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Analysing the Behavioral Intention Factors in Using Zakat-Based Crowdfunding Platform in Indonesia: A Quantitative Study

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ABSTRACT

This study aims to examine the behavioral intention of the Muslim crowd funders to use the Zakat-based crowdfunding platform model by adopting the Unified Theory of Acceptance and Use of Technology (UTAUT) Model. The online platform, as an intermediary between Muslim crowd funders and MSMEs, provides financing services for MSMEs to fight any situation/pandemic like COVID-19 nowadays. This study used the primary data collected by using the online survey questionnaires, and then the analysis is conducted using partial least squares (PLS) regression. The empirical study shows that all the variables except for facilitating conditions have a significant positive effect on Muslim crowd funders' intention to use the Zakat-based crowdfunding platform model. The present study will help the government and policymakers to plan appropriate intervention strategies to minimize the adverse impact of the COVID-19 pandemic on MSMEs in Indonesia. Furthermore, the study will contribute to the existing literature, especially on the factors influencing the adoption of the Zakat-based crowdfunding platform model.

Keywords: Zakat-Based Crowdfunding, Financial Services, MSMEs, COVID-19, Indonesia.

INTRODUCTION

As a global issue today, Coronavirus Disease 2019 or COVID-19 has been widespread rapidly since the finding for the first time in Wuhan, China (Chamani, Anshory, Hudaefi, Junari, & Zaenal, M. H Chamani *et al.*, 2020). The COVID-19 also has already impacted the economy in Indonesia. According to Sri Mulyani Indrawati, Minister of finance Indonesia, the current crisis caused by the COVID-19 pandemic was far more complex than the 1997-1998 and 2008-2009 crises (Victoria, 2020). Following that, in Indonesia, MSMEs will suffer the most significant impact from the COVID-19 (KNEKS, 2020). Even though MSMEs are the dominant sector in Indonesia's economic structure.

Based on the data from the Ministry of Cooperatives and Small and Medium-sized Enterprises (*Kementerian Koperasi dan Usaha Kecil Menengah*, 2018), the number of MSMEs is approximately 64 million, which absorbs more than 113 million workers or 93.88% of the total workforce (Hidayat, 2020; KNEKS, 2020). The total contribution of MSMEs to Indonesia's 2018 GDP is approximately 57% or IDR 8,457.3 trillion when Indonesia's economic growth is 5.20% and decreases to become IDR 6,830 trillion when Indonesia's economic growth is 4.20% during the COVID-19 pandemic based on the projection of Puskas Baznas (2020) – as shown in Figure 1.

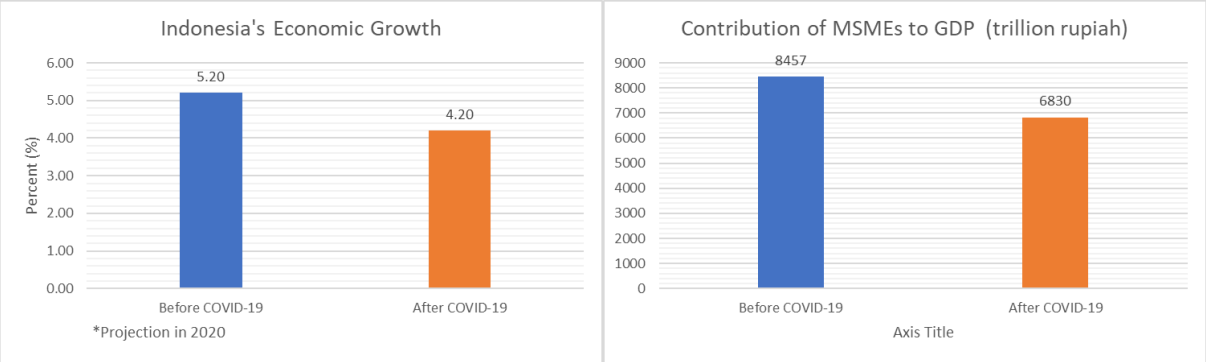

Figure 1. The Comparison of Indonesia's Economic Growth and the Contribution of MSMEs to GDP Before and After the COVID-19 Outbreaks
Sources: Puskas Baznas (2020)

In the global pandemic today, the MSMEs need funds for survival and sustain for very long if the situation continues for some more time. Most of the MSMEs are battling for survival, as it has become challenging for them to bear the operating expenses like paying salary and rent (Haider & Khan, 2020). Thus, this phenomenon has been taken into account. Not only the government but also all societies in Indonesia must overcome this matter togetherly. Furthermore, many scholars, practitioners, academicians, and civil societies have been discussing through webinar (online) discussion for seeking solutions in along times of COVID-19 outbreaks. They suggested that optimized for the potential of Islamic financial technology (Islamic FinTech) is one of the effective solutions (Mukhlisin, Ascarya, Pasumah, Antonio, Yasid, Mulyana, & Tamanni, 2020). If a lack of funding, Islamic FinTech can be a solution for any problems in MSMEs, apart from banking (Marzban, Asutay, & Boseli, 2014).

KPMG (2019) reports that there are around 167 FinTech companies, including Islamic FinTech in Indonesia (Darmansyah et al., 2020). One example is KitaBisa.com, a donation-based crowdfunding platform model in Indonesia (Wahjono, Marina, & Widayat, 2015). Where KitaBisa.com provides attractive features to make it easier for donors/crowd funders to make donations. Kitabisa.com also collaborated with Islamic charity donation Institutions such as BAZNAS, Dompet Dhuafa, Aksi Cepat, Lazisnu, Lazimu, Rumah Zakat, and others (Hutami & Irwansyah, 2019). BAZNAS itself as an Indonesian Zakat institution has been collaborating with the existing fintech companies (Go-Pay, OVO, LinkAja) for paying zakat by QR code and the existing e-commerce such as Elevenia.co.id, Blibli.com, Shopee.co.id, Tokopedia.com, Lazada.com, Mataharimall.com, JD.id, and Bukalapak.com (Hudaefi et al., 2020).

On the other hand, Indonesia as the largest Muslim population globally, Islamic charity donation fund from zakat, sadaqah, and other charities is the potential funding for overcoming problematic issues faced by ummah (Muslim society) nowadays (Indrawan & Herman, 2017). In Indonesia, the total of all zakat potential is approximately IDR 217 trillion from various sources. This number is equal to 3.4% of Indonesia's GDP in 2010 (Firdaus, Beik, & Irawan, 2012).

Therefore, based on the above explanation, we confirm that Indonesia has great potential to fight the economic impact of COVID-19, particularly on MSMEs, through optimizing and combining the role of Islamic FinTech such as the crowdfunding model as an intermediary between donors or Muslim crowd funders and MSMEs and the potential of Islamic charity donation fund, especially from

zakat. Following that, this study has an objective which is to test empirically factors influencing the behavioral intention of Muslim crowd funders to using the Islamic donation-based crowdfunding platform model based on the concept of Unified Theory of Acceptance and Use of Technology (UTAUT) Model proposed by Venkatesh, Morris, Davis, & Davis (2003, in Raza, Shah, & Ali, 2019). The theory has been used by researchers to examine the behavioral intention to adopt technological innovation, e.g., Darmansyah, Fianto, Hendratmi, & Aziz (2020); Raza, Shah, & Ali (2019); Yahaya & Ahmad (2019); Ahmad, Tarmidi, Ridzwan, Hamid, & Roni, (2014); Sedana & Wijaya (2012).

LITERATURE REVIEW

The Concept of Zakat

Zakat means purity and cleanness of the wealth and the heart of the person who pays *zakat. Zakat* cleans the dirt of wealth, and *zakat* purifies the zakat payer's heart and prepares him to sacrifice for Allah's cause (Shad, 1986 in Samad & Glenn, 2010). The other meaning of zakat is fertility or growth. The payment of zakat is designed to enable the poor to grow in wealth and spirit (Al-Qaradawi, 1973 in Samad & Glenn, 2010). Thus, zakat is mandatory or obligatory for Muslims who have met specific requirements (Owoyemi, 2020).

The establishment of *zakat* payment has several objectives, namely: to eradicate poverty and maintain socio-economic justice; safeguard wealth from the jealousy of the others, the poor in particular; social protection, by providing a social security system for Muslims; purify one's wealth and remove one's stringiness, and remain thankful to Allah for His bounty to him (Bilo & Machado, 2020; Saad & Farouk, 2019; Samad & Glenn, 2010). According to Al-Faizin, Insani, & Widiastuti (2017), in their research, *zakat* becomes an obligatory payment system which is managed by the government to ensure redistribution of resources between *mustaḥiq* (eligible recipients for Zakat) and *muzakkī* (zakat payers). Likewise, Zakat gives implications in realizing the balance of life in society by creating a sense of security, peace, and harmony in the community.

Furthermore, *zakat* is taken from specific sources of wealth and given to specific categories of recipients. The specific wealth sources include livestock, savings, trade goods, crops, and minerals (Indrawan & Herman, 2017). The categories of eligible recipients for *zakat* are mentioned in the Quran *Sūrah Al-Tawbah* verse 60 states: '*Alms are only for the poor and the needy, and those who collect them [zakat], those whose hearts are to be reconciled, captives, debtors, in the cause of Allah, and wayfarers...*'. According to Kashif, Jamal, & Rehman (2018), zakat donation brings certain benefits to human living, economic prosperity, and social welfare, especially for zakat recipients.

The Concept of Islamic Crowdfunding

Many researchers have defined that crowdfunding is known as a process of collection of funds in a small amount from crowd funders (donors or investors) by using the website platform for a specified project, business venture, or social project (Belleflamme, Lambert, & Schwienbacher, 2014; Dresner, 2014; Mollick, 2014; Suhaili & Palil, 2016; Thaker, 2018). In Islamic perspectives, according to Achsien and Purnamasari (2016), crowdfunding is like the use of small amounts of money obtained from a large number of individuals or organizations to fund a project, a business or personal loan, and other needs through an online web-based platform based on with shariah principles.

Some basic features are distinguishing Islamic crowdfunding from conventional one, as follows: (1) intentions and *halal* projects, (2) free usury (*riba*), gambling (*maysir*), and speculation

(*gharar*), and (3) the existence of Shariah supervisory board (Achsien & Purnamasari, 2016; Hudaefi, 2020). Additionally, the requirements of Islamic crowdfunding involve project initiators e.g., individuals, organizations, and businesses; potential funders (PF); crowdfunding operators (CFO); the board of Shariah (Marzban, Asutay, & Boseli, 2014). Islamic crowdfunding also can be divided into four types, namely, donation-based crowdfunding, reward-based crowdfunding, debt-based/lending-based crowdfunding, and equity-based crowdfunding (Hudaefi, 2020; Marzban, Asutay & Boseli, 2014; Thaker, 2018).

The advantage of Islamic crowdfunding is opened up a new source of funding for entities (including MSMEs), the ability to attract donors' interest to contribute and donate irrespective of geography, and a low-cost way of accessing funding (Suhaili & Palil, 2016). Furthermore, Islamic crowdfunding also provides investors, donors, and entrepreneurs with an opportunity for the socio-economic development of MSMEs sectors in Islamic countries (Marzban, Asutay, & Boseli, 2014).

Legal Aspects of Islamic Crowdfunding in Indonesia

In Indonesia, there are some legal aspects of Islamic crowdfunding issued by government authorities, namely: (1) The regulations of the National Shariah Council of the Indonesian Ulema Council Fatwa Number 117/DSN-MUI/II/2018 on the compliance of the information technology-based financing services with the Shariah principles (Fatwa Dewan Syariah Nasional-Majelis Ulama Indonesia Nomor 117/DSN-MUI/II/2018 Tentang Layanan Pembiayaan Berbasis Teknologi Informasi Berdasarkan Prinsip Syariah, 2018); (2) Bank Indonesia Regulation Number 19/12/PBI/2017 on the Implementation of Financial Technology (Peraturan Bank Indonesia (PBI) No.19/12/PBI/2017 tentang Penyelenggaraan Teknologi Finansial, 2017); (3) The regulation of the Indonesian Financial Services Authority Number 77/POJK.01/2016 on the information technology-based lending and borrowing services (Peraturan Otoritas Jasa Keuanagan Nomor 77/POJK.01/2016 Tentang Layanan Pinjam Meminjam Uang Berbasis Teknologi Informasi, 2016).

The Development of Zakat-Based Crowdfunding Platform in Indonesia

As a governmental agency of Indonesia regulated by Act No.3 of 2011, BAZNAS has the primary responsibility to control Zakat governance (including collecting and distributing) in national practice (Hudaefi et al., 2020). Currently, BAZNAS has been innovating its services in both collecting and distributing Zakat funds for reliable results. In doing so, The zakat-based crowdfunding platform has been developing by Indonesia zakat Institution or BAZNAS accessed at https://baznas.go.id/bayarzakat (Hudaefi et al., 2020).

Furthermore, BAZNAS has been collaborating with the local e-commerce, i.e., Elevenia.co.id, Blibli.com, Shopee.co.id, Tokopedia.com, Lazada.com, Mataharimall.com, JD.id, and Bukalapak.com, to realize zakat potential from the domestic zakat payers (*muzzaki*) millennials. For payment services, the online platform developed by BAZNAS also has been collaborating with local fintech companies such as Go-Pay, OVO, and LinkAja, which have partnered to offer zakat payment using QR code (Hudaefi et al., 2020).

The Concept of Unified Theory of Acceptance and Use of Technology (UTAUT) Model

The UTAUT model was introduced by Venkatesh & Davis (2000). It is a theory that combines eight theories that explain the factors which affect technology adoption (Venkatesh et al., 2003). These theories

include the theory of reasoned action (TRA), technology acceptance model (TAM), the theory of planned behavior (TPB) (Ahmad, Tarmidi, Ridzwan, Hamid, & Roni, 2014). TRA is further extended to form the basis of the TPB. TRA has indicated that a person's performance of a specified behavior is determined by his/her intention to perform it (Thaker, 2018). Meanwhile, TAM describes the adoption of innovation in an organization by individuals (Davis, 1989). TAM also predicts the intention to use and accept new information technology contexts (Chen, Li, & Li, 2011).

The development of the UTAUT model was in the four main determinants of intention to adopt new information technology i.e., performance expectancy (PE), facilitating conditions (FC), social influence (SI), and effort expectancy (EE) (Venkatesh, Morris, Davis, & Davis, 2003). Several researchers have used UTAUT as a model for understanding the technological adoption of FinTech products and services. For instance, Darmansyah, Fianto, Hendratmi, & Aziz (2020) have conducted empirical studies to investigate the influential factors on behavioral intentions toward Islamic financial technology (FinTech) use in Indonesia, for three types of FinTech services (i.e., payments, peer to peer lending, and crowdfunding). Their studies highlighted the acceptance model as the most influential factor model for using Islamic FinTech in Indonesia. Also, Yahaya & Ahmad (2019) analyzed the factors that could influence the acceptance of *asnaf* in adopting mobile banking for zakat distribution using the UTAUT model. The result shows that all variables except effort expectancy have a significant positive effect on the intention to use mobile banking to distribute *zakat* in Selangor, Malaysia.

Another research using the UTAUT model, Raza, Shah, & Ali (2019) study identified the factors which affect mobile banking (M-Banking) acceptance in Islamic banks of Pakistan by using the modified unified theory of acceptance and use of technology (UTAUT) model. The results show all the variables except for social influence have a significant positive effect on the intention, which results in actual usage to use M-banking in Pakistan. Also, Ahmad, Tarmidi, Ridzwan, Hamid, & Roni (2014) mentioned in their research which is focused on aims to gauge the awareness of an e-zakat online system in the Selangor and also to examine the extent of utilization of an online e-zakat among individual zakat payers adopting the UTAUT model. Using the primary data through a questionnaire survey, the results provided an intellectual challenge and contribute to knowledge in this area of user perceptions of IT utilization and provide crucial evidence of improving the awareness and utilization of e-zakat online.

Conceptual Framework and Hypothesis Development

In this study, the research is designed to test empirically factors influencing Muslim crowd funders' behavioral intention to use the zakat-based crowdfunding platform model based on the UTAUT framework. The researchers had only focussed on several independent variables, i.e., performance expectancy (PE), effort expectancy (EE), social influence (SI), and facilitating conditions (FC). Whereas behavioral intention (BI) is the dependent variable. Five variables are the construct variables in this study, and the relationships are shown in Figure 2.

The first construct is the performance expectancy (PE). PE tells the individual how using technology will improve their performance (Venkatesh, Morris, Davis, & Davis, 2003). In the Zakat-based crowdfunding platform model context, the Muslim crowd funders believe that using the platform will improve their zakat payment activities. Thus, performance expectancy has a significant impact and important variable to influence

the intention to use financial technology products and services (Ahmad, Tarmidi, Ridzwan, Hamid, & Roni, 2014; Darmansyah, Fianto, Hendratmi, & Aziz, 2020; Raza, Shah, & Ali, 2019; Sedana & Wijaya, 2012). Therefore, the first hypothesis of this study is:

H1. Perceived expectancy (PE) has a significant positive influence on behavioral intentions to use Zakat-based crowdfunding platform model.

The second construct is effort expectancy (EE). EE explained how easy it is for the individual to operate the technology (Venkatesh et al., 2003). In the Zakat-based crowdfunding platform model, EE tells the Muslim crowd funders will be easy to operate the platform. According to Huei, Suet Cheng, Chee Seong, Aye Khin, & Ling Leh Bin (2018), the individual perceives it easy, it will create a positive effect on the intention to adopt financial technology products and services. Thus, effort expectancy has a significant impact and important variable to influence the intention to use financial technology products and services (Ahmad, Tarmidi, Ridzwan, Hamid, & Roni, 2014; Darmansyah, Fianto, Hendratmi, & Aziz, 2020; Raza, Shah, & Ali, 2019; Sedana & Wijaya, 2012). Therefore, the second hypothesis of this study is:

H2. Effort expectancy (EE) has a significant positive influence on behavioral intentions to use Zakat-based crowdfunding platform model.

The third construct is social influence (SI). According to Venkatesh, Morris, Davis, & Davis (2003). SI is the individual's belief in how their relatives feel if they adopt the technology. In the zakat-based crowdfunding platform model context, SI is the Muslim crowd funder's perception of how their relatives react if they use the platform model. Thus, social influence significantly affects the individual's willingness to use financial technology products and services (Ahmad, Tarmidi, Ridzwan, Hamid, & Roni, 2014; Darmansyah, Fianto, Hendratmi, & Aziz, 2020; Raza, Shah, & Ali, 2019; Sedana & Wijaya, 2012). Therefore, the third hypothesis of this study is:

H3. Social influence (SI) has a significant positive influence on behavioral intentions to use Zakat-based crowdfunding platform model.

The last construct is facilitating conditions (FC). FC is the technical support available to the individual during technology usage (Venkatesh, Morris, Davis, & Davis, 2003). In the zakat-based crowdfunding platform model context, the Muslim crowd funder's perception of how the better the FC available to the user, the more it will be their willingness to use the platform. According to Ahmad, Tarmidi, Ridzwan, Hamid, & Roni (2014); Darmansyah, Fianto, Hendratmi, & Aziz (2020); Raza, Shah, & Ali (2019), facilitating conditions significantly influenced the behavioral intention to use financial technology products and services. Therefore, the last hypothesis of this study is:

H4. Facilitating condition (FC) has a significant positive influence on behavioral intentions to use Zakat-based crowdfunding platform model.

The conceptual framework for this study is shown in Figure 2.

