amrita, et al. (2018) studied to identify the critical success factors of women entrepreneurship in India. The study employed a fuzzy analytical hierarchal method to rank the critical success factors of women entrepreneurship. The study identified the critical success factor of women entrepreneurship in India using existing literature and through the application of the fuzzy AHP method validate it through industry experts. The factors are group under seven dimensions and concluded that the individual, management, and government dimensions are of more importance compared to women’s aim for becoming entrepreneur. Wu, et al., (2019) aimed the link between the four women’s entrepreneurial barriers namely, motherhood, entrepreneurial perceptions, customs, and finances low female entrepreneurial rate and consequently the barriers faced by the female entrepreneurs in a global and complex context. The study applied –fuzzy–set qualitative comparative analysis and compared women entrepreneurship across 28 countries to conclude that high initial funding and entrepreneurial perceptions are two major factors that lead to low women entrepreneurial participation rates in the studied countries. None of the Fuzzy MCDM based studies use fuzzy TOPSIS technique. The ones that are using fuzzy MCDM are mainly limited to the success factor that also being limited to the application of fuzzy AHP. This particular study adds to the existing literature on fuzzy MCDM applications to women entrepreneurship area in a few unique ways. First, it is an addition to the limited existing literature in the fuzzy MCDM domain on women entrepreneurship. Secondly, the study applies Fuzzy TOPSIS methods for identifying, analyzing, and validating the major challenges to women entrepreneurship in developing countries. Fuzzy TOPSIS has not been applied in this kind of study earlier. Thirdly, the study focuses on a developing country Pakistan, that has not been the center of such research till this study.

3. Materials and Methods

3.1. Proposed simulation based fuzzy TOPSIS approach

The literature review identified a lot of challenges and success factors associated with women entrepreneurs in developing countries and Pakistan also. The challenges identified from the literature review and after discussion with experts on women entrepreneurs, this study listed 16 challenges combined under four main headings all as major challenges for the women entrepreneurs in developing country as shown in Figure 1. These include limited funding access, social norms, moral support, and others. Within these four challenges like limited access to capital from family, friends, network or financial institution, etc. This study employs multicriteria decision making (MCDM), MCDM is a popular technique that has been used extensively in many fields of decision making. For example, energy (Ali, et al., 2018), environment (Ali, et al., 2019a), supply chain management (Ali, et al., 2019b), risk assessment (Ali, et al., 2019c), medical (Sabir, et al., 2018), etc. In the MCDM technique, multiple criteria conflict with each other and this technique helps to rank them according to the weights that are assigned by different decision-makers.
Figure 1. Theoretical model.

We live in an environment in which the objectives, the consequences and the constraints of the problem are not known with certainty. In such a situation, the Fuzzy models of MCDM (i.e., Fuzzy MCDM or FMCDM) can be applied. In FMCDM the decision-makers can deal with uncertain or incomplete information. The use of Fuzzy theory is more appropriate for the entrepreneurial environment given that it is a complex phenomenon (e.g., women entrepreneurship) and not each and everything associated with it is certainly known (Wu, et al., 2019). In this regard, Bellman and Zadeh (1970) introduced the Fuzzy MCDM theory that can apply to decisions in the fuzzy environment. In these methods, the decision-makers make the judgment of each criterion in natural language, use of words (e.g. Such criteria will have a very high or low impact on a particular alternative), the linguistic variables are further converted to fuzzy numbers (Zadeh, 1970). Fuzzy numbers (FN) most often used are triangular FN, trapezoidal FN and Gaussian FN (Moral Ávila, et al., 2017).

3.2. Fuzzy TOPSIS

TOPSIS is the Technique for Order of Preference by Similarity to Ideal Solution used in multi-criteria decision making which was introduced by Hwang and Yoon in 1981 (Hwang and Yoon, 1981) and was further developed by (Hwang, et al., 1993). Chen, (2000) extended TOPSIS technique by introducing fuzzy numbers. It is a technique based on the concept of the shortest geometric distance from the positive ideal solution and the longest distance from the negative ideal solution. The longer the distance from the ideal solution for a particular criterion the higher it is ranked and thus it helps to identify the most problematic criterion among all criteria under study. Furthermore, this technique can be used to evaluate multiple alternatives. The fuzzy TOPSIS method is applied as follows.

