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## An Artificial Intelligence and NLP based Islamic FinTech Model Combining Zakat and Qardh-Al-Hasan for Countering the Adverse Impact of COVID 19 on SMEs and Individuals

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### **Abstract:**

**Purpose:** The ongoing Corona virus (COVID 19) pandemic has already impacted almost everyone across the globe. The focus has now shifted from spread of the disease to the economic consequences it will bring to the society. The shortage of production will result into the shortage of supply and consequently will end as loss of jobs and employment for millions of people around the world. Two of the most important section of our society i.e., daily wage laborers and Small and Medium Enterprises (SMEs) will have to bear the major burnt of this crisis. The proposed integrated Artificial Intelligence and NLP based Islamic FinTech Model combining Zakat (Islamic tax) and Qardh-Al-Hasan (benevolent loan) can help the economy to minimize the adverse impact of COVID 19 on individuals and SMEs.

**Design/Methodology/Approach:** The present study explores the possibility of Zakat and Qardh-Al-Hasan as a financing method to fight the adverse impact of Corona virus on poor individuls and SMEs. It provides the solution by proposing an Artificial Intelligence and NLP based Islamic FinTech Model combining Zakat and Qardh-Al-Hasan.

**Findings:** The findings of the study reveals that Islamic finance has immense potential to fight any kind of situation/pandemic. Zakat and Qardh-Al-Hasan, if combined together can prove to be a deadly combination to fight the adverse effect of COVID 19.

**Practical Implications:** To be used as an effective way to support individuals and SMEs in the period during and after the pandemic of COVID 19.

**Originality/value:** There is no study combining Zakat and Qardh Al-Hasan to fight the adverse effect of poor individuals and SMEs. The study will contribute massively to the existing literature and will help the government and civil societies in fighting the economic impact of COVID 19 on individuals and SMEs.

**Keywords:** Artificial Intelligence, COVID 19, Islamic FinTech, Zakat, Qardh-Al-Hasan.

**JEL codes:** G3, G32, G38.

**Paper Type:** Research article.

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## **1. Introduction**

The start of this decade and first quarter of 2020 has seen everything. It started with the fear of U.S.-Iran war to global pandemic in the form of Corona virus (COVID 19) have pushed the global economy into huge contraction. Covid 19 is a new kind of Corona virus which was not found previously in human. The main source of this virus is still unknown but considering the previous experiences it must have transferred to the human from animals. Actually it is a large family of disease that has common symptoms like, normal cold, flu, cough to more severe disease like 'Severe Acute Respiratory Syndrome' (SARS). With every passing hour the adverse impact of this global pandemic Corona virus (COVID 19) is increasing manifold. Within just four months after the first case detected in China the economic impact of this crisis is already being compared with the global financial crisis of 2007-08 and great depression of 1930s. Just for the comparison the financial crisis of 2007-08 lasted for more than 3 years (Erken, 2012) where as great depression of 1930s lasted for around a decade (Romer, 1990).

With economies in lock down, closing shops, borders, people being asked to stay indoors and economic activities to a halt the global economy is in shambles and looking less healthy. The stock markets are tumbling, central banks are slashing interest rate, industrial production are almost zero resulting into massive job loss and a financial crisis is around the corner. As the writing is on the wall but the amount of damage to be done by this pandemic will largely depend on the amount of corrective actions the government and employers take today to minimize the damage. The employers, civil societies and government agencies are required to work in coordination to help the affected and minimize the adverse impact of this crisis on individuals in SMEs.

## **2. Impact of COVID 19 on Poor Individuals**

Though the death toll and number of infected people from COVID 19 are mainly from the world's most developed countries like, U.S., Italy, Spain, Germany, China and UK are increasing every minute. It has severely affected the world's most impoverished countries despite their best health care systems and other infrastructure facilities. The impact of this crisis is projected to be worse in underdeveloped and developing countries due to lack of adequate testing facilities, lack of accurate data and because of patients might have pre-existing conditions. The ongoing global pandemic will hit hard the poor and daily wage laborers in these countries as it is estimated that 24 million less people will escape poverty due to this pandemic (World Bank, 2020). The World Bank further reports that there are around 900 million people in the underdeveloped countries which are under risk due to this pandemic. Here in this paper we will not talk about the number of death or measures to cure the infected patients. Our focus will be beyond the number of infections and death, we will analyze the economic impact of this pandemic on individuals and

SMEs and how we can use Islamic finance tools, *Zakat* and *Qardh-Al-Hasan*, combined with the technology to fight this virus and minimize the damage on these two important sections of the society.