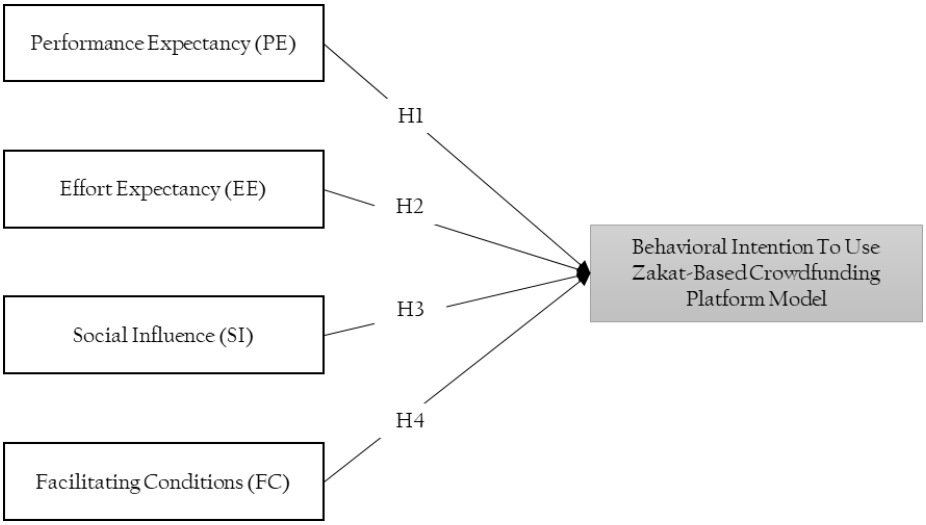

Figure 2. The Conceptual Framework of the Study

Sources: Previous study with modified by authors

METHODOLOGY

Research Design

This study used an online survey questionnaire to examine determining factors of Muslim crowd funders' behavioral intention to use the zakat-based crowdfunding platform model, particularly for countering the adverse impact of COVID-19 on MSMEs in Indonesia. The questionnaires were designed using questions adapted from previous authors and modified to suit this study's purpose. The questionnaire was divided into the following two components: respondents' demographics and variable constructs. The questionnaire contains three variable constructs: performance expectancy (three items), effort expectancy (two items), social influence (three items), facilitating conditions (two items), and behavioral intention (six items). In total, 16 question statements were in Appendix 1. The question statements were in Bahasa Indonesia and a five-point Likert scale measures the items from strongly disagree (1) to strongly agree (5).

Data and Sample

Data were collected from respondents who can access FinTech services, particularly crowdfunding platforms in Indonesia's various demographics and geographic areas. The online survey questionnaire was distributed from June to July 2020. One hundred fifteen (115) participated, and after data screening, 17 responses were deleted because of incomplete and missing value. The final sample size used in the study was 98 responses. The lower respondents who participated in this survey may due to the time constraints and respondents' disinclination. However, according to Churchill and Iacobucci (2010) stated that the samples of 50-100 still can function well for the structural equation model (SEM) technique (in Raza, Shah, & Ali., 2019).

Data Analysis Method

The data analysis method was used partial least squares (PLS) regression. PLS is a popular method for constructing predictive models when the factors are many and highly collinear (Tobias, nd.). According to Thakur (2014), PLS is a structural equation modeling technique in which it assesses the reliability and validity of the measures of theoretical constructs and estimates the relationships among these constructs simultaneously. The advantages of PLS include minimal restrictions on measurement scales, sample size, and residual distributions (Chin, Marcolin, &

Newsted, 2003 in Thaker, 2018). Thus, PLS examines the models and hypotheses to obtain the results (Hussein, 2015).

RESULTS & DISCUSSION

Respondents' Demographics

This study's respondents comprise gender, age group, education level, occupational respondents, income level, and expenditure level, as represented in Table 1. Table 1 shows that most respondents were female 53.06% and followed by male 46.94%. Almost three-quarters (71.43%) of the respondents are between the age group of 21-30, few are between the age group 31-40 (19.39%), and over 40 years of age (9.18%). In terms of educational level, the majority of respondents are dominated by bachelor's degrees (58.16%) and followed by a master's degree (31.63%) and Ph.D. (5.10%), while 5.10% are senior high school and diploma.

Table 1 also shows respondents' occupational level; over half of the respondents (55.10%) were working in the public sector, private sector, self-employed, and professional and followed by other occupations (44.90%). Also, most respondents (85.71%) are in the income group of less than IDR 10 million. The remaining 14.29% of the surveyed respondents fall on the above IDR 11 million income group. Most of the respondents spend less than IDR 9 million (92.86%), followed by 7.14% spending between IDR 10 million to IDR 19 million in terms of expenditure level.

Table 1. Distribution of Respondents' Demographics

Demographic items	**Frequency**	**%**
Gender		
Male	46	46.94
Female	52	53.06
Age group		
18-25	45	45.92
26-30	25	25.51
31-35	13	13.27
36-40	6	6.12
Above 40	9	9.18
Educational level		
Senior high school	4	4.08
Diploma	1	1.02
Bachelor	57	58.16
Master	31	31.63
PhD	5	5.10
Occupation		
Public	19	19.39
Private	18	18.37
Self-employed	9	9.18
Professional	8	8.16
Others	44	44.90
Income level		
Less than 3 million	33	33.67

3-5 million	28	28.57
6-10 million	23	23.47
11-15 million	5	5.10
16-20 million	3	3.06
more than 20 million	6	6.12
Expenditure level		
less than 2 million	37	37.76
2-4 million	31	31.63
5-9 million	23	23.47
8-14 million	5	5.10
15-19 million	2	2.04

Sources: Survey (2020)

Assessment of Measurement Model

The convergent validity and discriminant validity are measurements that use the assessment of the measurement model. The factor loading (FL), average variance extracted (AVE), and composite reliability (CR) were taken into consideration to test convergent validity in this study. Based on the results presented in Table 2, factor loading (FL) for all items exceeded 0.50 which recommended value as suggested by Hair, Black, Babin, & Anderson, (2009). In terms of the AVE requirement, Hair, Black, Babin, & Anderson, (2009) suggested that AVE should exceed 0.50. In the current study, AVEs have a minimum value of 0.50 in the range of 0.591 and 0.855. The convergent validity was evaluated through CR, all variables are higher than 0.70, which meets the criteria of Hair, Black, Babin, & Anderson (2009).

Table 2. The Results of the Measurement Model

Constructs	Items	FL	AVE	CR
Performance Expectancy (PE)	PE1	0.809	0.703	0.877
	PE2	0.850		
	PE3	0.855		
Effort Expectancy (EE)	EE4	0.928	0.855	0.922
	EE5	0.921		
Social Influence (SI)	SI6	0.501		
	SI7	0.860	0.591	0.804
	SI8	0.884		
Facilitating Conditions (FC)	FC9	0.951	0.611	0.747
	FC10	0.564		
Behavioral Intention (BI)	BI11	0.800		
	BI12	0.873		
	BI13	0.825	0.751	0.947
	BI14	0.913		
	BI15	0.902		
	BI16	0.879		

Sources: Author's Computation (2020)

Further, the discriminant validity was assessed by using cross-loading analysis and AVE. Table 3 shows that AVE's square root in the diagonal form is higher than the correlation between the variables, which is following the criteria given by Fornell & Larcker (1981). It means that the required discriminant validity has been achieved in this research.

In summary, based on these results, it confirms that the measurement model has adequate convergent validity and discriminant validity and can be used to examine the structural model.

Table 3. The Results of Discriminant Validity

Constructs	BI	EE	FC	PE	SI
BI	0.866				
EE	0.506	0.925			
FC	0.294	0.603	0.782		
PE	0.521	0.555	0.576	0.839	
SI	0.406	0.424	0.497	0.388	0.769

Notes: BI = Behavioral Intention; PE = Performance Expectancy; EE = Effort Expectancy; SI = Social Influence; FC = Faciliting Conditions.

Sources: Author's Computation (2020)

Assessment of Structural Model

In this study, the goodness of the structural model was analyzed by examining the R-square (R^2) (Hussein, 2015). R^2 is the assessment of the model predictive accuracy and higher R^2 representing a higher level of predictive accuracy (Hair, Ringle, & Sarstedt, 2011). The results of the current study show that R^2 value for behavioral intention to use the zakat-based crowdfunding platform model is 0.396. It means that 39.6% of the variance in behavioral intention to use the zakat-based crowdfunding platform model can be explained by PE, EE, SI, and FC.

To assess the significance level of path coefficients, this research has calculated the path coefficients of the structural model by performing bootstrapping procedure analysis. Based on the results in Table 4, the results revealed that the variables i.e. PE (β = 0.382, p < 0.05), EE (β = 0.345, p < 0.05), and SI (β = 0.237, p < 0.05) have a positive relationship with behavioral intention to use zakat-based crowdfunding platform model. Thus H1, H2, and H3 are supported. On the contrary, FC (β = -0.252, p > 0.05) has an insignificant effect on behavioral intention and H4 are rejected. Therefore, out of the four hypotheses, three were accepted (see Table 4 and Figure 3).

Table 4. The Results of the Structural Model

Hypothesis	Relationship	Effect type	Beta (β)	*t*-value	Decision
H1	PE → BI	Direct effect	0.382	3.421	Supported
H2	EE → BI	Direct effect	0.345	2.285	Supported
H3	SI → BI	Direct effect	0.237	2.336	Supported
H4	FC → BI	Direct effect	-0.252	1.877	Not supported

Notes: significant level 5% or *p-value* < 0.05.

Sources: Author's Computation (2020)

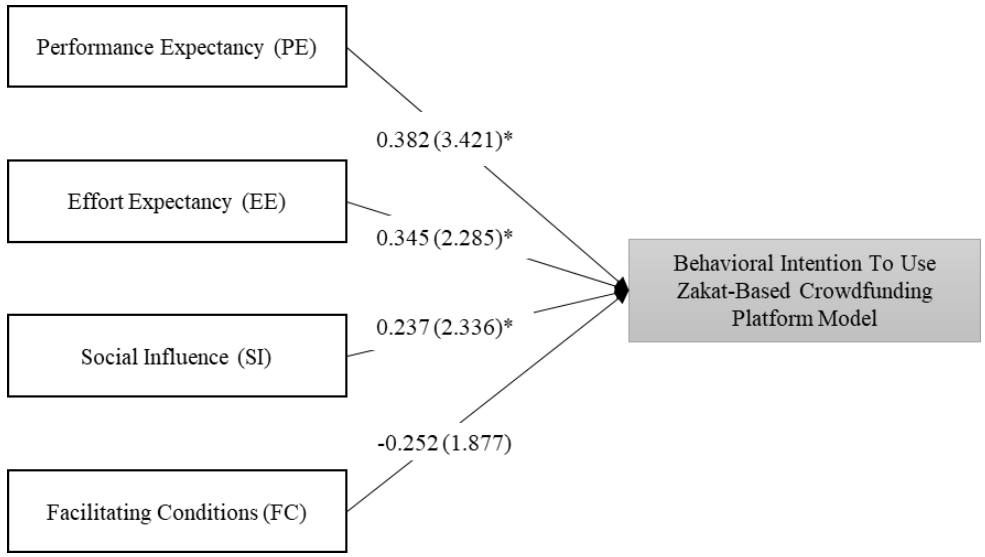

Figure 3. Results of Path Analysis

Besides, to look at the predictive relevance of the research model, the predictive relevance (Q^2) of the research model has used the blindfolding procedure (Henseler, Ringle, & Sinkovics, 2009). According to Hair, Ringle, & Sarstedt (2011), if Q^2 values are larger than zero, they indicate that the exogenous constructs have predictive relevance for the endogenous construct. For this research study, the Q^2 of behavioral intention to use the zakat-based crowdfunding platform model is 0.273 (larger than zero). Thus, it can be concluded that the research model has good predictive relevance.

Discussion of the Results

The results support the significant objectives of the study. The results show the excellent measurement and structural model and support the three hypotheses out of four. In the current study, the Muslim crowd funders' behavioral intention to using the zakat-based crowdfunding platform model was found to depend on performance expectancy, effort expectancy, and social influence except for facilitating conditions.

The path between the performance expectancy and behavioral intention is significant and positive (*H1* is supported). It means that the higher or the better one's performance expectations for the zakat-based crowdfunding platform model, the better one's behavioral intention is to use the zakat-based crowdfunding platform model. The result is consistent with the work of Raza, Shah, & Ali (2019) and

Yahaya & Ahmad (2019). The result indicates that if the platform improves the user's performance, the Muslim crowd funders will use it, especially for their zakat payment activities. This platform model is expected to create a positive perception toward Muslim crowd funders to use the platform model as financial services for MSMEs during and after a period of COVID-19 pandemic in Indonesia.

The path between effort expectancy and behavioral intention shows a significant and positive relationship (*H2* is supported). The finding also consistent with the findings by Raza, Shah, & Ali (2019). This indicates Muslim crowd funders have a positive influence on using the zakat-based crowdfunding platform model when they feel easy to operate the platform especially the platform will support financing services for the MSMEs in times of COVID-19 pandemic.

The path between social influence and behavioral intention shows a significant and positive relationship (*H3* is supported). The studies are consistent with the findings by Sedana & Wijaya (2012) and Yahaya & Ahmad (2019). This indicates that Muslim crowd funders will react to use the platform their friends or family recommend to use it, especially the platform provides in supporting financial services for MSMEs in times of COVID-19 pandemic.

Meanwhile, the association between facilitating conditions and behavioral intention is insignificant (*H4* is un-supported). The results are in accordance with the studies of Sedana & Wijaya (2012). This states that the facilitating condition is not the main factor influencing the Muslim crowd funders' intention to use the zakat-based crowdfunding platform model in this study. Besides, it can also be caused by the features on the zakat-based crowdfunding platform model that are deemed inadequate for paying zakat online.

CONCLUSION

From all the above, it can be concluded that the MSMEs are going to be the worst hit by the COVID-19 pandemic. The government and all parties in Indonesia should overcome this matter togetherly. One of the practical solutions is optimized for the potential of Islamic FinTech, particularly crowdfunding, as suggested by many scholars, practitioners, academicians, and civil societies. On the other hand, Islamic charity donation funds from *zakat* also have the most significant potential funding for overcoming problematic issues faced by *ummah* (Muslim society) nowadays, like the COVID-19 pandemic.

In the present study, this study has empirically tested Muslim crowd funders' behavioral intention in using this model by applying the UTAUT approach, and the analysis is conducted using partial least squares (PLS) regression. The results showed that the excellent model and confirms the acceptance of three hypotheses out of four (H1, H2, & H3 are accepted, and H4 is rejected). Therefore, the performance expectancy (PE), effort expectancy (EE), and social influence (SI) are the main variables and have a significant positive effect on the intention of Muslim crowd funders to use the zakat-based crowdfunding platform model.

In other words, the zakat-based crowdfunding model is the platform that can be potentially adapted to provide financial services for the MSMEs, especially during the crisis like COVID-19 in Indonesia. Furthermore, the platform model will allow for more optimum and impactful utilization of *zakat* or *sadaqah.* The like will help the government and policymakers plan appropriate intervention strategies to minimize the damages of the COVID-19 pandemic on MSMEs in Indonesia. Also, the zakat-based crowdfunding platform model will benefit

MSMEs because the platform model will provide financial support for MSMEs apart from banking during the COVID-19 pandemic. The platform model will also assist in the growth and sustain of MSMEs in crises like COVID-19 today.

Additionally, this study will add to the existing literature in Islamic FinTech, especially on the factors influencing the adoption of the zakat-based crowdfunding platform model. However, the sample size of the study becomes an obvious limitation. The sample size of the study should be added for future study. Future research can also be conducted by incorporating other factors such as perceived value, habit, perceived enjoyment, and objective usability.

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Appendix 1. Question statements

Constructs	Items	Question statements
Performance Expectancy (PE)	PE1	Using Islamic FinTech (zakat-based crowdfunding platform model) allows me to receive proof of zakat payments more quickly.
	PE2	I don't have to wait long to find out whether the zakat I paid has been received or not.
	PE3	Using Islamic FinTech (zakat-based crowdfunding platform model) motivates me to pay zakat.
Effort Expectancy (EE)	EE4	I think that the procedures for using Islamic FinTech (zakat-based crowdfunding platform model) in paying the zakat are very clear and easy to learn
	EE5	I really understand how to pay zakat using Islamic FinTech (zakat-based crowdfunding platform model).
Social Influence (SI)	SI6	In general, zakat institutions support the use of Islamic FinTech (zakat-based crowdfunding platform model) to pay zakat.
	SI7	My family supports me using Islamic FinTech (zakat-based crowdfunding platform model) to pay zakat
	SI8	The communities I interact with support using Islamic FinTech (zakat-based crowdfunding platform model) to pay zakat
Facilitating Condition (FC)	FC9	The zakat payment platform feature through Islamic FinTech (zakat-based crowdfunding platform model) provided by zakat institutions supports zakat payments
	FC10	I have the capacity to use computers, laptops, and smartphones well so that it helps me use Islamic FinTech (zakat-based crowdfunding platform model).
Behavioral Intention (BI)	BI11	I have the intention of using Islamic FinTech (zakat-based crowdfunding platform model) for zakat payments because it is effective, efficient and can help MSMEs affected by Covid-19
	BI12	I have the intention of using Islamic FinTech (zakat-based crowdfunding platform model) for zakat payments because it is easy to use and can help MSMEs affected by Covid-19
	BI13	I have the intention to using Islamic FinTech (zakat-based crowdfunding platform model) for zakat payments because people in my environment support using it and can help MSMEs affected by Covid-19

BI14	I will continue to use Islamic FinTech (zakat-based crowdfunding platform model) for zakat payments because it is effective, efficient and can help MSMEs affected by Covid-19
BI15	I will continue to use Islamic FinTech (zakat-based crowdfunding platform model) for zakat payments because it is easy to use and can help MSMEs affected by Covid-19
BI16	I will continue to use Islamic FinTech (zakat-based crowdfunding platform model) for zakat payments because people in my environment support using it and can help MSMEs affected by Covid-19

International Journal of Zakat Vol. 5(3) 2020 page 20 – 29

Blockchain and Smart Contract Application for Zakat Institution: A Conceptual Study

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ABSTRACT

Blockchain is an open distributed database that carries out transactions on an open decentralized ledger. It is a technology that will probably be the source of a huge digital change especially in the financial sector. The application of this technology has started to take its first steps recently and its importance is undeniable in an emerging and expanding field such as Islamic finance. In this context, the purpose of this article is to study the integration of the blockchain and one of its important components, namely the smart contract in the management of the compulsory Islamic charity the zakat. To do this, we have developed a funding model linking all the stakeholders in question and the diversities of blockchain technology. We were thus able to conclude huge benefits and technical contributions in this context which encourages Islamic financial institutions to develop more models likely to support this technology without ignoring the compliance with the Islamic jurisprudence rules.

Keywords: Blockchain, Smart Contract, Islamic Finance, Zakat

INTRODUCTION

As a mandatory charity which is taken from the wealthy class and distributed among poors, Zakat comes as the third pillar in the Islamic religion and is considered one of the most important rituals that a Muslim should strive to perform according to its requirements and rules and in its specified deadlines. The term "Zakat" originates from three different senses from sharia perspective: sanctifying (at-thaharatu), developing (an-namaa), and blessing (al-barakatu). It strongly contributes to strengthening social well-being, eradicating poverty and empowering people (Friantoro & Zaki, 2018). It is designed to be given to specific categories of society (masarif al-zakat) mentioned in the Quran. In the zakat process, the giver of zakat is called muzakee while the receiver is called mustahiq.

With the increasing evolution of Islamic finance over the past decades including the Islamic fintech, zakat has taken its part in the practical side by being present through a number of zakat management institutions in both Islamic and non-Islamic countries. Very similar to normal charities from the operational and systematic side, in addition to its spiritual benefits, these institutions strongly contribute to increase social well-being and alleviate poverty.

In fact, zakat institutions aim to develop a system for collecting monetary and non-monetary alms from individuals who have fulfilled the conditions of the obligation to pay zakat as well as distributing these collected donations to indigent individuals and those who belong to the zakat categories (Masarif al-zakat) of people needing social support within the limits of Islamic jurisprudence.

Furthermore, collecting zakat is a fairly delicate operation that requires institutional organization and powerful marketing work. One of the biggest challenges for zakat institutions as well as charities in the general context is their inability to prove their transparency and

reliability and thus donor's trust and interest.

As for zakat institutions, the problem is more prominent due to its importance within the framework of Sharia and the Muslim's keenness to perform it correctly and in its best way, which puts him in an environment of doubt. Moreover, the problem is further heightened in cases of natural disasters and socio-human crises where there is a need for emergency intervention and transfer of these handouts as quickly as possible just like the living conditions resulting today from the spread of the COVID 19 pandemic.

In line with the practice of digital zakat collection which has been emerging since the past few years (Hudaefi et.al, 2020), the conceptual field that a new technology called blockchain has recently emerged. The idea is to create a transparent and reliable environment for exchanging data and carrying out transactions through a decentralized and immutable network system. As a result, all the transactions carried out will be visible and authenticated by all the nodes in the network which makes it possible to track funds while being transferred in full transparency and makes any fraud operation impossible and protects against cyber-attacks. Blockchain should therefore be a perfect solution for Zakat institutes to overcome its drawbacks while allowing people to know exactly where and for which purpose their money was used (Peredaryenko, 2019). It can also contribute to higher transparency in charitable giving and increase clarity of the links between charitable giving and project results (Cole, Stevenson, & Aitken, 2020).