Step 1: Assigning rating and weighting

In this step the decision-makers rate and assign weights to various criteria and in natural language, i.e., if K is the number of decision-makers, Ai is alternative and Ci is the criteria then fuzzy rating and weighting for criteria, respectively are given as:

\[ x_{ij}^k = (a_{ij}^k, b_{ij}^k, c_{ij}^k) \]  \hspace{1cm} (1)

\[ w_{ij}^k = (w_{ij1}^k, w_{ij2}^k, w_{ij3}^k) \]  \hspace{1cm} (2)

Step 2: Linguistic variables to fuzzy numbers

The fuzzy numbers are assigned to weight and rate from the responses collected. Weighting is undertaking using a weighting scheme given in Table 1 as introduced by (Chen, 2000).

<table>
<thead>
<tr>
<th>Linguistic Variables</th>
<th>Weighting</th>
<th>Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very Low</td>
<td>(0.0, 0.0, 0.1)</td>
<td>(0,0,1)</td>
</tr>
<tr>
<td>Low</td>
<td>(0.0, 0.1, 0.3)</td>
<td>(0,1,3)</td>
</tr>
<tr>
<td>Medium Low</td>
<td>(0.1, 0.3, 0.5)</td>
<td>(1,3,5)</td>
</tr>
<tr>
<td>Medium</td>
<td>(0.3, 0.5, 0.7)</td>
<td>(3,5,7)</td>
</tr>
<tr>
<td>Medium High</td>
<td>(0.5, 0.7, 0.9)</td>
<td>(5,7,9)</td>
</tr>
<tr>
<td>High</td>
<td>(0.7, 0.9, 1)</td>
<td>(7,9,10)</td>
</tr>
<tr>
<td>Very High</td>
<td>(0.9, 1, 1)</td>
<td>(9,10,10)</td>
</tr>
</tbody>
</table>

Fuzzy ratings and weights are aggregated as follows:
Step 3: Compute the normalize fuzzy decision matrix

The fuzzy decision matrix with fuzzy weight in matrix form is constructed as follows:

\[
\begin{array}{c|cccc}
& C1 & C2 & \ldots & C3 \\
A1 & x_{11} & x_{12} & \ldots & x_{1n} \\
A2 & x_{21} & x_{22} & \ldots & x_{2n} \\
A3 & x_{31} & x_{32} & \ldots & x_{3n} \\
\end{array}
\]

(7)

Where, weight is \( W_j = (w_1, w_2, \ldots, w_n) \) and \( x_{ij} \) represents the fuzzy number; \( x_{ij} = a_{ij}, b_{ij}, c_{ij} \).

Step 4: Compute weighted normalize fuzzy matrix

The next step is to compute the weighted normalized fuzzy matrix as follows:

\[
R = [r_{ij}]_{m \times n}
\]

(8)

\[
r_{ij} = \left(\frac{a_{ij}}{c * j}, \frac{b_{ij}}{c * j}, \frac{c_{ij}}{c * j}\right)
\]

(9)

\[
M = \frac{Max_{ij}}{c * j}
\]

(10)

The normalizing decision matrix could be then written as:

\[
U = [u_{ij}]_{m \times n}
\]

(11)

Where \( i = 1, 2, 3, \ldots, m \) and \( j = 1, 2, 3, \ldots, n \) and \( u_{ij} = r_{ij} \times W_j \).

Step 5: Compute fuzzy positive ideal solution (FPIS) and fuzzy negative ideal solution (FNIS)

The fuzzy positive ideal solution \( F^+ \) and Fuzzy Negative ideal solution \( F^- \) can be computed as follows:

\[
F^+ = u^+_1, u^+_2, \ldots, u^+_n
\]

(12)

\[
F^- = u^-_1, u^-_2, \ldots, u^-_n
\]

(13)

Where \( u^+_j = (1,1,1) \) and \( u^-_j = (0,0,0) \).

Step 6: Computes the closeness Coefficient of each alternative

In this step calculation of closeness coefficient (CC) for each alternative is calculated as follows:

\[
CC = \frac{D^-}{D^+ + D^-}
\]

(14)

Step 7: Rank the alternatives

The alternative with the highest closeness coefficient represents the best alternative among the all.

3.3. Data and its sources

This study requires field data. The data was collected based on a questionnaire that was distributed among 23 women entrepreneurs (decision-makers). The questionnaire contained questions related to different types of challenges faced by the women entrepreneurs in Pakistan and what of the particular success factors were of more importance. The rating of different criteria was undertaking using a 1 to 7 scale where 1 was from having very low affect to 7 with having the highest effect on business. In total there were 16 criteria and four alternatives as shown in Figure 1. The survey was conducted via the internet using google docs survey tool. The data was collected in two weeks period. In total, 19 women entrepreneurs filled up the questioner completely so that was included in the final analysis. The data was then transformed to the Microsoft excel and the fuzzy TOPSIS was applied as per the above-stated steps.