It is estimated that some regions if we take the extreme scenario the number of people living in poverty could increase by 420-580 million and it is also expected to increase the global poverty to around 0.5 billion which is around 8% of the total world's population (Sumner, 2020). This situation has arrived first time since 1990 that the global poverty is expected to increase. Oxfam-a Nairobi based charity organization published a report on April 10, 2020 and their findings revealed that this is going to be an economic crisis more severe than the financial crisis of 2008. The global poverty is expected to increase for the first time in 30 years after 1990.

The report further revealed that taking into account the World Bank measure of poverty from being 1.90\$ a day or less to a higher poverty line of 5.50\$ a day or less, under every scenario there will be a global contraction of income of up to 20% and that will lead into a disaster. The number of people living below poverty line will increase up to 1.2 billion worldwide an increase of 434 million. Under the same calculation if other measure is taken into consideration i.e. the number of people living below poverty line on 5.50\$ a day or less. The total global population below poverty line will increase to a whopping 4 billion an increase of 548 million (Oxfem, 2020). Considering the above statistics and scenario, there is very bleak chance that the situation can get any better. In all probability the situation is expected to get worse only. The only way it can be improved is that the rich people and government around the world should come together and join hands to help these deprived section of society. Islamic finance has two of the most beautiful tools, *Qardh-Al-Hasan* and *Zakat*, to help *ummah* by advancing cash in this pandemic situation. If the Islamic finance tools are used effectively with the technology the Muslim countries can save the poor individuals.

### 3. Impact of COVID 19 on SMEs

It is expected that the coronavirus pandemic is going to kill more the small business than human being (Carruthers, 2020). Knowing the importance of Small and Medium Enterprises, it is of increasing importance to analyze the impact of Covid 19 on SMEs and find out the measures to help them in survival. In UK, it is revealed that the most organizations can be categorized as small on the basis of employee number. 95 percent of business have employed less than 10 people and of course when compared to the profit and turnover the data is skewed the other way (Day, 2000). SMEs are the backbone of the economy whether you talk about the economy of a random state or the world economy. Most of the world economy have achieved the high level of development due to the contribution from SMEs, for example, Taiwan, China and Japan have achieved high industrial growth due to the contribution from their dynamic SMEs (Pandya, 2012). SMEs provided the valuable inputs to the society in terms of contribution in GDP, generating employment,

providing goods for the local demand and adjusting the quality of goods and services as per the local demand. The contribution of SME is invaluable to world economy and it is beyond the scope of this research to describe (Robe, 2013).

The SMEs contribute massively to the GDP and employment generation, the contribution to GDP from SME comes around 52-57%, where as it contributes to the 61% of employment in developing countries (Abor, 2010). According to the world bank report in 2020 the SMEs contribute around 40% to the GDP, it contributes around 90% of the total businesses where as it 50% jobs worldwide are coming from the SMEs. SMEs are more important and have more relevance in Islamic countries as there are 53.2 SMEs in Islamic countries as compare to the global average of 25.2 per 1000 population (IDB, 2020).

The SMEs are in urgent need of funds due to the global pandemic COVID 19. There is travel ban all around the world, complete lockdown, no movement of goods and services, industries like, tourism and hotels are in complete disarray. Most of the SMEs are battling for the survival as it has become really difficult for them to bear the operating expenses like, paying salary and rent. It has become the question of survival for them as most of the SMEs are having very small capital and they can sustain for very long if the situation continues for some more time.

#### **4. Zakat as a Financing Tool during COVID 19**

*Zakat* is one of the five pillars of Islam along with the *Shahadah*, (Belief that Allah is on and there is no one except Allah to worship) *Salah*, (Muslims are required to worship Allah, five times a day), *Sawm* (Muslims are required to fast during the month of Ramadan, and *Hajj* (an annual Islamic pilgrimage to holy city of Makkah). *Zakat* literally means '*that which purifies*'. All the Muslims who are eligible to pay must pay minimum 2.5% of their wealth every year to the poor, needy, destitute and others. *Zakat* is a compulsory charity tool in Islamic finance that can be used for various purposes, mainly for eradicating the poverty from Muslim community. Holy Quran has mentioned at least eight application of *Zakat*, but there is general consensus that the most important application of *Zakat* can be for the eradication of poverty by paying it to the needy and poor (Hasan, 2010). *Zakat* is an important part of Islam as Allah has mentioned more than 30 times in Holy Quran about *Zakat*.