A body of blockchain-based projects and models for managing donations for charities has been developed within this framework, one of the most important and recent is Hyperchain who developed a platform model to track donations collected to support governments and health care organizations in donation process to infected victims in China (Nguyen, Ding, Pathirana, & Seneviratne, 2020). Actually, this concrete example reflects the aspiration of aid agencies to work with a more direct aid transfer model and blockchain plays an important contributory role in this context by making the donation sector digitized and more adapted to the future (De Vrij, 2018).

Unlike charities, the use of digital wallets in zakat distribution and collection operations is not yet a common activity, since it is mandatory to conduct studies on the adoption of these technologies and its compliance to sharia (Salleh, Abdul Rasid, & Basiruddin, 2019). All the more so, the complexity and still relatively ambiguous aspect of blockchain technology despite its enormous potential reinforces this assertion. Within this framework, a blockchain-based zakat management model is developed in this paper with the aim of opening the way for zakat institutions to be more reliable and transparent and to operate in a digital and innovative ecosystem within blockchain components. Our model also includes Smart contracts – a tiny computer program stored in a blockchain that takes the form of digital self-executing contracts without human intervention and which are created by using a distributed ledger to store contracts-.We will then also discuss the technical and operational contributions of our model in this whole framework.

The remainder of this paper is structured as follows: Section 2 includes the literature review. We discuss in section 3 the technical comprehensive framework of our model and in section 4 the proposed architecture and its benefits. Finally, section 5 serves as the conclusion.

LITERATURE REVIEW

Blockchain

Blockchain is an open distributed database that carries out transactions on an open

decentralized ledger (Nor, Rahman, Rahman, & Abdullah, 2017). More specifically it's about a data chain of transactions between users stored in blocks where each block records a specific amount of data encrypted thanks to cryptographic hashing. If a user wishes to carry out a transaction, he must communicate it to all other network users so that they can verify the authenticity of the operation. Each user will have a copy of the data ledger, thus all transactions are visible and available to all of them which makes impossible any false transaction, fraud act, or hacking operation. In addition to transparency, reliability and the possibility of precise and detailed fund tracking, the decentralized structure of a blockchain network reduces transaction costs by eliminating any intermediary.

Transaction promotion process in blockchain begins first by creating a digital security code by making encryption. The second step is where users attempt to authenticate the transaction while preserving private information. Finally, the transaction is thus recorded in an immutable way and will be automatically distributed to all users (Changa, Baudierb, Zhangc, Xua, Zhanga, & Aramid, 2020). The process explained above is shown in the following figure.

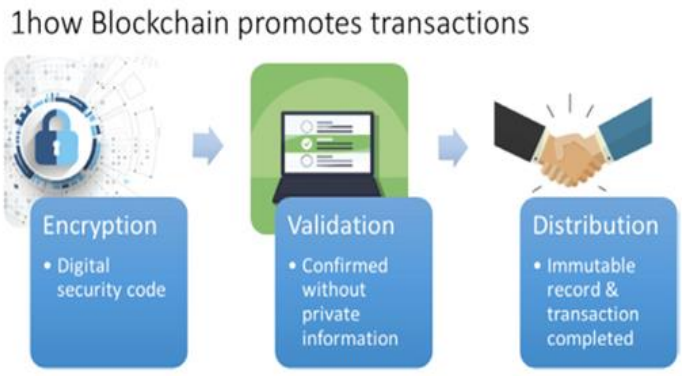

Figure 1. How Blockchain promotes transactions (Changa, Baudierb, Zhangc, Xua, Zhanga, & Aramid, 2020)

Smart Contract

Perceived as an innovation that will make a technological and organizational disruption over a wide area, smart contracts are expected to be the future of a whole automated, immutable and transparent institutional ecosystem. That said, traditional contracts, taking the form of physical paper, are exposed to non-transparency, fraud risks and slowness. Although this could be resolved relatively by delegating a financial intermediary, high costs will be recommended above (Cant, et al., 2016). But thanks to smart contracts, transactions will be independent, transparent, without financial intermediary and therefore at low cost and reliable since they are the result of a programming process.

Smart contracts were developed by Szabo (1993), at that period, it could not be spread on a large scale given the lack of a technology sufficiently able to support such fields of programming, until the appearance of blockchain technology. Thanks to blockchain, smart contract technology strongly stood out, and more specifically, it was thanks to Ethereum decentralized exchange protocol which allows users to create smart contracts for exchanges while using a cryptographic currency called Ether as an account unit. Thus, most of smart contracts today are being applied on blockchain platforms (Feng, Yu, Chai, & Liu, 2019). There are different types of blockchain, and smart contracts do not always operate in the same blockchain type. For example, while Hyperledger Fabric applies the alliance chain, Ethereum smart contract model mainly uses the public chain platforms (Feng, Yu, Chai, & Liu, 2019). Thanks to blockchain and distributed ledger technology a smart contract will be impossible to hack and therefore protected from any kind of falsification. Although smart contracts are adequate to be used in a multiple of activity sectors, they remain the most sought in the financial sector where transactions suffer in general from

heaviness, slowness, lack of transparency and high costs.

Zakat

Zakat, as a tremendously effective tool for poverty minimization and social problems resolution, just like digital wallets can be used and optimised within the potential use of blockchain technology (Salleh, Abdul Rasid, & Basiruddin, 2019). A project called "ZakatTech" in collaboration between the International Shariah Research Academy for Islamic Finance (ISRA) and SysCode was announced in 2019. This project will allow funds to be tracked throughout the Zakat management process from collection to distribution (IFNFintech, 2019).

In general, this applies in the same way to the charities. Much like zakat, blockchain is well suited to the charitable giving, foreign aid and development sectors that require the common use of direct payments and cash transfers (Vrba, 2018). This is why many academic works have developed models integrating blockchain into the modus operandi of charities and donation companies. (Farooq, Khan, & Abid, 2020) developed a management platform for charity collection and distribution by using a blockchain network as well as its components such as Intial coin offering (ICO), crypto wallets, IPFS protocol and smart contracts. Hu & Li (2020) developed a token-based blockchain charity system by also presenting the design model, architecture and operational process of the platform. An & Seo (2018) developed a blockchain-based donation system in effort to address the security gap in the current donation system. The model also includes a fundraising society and describes a structured process for using cryptocurrency and turning it into real currency. (Lee, Seo, Kim, & Jeong, 2018) created a blockchain donation structure designed to strengthen transaction security by keeping stakeholders' personal information private. For the purpose they used the P2P mixing method in order to set up a privacy protection system. All these contributions, based on various components and techniques of blockchain technology, allow the development of dynamic, digital, reliable and transparent donation systems capable of winning donor's confidence and trust.

TECHNICAL COMPREHENSIVE FRAMEWORK

Integrating blockchain into Zakat management requires setting up a process that improves the efficiency of the operational side and takes into account Sharia-compliance rules.

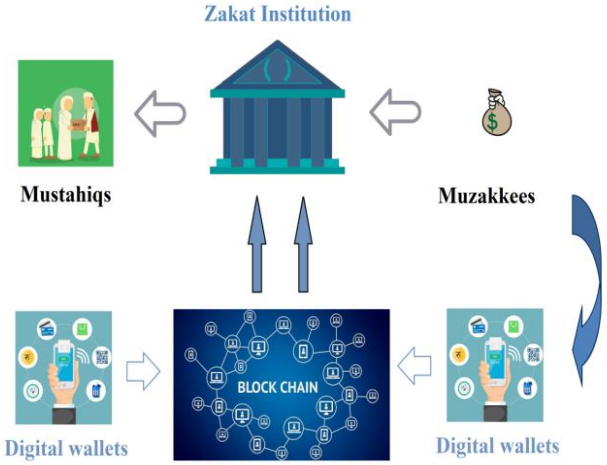

Figure 2. Proposed framework

The system presented in fig. 2 reflects the integration of blockchain technology within the zakat management institution which directly links the muzakees and mustahiqs on a single decentralized network. The connection to the network is achieved through a digital wallet and more precisely through decentralized applications (Dapps), every mustahiq who meets the conditions to be part of zakatable categories will have a blockchain account on the network. It is now imperative to explain the key technical points of the model in order to set up the bases of the proposed architecture.

Smart Contract implementation

Smart contracts will be used in each of Zakat's collection and distribution processes. Furthermore, first we have chosen to adopt a specific smart contract relationship between the muzakkees and zakat institution. For zakat collection, we will implement a smart contract which will be self-executed if the conditions of obligation to pay zakat are satisfied (A minimum of nisâb, which is the recommended minimum threshold of amount in a specific category of zakat, must have been accumulated and remained in possession throughout a lunar year (hawl)). Once the code in question is filled in, the smart contract will perform a corresponding action which is used here to automatically transfer the recommended zakat amount to the institution in the form of cryptocurrency. Additional costs outside the framework of zakat will also be levied so that they can be used as the operating funds of the Zakat institution. These fees are those of agency contract framework (Wakala).

Cryptocurrency

The issue of the legality of crypto-currencies within the framework of sharia is still at the heart of the debate. The complexity of this technology and methods available to acquire this kind of currency makes the question of deciding on its legitimacy more intricate. It is for this reason that we will adopt a neutral position with regard to crypto-currencies in the proposed architecture and we will therefore consider it part of the zakatables categories.

Technically speaking, we will not use cryptocurrency more than a medium of exchange throughout the process and for this we will adopt a fixed parity exchange system of 1 local currency for 1 cryptocurrency unit in order to avoid values fluctuations (An & Seo, 2018).

Stablecoin : Tether

We use for this pupose stablecoins which are types of cryptocurrencies designed to provide security relating to other major currencies that reputable central banks struggle to preserve purchasing power over time in the crypto-asset markets (Bullmann, Klemm, & Pinna, 2019).

This type of cryptocurrency is thus characterized by very low volatility (commonly close to zero). We use “Tether” which is the most famous and commonly used crypto currency for this kind of operations. The big specificity of Tether is that it belongs to the category of stablecoin which is stabilized and fixed by fiat currencies. Tether holds a parity of one Tether unit (1USDT) for 1 dollar.

Connecting Mustahiqs to the network

Every mustahiq identified on the zakat institution database will automatically have a blockchain account on the network. He receives these zakat funds in crypto-currency form and then transfers them in fiat money on the exchange platform.

PROPOSED ARCHITECTURE

Process

The muzakees will apply on the blockchain network of the zakat institution where they will automatically have a permanent account. Their zakatable funds will thus be represented in the form of the Tether crypto-currency. On the other side, each mustahiq on the zakat institution database which has fulfilled the conditions allowing him to be part of those who should be given zakat will also have a blockchain account. Once completed, a smart contract will be signed between the institution and the muzakee where it will be automatically executed i.e zakat funds will be levied in crypto-currency form, if the nisâb is

reached and remained one lunar year in possession. Zakat institution will receive operating fund as additional fees. Once the funds are acquired, they will be exchanged for fiat money on the exchange platform for "1 Tether = 1 Dollar" parity and transferred to the mustahiq.

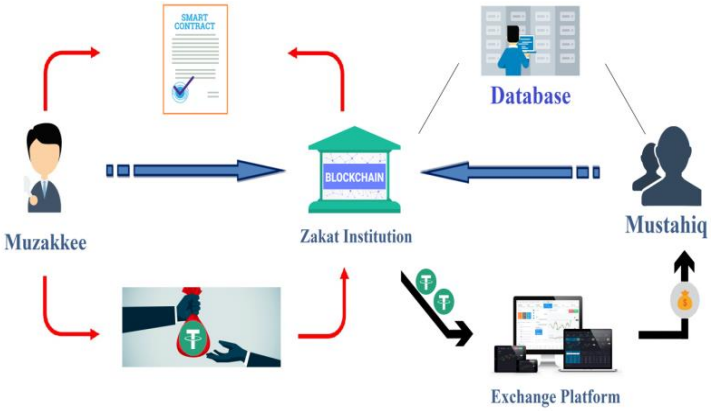

Figure 3. Proposed architecture

Benefits

Identifying muzakees

Among the major causes of the rampant poverty perceived in Islamic economies, the zakat non-payment. This comes down to the inability to identify those who have fulfilled the conditions of having to pay zakat. Through the transparency and reliability provided by blockchain technology it would be possible to identify the funds held by the muzakees and thus their accountability or not to pay the zakat while supervising the calculation and funds transfer by a smart contract.

Ensure a trust environment

Earning the donor trust is the key point for charities. However, this factor is more and more decreasing which has caused downward trends in individual donations in recent years. The Charities Aid Foundation affirmed this decline according to its report in 2017 and 2018. Organizations are in many cases accused of illegal exploitation of donations (Farooq, Khan, & Abid, 2020).

What the Blockchain offers as a solution in this regard is that it limits illegal access to the network or modification of data. As a result, once the data is saved in the blockchain, it can almost never be erased or accessed except by the trusted entity (Farooq, Khan, & Abid, 2020). Smart contracts applied on blockchain platforms will allow muzakkees to know where their funds have been transferred and for which purposes. Through blockchain technology, collected funds will be accurately tracked to know where and for which purposes they have been used. Thereby, the process will be trackable, auditable, and immutable which are main qualities to ensure a successful zakat raise system (Elasrag, 2019).

Time efficiency

In cases requiring emergency interventions such as natural disasters, wars, epidemics as well as the emerging virus COVID 19 it is extremely important that the donations reach the poor person on time (Farooq, Khan, & Abid, 2020). Calamities faced nowadays by Islamic countries create an urgent need for Zakat delivery. As a decentralized system with no intermediary, blockchain ensures the satisfaction of this need by consuming little time for the funds to be transferred in emergencies with a quick feedback on the way in which the funds are spent between the muzakee, mustahiq, and the zakat management institution.

More efficient muzakee-mustahiq connection

Contingencies were explored with regard to smart contracts in their ability to link the funder with the financing needs with the entire cash flow matching process carried out via an algorithm (Kasujja, 2018). This paves the way towards a decentralized

zakat management system, where muzakkee can easily and efficiently spot mustahiqs by simply connecting via Dapp to the institution's blockchain network and mustahiq also can easily earn zakat funds. Audit reports of every charity activity are also given (Jayasinghe, Cobourne, Markantonakis, Akram, & Mayes, 2017). This architecture greatly facilitates a future digital link which goes against the traditional problems of centralized systems and will also have its positive impacts by reviving and developing an efficient zakat ecosystem.

Accounting processes facilitation

Among the major problems perceived for the muzakkees refraining from taking proper care of their duty in zakat, their possession of large wealth on which zakat is due, and therefore the need to struggle to calculate the amount of zakat that need to be paid. Since blockchain allows open access to the data of each node and the smart contract included in the model ensures an automatic calculation of the nisab, accounting will be automated and therefore this task will no longer be an obstacle. This also applies to the institution of zakat which requires even more complex accounting work. All the inflows and outflows of zakat funds, the calculation data relating to each muzakkee and each mustahiq as well as those relating to cyptocurrency.

Remittance efficiency

In general, the use of smart contracts in the funds transfer system contributes to the facilitation of payment processing and funds transfer to clients and other stakeholders. Some banks have been eager to speed up their remittance systems while preserving accuracy and transparency since smart contract codes are immutable and distributed (Lambert, 2019). Zakat funds transfer in our proposed model is perceived as a complicated operation, that's why being assisted by a smart contract allows it to be fast, accurate and transparent.

Avoiding lack of skills problems

Zakat management is a complex operation which requires institutional know-how and both managerial and academic skills in sharia field. Through the automation of the whole system through blockchain and smart contracts, it will be possible to avoid a large part of these skills problems as well as to avoid the possible errors that can occur. Once the system is installed, all the steps will be automated and enormous material and time consuming costs will be saved (Salleh, Abdul Rasid, & Basirudd, 2019).

CONCLUSION

We have tried in this research paper to highlight the importance of blockchain and smart contracts use in the management of zakat through the development of a model that combines the institution of zakat management with the components of blockchain technology and smart contract. We have seen positive points and benefits, both from a technical point of view and from the Shariah perspective, which strongly encourage the potential application of blockchain in the management of zakat.

However, Islamic scholars would need to make clear and neat final decisions regarding the shariah-compliance of some technical aspects such as smart contracts and cryptocurrencies so that future models can be developed for either zakat or for any other branch of Islamic finance.

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A Techno-Efficiency Analysis of Zakat Institutions in Indonesia

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ABSTRACT

Zakat institutions play an important role in managing zakat effectively and efficiently as described in Law no. 23 of year 2011. This study aims to analyze the efficiency of zakat institutions in Indonesia and determine the best ranking of the units observed. This study uses a descriptive quantitative approach with the Super Efficiency Analysis. The study objects are BAZNAS, Rumah Zakat, Dompet Dhuafa, and YBM PLN with the 2016-2018 observation period. Personnel costs, operational costs, and socialization costs are input variables. While the output variables used are the amount of zakat collected and the amount of zakat distributed. The results of super-efficiency measurement show that the 3 best DMU rankings were achieved by YBM PLN 2016, BAZNAS 2018 and BAZNAS 2017. While the other 9 DMUs were inefficient. Inefficiency is due to the not optimal amount of zakat collected and zakat distributed and the high use of socialization costs. The variable of the amount of zakat collected is the most sensitive variable to the value of efficiency. To achieve performance efficiency, technology can be utilized to improve input and output. This research can be used as an evaluation material for zakat institutions to optimize efficiency.

Keywords: Super Efficiency; Zakat Institution; Technology

INTRODUCTION

Zakat is one of the pillars of Islam. One of the orders to pay zakat is mentioned in the Quran Surah Al-Baqarah verse 43 which means "*and establish prayers, pay zakat and bow along with those who are rukuk*." The essence of paying zakat apart from the assets owned is the part of those who cannot afford it, but it can also improve the quality of faith and cleanse the soul.

Zakat has an economic function, namely ensuring an even distribution of income. Johari et al. (2013) stated that the distribution of zakat is very important in determining the distribution of income. Zakat is an alternative solution to reducing poverty and inequality by distributing zakat to eight *ashnaf*. Zakat as an economic stimulus through sharing mechanisms and equitable economic growth. The benefits of zakat can be felt more widely if it is managed properly.

Zakat in Indonesia continues to develop. From the collection side, statistical data shows that the amount of zakat and other funds collected continues to increase. In 2019 the collection of Zakat, *Infaq*, Alms, and other funds reached 8.1 trillion (Puskas BAZNAS, 2020). It can be interpreted that there is an increased awareness of paying zakat and a sense of trust from *muzakki* to zakat institutions. However, the realization of the collection is still far from potential. The potential for zakat in 2019 reaches 233.84 trillion (Puskas BAZNAS, 2020). The gap between the potential and realization of zakat funds is still far away.

From the distribution side, zakat distributed by zakat institutions can have a positive effect on the recipients. Ali et al. (2016) show that zakat distributed by zakat institutions in consumptive and productive forms can improve the welfare of *mustahiq*. Furthermore, Nurzaman (2017) found that

productive zakat that is distributed increases the *mustahiq* welfare index both in material and spiritual terms. Other research such as those conducted by Sari et al. (2019) and Razak (2020) also show the same result. However, Afriadi and Sanrego (2016) found that overlapping distribution with government programs is one of the priority problems of the Zakat Institution, making distribution less effective and efficient. Zakat institutions as intermediary institutions in the social sector must ensure that zakat is managed effectively and efficiently so that it can provide wider benefits for *mustahiq.*

During the problems faced, zakat institutions must continue to improve their performance at an efficient. Zakat institutions work efficiently by maximizing output with existing inputs or producing certain outputs with minimal inputs. In working efficiently, in this digital era, the use of technology can be developed. Technology can be used to support performance efficiency (Wahab and Rahman, 2011). The existence of regulations and guidelines such as Law no. 23 of 2011, Zakat Core Principles and other regulations are evidence that apart from being managed effectively, zakat must also be managed efficiently. Adiwijaya and Suprianto (2020) state that efficiency is one of the criteria for good zakat governance. Efficiency is an important element to maintain reputation, trust from the public, and as a material for performance evaluation in the management of zakat. Therefore, it is necessary to measure the efficiency so that zakat management can be optimal.