4. Findings and Discussion

4.1. Results and Findings

There were in total of 16 criteria that were used to rank four alternatives namely, limited funding access, social norms, moral support, and other reasons affecting women entrepreneur’s growth in developing countries. The theoretical model is presented in Figure 1. The fuzzy TOPSIS method is applied using the seven-steps procedure described earlier. The results of weighting and based on that ranking of each criterion by the women entrepreneurs are presented below in Table 2. Gender inequality is considered as the major obstacle for women entrepreneurs in developing economies, followed by the self-believes on own decisions, and lack of family support as second and third most important obstacles, respectively. The rest of the ranking for the remaining obstacles is also given in the last column of Table 2 below.
The role of women in venture growth in Pakistan. The second most challenge for women entrepreneur to overcome for Pakistani community and being one of the major possible explanations for the gender bias within society, lesser hours being available to work for women misinterpretation of religion within male norms within the region. While the best gender inequality either high or very high challenge for women entrepreneurs. It is interesting that availability of loans from either financial institutions or from family sources is ranked respectively 6th and 7th important hurdles by women entrepreneurs. It is interesting that availability of financial resources is ranked lower compared to the issues like the supportive country environment, government policies, gender neutrality, etc., implying that it is not the earlier issues that hamper women entrepreneurship growth but the later issues that affect the growth of women entrepreneurship in developing countries. There are some other factors too, such as lack of social support, being jealous of other females, family responsibilities and resource constraints that also are hurdle for women entrepreneurship growth in Pakistan, however, given the factors such as gender equality, support from family, government regulations, etc., these are of lesser importance as far
as Pakistani entrepreneurs are concerned. The application of Fuzzy TOPSIS to ranks various alternatives reveals that its moral support that is the biggest challenge for women entrepreneurs in Pakistan than the limited access to financial resources and social support. This finding is consistent with the earlier studies of (Diaz, 2007) and (Vadnjal and Vadnjal, 2013) that also reported that family and friend support matters the most for women entrepreneurs. Similarly, lack of access to financial resources is also a big challenge for women entrepreneurs but it is ranked lower compared to the moral support from family and friends. This is an interesting findings and it reveals that the biggest hurdle for women in developing countries to become entrepreneur is not access to financial resources (as one would think for developing countries due to low per capita income) but the moral support of the family and that could obviously be provided with educating the male family members for the importance of women participation in economic activity and being emphasizing and preaching that they could be equally good given the opportunity. The fund limitation being the second issue, meanwhile, should not be taken for granted. No business could be run without funds availability and given the finding of this study and many others as cited in the literature review, financial resource availability for women entrepreneurs turns out to be the second important challenge for women entrepreneurs in Pakistan. The findings that the second important challenge for women entrepreneurs is limited access to financial resources is quite plausible and consistent with literature (e.g., (Maden, 2015)) and also given that financial sector in Pakistan is not fully developed as according to State Bank of Pakistan report less than 50 percent of total population has access to bank service (SBP, 2019). The rural sector women, in particular, have limited access to financial resources and given that they are mostly less educated and had hardly formal training for running the business, the issue of funds availability becomes a two-tier problem. First, on the part of financial institutions and government to reach to those women entrepreneurs who need their services and second, the women entrepreneurs who hardly knows the complex financial systems of modern times that could help them to establish their start-ups. The social norms remained the third important hurdle for women entrepreneurs in Pakistan. Being a developing country, that has been created in the name of religion (Islam) and at the same time being affected by about 2 decades–old war on terror (WOT), Pakistani society becomes more male-dominated, less tolerant and lesser conducive for business activities being own, run and managed by women. Women, in general, get lesser exposure, lesser opportunity, they are treated not as equal to their male counterparts (especially, in rural areas), thus making social norms and culture as one of the third major hurdles for women entrepreneurs in Pakistan. There are several limitations of this study that may be placed for readers and policymakers. First, this study is based on a limited number of women entrepreneurs working in Pakistan, and given that every region is unique, therefore, too much generalization of this study in various contexts may be not accurate. Secondly, women entrepreneurs in Pakistan mostly start informally and operate at a low scale, and they may lack motivation for growing a bigger business and only committed to meet the limited needs that they could. Finally, Pakistani culture, in general, does not allow the required mobility to women compared to men, thus that place an additional constraint on the study design.