Allah says in *Surah Al-Maida*, Verse 12. "*Allah says, I am with those who prays to Allah, pays Zakat and believe in my messenger. Allah further says in the same Surah that, I will honor and assist them and lend a good loan to Allah and I will erase their sins and take them to the Jannah (paradise) where there are gardens and rivers flowing. If any of you disbelieved, it means he has gone away from the straight path*". (Surah Al-Maida, Verse 12).

## 5. Scope of Zakat for Helping Poor and Poverty Alleviation during COVID 19 Pandemic

As mentioned earlier there are eight applications of *Zakat* mentioned in Holy Quran and five of those applications are related to the poverty alleviation. To help the poor is the basic teaching of Islam. Helping the poor people in this difficult time will bring two benefits to the wealthy or rich people as it will purify their wealth and heart from greed as promised by Allah and it will also contribute in the economic growth of the country (Embng, 2013). Keeping all other objectives of paying *Zakat*, the most important of them is to help the poor and needy to attain the minimum standard of life (Abu Bakar, 2011). Due to the COVID 19, the poor's and daily wage earners are in urgent need of funds and those people who are eligible to pay *Zakat* and also the *Zakat* houses and *Zakat* collection centers can use this money to help the poor and needy during this difficult time.

## 6. Zakat as a Financing Tool for SMEs during COVID 19 Pandemic

Distribution of *Zakat* is a very important and one should be very careful as it cannot be given to every business. It can only be given to those businesses who are eligible for it as per the rules laid down by the sharia. There is various application of *Zakat* mentioned in Holy Quran and as practiced by the *Zakat* institutions and rich and wealthy individuals. One of the most widely used application of *Zakat* is the distribution of *Zakat* money to the needy people in the form of business capital as a source of Islamic micro financing (Ibrahim, 2014). *Zakat* can be given to the SME and it has shown positive correlation between the *Zakat* and business development of SMEs in Malaysia (Sukestri, 2018). However, it is concluded here that while paying *Zakat* to the SMEs one should be very careful and should check that while paying *Zakat* the recipient shall not become the *Sahib-Al-Nisab* (The owner of wealth valuing equal to 52.5 tola silver).

## 7. Qardh Al-Hasan (QH) as a Financing Tool during COVID 19 Pandemic

*Qardh Al-Hasan* is the non interest or benevolent loan or non-margin loan practiced since the era of Holy Prophet Muhammad ﷺ. It is one of the most beautiful financing tool available in Islamic finance. *Qardh-Al-Hasan* is a loan given by the first party to the second party without expectation of any reward. It is served as a bailout fund for a short period of time (Hannanong, 2018). As objective of Islamic finance is the removal of poverty and eradicating the inequality of income. *Qardh-Al-Hasan* is served as one of the most important tool in Islamic finance. *Qardh-Al-Hasan* financing is a traditional financing method in Islamic finance and it has its relevance even today in modern world and if applied properly it can help the SMEs sector in fighting this pandemic. Allah has mentioned *Qardh-Al-Hasan* on six occasions (Q2:245, Q5:12, Q57:11, Q57:18, Q64:17, Q73:20). At one of the occasions Allah says that (*Surah Al-Baqarah*, verse No. 245).

“Who is it that would loan Allah a goodly loan so He may multiply it for him many times over? And it is Allah who withholds and grants abundance, and to Him you will be returned”. Explanation: The above verses of Holy Qura’an can be interpreted as- *Qardh-Al-Hasan* means lending money to the individuals or organization without interest. As Allah has promised that you will be rewarded on the day of judgement. The word ‘*Kaseera*’ is used everywhere which means ‘*more and more*’. Of course, Allah is the one who gives more and more and if Allah starts giving the reward, there is no limit to it (Mirakhor, 2007).

### **8. Scope of Qardh-Al-Hasan (QH) for Helping Poor and Poverty Alleviation during COVID 19 Pandemic**

The central objective of Islamic finance is to achieve social justice, eradication of poverty and overall welfare of the society. Islamic finance principles are based on the objective of helping the last man standing in the queue (Munner, 2019). *Qardh-Al-Hasan* along with the *Zakat* and *Sadaqah* are the Islamic finance tools to help the poor and needy. This can prove to be an effective tool in this grave situation of COVID 19. As explained earlier COVID 19 has brought disaster for the poor and Islamic countries and Muslims in the other countries must use *Qardh-Al-Hasan* to help the needy and poor. It is the duty of the society to ensure that poor including women are empowered (Rabbani, 2020b; Rabbani, 2020d).