One measure of the efficiency of zakat institutions is using the method Data Envelopment Analysis (DEA). By using several input and output variables it can be analyzed how efficient the zakat institution is and the optimal solution that can be generated. However, measuring the efficiency of zakat institutions using the method Data Envelopment Analysis (DEA) has a weakness, namely that the efficiency value is limited to 1 or 100% so that the best efficiency rating and changes in efficiency values are not known. By knowing the level of change in efficiency each year will make it easier for zakat institutions to evaluate performance. Overcoming the weaknesses of the standard DEA model, Andersen and Petersen (1993) developed the concept of Super Efficiency analysis. Super Efficiency is a measure of the power of the efficient units used to determine the observed DMU rating. Super Efficiency Analysis allows the efficiency of the DMU to be more than 1 or 100%.

This study aims to measure and analyze the efficiency of zakat institutions in 2016-2018 using the Super Efficiency. This research is related to research by Wahab et al. (2012), Rusydiana and Al Farisi (2016), Rusydiana and Widiastuti (2018), Rusydiana and Al Farisi (2018), Budiantoro et al. (2018), and Rustyani and Rosyidi (2018) with updates to the Super Efficiency method. This research is expected to be used as an evaluation material not only for the observed zakat institutions but also for all zakat institutions in Indonesia.

LITERATURE REVIEW

Efficiency Concept

According to *Kamus Besar Bahasa Indonesia* (KBBI) it is said to be efficient if something is done properly, it does not waste time, effort, and cost. In Islam, the concept of efficiency is explained in QS. Al-Isra verse 26 which means "*And give to families that are close to their rights, to the poor and those who are traveling and do not waste (your wealth) wastefully*." According to the Zubdatut Tafsir, it is prohibited to overspend assets even for things that are lawful or to spend assets for things that are haram even if only a little. From these verses and interpretations, efficiency is an action that is not wasteful, and all resources are used appropriately.

In economics, an organization is said to be efficient when it can produce maximum output with certain inputs or produce certain outputs with minimal inputs. An economy is said to be efficient if all existing resources have been used and produce a flow of goods and services for the needs of many people (Chapra, 1992).

One of the measures of efficiency is the Data Envelopment Analysis (DEA) method. In the Data Envelopment Analysis method, there are two orientations used, namely input oriented and output oriented. The input-oriented shows how much output can be produced with minimal input, while the output oriented shows the maximum output that can be produced with certain input. The difference in the use of this orientation will affect the target recommendation that can be applied to the actual value if there are units that are considered inefficient. In the DEA, there are two assumptions, namely CCR and BCC. DEA-CCR was developed by Charnes et al. (1978) while DEA-BCC was developed by Banker et al. (1984). CRR assumes the unit under study operates on a constant return to scale by assuming that the input will give the same output. Meanwhile, BCC assumes that the unit under study operates with a return to scale (VRS) variable, that is, the use of input can produce smaller or larger output results.

While the basic DEA model can measure different types of efficiency scores, the DEA makes it impossible to know the efficiency unit rating because the efficiency score is 1 or 100%. Andersen and Petersen (1993) then developed a super-efficiency model to overcome this deficiency. Super Efficiency allows the measurement of the efficiency with an efficiency value of more than 1 for a unit that is considered efficient so that the best unit of all observed units can be found. Super Efficiency is very useful if we want to evaluate efficiency per year because it is known that the difference value is limited to 1 or 100%.

The Concept of Zakat Institution

Zakat has great benefits for that zakat must be managed institutionally by Islamic law as described in Law No. 23 of 2011 on Zakat Management. Previously, zakat management in Indonesia has a long history, starting from being managed traditionally to establishing an institution that is tasked with managing zakat. Zakat management in Indonesia by zakat institutions, both those formed by the government and the community. Based on Law no. 23 of 2011 The Zakat Institute has duties in terms of collecting, managing, distributing, and utilizing zakat. The Zakat Institution as an intermediary institution in the social sector has to coordinate the needs of *muzakki* and *mustahiq*. On the *ashnaf* side, the zakat institution is in charge of taking zakat from them. On the *mustahiq* side, through the management and distribution of zakat, zakat institutions have a big role to play in changing the status of *mustahiq* to *muzakki*. In that sense, *mustahiq* get out of poverty and get prosperity. In realizing welfare, based on Law no. 23 of 2011 states that zakat management must be carried out effectively and efficiently.

Efficiency is an important criterion in the Zakat Institution. Adiwijaya and Suprayitno (2020) stated that the management of zakat institutions is said to be good if it meets the efficiency criteria. It is further explained that efficiency is related to the distribution aspect. If zakat institutions work efficiently, it can be said that the distribution is placed in the right program. In carrying out the management of zakat effectively and efficiently, the Zakat Institution receives a part of the collected funds which are used for operational needs.

The efficiency of the Zakat Institution builds public reputation and trust. Wahid et al. (2009) found that the inefficiency of zakat institutions affects the dissatisfaction of *muzakki* in entrusting

zakat pay. In terms of the professionalism of zakat management, one of which is reflected in the efficiency of zakat institutions. To achieve the efficiency of the Zakat Institution, the use of technology can be developed. Wahab and Rahman (2011) stated that technology adoption is important in improving the level of efficiency.

Previous Research

Several studies discussing the efficiency of zakat institutions, one of which was conducted by Budiantoro et al. (2018) This study measures the efficiency of BAZNAS for the period 2002-2016 using the Stochastic Frontier Analysis (SFA). The input variables used are total assets and operational costs. While the collection of zakat and distribution of zakat are output variables. BAZNAS efficiency level based on the amount of zakat collected is 94.98%. Meanwhile, the BAZNAS efficiency level based on the amount of zakat distribution is 70.99%. From the collection side, there is 5.02% that must be optimized and 29.01% from the distribution side that must be optimized.

Rustyani and Rosyidi (2018) measure the efficiency of six zakat institutions, namely LAZ YDSF, LAZ Al-Azhar, LAZ ACT, LAZ Rumah Yatim Arrohman Indonesia, LAZ PKPU, and LAZ Rumah Zakat for the 2014-2016 period using Data Envelopment Analysis (DEA). The input variables used are the total zakat collection, total costs, and amil receipts. The output variables used are the amount of distribution of funds and total assets. There are two LAZ that experienced inefficiency in 2014-2015, namely LAZ YDSF and ACT. Meanwhile, in 2016 all zakat institutions achieved optimal efficiency.

Rusydiana and Al Farisi (2016) measure the efficiency of three zakat institutions, namely BAZNAS, PKPU, and Rumah Zakat in the 2007-2014 period using the Data Envelopment Analysis (DEA) method. The output variables used are the amount of zakat collection, the amount of zakat distribution. Meanwhile, operational costs, socialization costs, and personnel costs are input variables. The results show that 12 DMUs operate efficiently and six DMUs experience inefficiency. The main factor of inefficiency is the distribution of zakat funds to *ashnaf* which is still not optimal.

RESEARCH METHOD

This research is a quantitative descriptive study using the Super Efficiency-Data Envelopment Analysis (DEA) analysis technique. The population in this study are all zakat institutions in Indonesia, both those managed by the government or the community. The samples used were BAZNAS, LAZ Rumah Zakat, LAZ Dompet Dhuafa, and YBM PLN. The sample selection uses a purposive sampling technique by determining the criteria 1) zakat institutions with the largest acceptance and distribution of zakat funds, 2) publish financial reports on the website from 2016-2018.

Types and sources of data use secondary data obtained from the 2016-2018 Zakat Institution Annual Financial Statements published on the zakat institution's website. There are 12 DMUs from four zakat institutions and three periods. The measurement of efficiency in this study uses a production approach. In measuring the efficiency using the Super Efficiency DEA, the input and output variables are used. Input variables are personnel costs (X1), socialization costs (X2), and operational costs (X3). While the output variables used are the amount of zakat collected (Y1) and the amount of zakat distributed (Y2).

The operational definitions of the variables in this study are:

1. Personnel costs (X1) are costs for salaries and employee benefits in one year.

2. Socialization costs (X2) are costs used for socialization, promotion, publication in one year.
3. Operational costs (X3) are the entire use of amil funds except for personnel and socialization costs in one year.
4. The amount of zakat collected (Y1) is the number of zakat funds collected, either obtained from *muzakki* or profit-sharing.
5. The amount of zakat distributed (Y2) is the amount of zakat that is distributed to *ashnaf*.

As explained earlier, the efficiency measurement carried out using Super efficiency is the development of Data Envelopment Analysis (DEA). Andersen and Petersen (1993) developed Super Efficiency which allows measurement of DMU efficiency with a value of more than 1 or 100%. Super Efficiency only affects units that are considered efficient with the restrictions removed. Meanwhile, inefficient units are not affected because the efficiency is less than 1. Super Efficiency is used to rank the DMU that is the object of observation.

The data processing stage starts from grouping the types of costs in the financial statements into predetermined variables. Furthermore, data analysis was carried out using the Banxia Frontier Analyst 4 software. The assumptions used were CCR (CRS) with an output orientation. After the data analysis process is complete, a ranking of the DMU is carried out, investigating the causes of inefficiency, and conducting a sensitivity analysis to determine the influencing or sensitive variables in determining the efficiency value.

RESULT

In this study, the measurement of efficiency is based on the CRR assumption with an output orientation. Output-oriented is chosen in measuring the efficiency of zakat institutions where there are gaps in the realization and potential of zakat. Table 1 shows the standard DEA measurements and the efficiency values given relative, not absolute, efficiency values. The use of Super Efficiency will result in an efficiency score of ≥ 100% for DMUs that are considered efficient. As with DEA, an efficiency score <100% indicates that the DMU is inefficient. Table 1 below describes the super efficiency scores of the 12 DMUs observed using three input variables (personnel costs, operational costs, and socialization costs) and two outputs (the amount of zakat collected and the amount of zakat distributed). Of the 12 DMUs, 3 DMUs showed efficient scores, namely BAZNAS 2017, BAZNAS 2017, and YBM PLN 2016. While the other 9 DMUs experienced inefficiency and needed to make improvements to their inputs or outputs to achieve efficient results.

Table 1. Efficiency Super Value

DMU	Score (%)	Rank
BAZNAS_2016	62.1	9
BAZNAS_2017	113	3
BAZNAS_2018	121.4	2
LAZ RZ_2016	68.1	7
LAZ RZ_2017	72.7	6
LAZ RZ_2018	75.8	5
LAZ DD_2016	52.8	10
LAZ DD_2017	47.5	11
LAZ DD_2018	38.5	12
YBM PLN_2016	159.3	1
YBM PLN_2017	86.2	4
YBM PLN_2018	64.4	8

Source: Data Processing Banxia Frontier Analyst 4 (2020)

Seen in the table above, the best ranking of the 12 DMUs observed were

YBM PLN 2016, then BAZNAS 2018, BAZNAS 2017. Next, YBM PLN 2017, Rumah Zakat 2018, Rumah Zakat 2017, Rumah Zakat 2016, YBM PLN 2018. Followed by BAZNAS 2016, Dompet Dhuafa 2016, Dompet Dhuafa 2017, and Dompet Dhuafa 2018.

If Zakat Institutions experiences inefficiency, it is necessary to make improvements or improvisation on input and output. Table 2 shows potential improvement, namely input and output targets that can be applied to achieve efficient management. Almost all observed Zakat Institutions must reduce the cost of socialization and increase the amount of zakat collected and the amount of zakat distributed. Meanwhile, the reduction in personnel costs only occurred at BAZNAS 2016, and operational costs reduction at YBM PLN 2017 and 2018. From the potential improvement table below, it can also be seen that the cause of Zakat Institutions inefficiency is the use of large socialization costs but has not been able to produce the same output. Another cause of inefficiency is that the amount of zakat collected, and zakat distributed is still far from the target.

Table 2. Value of Potential Improvement Dompet Dhuafa (%)

DMU	Personnel Cost	Operational Cost	Socialization Cost	Zakat Collected	Zakat Distributed
BAZNAS_2016	-48	0	0	61	63
LAZ RZ_2016	0	0	-34	90	46
LAZ RZ_2017	0	0	-13	86	37
LAZ RZ_2018	0	0	-28	69	31
LAZ DD_2016	0	0	-62	89	89
LAZ DD_2017	0	0	-63	110	140
LAZ DD_2018	0	0	-63	159	187
YBM PLN_2017	0	-16	-24	15	19
YBM PLN_2018	0	-18	-9	55	61

Source: Data Processing Banxia Frontier Analyst 4 (2020)

In the super efficiency method, it is possible to measure the sensitivity of each variable. Sensitivity analysis is carried out to determine the difference in efficiency values after measuring the efficiency, which is then done by eliminating one of the variables. If in the next measurement by eliminating one of the variables there is a change in the efficiency value, then the variable is considered sensitive to the efficiency value. This sensitivity analysis affects the final recommendations produced. The measurement of super-efficiency in this study is output-oriented, so the writer will see that the sensitivity analysis is only carried out on the output variable. Previously, the measurement of sensitivity analysis was carried out by (Ruysdiana and Hasib, 2020) with the object of observation of Islamic banking.

Table 3. Results of Sensitivity Analysis (%)

DMU	Without Eliminating Variable	Without Zakat Collected	Without Zakat Distributed
BAZNAS_2016	62.1	57.4	62.1
BAZNAS_2017	113	87.7	108.6
BAZNAS_2018	121.4	153.2	82.9
LAZ RZ_2016	52.8	52.3	49
LAZ RZ_2017	47.5	38.7	47.5
LAZ RZ_2018	38.5	32.7	38.5
LAZ DD_2016	68.1	68.1	52.3
LAZ DD_2017	72.7	72.7	53.2
LAZ DD_2018	75.8	75.8	58.3
YBM PLN_2016	159.3	159.3	154.3
YBM PLN_2017	86.2	83.5	86.2
YBM PLN_2018	64.4	62.1	64.4

Source: Data Processing Banxia Frontier Analyst 4 (2020)

Based on the measurement of the sensitivity analysis above, the DMU that changes when the output variable amount of zakat collected is omitted, namely 8 DMU. There is a change in the value of efficiency if the variable zakat collected is removed. It can be interpreted that the assessment of efficiency is sensitive to the variable of zakat collected. While analyzing the zakat distributed variable, 7 DMUs experienced changes in value. When compared between the output variables, the most sensitive to the efficiency value is the amount of zakat collected.

DISCUSSION

Based on Law no. 23 of year 2011 zakat management must be carried out effectively and efficiently. Therefore, it is necessary to measure the efficiency of zakat institutions as an evaluation material so that management is right on target. One method to measure efficiency is Super Efficiency which can give the best rating when the efficiency value is not limited to 100%. The application of the super efficiency method with the object of observation by the Zakat Institute has never been done before. The measurement of efficiency in this study uses the CRS (Constant Return to Scale) assumption, which is a condition where the addition of 1 input will produce the same output. The orientation to the output is used with the assumption that the Zakat Institution has sufficient input to achieve maximum output. Also, there is a gap between zakat potential and realization so that the output orientation is chosen. The measurement results show 3 DMUs with the best ratings, namely YBM PLN 2016, BAZNAS 2018, and BAZNAS 2018. 3 DMUs are DMUs that get efficient results with efficiency values above 100%. Meanwhile, 9 other DMUs experienced inefficiency.

Based on the BAZNAS efficiency score in this study, BAZNAS obtained efficient results and was the best DMU. These results can be compared with research by Syaifuddin (2019) which shows that BAZNAS obtained an efficient score in 2017. From year to year (2016-2018), BAZNAS has increased efficiency. This is indicated by the efficiency results of 62.1% in 2016, 113% in 2017, and 121.4% in 2018. The management of zakat by BAZNAS was getting better during the observation period.

In measuring the efficiency of Rumah Zakat, it shows a difference between Hikmah and Shofawati (2020). This is reasonable because of the use of different assumptions. However, the similarity still exists, namely the increase or decrease in the efficiency of Rumah Zakat. Hikmah and Shofawati (2020) show that the efficiency value of Rumah Zakat 2018 is smaller than Rumah Zakat 2017. The same results are shown in this study, Rumah Zakat 2018 experienced a decrease in performance in 2018.

On the other hand, Dompet Dhuafa experienced inefficiency in the year of observation. This result is supported by research by Kurniawan (2019) which shows the efficiency value of Dompet Dhuafa 2016 is 64% with the same assumptions and orientation. In this study, the efficiency value of Dompet Dhuafa 2016 was 52.6%. This difference in value can occur because Kurniawan (2019) uses an output variable in the form of total ZISWAF receipts and total ZISWAF disbursements, while in this study using the output variables of the amount zakat collected and the amount zakat distributed. The efficiency value shows that the efficiency of Dompet Dhuafa has continued to decline from 2016 to 2018. The decline in the efficiency value of Dompet Dhuafa from 2016 to 2017 was also shown by Hikmah and Shofawati (2020). Similar to Dompet Dhuafa, YBM PLN also experienced a decrease in the efficiency value during the observation period. The difference lies in 2016 where YBM PLN showed efficient results and was the best DMU.

Besides, this research provides potential improvement value for DMUs that are considered inefficient. Of the 12 DMUs that were observed, 9 DMUs showed inefficiency. Based on the potential improvement value, Zakat Institutions need to increase the amount of zakat collected and the amount of zakat distributed. Or in other words, the cause of inefficiency is also due to a lack of zakat collected and zakat distributed. This inefficiency is supported by research by Ardiani (2019) and Parisi (2017), which show that inefficiency is due to less than optimal distribution of funds, even though the sample and observation period are different. This means that the causes of inefficiency in this study are not only a concern for the observed institutions but also all zakat institutions in Indonesia. This can be related to the function of the zakat institution as an intermediary institution, namely collecting funds and distributing them. By increasing the number of zakat collected, it means that the Zakat Institution also improves the function of the collection, namely coordinating the needs of *muzakki* in terms of paying zakat. From the total amount of zakat collected, then zakat institutions can manage and allocate appropriately for the interests of *mustahiq*. Collection and distribution are related. With the amount zakat collected, there will be zakat distributed.

Judging from the observed institution's financial reports, there are periods when there is a surplus of zakat funds. It can be interpreted that in terms of measuring efficiency with the variable amount of funds channeled, the surplus of zakat funds indirectly causes inefficiency. Referring to the potential improvement value, all observed Zakat Institutions must increase the zakat distributed. If we look at the observed Zakat Institution financial statements, there is a surplus of zakat funds either from one period or from the previous period. For example, YBM PLN was efficient in 2016, but in 2017 and 2018 its experienced inefficiency. When viewed from the YBM PLN financial report, the balance of zakat funds (surplus) in 2018 was Rp111.086.133.205 compared to the previous year Rp78.750.191.866. Judging from the potential improvement, the zakat target distributed by YBM PLN in 2018 must increase by 61% compared to 2017 which only needs to be increased by 19%. The same thing is shown in the financial statements of Rumah Zakat, Dompet

Dhuafa, and BAZNAS where there is a surplus of zakat funds.

This zakat surplus needs to be a concern for zakat institutions in their function as an intermediary institution. In the context of zakat governance, Saad et al (2017) say that the management of zakat institutions is not achieved at an optimal level if there is a significant surplus of zakat funds. Furthermore, it is said that zakat institutions can make innovations and proper management for the interests of *mustahiq* in the context of creating welfare. In terms of efficiency, an increase in the amount of output (the amount of zakat collected and zakat distributed) still requires supervision of the use of inputs or costs so that the increase in output can be carried out as efficiently as possible, but still provide optimal results. For this reason, zakat institutions can use various alternative methods that provide an optimal output at an efficient cost.

On the other hand, the cause of the Zakat Institutions inefficiency found in this study was the input variable. The high use of socialization costs is the main cause of inefficiency from the input side. The same results were also found by Al-Ayubi et al. (2018) and Parisi (2017) which measure efficiency in different periods and samples that it is necessary to reduce the cost of socialization. On the other hand, socialization is one of the priority solutions to zakat problems as shown by Afriadi and Sanrego (2016). There is a potential gap and the realization of zakat funds, socialization is important and requires a lot of money. Thus, the Zakat Institution can review its management so that the socialization carried out can have a significant impact on increasing the amount ofzakat collected and zakat distributed so that the costs incurred for the socialization are productive and efficient.

On the other hand, personnel costs also need to be reduced. However, personnel costs are not a major cause of inefficiency. Most zakat institutions have allocated personnel costs appropriately. However, the 2016 BAZNAS Financial Report shows the need to reduce personnel costs. When salary or personnel costs cannot be done because it is amil's right as one of the *ashnaf* and is also a reward for his performance in managing zakat, then what needs to be considered is how the fixed costs can produce maximum output. In this case, the quality of personnel needs to be improved so that efficiency can be achieved. This is also conveyed by Rustyani and Rosyidi (2018) who say that their attention is not to minimize costs but to manage cost efficiently, so that expenses are not in vain. Meanwhile, the reduction in operational costs is shown by the 2017 YBM PLN Financial Statements and 2018 PLN YBM.