5. Conclusion

Women entrepreneurs face a lot of hurdles and obstacles through their journey towards success in both developed and developing countries. Though, in developed countries among other things women are treated as equal gender and the nature of their problems is somehow different compared to developing countries. In contrast, in developing countries like Pakistan issues of gender equality, male-dominated society and lack of women formal education and opportunity make it more challenging to become an entrepreneur. The current study is based on studying the various challenges that women entrepreneurs face in Pakistan. The unique feature of the study is that it uses the Fuzzy TOPSIS method that is a powerful multicriteria decision–making technique and had never been applied in the context of the women entrepreneurship scholarly studies. The study uses women entrepreneurship filled up questionnaire-based data from Pakistan, and with the help of Fuzzy TOPSIS not only rank the 16 challenges that are faced by the Pakistani women entrepreneurs but also based on this analysis ranks the four major alternatives namely, limited fund access, social norms, moral support and other reasons that may affect opportunity to grow. It was found that, although all of them are up to some extent of comparable importance, it is not the limited access to financial resources that block the growth of women entrepreneurship in Pakistan but instead the moral support via family and friends that matter the most for their growth. The findings have several applications. The most important issue is the moral support from family and friends. Additionally, the absences of gender equality are the biggest challenge for women entrepreneurship. Therefore, the government should focus on policies that can pave the path for having a more accommodating society in which women have equal rights to men. For this purpose, an awareness campaign could be initiated. The engagement of electronic, social and print media could add more value to these efforts at a lower cost. The second important issue is the availability of funds for women entrepreneurship, in that aspect the government may set some policy guidelines to commercial banks for preretinal treatment for women entrepreneurs for credit needs. Some such efforts are
already on its way through both formal and informal channels with programs like Akhwat, national rural support program, provincial rural support programs. However, given that Pakistan has a big population with many more are still out of the reach of these mentioned financial services, in particular to the women, these efforts (both from government and private sector) clearly needed to be multiplied in order to increase access to financial resources by all women who want to step forward and want to become an entrepreneurs.

Appendix A.

See FPIS/FNIS for alternatives.

References


Geneva, Switzerland.


### Appendix A.

**Table A.1. FPIS/FNIS for Alternatives**

<table>
<thead>
<tr>
<th>Alternative 1 (Limited Funding Access)</th>
<th>Weight of Matrix</th>
<th>( D^* )</th>
<th>( D^- )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alternative 2 (Social Norms)</td>
<td>0.31</td>
<td>0.59</td>
<td>0.87</td>
</tr>
<tr>
<td></td>
<td>1.18</td>
<td>1.15</td>
<td>1.12</td>
</tr>
<tr>
<td></td>
<td>1.05</td>
<td>1.07</td>
<td>1.09</td>
</tr>
<tr>
<td></td>
<td>1.41</td>
<td>1.33</td>
<td>1.27</td>
</tr>
<tr>
<td></td>
<td>0.64</td>
<td>0.76</td>
<td>0.88</td>
</tr>
<tr>
<td></td>
<td>0.32</td>
<td>0.49</td>
<td>0.65</td>
</tr>
<tr>
<td></td>
<td>0.98</td>
<td>1.04</td>
<td>1.08</td>
</tr>
<tr>
<td></td>
<td>0.78</td>
<td>0.87</td>
<td>0.96</td>
</tr>
<tr>
<td></td>
<td>0.82</td>
<td>0.89</td>
<td>0.94</td>
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<tr>
<td></td>
<td>0.84</td>
<td>0.88</td>
<td>0.93</td>
</tr>
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<td></td>
<td>0.47</td>
<td>0.61</td>
<td>0.78</td>
</tr>
<tr>
<td></td>
<td>0.36</td>
<td>0.45</td>
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<td></td>
<td>0.26</td>
<td>0.35</td>
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<table>
<thead>
<tr>
<th>Weight of Matrix</th>
<th>( D^* )</th>
<th>( D^- )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alternative 3 (Moral Support)</td>
<td>11.44</td>
<td>12.9</td>
</tr>
<tr>
<td>Alternative 4 (Other reasons effecting the opportunity to grow)</td>
<td>11.55</td>
<td>12.3</td>
</tr>
</tbody>
</table>