The importance of *Qardh-Al-Hasan* is more than *Zakat* in the sense that there are many people who are not eligible for *Zakat* because their wealth is above the prescribed minimum limit for accepting *Zakat* and these people can easily accept the *Qardh-Al-Hasan*. The *Qardh-Al-Hasan* has zero cost of borrowing and individuals who need money can fight this situation of COVID 19 and restore their previous position and can later repay the loan. It is proved that the *Qardh-Al-Hasan* financing is an effective tool in empowering the economic activities of the poor and needy (Widyanto, 2011). *Qardh-Al-Hasan* is the tool to reinforce the social integrity, cooperation and harmony. It can be always used to help the needy and power to empower them and help them in times of need (Iqbal, 2015).

### **9. Scope of Qardh-Al-Hasan (QH) for Financing the SMEs during COVID 19 Pandemic**

One the biggest difference between *Zakat* and *QH* is that *Zakat* cannot be accepted by everyone or everyone is not entitled to receive *Zakat* where as *QH* can be accepted by anyone who is in need of fund whether rich or poor. It has been observed that the *QH* loan has completely been ignored by the Islamic banks as financing tool for SMEs. There are various sources of fund which can be used by the government and Islamic banks to provide *QH* loan to the SMEs. As COVID 19 is a temporary phenomenon and most of the countries have already announced the stimulus package to help their countries in fighting the adversities of COVID 19. The money from these package can be used to finance the SMEs by giving *QH* loan

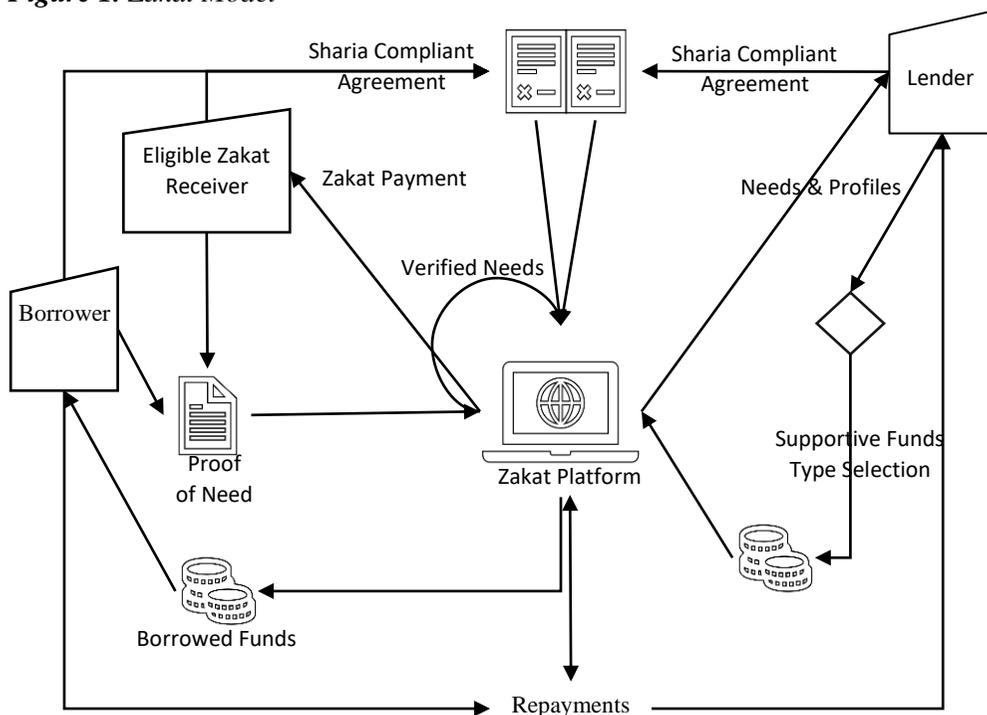
(Saqib, 2011). As it will increase the customer satisfaction and customer satisfaction will result into the customer loyalty (Rabbani, 2016). The banks and Islamic financial institutions can use their capital to finance the SMEs in this crisis time by giving *QH* loan and it will also not affect their liquidity as they are expected to be paid soon. Another source of finance for giving the *QH* loan could be the charity amount received by the Islamic bank during *Murabaha* financing. These funds are earmarked and cannot be used for any other purpose, but with the permission from client the banks can use this fund during this pandemic to bail out the SMEs from getting bankrupt (Usmani, 2008).