Meanwhile, the sensitivity analysis by eliminating one of the output variables shows that the efficiency value is sensitive to the variable amount of zakat collected with changes in value at 8 DMU and sensitive to the variable amount of zakat collected. Which is sensitive in the variable of zakat distributed with changes in value at 7 DMU. These variables both affect increasing efficiency, with the greatest influence being the variable zakat collected. The increase in zakat collected and zakat distributed must go hand in hand as a step to create welfare through the proper distribution of zakat on the zakat funds that have been collected.

In the digital era, technology has been implemented in the Zakat Institution because it can provide convenience and fast access in managing zakat. Also, the use of technology supports the efficiency, transparency, and accountability of zakat institutions (Puskas BAZNAS, 2020). Moreover, (Yolanda et al., 2020) show that the better adoption of technology can increase good amil governance practice. In an effort to increase the amount off zakat collected and the amount of zakat distributed while maintaining the use of

inputs, the application of technology can be improved. For example, BAZNAS implemented technology in 2016 and the number of collections increased by 16% in 2017 (Puskas BAZNAS, 2020). In this study, BAZNAS in 2017 obtained efficient results. Both BAZNAS, Rumah Zakat, Dompet Dhuafa, and YBM PLN have implemented technology by involving internal and external platforms.

There are inefficiencies caused by the high cost of personnel, so in the application of technology, the institution needs to ensure that the service to pay zakat on digital channels is adequate and Amil is able to operate, so that in the collection and distribution process, Amil can provide services that make it easier for *muzakki* to pay zakat and convenience zakat distribution for *mustahiq*. Meanwhile, due to the high or not optimal cost of socialization, zakat institutions can take advantage of digital technology in socialization such as socialization on social media.

Technology provide benefits in increasing the amount of zakat collected. Currently, the Zakat Institution such as BAZNAS uses e-commerce, e-wallets, collaborations with various companies such as Gojek, OVO, and other fintech companies. The application of such technologies makes paying zakat easier, and it is also a means of socializing, especially for the millennial generation. For that, the improvisation of input and output aimed at achieving efficiency, technological innovation can be developed and improved by zakat institutions (Hudaefi et al., 2020).

The application and improvement of the use of technology in the Zakat Institution with the aim of efficiency is also supported by research by Wahab and Rahman (2011) which states that based on theory, technology is important in improving the level of efficiency. Meanwhile, Rachman and Nur Salam (2018), and Friantoro and Zaki (2019) state that technology is needed in terms of collecting and distributing zakat. This is related to the sensitivity analysis which shows that the efficiency value is sensitive to the variable of the amount of zakat collected and zakat distributed.

Although the value of efficiency in this study is not an absolute result, the value of super efficiency, potential improvement, and sensitivity analysis presented can be of mutual concern so that zakat management can be optimal and following Law No. 23 of 2011 that the management of zakat effectively and efficiently can run as it should.

CONCLUSION

This research produces several findings, namely the highest efficiency value is in the 2016 YBM PLN Report, the second BAZNAS 2018, the third 2017 BAZNAS, the fourth 2016 PLN YBM, the fifth 2018 Zakat Houses, the six Zakat Houses 2017, the seventh 2016 Zakat Houses, the 2018 PLN YBM 2018, ninth BAZNAS 2016, tenth Dompet Dhuafa 2016, eleventh Dompet Dhuafa 2017, twelfth Dompet Dhuafa 2018. Overall, of the 12 DMUs observed, 3 DMUs were efficient while 9 other DMUs experienced inefficiency. Zakat institutions need to improvise inputs and outputs so that zakat management runs efficiently under Law no. 23 of 2011.

Meanwhile, the potential improvement value of the inefficiency DMU shows the need for an increase in the receipt and distribution of zakat and a reduction in the cost of socialization so that the increase in output must still pay attention to the use of inputs. Meanwhile, the sensitivity analysis shows that the efficiency value is very sensitive to the output collected. The difference of 1 DMU on the results of the sensitivity analysis does not indicate that the variable amounts of zakat distributed can be ignored. Zakat

collected and zakat distributed are interrelated in the context of creating welfare.

In the digital era, the application of technology can be improved to overcome cost inefficiencies and to increase the amount of zakat collected and the amount of zakat distributed. The use of technology supports the efficiency of zakat institutions and provides great benefits in the management of zakat. The efficiency value generated in this study is not absolute efficiency. However, it remains a common concern in terms of managing zakat effectively and efficiently as described in Law no. 23 of 2011. Zakat Institutions need to conduct regular efficiency evaluations so that the allocation of funds is right and on target with improvisation on inputs and outputs.

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International Journal of Zakat Vol. 5(3) 2020 page 44 – 56

Technological Transformation in Malaysian Zakat Institutions: A Qualitative Analysis

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ABSTRACT

This research observes technology adoption among zakat institutions in Malaysia. To achieve this objective, a qualitative approach is adopted where the primary data is collected via observation of website or any related materials, which supports technology application among Zakat institutions in Malaysia. The materials including website, the information of online collection or payment system and others. The findings indicate that majority of the zakat institutions have started to utilize technology system in their organization, especially with regards to zakat payment. However, there is still lacking of technology usage for zakat distributions, awareness as well as zakat fund reporting to public. Overall, as zakat collection and distribution have involved millions of records and its management is still questionable by all parties, it is believed that technology will enhance the operations of zakat institutions to become more efficient and effective to distribute wealth to the needy. It is thus public trust towards the institutions is expected to increase.

Keywords: Zakat; Technology; Malaysia; zakat collection; zakat distribution

INTRODUCTION

Zakat is one of the Islamic pillar that among the aim is to solve an economic problem in a society by way of wealth sharing between the rich and the poor according to rules set in the Quran, and also guidelines prepared by the Muslim authority (Surah An-Nur, verse 56; At-Taubah, verse 60). In addition, the *hikmah* behind zakat is to enlighten human life by admitting that all the fund received is not solely for themselves as it should be shared with other who are in need (Surah At-Taubah, verse 103). As zakat collection is becoming a serious matter in a Muslim world, it should be managed professionally to ensure fair treatment for both zakat givers and recipients. It is observed that people nowadays still questioning the management of zakat where quiet number of researchers have found that there was low satisfaction among zakat givers on the zakat fund management due to high amount of undistributed zakat fund every year. This matter, however, owing to certain reasons when is asked to the zakat institutions. It is believed that they have done their best to perform their duty as zakat trustee.

In Malaysia, zakat institution is under purview of the State Islamic Religious council. Every state has their own enactment on how to manage zakat fund accordingly. Parallel to the industrial technology movement, the adoption of technology is appearance among the Malaysian zakat institutions. Previously,

everything is done manually, and all record related to zakat collection, distribution, and management is done using 100 percent by human resources. Hence, there is lack of efficiency to ensure all data and documents are recorded properly without having any issues of mis-recorded or lost data. Now, technology has assisted the zakat institution in keeping record of zakat collection, reaching *asnaf* for zakat distribution and managing zakat fund for investment purposes.

This research basically observes the adoption of technology among zakat institutions in Malaysia especially in the context of zakat collection and distribution. It is believed that public trust and satisfaction is very crucial for the institution to sustain in future to ensure all the zakat contribution reach the needy and indirectly alleviate the property level in the country. This paper is structured based on following sequence; literature review, methodology, findings, and discussion.

LITERATURE REVIEW

Malaysian Zakat Institutions

The Federal Constitution of Malaysia has concluded that matters relating to Islam are subject to the jurisdiction of the states as provided in the Ninth Schedule (2-List of States)(Yusuf & Derus, 2013)(Yusuf & Derus, 2013). It lists matters related to *wakaf, zakat, baitulmal* and it's related as the responsibility of every state in Malaysia. The Federal Constitution's financial provisions also state that the proceeds of *zakat* should be accounted for in a separate fund (fund) and not in the Federal or State Consolidated Fund. Accordingly, all states have made provisions relating to the management of *zakat* in their respective state acts or enactments such as the Islamic Administration (State of Selangor) Enactment 2003, the Selangor *Zakat* and Zoning Regulations 2013 and the *Syariah* Criminal Offenses (Federal Territories) Act 1997 (Act 559). State enactments have set the State Islamic Religious Council (SIRC) as the governing body for the collection and distribution of *zakat* in each state except in the state of Kedah where the *zakat* administration is fully implemented by the Kedah *Zakat* Board under the state administration.

Overall, the SIRC plays two key functions in the state administration framework. Apart from administering the economic development activities of the Islamic states, including the administration of charity, the main function of SIRC is to help and advise the Sultan as the head of Muslim on matters related to Islam and Malay customs. Section 5 of the Administration of Islamic Law (Pahang) 1991 for example, has outlined clearly Pahang SIRC function to advise the Sultan in respect of all matters relating to the Islamic religion and Malay customs except those related to the administration of justice. This makes them the highest authority in the Islamic administration at the state level.

Accordingly, in the 1990s, there was a change in the structure of the *zakat* administration in several states aimed at increasing the efficiency and effectiveness of *zakat* management in general. The profession of *zakat* collection is professionally introduced in Malaysia through corporate and privatization activities. Following this introduction, the management structure of *zakat* activities in Malaysia has changed in certain states. In some states, collections and / or distributions are made by entities appointed as agents (*amil*) through the concept of *'wakalah'. Wakalah* involves the reduction of certain functions (*zakat* collection) to third parties for a particular activity or item (Al-Zuhayli, 2002; Saleem, 2007).

This initiative is said to have successfully increased the revenue of the charity (Hairunnizam Wahid, Mohd Ali Mohd Noor & Sanep Ahmad, 2005). SIRC

for Wilayah Persekutuan (MAIWP), for example, has appointed Harta Suci Sdn Bhd (*Zakat* Collection Center) to carry out *zakat* collection in the Federal Territory (Kuala Lumpur, Labuan and Putrajaya) and maintains its distribution role by the MAIWP Baitulmal Division.

As a *zakat* administrator (amil), SIRC is responsible for administering the *zakat* collection and distribution including raising awareness of the obligation to pay *zakat*, providing an infrastructure for *zakat* payments, and managing the distribution of *zakat* to *Asnaf* (needy mentioned in the Quran) in their respective states. The role of SIRC has also been extended to the development of the *Asnaf* aimed at transforming their lives to become self-reliant and thus becoming a *zakat* payer. SIRC as *Zakat* institutions in Malaysia has so far provided short and long-term assistance direct to the *Asnaf* through various assistance schemes. For example, financial scheme for education, business, disable, houses, boat equipment, machineries, and others.

Even though various efforts have been placed by most of the SIRC in Malaysia to execute their duty as *Zakat* administrator or trustee, there are still issues and challenges faced by the institutions to ensure all *Asnaf* are well captured by Zakat fund. Moreover, people have negative impressions on the efficiency of the SIRC in terms of *Zakat* fund management which mostly on the issue of *Zakat* collection and distribution.

Mobile or Internet Banking in Malaysia

According to Internet World Stats, there are 26,353,017 total internet users with 81.4% penetration are recorded in June/2019 in Malaysia (IWS, 2020). This number shows the adoption of information communication technology by individuals in Malaysia. Furthermore, Industrial Revolution 4.0 has emerged in several developed countries, including emerging countries such as China and India (Abdullah, Abdullah, & Salleh, 2017). As this consequence, Malaysia has already welcomed this revolution through several initiatives taken by agencies such as, the Malaysian Digital Economy Corporation (MDEC) (Abdullah et al., 2017).

Hence, internet can be used by mobile as well as computer or any other supportive devices. Internet or mobile banking, online purchase, and online trading are significantly increasing around the world. Mobile banking is used as checking balance, bill payment and other financial services for example; p2p lending or p2p payment incurred through mobile phone (Ali, Muthaly, & Dada, 2018; Goh, Suki, & Fam, 2014). Significantly, the value of mobile and internet banking are increasing for the last decade in Malaysia (Figure 1 & 2). The figure shows the upward growth of mobile and internet banking users. The multiple uses of mobile phone through various channels are available for communication and transaction along with other features (Abdullah et al., 2017). Therefore, it can be predicted that the penetration of mobile and internet users may be more than 90% in near future.

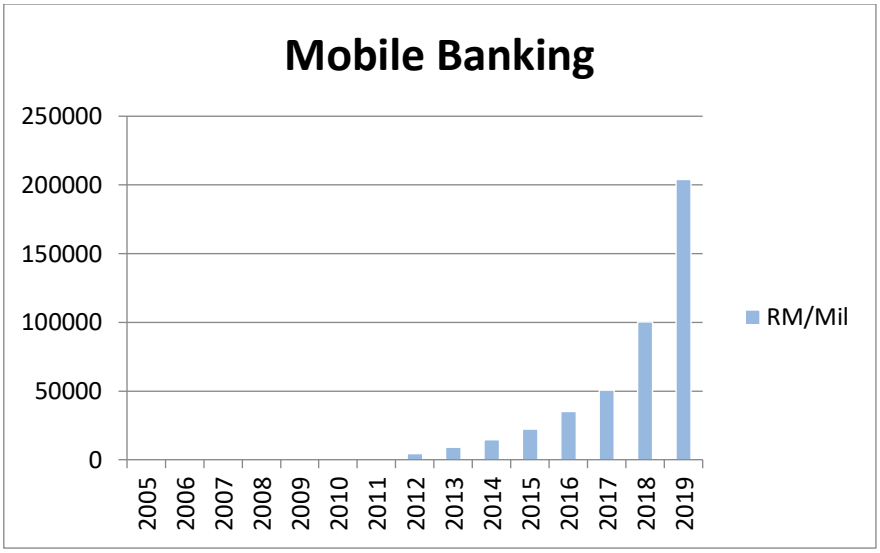

Figure 1. Mobile banking in Malaysia, Source: (BNM, 2020)

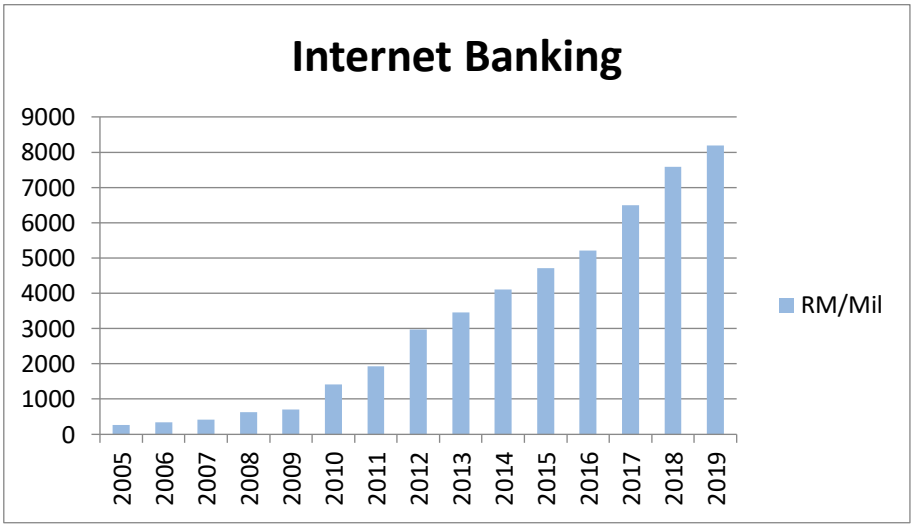

Figure 2. Internet banking in Malaysia, Source: (BNM, 2020)

With these growing internet users in Malaysia, it inclines the fast phase of adoption of innovation offered by fourth industrial revolution (Abdullah et al., 2017). Consequently, mobile or internet banking (technology innovation) may offer flexibility, friendly uses, cost saving, accessibility from anyplace and anytime in terms of *zakat* fund collection and distribution which will ultimately enhance efficiency (Yahaya & Ahmad, 2019). Mobile banking offers financial services to those are in remote area (anywhere) and anytime, develop the regulatory and competition polices, and provides depth primary concept of this services (Klein & Mayer, 2011).

Technology Adoption in Zakat

The development of financial technology has offered opportunities for businesses to growth fast to accelerate economic activities (Ahmad et al., 2014). It is undeniable that the current era is dominated by the advanced technology where knowledge and opportunities are delivered virtually as well as the usage of artificial intelligence (machine touch) trend have

replaced human to human communication. However, improper and inadequate utilization of technology may hamper the gain of efficiency and effectiveness (Agarwal & Prasad, 1999). Technology innovation is not only covering the financial industry but also private and public non-financial sector, for instance; zakat institution (Islamic social finance) to ensure collection and distribution effectively through online system (Muhamad & Khaliq, 2019).

Zakat is one of the Islamic pillars that applied as a tool to redistribution of wealth which schedule collection of public money from eligible *zakat* payers and channels to eligible beneficiaries align with *shariah* principles (Migdad, 2019; Rosli, Salamon, & Huda, 2018; Yahaya & Ahmad, 2019; Yusuf & Derus, 2013). Thus, *zakat* is a dynamic constituent in Islamic public finance that shields the ethical, societal and economic ranges (Yahaya & Ahmad, 2019).

Zakat as an Islamic social finance tool is currently move is moving towards financial technology to accelerate quicker collection and distribution of zakat funds (Salma Al Azizah & Choirin, 2019). Using online transaction, zakat payers would able to calculate their zakat amount, making payment and tracking their payment on fingertips via online platform (Ahmad et al., 2014). Accordingly, financial technology would provide flexible and friendly system, effective, efficient, translucent and fast services to its users (Salma Al Azizah & Choirin, 2019). At the end, it may provide new innovation to the financial business in terms of products and services. Salma Al Azizah and Choirin (2019) have found that zakat funds collection and distribution were improved by adoption of technology in Indonesia. As a consequence, technology application in managing zakat funds is in trend and can facilitate the best practices as well as to implement Islamic social finance effectively (Nur et al., 2019).

The expansion of technology with innovation and digitalization is scattering over almost all industries along with financial institutions (Yahaya & Ahmad, 2019). It helps to improve design, collection and distribution process and sharing information of any financial institutions (Nuswantara, Nugrohoseno, & Iriani, 2018) including the banking and financial institutions including Islamic finance and banking. Accordingly, the public and non-public institutions such as charity, endowment and zakat institutions are adopting technology in order to ensure robust financial inclusion (Nuswantara et al., 2018; Yahaya & Ahmad, 2019). Potentially, financial technology adoption in transaction mechanism and zakat receipts are not contradict to Islamic principles with several conditions (Utami, Basrowi, & Julianas, 2019). Factually, not vast but several zakat intuitions have adopted technology to collect zakat fund through online, for instance; BAZNAS in Indonesia, National Zakat Foundation in Australia, Islamic Religious Council of Wilayah Persekutuan of Malaysia and other countries (Hudaefi et al., 2020). BAZNAS, Indonesian zakat institution expanded online platform to collect zakat funds which can be accessed through website as well as mobile application (Hudaefi et al., 2020).

Furthermore, adoption of technology provides the opportunities to track and monitor the process of zakat collection and disbursement (Migdad, 2019; Nuswantara et al., 2018). Internet banking has adopted to collect and distribute zakat fund from the desk or service counter (Yahaya & Ahmad, 2019). Technology adoption in zakat institution has significantly increase the collection rate (Yahaya & Ahmad, 2019). Study by Esrati et al. (2018) on acceptance of the zakah institutions, Asnaf (zakat recipients) as well as Zakat contributors on the usage of technology have found that they believe that technology may enhance the Zakat management and services. They also found that the Zakat stakeholders believe in the

technology and its advantages even though at the same time they were not familiar with blockchain technology. The authors in this context concluded that it may because of lack of familiarity on the blockchain technology. Similarly, in the context on Indonesia, adopting technology in zakat payment has benefitted in terms of public welfare (Utami et al., 2019).

In addition, adoption of technology may use to establish a central database for gathering data from all states, which will enlist all zakat institutions and other charity organizations (Migdad, 2019). Technology adoption enhances transparency of information which ultimately improve the performance of zakat institutions (Nuswantara et al., 2018; Utami et al., 2019). As a result, adoption of technology with effective structural model will benefit the zakat institutions itself along with welcoming the fourth industrial revolution in all aspects in Malaysia. Study on the acceptance of Mobile banking in zakat distribution among Asnaf by Muhamad and Khaliq (2019) have found that four factors that may enhance the utilization of Mobile banking are behavior, facilities, family or peers. Influence and the performance of the system.

Technology Adoption Theories

Technology acceptance model (TAM) is the contemporary version of theory of reasoned action which was introduced by Davis (1986), which is denoted the user adoption of information technology. According to Yusuf and Derus (2013), assumption of TAM denotes that an individual act without any limitation when they intend to act on specific behavior. Hence, there are several constrictions limit individuals' freedom to act such as; constraint capability, time restriction, organizational or environmental constraints or unconscious habits (Bagozzi & Verbeke, 2003). Hence, Davis (1986) denoted that IT acceptance is predicted and explained by the relationship of all components (belief-attitude-intention-behavior).

In fact, trust related components may have direct impact on individuals' trust intention (McKnight, Choudhury, & Kacmar, 2002), trust intention describe the readiness of an individual to rely on another (Ali et al., 2018; Yusuf & Derus, 2013). Trust-belief refers to the level of confidence that an individual ready to engage in transactional obligations as expected to them (Guo & Barnes, 2007). Furthermore, nature of trust and trust in institution define the belief in the web-trust model (Yusuf & Derus, 2013). Thus, familiarity is an important factor on trust-linked behavioral intention (Bhattacherjee, 2002; Gefen, 2000; Walczuch & Lundgren, 2004). Familiarity is the understanding of current behaviour adopted from past transactions/experiences that lead to further behavior (Gefen, 2000). Moreover, past successful experiences in transaction always enhance more transactions beyond a cautious valuation of the current ability, generosity and uprightness of business partner (Bhattacherjee, 2002). As the consequence, familiarity increases the acceptance of web-based facilities and also increases the understanding of trust-linked behavior enlarged web-trust (Yusuf & Derus, 2013).

Innovation refers to a notion, practice or entity which is observed as new by an individual or other component of acceptance whereas diffusion as the procedure by which an innovation is interconnected within a societal system and accepted or rejected by the society (Rogers, 1995). So, this mechanism of transferring or communicating the innovation within a societal system form the innovation diffusion theory (IDT), that has been used at both individual and organization level (Rogers, 2003). This theory provides a theoretical structure for discoursing acceptance globally (Yusuf & Derus, 2013). It also exposed the propagation of IR4.0 with the availability of all elements

such as; innovation, channel, social system and time (Abdullah et al., 2017). Hence, the impact on the level of innovation adoption is attributed by rational advantage, compatibility, intricacy, experimental ability and observability (Rogers, 1995). However, individuals have diverse propensities to accept an innovation (Yusuf & Derus, 2013).

Unified theory of acceptance and use of technology (UTAUT) signifies to explain individuals' intentions to apply information system and successive behavioral use (Venkatesh, Morris, Davis, & Davis, 2003). According to this theory, users' intention and behavior determined by four components those are; expectation over performance, expectation over effort, societal influence and facilitating condition (Ali et al., 2018; Yusuf & Derus, 2013). The core constructs used in UTAUT Model were presented in the Table 1.

Table 1. Core constructs of UTAUT

Core Construct	Definition
Performance Expectancy	the expectation level that an individual think adopting the system will assist him or her to achieve or perform better performance
Effort Expectancy	The level of easiness of using the system
Social Influence	Community members' influence to use a new system
Facilitating Conditions	An organizational and technical infrastructure available to support the use of the system.

Source: (Venkatesh et al., 2003)

RESEARCH METHOD

This research is conducted based on qualitative approach. Primary data is collected based on observation on website and online internet application among zakat institutions in Peninsular of Malaysia. Overall, ten (10) zakat institutions have been selected in this research for content analysis. Findings of the observation are presented below.

FINDINGS

Table 2 below summarises results of observation among ten (10) Zakat institutions in Malaysia particularly on technology adoption for the overall zakat collection, distribution, and management. In details, it is observed that majority of the institutions have started to utilise technology system in their organization mainly with regards to zakat payment. Hence, in terms of Zakat fund collection and distribution, only three of the institutions have disclosed amount of zakat collection and distribution for a particular year in their website which were Negeri Sembilan Baitulmal Body, Lembaga Zakat Selangor, and Lembaga Zakat Negeri Kedah. The rest of the institutions were only presented general information related to Zakat such as types of zakat, calculation, value of nisab, and other general information at their websites.

Accordingly, further observation is done on a technology system adopted by the institutions. It is found that, majority of the institutions were concerned more on zakat payment system rather than zakat assistance system to the needy. In particular, they have adopted internet banking system which including FPX, jompay, credit card, salary

deduction system, and others for zakat payment. In addition, only four (40 percent) of the institutions (including Negeri Sembilan Baitulmal Body, Pusat Kutipan Zakat Pahang, Majlis Agama Islam Kelantan, and Lembaga Zakat Negeri Kedah) have utilised mobile application to ease zakat payer and only one of them have adopted artificial intelligent in the website which was Majlis Ugama Islam Pahang. Therefore, majority of the institutions still do not keen to adopt mobile application even though it is now have become a norm in a society. Fortunately, only one institution (Lembaga Zakat Negeri Kedah) have used technology to record zakat activities which including asnaf registration online application, amil (agent) location, real time amount of zakat collection and distribution. As because of the mobile application is newly applied, there are parts that need to enhance in future. It is concluded that connection of all zakat activities and reporting it to public is very important to increase transparency and public trust in zakat management.

Table 2. Adoption of Technology among Malaysian Zakat Institutions

No.	Zakat Institutions	Enactment on Zakat	Disclosure on Related Information at Website	Zakat Online Application
1.	Pusat Zakat Melaka Zakat Melaka (PZM) since 2001 -the role mainly for zakat collection whereas zakat distribution is done by Baitulmal Majlis Agama Islam Melaka.	Enakmen Pentadbiran Agama Islam (Melaka) 2002 section 75 (1).	*No disclosure on amount of zakat collection and distribution for particular year *Very limited information on zakat at website * Website not attractive and friendly	*No zakat apps yet or any online system built to ease zakat payment and distribution * No comprehensive online zakat management system
2.	Majlis Agama Islam Negeri Johor (Zakat Department)	Zakat & Fitrah Rules Year 1962	* No disclosure on amount of zakat collection and distribution for particular year *Enough information of zakat (types, calculation)	*There is option to pay zakat via online transfer *No online application specific for zakat * No comprehensive online zakat management system
3.	Negeri Sembilan Baitulmal Body	Enakmen Pentadbiran Agama Islam (Negeri Sembilan) 2003 (Enakmen No. 10 2003).	*Disclosure of amount zakat collection and distribution yearly *Information on Zakat is stated in the website	*Online system for zakat calculation, payment system, *Mobile Apps for zakat payment (Zakat N9) *No comprehensive online zakat management system
4.	Majlis Agama Islam Wilayah Persekutuan (Zakat Collection Centre-PPZ)	Article 3 (5) of the Federal Constitution Section 4 (1), Act 505 Section 31, Act 505 .	* No disclosure on amount of zakat collection and distribution for particular year * Information on Zakat types and calculation is stated in the website	*Online system for zakat (calculation, payment, statement) *Online payment system (salary deduction, direct transfer FPX, credit card, internet banking) * No mobile apps * No comprehensive online zakat management system
5.	Lembaga Zakat Selangor	Trusty Act 1952	*Disclosure of amount zakat collection and distribution yearly *Report of zakat collection and management	*Comprehensive online system for zakat payment, collection, and distribution e-zakat pay e-zakat online e-majikan e-ejen e-spg (salary deduction) *No comprehensive online zakat management system

No.	Zakat Institutions	Enactment on Zakat	Disclosure on Related Information at Website	Zakat Online Application
6.	Pusat Kutipan Zakat Pahang	Enakmen Pentadbiran Undang-Undang Islam 1991	* No disclosure on amount of zakat collection and distribution for particular year * Information on Zakat types and calculation is stated in the website	*Zakat online payment (FPX) *Mobile apps (Zakat Klik) *Artificial intelligent *BizZakat * No comprehensive online zakat management system
7.	Majlis Agama Islam Kelantan	Enactment 4 1994 Section 51	*Very attractive and informative website *No disclosure on amount zakat collection and distribution for particular year	*Online zakat payment system and assistance (monthly salary deduction, jompay, fpx, migs) *mobile apps (MyMAIK e-zakat payment) * No comprehensive online zakat management system
8.	Majlis Agama dan Adat Resam Terengganu	Enakmen Pentadbiran Hal Ehwal Agama Islam (Terengganu) 2001 (En. 2/01) Section 70	*No disclosure on amount zakat collection and distribution for particular year * Information on Zakat types and calculation is stated in the website	*Online system to apply zakat and for zakat payment *No mobile apps *No comprehensive online zakat management system
9.	Lembaga Zakat Negeri Kedah	Enackment Lembaga Zakat Negeri Kedah Darul Aman (LZNK) 2015	*Disclosure on amount zakat collection and distribution at front page website *Information on Zakat types and calculation is stated in the website *Disclosure of Annual Report and Statistic on zakat distribution to various types of Asnaf	*Online zakat calculation and payment *Mobile Apps (Zakat on touch)-quiet comprehensive which not only on zakat payment
10.	Majlis Agama Islam dan Adat Istiadat Melayu Perlis	Enakment Pentadbiran Agama Islam Negeri Perlis 2006	*No disclosure on amount of zakat collection and distribution *Limited Disclosure of Zakat information on website	*Limited online system for Zakat payment *No mobile apps *No online system for zakat assistance *No comprehensive online zakat management system

Source: Prepared by the Authors.

TECHNOLOGICAL TRANSFORMATION IN MALAYSIAN ZAKAT INSTITUTIONS

The findings exhibit that Malaysian zakat institutions are applying technology in their operation. However, most of the institutions are still struggling with lack of adequate technology features. The findings have acknowledged the insufficient information, not up-to date data, poor web-design exhibited on website and mobile application. It can be assumed that management is still facing difficulties to maintain the technological operations due to technology experts, insufficient staffs, and information. The current world is updating with all new features that ease daily lives including financial transactions. Unfortunately, zakat institutions are still left behind. In these consequences, it is recommended to update the operation and management of zakat institutions to adopt financial technology. It will enhance the stability and sustainability of zakat institutions in long term.

CONCLUSION

As Zakat is mentioned clearly in the Quran as one of the Islamic pillars, its attainment should uphold the objective of Shariah (*Maqasid Shariah*). The principle of accountability and transparency are really

important in order to build confidence of the general public to make donation through Zakat for poverty eradication. Findings from the observation made via this research indicate that the Malaysian Zakat institutions still in their complacent state to maintain with the traditional medium to collect and distribute the Zakat fund. Furthermore, majority of the institutions do not keen to share the amount of zakat collected and distributed in their website in addition to any activities that they have done with regards to the fund especially the investment activities. Even though, technology have been widely adopted throughout the world, it still unable to attract the interest of the Malaysian zakat institutions where only few of them have utilised mobile technology platform to reach the public both the zakat contributor as well as the recipients. Apart of zakat collection, the other important part is zakat education and awareness where the institution can easily disseminate knowledge on Zakat through medium of technology. However, the observation shows that the usage of mobile application still lacking among the zakat institutions in Malaysia. A lot of effort needs to be done to enhance the practice and the culture of Malaysian zakat institution in order to become more proactive and innovative through technology adoption which the aim is to increase the zakat fund operation.

SUGGESTIONS

Among suggestions that the research would like to share are:

1. It is suggested to the Zakat institutions to set up a special technology department to construct a comprehensive platform for Zakat chain management which the purpose is manage all stages of zakat from knowledge sharing, zakat collection, payment, distribution, zakat report, and investment.
2. It is suggested to the Zakat institutions to collaborate with third part which including government body and also financial institutions to discuss any idea on enhancing the efficiency of Zakat to the society
3. It is suggested to the Zakat institutions to disseminate knowledge and awareness on zakat and technology both via offline and online platform to the public
4. It is suggested to the Zakat institutions to enhance human resource expertise on technology (training and education) and at the same time find more experts to strengthen the adoption of technology in zakat management
5. It is suggested to the Zakat institutions to add more allocation/yearly budget on technology expenses. In this context, the federal government may also assist the institution in terms of budget allocation for technology

Future research may explore on the development of a comprehensive platform for zakat chain management for Zakat institutions.

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International Journal of Zakat Vol. 5(3) 2020 page 57 – 72

Does Information affect Online Zakat Payment? A Quantitative Study

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ABSTRACT

Indonesia has enormous potential for zakat, but the results of collecting zakat are still far from the existing potential. OPZ has made various ways to increase the collection of zakat funds, one of which is by implementing online zakat payments. This study aims to analyze the resistance to using online zakat payment services. The research approach is quantitative with the help of smartPLS software. This study's variables consist of information variables, which are independent variables, while the dependent variable consists of traditional barrier variables, image barriers, usage barriers, value barriers, and risk barriers. Data in this study collected using a questionnaire. The sample of this study was 100 respondents from various regions in Indonesia. The results showed that the information has a significant and negative effect on the traditional barrier variables, image barrier, usage barrier, value barrier. This means that the greater / more information provided by OPZ, the barrier in using online zakat payment services are getting smaller / less. The information variable on the risk barrier shows insignificant and negative results.

Keywords: Online zakat payment, Information, Barrier

INTRODUCTION

Zakat is one of the fiscal policy instruments in the economy that has an essential role in the distribution of wealth (Mongkito, Hafiduddin, & Beik, 2018). Mubyarto explained that the distribution system in Islam aims to improve the welfare of the community (Rahmawati, 2016). That is, by paying zakat, someone has participated in realizing the welfare of society. Zakat is an obligation for every Muslim to be paid from accumulated assets, from trade, agriculture, livestock, and various production activities (Kalsum, 2018). Therefore, zakat as a pillar of Islam has an essential role because it has two dimensions, namely vertical as a form of obedience to Allah SWT and a dimension of caring for others (Anwar, Rohmawati, & Arifin, 2019).

Based on Law no. 23 of 2011, the management of zakat in Indonesia is carried out by the Zakat Management Organization (OPZ), which consists of the National Zakat Agency (Baznas) and the Amil Zakat Institute (LAZ). The management of zakat carried out by the OPZ includes collecting, distributing, and utilizing zakat. The collection of zakat has five main objectives, raising funds, gathering donors, gathering sympathizers, building the organization's brand image, and providing trust and satisfaction to donors (Sani, 2010). The strategy of collecting funds is divided into two, directly and indirectly (Anwar et al., 2019), what distinguishes the two strategies is the direct collection strategy, OPZ makes contact with muzakki either via email, telephone or presentation. Meanwhile, the OPZ indirect collection strategy does not directly contact muzakki, but does advertisements, conducts events, or other activities that make OPZ known to the public. The use of technology can also be a way to optimize zakat collection if the traditional industry is limited to services with branch offices and physical meetings, which have high fixed costs. The development of information technology not only makes it possible to reduce these fixed costs but also provides efficiency (Arif,

Afshan, & Sharif, 2016). Many sectors have benefited from the technological revolution, including economics, business, and communications (Alafeef, Singh, & Ahmad, 2012).

Technological innovation will have an impact and change on people's lifestyles. An example of this impact is the adoption of technology in the online zakat system (Ahmad, Tarmidi, Ridzwan, Hamid, & Roni, 2014: Hudaefi, et. al, 2020). Online zakat payment is the process of paying zakat through a digital mechanism where muzaki do not need to meet amil zakat directly to pay zakat (Mahri, Nuryahya, & Nurasyiah, 2019).

This practical process is expected to help muzakki, who are busy and far from the OPZ location, still paying zakat. Customers get at least six benefits when making payments online, convenience benefits, economic benefits, information security benefits, enjoyment benefits, experiential benefits, and social benefits (Park, Ahn, Thavisay, & Ren, 2019). Online zakat payments can now be made through three platforms. First, the internal platform is the result of development by OPZ itself using the site or application. Second, some platforms are provided by third parties, such as e-commerce and digital money services. Third, using social media from OPZ (Mahri et al., 2019). There are many ways to pay zakat as part of OPZ's efforts to optimize zakat collection in Indonesia so that it can be absorbed according to existing potential. The potential for zakat in Indonesia is enormous; nationally, the zakat potential includes household zakat, corporate zakat, and savings zakat. However, what happens is that the collection of zakat is still not optimal (Beik, 2012). The large gap between the potential for zakat collection and the amount of zakat collected indicates that some Muslims do not pay zakat (Mukhlis & Beik, 2013). Therefore, the OPZ needs a strategy and a more in-depth study related to the fact that people do not pay zakat.

Many studies have been made to identify consumer behavior in adopting technology from various industrial sectors. Consumer resistance to innovation has received less attention in the marketing literature than the attention paid to innovation adoption. Most innovation studies focus on successfully transferring technology through the market (Kuisma, Laukkanen, & Hiltunen, 2007). Although understanding consumer behavior in adopting technology is essential, identifying barriers to adoption is a more excellent opportunity for practitioners (T. Laukkanen, 2016). In this study, the authors will try to analyze the role of information provided by OPZ to the public's resistance using online-based zakat payment services.

REVIEW OF LITERATURE

Technological innovation is currently an essential part of OPZ in collecting and distributing zakat. There are four digital media from various fintech firms that have collaborated with Baznas to collect zakat funds. Muzakki may access a website that was developed by Baznas. Besides that, muzakki can also use existing e-commerce or use QR code for zakat payment (Hudaefi et al., 2020). Given the use of technology in zakat payments for the past few years, it is necessary to analyze how the muzakki responds.

Ram and Sheth divided the barriers to technology adoption into two groups: functional and psychological barriers. Functional barriers consist of three factors, namely product use patterns, product value, and the risks associated with product use. The psychological barrier consists of two factors, namely tradition, and consumer norms and the perception of product image (Ram & Sheth, 1989)

Usage Barrier

Usage barriers will occur when innovations do not follow the workflow, practices, or previous consumer habits (T. Laukkanen, 2016). In the context of technological innovation, the usage barrier is similar to the complexity theory proposed by Rogers (1983), which refers to the extent to which an individual thinks that innovation is challenging to use and understand (T. Laukkanen & Kiviniemi, 2010).

In other words, the excessive complexity of innovation becomes a barrier in adopting this technology (Sahin, 2006). Therefore, innovation with a little complexity will be preferred and quickly accepted and adopted by users (Zhang, Yu, Yan, & Ton A M Spil, 2015). Several studies pay attention to internet service authorization mechanism, a simple authorization mechanism that will provide convenience for consumers (Kuisma et al., 2007).

The authorization mechanism is a consumer verification process to obtain access permits for internet-based services.

H1 = Information provided by OPZ has a negative effect on the usage barrier.

Value Barrier

The perception of an innovation's value results from the benefits of using the innovation minus the harmful effects of using the innovation (Heidenreich & Spieth, 2013). Consumers will adopt Internet service facilities if they provide benefits (Pikkarainen, Pikkarainen, Karjaluoto, & Pahnila, 2004). That is, if consumers judge that the service is not functioning correctly, then consumers will not use the service (Serener, 2019). (Ram & Sheth, 1989) initiated the value barrier, which is if the service is terrible both in terms of performance and value for money.

The absence of comparative benefits and ease in using new technology is a barrier to using internet-based services (Arif et al., 2016). In contrast, the ease in using a service that is felt by consumers influences the intention to adopt and use a product or service (Yiu, Grant, & Edgar, 2007). So the condition for innovation is that it must be superior to the old product/service (Ferreira, da Rocha, & da Silva, 2014). Innovations that provide better performance to price than the previous product will be an alternative for consumers to change their behavior in using the product (Ram & Sheth, 1989).

H2 = Information provided by OPZ has a negative effect on the value barrier

Risk Barrier

Risk is definitely in everyone's mind, both when carrying out a task or starting something (Arif, Aslam, & Hwang, 2020). This risk is also felt by consumers regarding errors during online transactions (Kuisma et al., 2007). Consumers argue that their passwords can be easily hacked, and others can easily access their bank accounts if they use internet-based payment transactions (Arif et al., 2020).