### 10. Zakat and Qardh-Al-Hasan Platform

*Zakat* platform requires that each user of the system must be registered with the *Zakat* platform. There are three types of users who acts as audience of the *Zakat* and *Qardh-Al-Hasan* platform, first type of the users are the people or organization who are willing to support others by offering *Qardh-Al-Hasan* or by *Zakat*, as discussed earlier, henceforth, this type of users are called lender in our system. The second type of users are the individuals or small and medium enterprises (SMEs) which are in great need of funding because of some crisis such as due to some kind of natural disaster such as pandemic, flood, war or other similar kind of situation. This type of organizations or individuals usually belong to the category of self-reliant but because of some external forces such as war and natural disasters etc., which are beyond the control of an individual or SMEs. *Zakat* platform classifies these users as borrowers and henceforth, this research study will use the same term. The other category of the users is those who are less fortunate or underprivileged and are in need of support from others to fulfill basic requirements. The *Zakat* system classifies this category of users as eligible *Zakat* receiver and this research will use the same term henceforth. The following Figure 1 illustrates the working of the *Zakat* platform.

Each user must provide an agreement of Sharia compliance to activate his/her account on *Zakat* platform. The lenders have to provide the information that the funds which they are going to use for the support have been earned through those sources which are permissible under Sharia law. Similarly, the borrowers and the eligible *Zakat* receiver also have to provide the sharia compliance agreement stating that the use of the support funds will be used for the activities which are permissible under Sharia law. Borrower and *Zakat* receiver provide the proof of their needs. These proofs can be in the form of textual information and/or media (audio/video). The *Zakat* systems use various technologies for processing of this information to support the verification of the needs and classify them into valid or invalid categories. If the system classifies the need into invalid category, it is ignored and will not reviewed by the system again until requested by the *Zakat* representative. However, if the request is classified as the valid category, it is reviewed by the *Zakat* platform representative.

**Figure 1. Zakat Model**



*Source: Own.*

The system uses machine learning, natural language process (NLP) and digital image processing techniques for the analysis of the information provided by the borrower or by the *Zakat* receiver. The text documents are processed using natural language processing techniques to retrieve the important information from the proofs of need document. The retrieved information is used by the *Zakat* representative to verify the needs and classify them into appropriate category. *Zakat* platform applies a hybrid approach of natural language process using various techniques in different modules. Hybrid approach uses combination of different techniques used for natural language processing.

Some examples of various techniques used in machine translation application domain of NLP are statistical approaches in which the model is built around the Bayesian probability theorem (Shahnawaz, 2013b), artificial neural network based approach which is one of the most popular approach nowadays as the use of deep learning is increasing (Khan, 2011; Mishra, 2012; Khan, 2019a), rule-based methods (Shahnawaz, 2013a), case-based reasoning approach which considers the previously available data as the case base for processing future incoming information (Shahnawaz, 2015) and many more.

However the textual information received from the borrowers sometimes is not available in proper grammatical structure, therefore, NLP techniques are applied for getting the proper information because for the efficiency of the NLP algorithms the input provided to most of these algorithms must be in proper structure specifically for those algorithms which generates a parse tree for extracting the information from the input documents (Khan, 2018; Shahnawaz, 2011). The proposed system can also be developed for automatic assessment of the images and getting the preliminary information from the images and videos (Bashir, 2017). The researchers are working in the direction of developing a chatbot for the integration on *Zakat* platform which will be available online for the automatic response of the user queries (Khan, 2020; Khan, 2020b).

However, building a chatbot requires a lot of information as the knowledge base so that it can understand the semantic meaning of the text to respond them by understanding their sentiments (Khan, 2019b; Astya, 2017). The above process of information generation is very similar and can be considered similar to a decision support system as the capability and functionality are almost identical. The *Zakat* representative examines the needs based on the information generated by the *Zakat* platform and approved to be published for the *Zakat* users.

The lender can search from their dashboard any of the published profile of needs and select as the beneficiary to receive the support. The lenders also have access to the verified proof of need information provided by the borrowers. *Zakat* system recommends the information of possible beneficiaries based on the past supporting history of the lenders and if they have set any interests in the dashboard for the support. If none of the information is available to the lenders, in that case, of the proposed system, the *Zakat* platform recommends the list of the beneficiaries. These recommendations are based on the type of support selected by the lenders and are generated using artificial intelligence-based recommender system. If the lenders select the *Zakat* as the type of support then the list of the beneficiaries will contain the needs of eligible *Zakat* receivers and if the lenders selects the *Qardh-Al-Hasan* support then the list will contain the information for the borrowers.