Besides, many consumers are also afraid of making mistakes through internet services because by using a computer or mobile phone, human error will quickly occur (P. Laukkanen, Sinkkonen, & Laukkanen, 2008). Less clear instructions and the necessity to change the PIN code are factors that consumers refuse to use via the internet (Kuisma et al., 2007). The amount of risk attached to this innovation is known as the risk barrier (Ram & Sheth, 1989). Risks to internet services are in the form of privacy and security issues (Poon 2008, Tan et al. 2010, Yuan et al. 2016), besides that it also concerns self-efficacy, where many individuals lack self-confidence and find it easy to make mistakes in internet-based services (Luarn and Lin 2005, T. Laukkanen 2007)

H3 = Information provided by OPZ has a negative effect on the risk barrier

Tradition Barrier

A barrier for consumers in using a service or product is because a new service or product is present in a way that is contrary to the traditional way (Serener, 2019). If

this old habit is considered necessary by consumers, then the rejection of using this new technology or innovation will be high (Kuisma et al., 2007). The use of services or products for an extended period makes consumers have routines and habits that may be very important for them to maintain (Kleijnen, Lee, & Wetzels, 2009).

For example, someone accustomed to going to the service office and meeting the officers in person. When direct contact is considered necessary, service via the internet will be rejected because it does not directly contact (Serener, 2019). New or different innovations always make consumers have to make changes, which threatens consumers psychologically (Heidenreich & Spieth, 2013).

H4 = Information provided by OPZ has a negative effect on the tradition barrier

Image Barrier

The image becomes an important variable when studying resistance to innovation because image becomes a sign for consumers to base their decisions (Kleijnen et al., 2009). Every individual perceives something differently. The perceived image of something is built by personal preferences based on what they like and do not (Arif et al., 2020).

The image barrier is related to a person's readiness to utilize technology, which refers to the individual's overall mental condition towards technology in general (Ferreira et al., 2014). Negative perceptions arise because of complex procedures for using internet-based services (Fain & Roberts, 1997). So that if consumers feel that using this technology is difficult, they will refuse to use this technology (Serener, 2019).

Consumers, who have negative perceptions about using new technology, will refuse to use services via the internet, and this negative perception discourages consumers from adopting internet service facilities (Kuisma et al., 2007).

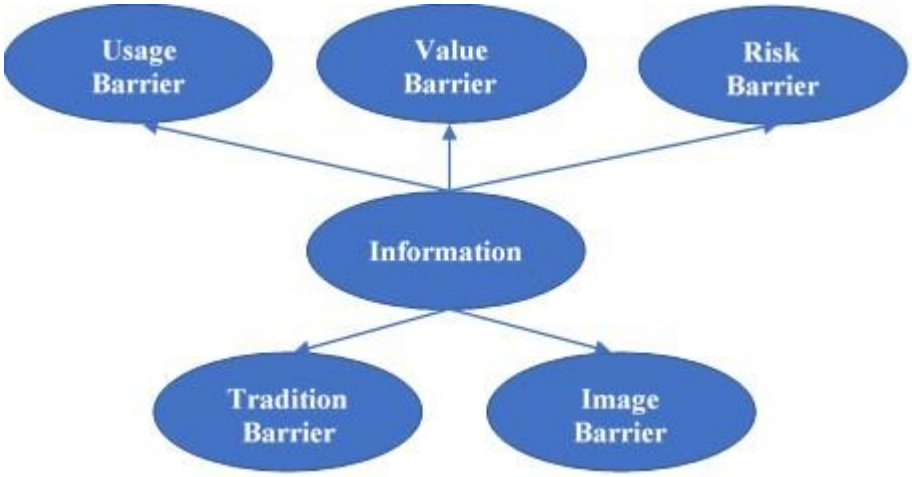
H5 = Information provided by OPZ has a negative effect on the image barrier

Information

Technology adoption results from a cognitive process in the form of searching and processing information by consumers (Claudy, Garcia, & O'Driscoll, 2015). In the context of internet technology-based services, consumers who do not use them are experiencing difficulties due to a lack of information about how to use these services (Kuisma et al., 2007). Even though the information is essential because information contains data, the information's recipient is useful in making decisions (Abubakar, Boham, & Koagouw, 2019).

Information and guidance from the Bank have a significant impact on lowering the usage barrier (Serener, 2019). The research (Nicolaou & McKnight, 2006) show first, the perception of the quality of information is an essential antecedent of trust and risk. Second, the quality of information reduces the perception of risk. Third, it shows that perceptions of the quality of information build trust. Research results from (Kuisma et al., 2007) indicate that lack of information is one of the causes of resistance in online transaction services. It is because customers do not get enough information and help.

Whereas for producers, information related to existing technology in the company can increase the innovation of the company for several reasons, first it reduces the risk of the company's innovation project; secondly, it allows the company to introduce innovation earlier, the third allows it to offer a stepping stone in exploiting opportunities-new business (García-Quevedo, Mas-Verdú, & Pellegrino, 2018).



I.

Figure 1. Research Model

METHODOLOGY

Research Model

This study aims to determine the role of information provided by OPZ to the barriers faced by muzakki to adopt the online zakat payment system in Indonesia. This study's independent variable is information, while the dependent variable in this study includes traditional barriers, image barriers, usage barriers, value barriers, and risk barriers. The traditional variable barrier, image barrier, usage barrier, value barrier, and risk barrier was developed by Ram and Sheth (1989) and has been used by Laukanen, Sinkkonen, Laukanen (2008), Laukanen and Kiviniemi (2010), Laentuken (2016), Arif, Aslam, Hwang (2019). Variable information was developed by Laentuken and Kiviniemi (2010).

Data Collection

This research is field research with a quantitative approach. The population of this study is the Indonesian people. The sample of this population is people who have paid zakat, in the form of zakat fitrah, zakat maal, and zakat from the profession, the number of samples reaches 100 respondents. Instruments The research data collection used a questionnaire that was conducted online using the google form. The statement in this research questionnaire was adopted from previous research. All research variables use a Likert scale in the process of measuring data. The Likert scale consists of 5 assessments, both with structured and reverse assessments, as shown in the following table:

Table 1. Likert Scale

Statement	Symbol	Score	Reversed Score
Strongly Agree	SS	5	1
Agree	S	4	2
Neutral	N	3	3
Disagree	TS	2	4
Strongly Disagree	STS	1	5

Analysis Technique

The data analysis in this study used Structural Equation Modeling (SEM) with SmartPLS as an analysis tool. The analysis technique uses Partial Least Square (PLS), which is a method that implements SEM. The PLS method can be used when the theories used to develop the research model are weak, and the indicators cannot meet the ideal model. Besides, the PLS method can also be used when the research sample is small and can be applied to all data scales (Ghozali & Latan, 2015). Chin developed the criteria for evaluating the results of

modeling with the PLS method (Ghozali & Latan, 2015):

Table 2. Criteria Evaluating

Criterion	Explanation
Measuring Model Evaluation	a. Loading factor > 0.6 b. Composite reliability > 0.60 c. AVE > 0.50 d. Cronbachs Alpha > 0.70
Structural Model Evaluation	a. $P_{value} < 0.05$ b. $Q^2 > 0$ c. f^2 1) 0.02 small Effect 2) 0.15 medium Effect 3) 0.35 large Effect

RESULTS AND DISCUSSIONS

Profile of Respondent

The results of data collection using a questionnaire obtained 117 respondents, but only 100 respondents who met the criteria. The percentage of respondents namely male amounted to 65% and female amounted to 35%. The distribution of respondents by province, namely 56% came from NTB, 27% from East Java, 3% from Banten, 2% respectively from DKI Jakarta, West Java, Central Kalimantan, and NTT, while the remaining 1 % respectively from Central Java, Bali, West Kalimantan, West Sumatra, North Sulawesi, and Papua. For the education level of the respondents, among others, SMA is 8%, Diploma is 8%, Undergraduate group is 55%, Masters are 25%, and the rest are Doctoral amounting to 4%.

Then for the majority of respondents' jobs are ASN, namely 40%, private employees 36%, contract / honorary employees 10%, BUMN employees 5%, entrepreneurs 5%, TNI 1%, fishermen 1%, housewives 2%. As for the income per month, 13% of respondents have an income of less than IDR 2,000,000, there are 48% of respondents who have an income of IDR 2,000,000-IDR 4,000,000, then 23% of respondents have an income of IDR 4,000,001-IDR 6,000,000, then 16% of respondents have an income more than IDR 6,000,000.

Estimation and Strucutural Model

Data estimation in this study uses smartPLS3 software. To determine the convergent validity from the measurement model is to analyze the correlation of the indicator score with the construct score on the outer loading table. If the value is above 0.50, the individual indicator is considered reliable. (Ghozali & Latan, 2015):

Table 3. Analisis Convergent Validity

	Information	Image Barrier	Traditional Barrier	Usage Barrier	Value Barrier	Risk Barrier
INF1	0.850					
INF2	0.933					
INF3	0.906					
IB1		0.604				
IB2		0.675				

	Information	Image Barrier	Traditional Barrier	Usage Barrier	Value Barrier	Risk Barrier
IB3		0.840				
IB4		0.754				
IB5		0.697				
TB1			-0.362			
TB2			-0.238			
TB3			0.727			
TB4			0.660			
UB1				0.817		
UB2				0.873		
UB3				0.814		
UB4				0.775		
UB5				0.792		
VB1					0.780	
VB2					-0.298	
VB3					0.751	
VB4					0.844	
VB5					0.880	
VB5					0.656	
RB1						0.365
RB2						0.208
RB3						0.742
RB4						0.848
RB5						0.926

Convergent validity analysis based on outer loading shows that six indicators have scored less than 0.50. Therefore the TB1, TB2, VB2, RB1, and RB2 indicators should be removed from the model.

Then to determine the discriminant validity of the measurement model is to analyze the score of the indicator with the construct score on the cross-loading table. If the correlation score of the indicator with its construct is greater than the correlation score with other constructs, it is considered to meet discriminant validity (Ghozali & Latan, 2015):

Table 4. Analisis Discriminant Validity

	Information	**Image Barrier**	**Traditional Barrier**	**Usage Barrier**	**Value Barrier**	**Risk Barrier**
INF1	0.858	-0.269	-0.231	-0.420	-0.447	-0.085
INF2	0.931	-0.296	-0.300	-0.502	-0.446	-0.207
INF3	0.900	-0.170	-0.145	-0.421	-0.417	-0.142
IB1	-0.117	0.602	0.316	0.454	0.410	0.282
IB2	-0.170	0.673	0.423	0.442	0.363	0.375
IB3	-0.274	0.841	0.366	0.467	0.388	0.480
IB4	-0.198	0.755	0.513	0.410	0.310	0.453
IB5	-0.197	0.698	0.496	0.473	0.322	0.510
TB3	-0.262	0.532	0.925	0.454	0.382	0.409
TB4	-0.187	0.501	0.847	0.383	0.352	0.493
UB1	-0.369	0.556	0.377	0.818	0.615	0.348
UB2	-0.489	0.614	0.439	0.873	0.735	0.392
UB3	-0.345	0.412	0.353	0.813	0.672	0.333
UB4	-0.399	0.471	0.402	0.775	0.633	0.359
UB5	-0.419	0.422	0.355	0.793	0.592	0.221
VB1	-0.394	0.399	0.305	0.710	0.780	0.361
VB3	-0.311	0.332	0.294	0.597	0.748	0.257
VB4	-0.409	0.342	0.401	0.628	0.849	0.302
VB5	-0.406	0.438	0.420	0.741	0.881	0.369
VB5	-0.381	0.388	0.193	0.452	0.660	0.313
RB3	-0.079	0.473	0.408	0.295	0.332	0.801
RB4	-0.117	0.504	0.427	0.395	0.400	0.875
RB5	-0.196	0.583	0.477	0.378	0.368	0.957

The discriminant validity analysis results based on cross-loading show that all indicators have a correlation score with the construct greater than the correlation score with other constructs, so all indicators can be declared to meet discriminant validity.

Next is to analyze the validity and reliability of the construct. The construct validity test using the Average Variance Extracted (AVE) score. A good model is if the AVE score of each construct is more than 0.50. As for testing construct reliability using composite reliability and

Cronbach alpha. The construct is declared reliable if the composite reliability and Cronbach alpha value is more than 0.70 (Ghozali & Latan, 2015):

Table 5. Validity and Reliability

Variable	Cronbach Alpha	Composite Reliability	AVE
Informasi	0.878	0.925	0.804
Image Barrier	0.769	0.840	0.516
Traditional Barrier	0.736	0.881	0.787
Usage Barrier	0.874	0.908	0.664
Value Barrier	0.843	0.890	0.620
Risk Barrier	0.861	0.911	0.775

Based on table 5, it is known that all constructs have an AVE score greater than 0.50, meaning that all constructs in this research model are valid. Then the scores of composite reliability and Cronbach alpha show greater than 0.70, meaning that all constructs in this research model are reliable.

Evaluation of the structural model

The structural model test in this study uses two methods, namely blindfolding and bootstrapping. The blindfolding method is used to analyze the predictive ability of the research model. The bootstrapping method is used to analyze the approximate path coefficient and two-sided significance. The reason for using the bootstrapping method, this method uses all original samples to carry out the re-creation process to see the significance of the relationship between variables.

Table 6. Structural Inner Model Test Result

Relationship	R^2	f^2	Q^2
INF → IB	0.078	0.084	0.029
INF → TB	0.067	0.071	0.035
INF → UB	0.252	0.337	0.155
INF → VB	0.237	0.311	0.137
INF → RB	0.027	0.028	0.009

Based on the table 6, Image Barrier score is 0.078 or 7.8%, Traditional Barrier score is 0.067 or 6.7%, Usage Barrier score is 0.252, Value Barrier score is 0.237, and Risk Barrier score is 0.027. This means that all models in this study are in the weak category.

Based on the effect size (f2), it is known that the Image Barrier score is 0.084, the Traditional Barrier score is

0.071, the Usage Barrier score is 0.337, the Value Barrier score is 0.311, and Risk Barrier score is 0.028. This means that the Usage Barrier and Value Barrier variables in the study have an effect size in the broad category. The Image Barrier and Traditional Barrier variables have an effect size in the medium category. Meanwhile, the Risk Barrier variable has an effect size in the small category.

The results of the predictive relevance (Q2) of the Image barrier variable is 0.029, Traditional Barrier is 0.035, Usage Barrier is 0.155, Value Barrier is 0.311, and Risk Barrier is 0.028. All study variables have a predictive relevance score greater than 0 (Q2> 0), meaning that the model has predictive relevance. However, predictive relevance variable (q2) analysis cannot be done because there is only one independent variable.

Next is the evaluation of the model by analyzing the significance score to determine the effect between variables.

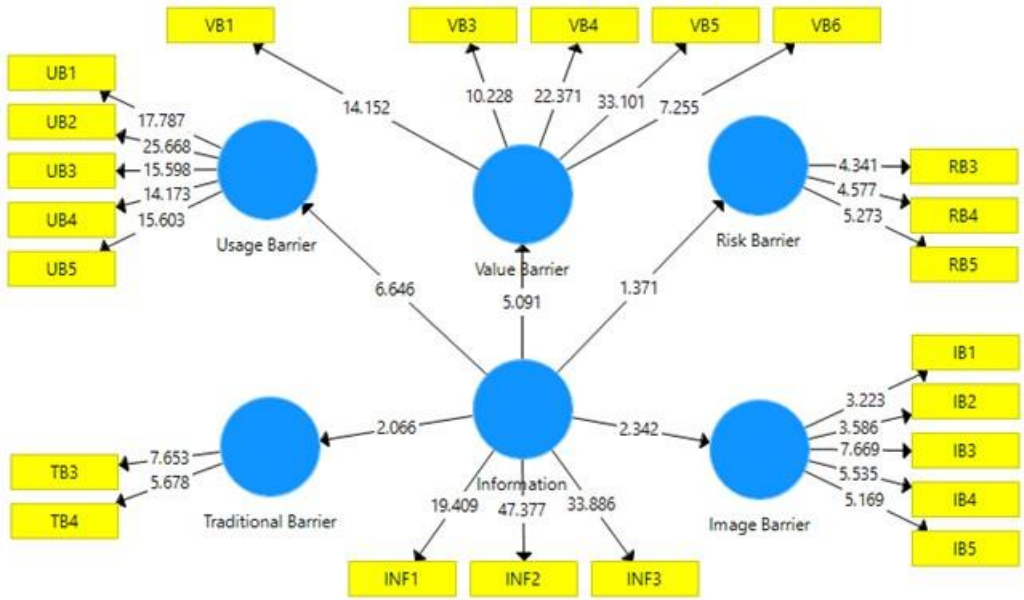


Figure 2. Path Coefficient Bootstrapping

Based on Figure 2 about the path coefficient bootstrapping, here are the results of the evaluation of the research model using the bootstrap method:

Table 7. The model test results using Bootstrapping

Relationship	Original Sample (O)	Sample Mean (M)	t – statistic (|O/STDEV)	p - value
INF → IB	-0.279	-0.304	2.342	0.020
INF → TB	-0.258	-0.273	2.066	0.039
INF → UB	-0.502	-0.515	6.646	0.000
INF → VB	-0.487	-0.507	5.091	0.000
INF → RB	-0.165	-0.178	1.371	0.171

The effect of the information variable on the dependent variables can be seen by calculating the t-statistic score and comparing it with the t-table score. The t-table score of this study was 1,985; the t-statistic score of Image Barrier was 2,342. The t-statistic score for Traditional Barrier is 2,066. The Usage Barrier t-statistic score is 6,646. The t-statistic score of Value Barrier is 5.091, which means the variable image barrier, traditional barrier, usage barrier, and value barrier, the t statistic> t table. In contrast, the t-statistic score of Risk Barrier is 1.371, which means that the t statistic < t table. In addition to comparing the t statistical score and the t table, another way is to look at the p-value score. If the p-value is lower than 0.05, it is considered significant. Of all variables, only the Risk Barrier has a p-value of more than 0.05, meaning that both by calculating the t statistic and the p-value, the Information variable does not significantly affect the Risk Barrier.

The analysis results using the parameter coefficient (original sample / O); it is known that the effect of the Information variable has a negative score on all variables. So it can be concluded that the higher the information, the lower the Image Barrier, Traditional Barrier, Usage Barrier, and Value Barrier.

DISCUSSION

Digital-based financial services are currently being adopted to make it easier for consumers. However, not a few consumers are still reluctant to use these digital-based services for various reasons, including online zakat payment services. In this study, specifically analyzed the role of information on resistance to online zakat payments. Based on previous research, what is meant by information is the fulfillment of information and guidance felt by consumers about services provided by producers (T. Laukkanen & Kiviniemi, 2010).

Meanwhile, the resistance-related theory was developed by researchers to analyze people's resistance behavior in adopting the technology. The dependent variables in this theory are divided into two, namely, psychological barriers and functional barriers. Psychological barriers consist of image barriers and traditional barriers. Functional barriers consist of barriers to use, barriers to value, barriers to risk. All of these obstacle variables become the dependent variable in this study. The independent variable in this study is the information variable.

The study's findings indicate that the information has a negative impact, namely the reduction of barriers to using online zakat payment services. The higher or more information provided, the less or fewer barriers there will be in using online zakat payment services. This can be seen from the score of the parameter coefficient, which shows a minus number. However, of the five barrier variables, there is one variable that is not significant, namely the risk barrier variable, this finding is different from the research conducted by (T. Laukkanen & Kiviniemi, 2010) which shows that information has a significant effect on the risk barrier, then (Arif et al., 2020) found that risk barrier is a significant obstacle in the adoption of internet banking technology.

Whereas in this study, the risk barrier is not significant to the adoption of online zakat payments. This can occur because the risk in banking transactions is more vulnerable than the risk in zakat payments. According to (T. Laukkanen & Kiviniemi, 2010), to reduce the risk barrier, consumers need to be allowed to try the technology that will be adopted because of the smaller the technology's trial, the more excellent the resistance to that technology.

It means that OPZ managers need to socialize to prospective muzakki how to use online zakat payment services. (Arif et al., 2016) added that service providers must not forget that information and guidance can

increase perceptions of the added value provided by online-based services and indirectly reduce perceptions of innovation risks. In his research, (Kleijnen et al., 2009) found that the consumer's risk reduction strategy is to seek information to increase knowledge and solutions to the risks that will be faced.

The variable image barrier, traditional barrier, usage barrier, and barrier value both from the t-statistical value and the p-value show significance. The information has a negative and significant effect on the image barrier, according to (T. Laukkanen & Kiviniemi, 2010) research. In (Arif et al., 2020) research, the Image barrier is the most crucial barrier in technology adoption barriers. At the same time, (T. Laukkanen & Kiviniemi, 2010) argues that having information and guidance will increase the positive image of the use of technology, besides developing user-friendly applications, and proper communication can overcome the problem of the image barrier (T. Laukkanen, 2016).