The lenders on the *Zakat* platform can directly transfer the funds to the beneficiaries. In some cases, if the beneficiaries does not have a linked bank account with the proposed platform then the funds are received by the *Zakat* system and are put into the wallet, the *Zakat* representatives then makes the arrangement for the transfer of the funds to the intended beneficiary and funds are delivered. The *Zakat* representative provides the contact information once the beneficiary has been contacted by the *Zakat* representative to make sure the selected beneficiary by the representative is the intended beneficiary to whom the lender wanted to support. On delivery of the funds, the lender is given the information about the fund transfer with the contact information of the receiver for the confirmation and the funds are removed from the wallet. All the transactions are recorded to maintain the history so that if the borrower wants to repay the *Qardh-Al-Hasan*, there will be no

discrepancies related to the amount of funds received or repaid. The transaction history of the eligible *Zakat* receiver is maintained to observe how it has uplifted the status of the *Zakat* receiver and how much *Zakat* a user has received, the *Zakat* receivers are listed in the increasing order of *Zakat* amount received by a beneficiary.

The *Zakat* receivers who have received least amount of the *Zakat* will be on the top of the list. This information helps the lenders to make the decision. In the similar way, the transaction records or history of the borrowers is also maintained, recorded and accessible to the lenders which the lenders can analyze to make decision how much and why they want to support the borrowers and can also agree to terms and conditions of repayment with the borrowers. As discussed earlier, *Qardh-Al-Hasan* is a type of fund which is considered as one of the highest forms of charity under Sharia law. Therefore, it is up to the lenders to discuss these terms and conditions of repayments. The proposed *Zakat* system is an Islamic FinTech model which works as the platform to bring all the parties together and ease the way in which these services can be provided. The research studies in (Rabbani, 2020a; Rabbani, 2020c) suggest that Islamic FinTech can provide the solution of many obstacles in efficiently executing the services and obligation of the Sharia law and create innovative pathways to implement some of the most important finance related duties applicable to the Muslim community. Therefore, the proposed *Zakat* platform can be a revolutionary step in the direction of solving the issues related to transparency, speed of support delivery service and fair distribution of *Zakat*.

## **11. Discussion**

Based on the presentation above, it can be discussed that Islamic finance have the capability to counter the threats arisen because of crisis situations like COVID-19. *Zakat* and *Qardh-Al-Hasan* are two concepts in Sharia law which can be a valuable solution in this kind of situations. *Zakat* is one of the key pillars of Islamic principles and it is obligatory for every Muslim to pay *Zakat*. The implementation of these concepts of Islamic Finance with technology using artificial intelligence and natural language processing makes it easier to reach to a wider range of audience as web-based platform can reach the people across the globe.

In this research study, the researchers have presented a novel model for implementing these Islamic finance concepts on web-based platform using artificial intelligence and natural language processing, however, other supporting technologies for building the online version of the platform have not be discussed as those are not in the scope of this research study. The novel *ZaQaH* platform has three major modules. First module is the information generation module which process the proof of need information provided by the beneficiaries. The information provided in the form of textual and media data as the documents of proofs of need is processed with AI and NLP to generate the key information which helps the *ZaQaH* representatives in the decision making process for identifying a valid or invalid

need. This module of the *ZaQaH* platform functions similar to a decision support system.

The second module of the system is the recommender system which helps in generating the potential list of the beneficiaries for the lenders. The proposed Islamic Fintech system *ZaQaH*, uses natural language processing and artificial intelligence-based recommender system to suggest the list of the envisioned interested parties. Artificial intelligence and NLP also facilitate in the process of verifying the needs of the beneficiaries. The third module is the facilitator module which maintains the record of transactions and provide functionality of communication. As the research studies in (Rabbani, 2020a; Rabbani, 2020c) suggest that Islamic FinTech can provide the solution of many obstacles in efficiently executing the services and obligation of the Sharia law and create innovative pathways to implement some of the most important finance related duties applicable to the Muslim community. Based on the above discussion it can be considered that the proposed system may be a revolutionary step in implementing the *Zakat* and *Qardh-Al-Hasan* principles of Sharia law.

## 12. Conclusion

From all above it can be concluded that it is very early to exactly estimate the exact amount of damage to be done by the global pandemic COVID 19. The views from experts shows the poor individuals and SMEs are going to be worst hit by the COVID 19. Like always, Islamic finance is the complete way of life and it provides an effective tool in terms of *Zakat* and *Qardh-Al-Hasan* to not only help these two important sections of society but also minimize the damages on them. Now, it is the responsibility of the government, civil societies and rich individuals to use these Islamic financing tools and provide the benefit to the poor individuals as well as to the SMEs.

The study proposed an Artificial Intelligence and NLP based Islamic FinTech Model combining *Zakat* and *Qardh-Al-Hasan* for countering the adverse impact of COVID 19 on SMEs and individuals' can prove to be a stepping stone in this direction. The model uses the Artificial Intelligence and NLP to make the system more effective and transparent. Islamic finance must be combined with the technology to increase its reach and to achieve the broader objective of social justice and providing quality life to each and every Muslim across the globe. It is further reassured that the *QH* and *Zakat* must be used with technology to achieve the objective of Islam and Islamic finance, i.e., to treat every member of *Ummah* as brothers and sisters and reach to them with right intention in terms of pandemic like COVID 19 and Allah is the best to judge the intention and give the reward.

## References:

- Abor, J., Quartey, P. 2010. Issues in SME development in Ghana and South Africa. *International research journal of finance and economics*, 39(6), 215-228.
- Astya, P. 2017. Sentiment analysis: approaches and open issues. *International Conference on Computing, Communication and Automation (ICCCA)*, 154-158. IEEE, DOI: 10.1109/CCAA.2017.8229791.
- Bakar, M.H.A., Abdghani, A.H. 2011. Towards achieving the quality of life in the management of Zakat distribution to the rightful recipients (the poor and needy). *International Journal of Business and Social Science*, 2(4).
- Bashir, T., Imran, U., Shahnawaz, K., Junaid, Ur.R. 2017. Intelligent reorganized discrete cosine transform for reduced reference image quality assessment. *Turkish Journal of Electrical Engineering and Computer Sciences*, 25(4), 2660-2673.
- Carruthers, P. 2020. How Coronavirus can kill small businesses: COVID-19. *Personal Finance*, (471), 8-10.
- Day, J. 2000. Commentary—the value and importance of the small firm to the world economy. *European Journal of Marketing*, 34 (9/10), 1033-1037.
- Erkens, D.H., Hung, M., Matos, P. 2012. Corporate governance in the 2007–2008 financial crisis: Evidence from financial institutions worldwide. *Journal of corporate finance*, 18(2), 389-411.
- Hannanong, I., Aris, A. 2018. Al-Qardh-Al-Hasan: Soft and Benevolent Loan Pada Bank Islam. *DIKTUM, Jurnal Syariah dan Hukum*, 16(2), 171-182.
- Hassan, M.K., Ashraf, A. 2010. An integrated poverty alleviation model combining zakat, awqaf and micro-finance. In *Seventh International Conference—The Tawhidic Epistemology: Zakat and Waqf Economy*, Bangi, Malaysia, 261-281.
- Ibrahim, P., Ghazali, R. 2014. Zakah as an islamic micro-financing mechanism to productive zakah recipients. *Asian Economic and Financial Review*, 4(1), 117.
- Iqbal, Z., Shafiq, B. 2015. Islamic finance and the role of Qard-al-Hassan (Benevolent Loans) in enhancing inclusion: A case study of AKHUWAT. *ACRN, Oxford Journal of Finance and Risk Perspectives*, 4(4), 23-40.
- Islamic Development Bank. 2020. President of the Islamic Development Bank Group: Covid-19 and Micro, Small and Medium Enterprises, Saving the Global Economy from the Pandemic: Available at: <https://www.isdb.org/news/president-of-the-islamic-development-bank-group-covid-19-and-micro-small-and-medium-enterprises-saving-the-global-economy-from-the-pandemic>. Accessed on 4 April.
- Khan, S., Rabbani, M.R. 2020a. Artificial Intelligence and NLP based Chatbot as Islamic Banking and Finance Expert. *International Conference on Computational Linguistics and Natural Language Processing (CLNLP 2020)*, Seoul, South Korea on July 20-22.
- Khan, S., Imran, U. 2019a. A model for English to urdu and hindi machine translation system using translation rules and artificial neural network. *Int. Arab J. Inf. Technol.* 16(1), 125-131.
- Khan, S., Mishra, B.R. 2011. Translation rules and ANN based model for English to Urdu machine translation. *INFOCOMP 10*, 3, 36-47.
- Khan, S., Rabbani, M.R. 2020b. Artificial Intelligence and NLP based Chabot as Islamic Banking and Finance Expert. *International Journal of Information Retrieval Research (IJIRR)*, Special Issue on Optimization and Convergence of Machine Learning Algorithms for Leveraging IoT, Blockchain and Artificial Intelligence.

- Khan, S., Thirunavukkarasu, K. 2019b. Indexing Issues in Spatial Big Data Management. Available at SSRN 3387792.
- Khan, S., Usama, M., Salam, S.S., Sultan, A. 2018. Translation Divergence Patterns Handling in English to Urdu Machine Translation. *International Journal on Artificial Intelligence Tools*, 27(5), 1850017.
- Mirakhor, A., Iqbal, Z. 2007. Qard hasan microfinance (QHMF). *New Horizon, Global Perspective on Islamic Banking and Finance*, No. 164, 1-20.
- Mishra, R.B. 2012. A neural network based approach for English to Hindi machine translation. *International Journal of Computer Applications* 53, 18, 50-56.
- Muneer, F., Khan, F. 2019. Qard-Al-Hassan as a Tool for Poverty Alleviation a Case of Fael Khair Waqf Program in Bangladesh. *Journal of Islamic Monetary Economics and Finance*, 5(4), 829-848.
- Oxfem. 2020. Coronavirus impact: COVID-19 may push half million people into poverty, says Oxfam; Available at: <https://www.oxfam.org/en/oxfams-response-covid-19>. Accessed on 16 April, 2020.
- Pandya, V.M. 2012. Comparative analysis of development of SMEs in developed and developing countries. *International Conference on Business and Management*, 6-7.
- Rabbani, M.R., Qadri, F.A., Ishfaq, M. 2016. Service Quality, Customer Satisfaction and Customer Loyalty: An Empirical Study on Banks in India. *VFAST Transactions on Education and Social Sciences*, 11(2), 1-9.
- Rabbani, M.R. 2020d. Multidimensional Scaling as a Tool of Positioning: Similarity based Perceptual Mapping of Banks in Saudi Arabia. *International Journal on Emerging Technologies*, 11(3).
- Rabbani, M.R., Khan, S. 2020a. Agility and Fintech is the Future of Islamic Finance: A Study From Islamic Banks in Bahrain. *International Journal of Scientific and technology Research*, Vo. 9, Issue 3.
- Rabbani, M.R., Shahnawaz, Abey. J., Rahiman, H. 2020b. Analysis of Critical Barriers to Women Entrepreneurship in Bahrain: An Exploratory study. *International Journal of Scientific and Technology Research* 9, 3.
- Rabbani, M.R., Khan, S., Thalassinos, I.E. 2020c. FinTech, Blockchain and Islamic Finance: An Extensive Literature Review. *International Journal of Economics and Business Administration*, 8(2), 65-86.
- Robu, M. 2013. The dynamic and importance of SMEs in economy. *The USV annals of economics and public administration*, 13(17), 84-89.
- Romer, C.D. 1990. The great crash and the onset of the great depression. *The Quarterly Journal of Economics*, 105(3), 597-624.
- Saqib, L. 2011. *Financing Agriculture Through Islamic Commercial Transaction*, 1st ed. Lambert Academic Publishing.
- Shahnawaz. 2015. Conversion between Hindi and Urdu. *International Conference on Computing, Communication & Automation*, Noida, 309-313.
- Shahnawaz, Mishra, B.R. 2015. An English to Urdu translation model based on CBR, ANN and translation rules. *International Journal of Advanced Intelligence Paradigms* 7(1), 1-23.
- Shahnawaz, Mishra, B.R. 2013a. Rule-based approach for handling of case markers in English to Urdu/Hindi translation. *International Journal of Knowledge Engineering and Soft Data Paradigms*, 4(2), 138-165.
- Shahnawaz, Mishra, B.R. 2013b. Statistical machine translation system for English to Urdu. *International Journal of Advanced Intelligence Paradigms*, 5(3), 182-203.
- Shahnawaz, Mishra, B.R. 2011. ANN and rule based model for English to Urdu-Hindi

- machine translation system. In Proceedings of National Conference on Artificial Intelligence and agents: Theory & Application (AIAIATA), 115-121.
- Sukesti, F., Budiman, M. 2018. The Role of Zakat in Business Development of SMEs (Study on Baznas Semarang, Central Java, Indonesia). *International Journal of Islamic Business Ethics*, 3(1), 401-409.
- Sumner, A., Hoy, C., Juarez, E.O. 2020. Estimates of impact of COVID 19 on global poverty. Wider working paper 2020/43: Available at: <https://www.wider.unu.edu/sites/default/files/Publications/Working-paper/PDF/wp2020-43.pdf>. Accessed on 14 April, 2020.
- Taha, R., Nor, M.N.M. 2013. Role of zakat to eradicate poverty in Malaysia. *Jurnal Pengurusan (UKM Journal of Management)*, 39.
- Usmani, M.T. 2008. *An Introduction to Islamic Financial System*. Maktaba Maariful Qurān, Karachi, 10-221.
- Widiyanto, W., Mutamimah, S., Hendar, H. 2011. Effectiveness of Qard al-hasan financing as a poverty alleviation model. *Economic Journal of Emerging Markets*, 3(1), 27-42.
- World Bank. 2020. *Small and Medium Enterprises Finance*. Available at: <https://www.worldbank.org/en/topic/sme/finance>. Accessed on 14 April, 2020.