Then the results of research on the effect of information on the traditional barrier show significant and negative results, this study is different from the results that have been done by (T. Laukkanen & Kiviniemi, 2010) and (Arif et al., 2020) that the traditional barrier is not significant.. (Arif et al., 2020) explained that generally visiting financial service providers for financial transactions will automatically reduce internet-based services.

Furthermore, the effect of information on usage barrier shows a significant and negative effect, and this study is following research conducted by (T. Laukkanen & Kiviniemi, 2010) which explains that information has the most significant influence in reducing the usage barrier, as explained by (Serener, 2019) that during the delay in using a technology innovation, consumers will seek information to decide whether to use or reject the new innovation. The effect of information on the value barrier shows a significant and negative result, and this finding is the same as that of (T. Laukkanen & Kiviniemi, 2010). (T. Laukkanen, 2016) revealed that the value barrier is the main obstacle, among other obstacles. The delivery of appropriate information to reduce the value barrier is not personal but uses mass media about the added value of technological innovation (T. Laukkanen & Kiviniemi, 2010).

Based on the findings in this study that deserves special attention is the low score of r square (R2). It shows that the independent variable in this study has not fully described the resistance to using online zakat payment services. In the study, the R2 score of the variable usage barrier and the value barrier was the highest, namely 25.2% and 23.7%, while the variable image barrier, traditional barrier, and risk barrier had a score of 7.8%, 6.7%, and 2.7%. Therefore, it is necessary to increase the number of independent variable s in order to describe the resistance in using online zakat payment services. Besides, the small number of responses is also one of the limitations of this study, so it needs to be tested in large numbers and different estimation techniques.

CONCLUSION

First, in this study, it is known that the functional barrier has a significant role in the resistance to using online zakat payment services. Therefore, the OPZ needs to conduct direct socialization so that people can try and feel the experience of paying zakat online. Second, psychological barriers have a crucial role in resistance. OPZ also need to intensify information in any form regarding the use of online zakat payment services.

Theoretically, this research provides the understanding of zakat and technology adoption. For further research, the addition of other variables in the form of lifestyle, social influence, and experience can be additional independent variables. Besides, increasing the number of respondents is

also an excellent option to obtain a better research model and description.

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International Journal of Zakat Vol. 5(3) 2020 page 73 – 87

The Strategies in Strengthening the Role of Zakat Boards and Institutions in Indonesia

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ABSTRACT

This study attempts to formulate strategies in strengthening the role of zakat boards and institutions in Indonesia from the perspectives of three zakat experts and practitioners by employing Analytical Network Process (ANP) method. While the indicators of zakat institutions' performance measured in this study are based on the National Zakat Indices (abbreviated as NZI), the alternatives of strategy are constructed through study of literatures. This study suggests that among four zakat institutions' indicators, the reporting of zakat shared the highest portion of the important indicators of amil's performance, followed by the collection, distribution and management of zakat. Besides, the study also finds the strategies that need to be given top priorities based on their orders, including; optimizing zakat distribution program, strengthening Information and Technology (IT) system, strengthening zakat regulation, improving database of zakat payers and beneficiaries, strengthening the synergy between zakat boards, institutions and other zakat stakeholders, strengthening human resources and improving socialization as well as education pertaining to zakat and the role of zakat boards and institutions.

Keywords: Zakat; Amil Board and Institutions; ANP

INTRODUCTION

As the third pillar of Islam, zakat plays a vital role not only from the perspective of religion, but also from the socio-economic point of views. As such, zakat has the role to alleviate poverty and to reduce inequality among society as mentioned in the *Quran* 9: 60 and the *Quran* 59: 7.

The function of zakat for both aspects can be realized if zakat boards and institutions (*amil*) as assigned in the *Quran* 9: 103 are able to strengthen its position in collecting, managing and distributing zakat fund in the society. This occurred in the period of the Caliphate of Umar bin Abdul Aziz. When zakat was managed in the hand of strong and professional *amil*, zakat was able to solve socio-economic problems specifically the dual problems of poverty and income inequality (Syahhatih, 1989). This shows that it is vital to have transparent and reliable *amil*.

Hafidhuddin *et al* (2015) argue that there are five advantages if zakat collection and distribution process are managed by *amil*. First, this practice is in line with *shariah* guideline including *Al-Quran, hadith* as well as the examples given by the companions of Rasulullah (s.a.w). Second, *amil* institutions can ensure the discipline of zakat payers to fulfill their obligations. Third, *amil* institutions can protect the dignity of zakat recipients. Forth, the management of zakat is likely to be more efficient and effective through *amil* institutions. Fifth, the professional *amil* institutions can apply the modern indirect financial system.

In Indonesia, the National Zakat Board (abbreviated as BAZNAS) was established based on presidential decree No. 21/2001[1] as the coordinating zakat institution at the national level (Hafidhuddin, 2015). One of important tasks of BAZNAS is to realize the high potential for zakat collection in Indonesia. A study done by Firdaus *et al* (2012) shows that the national zakat potential collection is USD 22.33 billion[2] per annum[3] which approximately equals to 3.4 percent of the total GDP of Indonesia (vide Table 1.1).

It appears that private industry contributes the largest portion with more than a half of total collection, followed by household with approximately one third. The remaining 10 percent is contributed by saving and state-owned enterprises. This is evident from figures in column (2) of Table 1.1.

This high potential of zakat collection might be due to the high Muslim population in Indonesia. According to Pew Research Center (2010), Indonesia constitutes the largest Muslim population in the world that shares 12.7 percent of the world's Muslims followed by Pakistan (11 percent), India (10.9 percent) and Bangladesh (10 percent).

Table 1.1. Potential zakat collection in Indonesia per annum

Description	Potential Zakat Collection (USD billion)	Percentage of GDP (%) (1)
Private Industry	11.82	1.80
Household	8.54	1.30
Saving	1.77	0.27
State Owned Enterprises	0.20	0.03
Total	22.33	3.40

Source: Firdaus *et al* (2012)

Table 1.2. National zakat collection, 2002-2015

Year	Total Zakat Collection (USD million)	Annual Growth (%)
2002	5.47	-
2003	6.82	24.70
2004	12.00	76.00
2005	23.64	96.90
2006	29.85	26.28
2007	59.19	98.30
2008	73.59	24.32
2009	95.98	30.43
2010	119.98	25.00
2011	138.38	15.25
2012	175.97	27.24

[1]After 12 years of implementation, Zakat Management Act No 23/2011 replaced the previous Act with some vital alterations such as, strengthening the role of BAZNAS and fostering the synergy and collaboration between BAZNAS and other private zakat institutions (Hafidhuddin *et al*, 2015).

[2] Based on Central Bank of Indonesia in 28 December 2012, USD 1 equals to Rp9,718.

[3] The calculation of the potential zakat collection is presented in Appendix 3.

2013	215.97	22.73
2014	263.96	22.22
2015	337.55	21.21
Average	113.31	39.78

Notes: Based on Central Bank of Indonesia data in 31 December 2014, USD 1 equals to Rp12,502.

Source: BAZNAS Annual Report (2016)

Unfortunately, even zakat institution has been collaborating with fintech firms for zakat collection (Hudaefi, et. al, 2020), such actual collection of zakat fund still falls behind its notable potential. The latest collection of zakat was only roughly 3 percent of its potential (vide Table 1.2). It suggests that greater endeavor to collect zakat should be prioritized, although the trend of zakat collection increases over the year. In Table 1.2 above, it is interesting to observe that there has been an upward trend of the national zakat collection by approximately 60 folds in the last decade. This shows that the awareness of the Muslims to fulfill the obligation of paying zakat is likely to rise. It appears that the growth of the fund collection reached a nearly 100 percent of annual growth in 2005 and 2007 when natural calamities hit the country. There were *tsunami* calamity in Aceh in 2005 and an earthquake in Yogyakarta two years after.

Despite the huge gap between the realization of zakat and its expectation as evident from Table 1.1 and 1.2, the current zakat distribution program has been empirically successful in helping lessen poverty and income gap among the society. For instance, Indonesia Zakat and Development Report (2012) shows that zakat is able to reduce the poverty incidence of *mustahik* by 21.11 percent in the year 2011. This finding is also supported by Beik (2013), which suggests that productive-based zakat distribution and free-hospital program can lower the poverty incidence in Jakarta.

Besides collection and distribution, the role of zakat boards and institutions is also important in managing and reporting zakat fund. Zakat management as stated in the Zakat Management Act No 23/2011 aspires to achieve two objectives. First, it aims at improving effectiveness and efficiency of zakat management service specifically with respect to zakat collection and distribution. Second, it purposes to strengthen the role of zakat to realize the welfare of the society as well as to eradicate poverty and income inequality. In this case, *amil* zakat must be trustable and hence the reporting of zakat must be also done to realize the transparency and professionalism of *amil* zakat. These four indicators, namely collection, distribution, management and reporting of zakat hence become the evaluation measures for institutional zakat performance that construct National Zakat Index (NZI) at the micro level published by BAZNAS in 2017.

Having known the important position of zakat boards and institutions, this paper attempts to formulate strategy in strengthening this role from the perspectives of zakat experts and practitioners in Indonesia. This paper comprises five sections including introduction in section one. Section two is the literature review followed by method as well as result and analysis in section three and four. Section five concludes.

LITERATURE REVIEW

Basic Concept of Zakat

According to Al-Qaradawi (1993), zakat is defined as "the determined share of wealth prescribed by God to be distributed among deserving categories and is also used to mean the action of payment of this share." The importance of zakat can be seen from the twenty-seven verses among thirty-three verses in the *Quran* stating that the obligation of zakat is associated with prayer in various words.

Al-Qaradawi explains that the benefit of zakat is not only for the individual but also for the society. For the individual, zakat can elevate the spirit of human beings above the love of material acquisition and liberates the beneficiaries from material needs. This can minimize jealousy and hatred among people. For the society, zakat serves important social objectives as Islam's social insurance system and can realize spiritual integrity of the nation. These advantages make zakat plays a significant role in the development of the Muslim community.

The *Quran* 9: 60 mentions zakat beneficiaries are classified into categories (*asnaf*) namely, the poor (*fuqara*), the needy (*masakin*), zakat collectors (*amilin*), those newly converted to Islam (*muallaf*), ransoming of slaves (*riqab*), the debtors (*al-gharimin*), in the cause of Allah (*fi sabilillah*) and the wayfarers (*ibnu sabil*).

Al-Qaradawi (1993) argues that among the eight categories, the poor and the needy are the most important as it is in line with the ultimate goal of zakat. The distribution of zakat among the eight categories needs not to be equal depending on the total of zakat collection and the priorities of the aforementioned categories. Similarly, Sadeq (2002) finds that zakat helps lower poverty that brings untold sufferings. Poverty encourages begging, which is condemned by Islam.

According to Hasan (2006), zakat is an element that ranks third among the five fundamentals of Islam. The determination of the minimum limits beyond which zakat would be payable on different categories of wealth and its corresponding rate were left to the discretion of the Rasulullah (s.a.w). There are few characteristics of zakat that are as follows. First, the coverage of zakat is vast. It applies to both the incomes of certain types such as agricultural earnings and the wealth of the rich. Second, zakat is neither a tax nor charity. It cannot be abolished by an act of state, its rate cannot be altered and the amount collected can only be spent on specified heads. Zakat is the right of the poor and the needy to a share in the wealth of the rich that they have to part as believers.

In order to achieve the objectives of zakat, Hafidhuddin and Juwaini (2006) highlight the important role of *amil* institution for zakat management that is in line with the *Quran* 9: 60 and 103. They suggest that the role of *amil* institution is not only for zakat collection but also for zakat distribution as well as assessment.

According to the fatwa of Indonesian *Ulama* Council (abbreviated as MUI) No. 8/2011, *amil* refers to a person or a group of people that are appointed by the government or society and get endorsement from the government to be responsible in managing zakat in the country. Hafidhuddin *et al* (2015) argue that *amil* is the intermediary between zakat payers and beneficiaries that should be trustable, transparent, professional and full-time assigned.

It is interesting to note that, the success of zakat in achieving its socio-economic goals cannot be separated with the role of Islamic scholars and zakat experts. In this regard, Abdullah and Yusop (2015) highlight that zakat will be an

effective tool to eradicate poverty if the two pre-requisites are satisfied. First, Islamic jurisprudence experts should endeavor a new and more reliable consensus pertaining to zakat. Second, Muslim bureaucrats should create a more dynamic and efficient zakat management system. In other words, the two conditions require a good collaboration between Islamic scholars, leaders and other zakat stakeholders to come up with overall zakat management based on *zakatable* income, assets and wealth that is applicable with the complexity of contemporary economics and business practices. This shows the important cooperation between all zakat stakeholders to build zakat as a system.

Empirical Studies

Perhaps, the study in formulating strategies to strengthen the position of *amil* institutions in Indonesia from the point of views of zakat experts and practitioners is still limited. The majority of existing empirical studies are based on the perspectives of either zakat payers or zakat recipients.

For instance, Shalihati (2010) conducts a specific field on *muzakki*'s (zakat payers) perception towards BAZNAS and other *amil* institutions. She finds that all dimensions of marketing mix including product, price, place, promotion, people, process and physical evidence, significantly contribute in influencing perception and attitude.

Ayuniyyah and Shalihati (2011) analyze factors affecting *muzakki* to pay zakat through the institutions by taking case study of BAZNAS. In that study, 200 respondents are analyzed using binary regression model. The result shows that from expectation of *muzakki*, there are three factors that are positively affecting *muzakki* to pay zakat through *amil* institution including the strategic location, professionalism of *ami*l officers and reporting of zakat program. These three factors should be maintained in order to increase the awareness of *muzakki* to pay zakat through *amil.*

However, there are also three expectation factors that negatively relate to the zakat payment through *amil*, i.e. zakat distribution, knowledge of *amil* about zakat and government certificate. The respondents expect that those factors have not been fulfilled well their expectation. This exhibits that *amil* should improve, repair and elevate these three factors to build *muzakki'*s awareness.

To develop her previous study, Ayuniyyah (2011) analyzes the respondents using different method namely Importance Performance Analysis (IPA) to determine factors that needs to be improve by *amil* institutions to strengthen its position. She found that promotion program (socialization) and the ability of promotion program to trigger *muzakki*'s curiosity to learn about zakat through amil institution should be improved. *Muzakki* are of the view that the promotion of BAZNAS and other institutions are still less attractive, thus they are not interested enough to learn about the advantage of paying zakat through *amil* institution.

An effort to formulate strategies from the point of view of practitioners of one private zakat institution is done by Rukmana (2014). From TOWS matrix, he suggests that the utilization of Information and Communication Technology (ICT) and strengthening internal management of the organization should be undertaken. The latter particularly should focus on the innovative zakat program as well as transparent and accountable zakat management.

METHODOLOGY

Types and Sources of Data

This study employs primary data that is acquired through survey using questionnaire. The respondents are three zakat experts and practitioners in Indonesia. They are selected based on their competency, ability and deep understanding pertaining to zakat.

Analytical Method

This study uses the Analytical Network Process (ANP) in order to capture the view and opinion of zakat experts and practitioners to formulate the strategies in strengthening *amil* institutions in Indonesia. Saaty (1999) defines the Analytical Network Process (ANP) as "a general theory of a relative measurement used to derive composite priority ratio scales from individual ratio scales that represent relative measurements of the influence of elements that interact with respect to control criteria". It has the ability to capture the outcome of dependence and feedback within and between clusters of elements.

Saaty and Vargas (2006) explain that in general the ANP has four axioms as its theoretical bases that are as follows.

a. Reciprocal. This axiom states if PC (EA, EB) is a pairwise comparison from elements of A and B, from the perspective of upper element of C. For instance, if A is three times larger than B, then B is one third of A.
b. Homogeneity. This axiom means that the elements being compared should not have large difference that may lead to biasness in determining the assessment of supporting elements, which influence the decisions.
c. Priority. This axiom refers to the absolute weight using interval scale [0.1] and as relative domination measures.
d. Dependence condition. This axiom assumes the order can be composited into components that build cluster. The fundamental scale for making judgments can be found in Table 3.1.

Table 3.1. The fundamental scale for making judgments

Definition	Intensity of Importance
Equal	1
Between Equal and Moderate	2
Moderate	3
Between Moderate and Strong	4
Strong	5
Between Strong and Very Strong	6
Very Strong	7
Between Very Strong and Extreme	8
Extreme	9

Source: Saaty and Vargas (2006)

With regard to the steps of research, the ANP consists of three general steps that are as follows.

a. Model construction. This step is a crucial part that is done through literature review of both theoretical as well as empirical frameworks. Besides that, in-depth interview with the experts and focus group discussion can also be executed to gain deeper knowledge and information. In this study, the model is constructed through literature review and in-depth interview with one zakat expert.

b. Model quantification. In this stage, the model constructed in the previous step is built into ANP questionnaire that consists of pairwise comparison between elements in the cluster so that we can know which one is more dominant in numeric scale from 1 to 9 (vide Table 3.1).
c. Synthesis and Analysis. This stage consists of two parts including geometric mean and rater agreement. Saaty and Vargas (2006) explain geometric mean is used to get individual judgments in the form of pairwise comparison so that we can have consensus between the respondents. According to Ascarya (2011), the formula of the geometric mean is as follows.

$$(\pi_i^n = 1a_i)^{1/n} = \sqrt[n]{a_1 a_2 \dots a_n} \quad (1)$$

Rater agreement refers to the ratio that shows compatibility (agreement) of the respondents about elements in the cluster. Kendall's coefficient of concordance is used to measure rate agreement. The value of the coefficient ranges from 0 to 1 where 1 shows perfect agreement (Ascarya, 2011).

RESULTS AND ANALYSIS

Model Construction

According to the National Zakat Index (2017), the performance indicators of zakat boards and institutions consist of four aspects including the collection, management, distribution and reporting of zakat. These four indicators become elements that construct criteria cluster at the top level. The four elements have also been validated through interview with the expert.

The collection of zakat refers to the ability and responsibility of *amil* zakat to collect zakat fund from zakat payers including its year on year growth. The management of zakat refers to the availability of standard operational procedures of zakat management, strategic planning, ISO certification or quality management and the annual working program. The distribution of zakat includes the allocation to collection ratio and the assessment on the economic program (productive-based program), social program and *da'wah* program. The reporting of zakat refers to the ability of zakat institutions to provide financial report with some audited standards.

The criteria of strategies to strengthen the aforementioned institutional indicators are based on Hafidhuddin *et al* (2015). They opine that there are several national zakat agenda that should be undertaken that are as follows.

a. Improving the socialization and education. This includes campaign to the society pertaining to definition, wisdom, benefit, object and regulation of zakat through variety of media. In this case, *amil* has an important position to optimize the role of zakat in aiming the welfare of the society.
b. Strengthening the institutions of zakat. This includes strengthening human resources, information and technology (IT) system of zakat and completing database of zakat payers and recipients.
c. Optimizing zakat program. This should be based on the comprehensive, integrated and updated database of zakat payers and recipients as well as the even standard operational procedures of zakat program management.
d. Strengthening the regulation of zakat. This includes the implementation of Zakat Management Act No. 23/2011 in order to achieve good *ami*l governance (abbreviated as GAG).
e. Strengthening the synergy between all zakat stakeholders. This aspires to

achieve harmony between zakat stakeholders and in the long run it is expected to build brotherhood among Muslim in Indonesia and in the world.

Model Quantification

According to the aforesaid model construction, the next stage is model quantification using the ANP model (vide Figure 4.1). Basically, the ANP in this study consists of two clusters.

The first cluster is the criteria of institutional performance indicators that consist of four elements including collection, management, distribution and reporting of zakat.

The second cluster is the alternatives that contain seven strategies in strengthening the *amil* institutions including improving the socialization and education, optimizing zakat program, strengthening human resources, strengthening zakat regulation, strengthening the database of *muzakki* and *mustahik*, strengthening the IT system and improving the synergy between zakat stakeholders.

SYNTHESIS AND ANALYSIS

Assessment of Criteria

According to the zakat experts' and practitioners' judgments as seen in Table 4.1 and Figure 4.2 below, reporting of zakat share the highest portion of criteria that construct the performance of *amil* institution followed by zakat collection, zakat distribution and zakat management in order. However, it is interesting to note that each element shares more than 20 percent to the total performance indicators implying that the portion of four elements only have slight differences.

CRITERIA			
Collection of Zakat	**Distribution of Zakat**	**Management of Zakat**	**Reporting of Zakat**

↕

ALTERNATIVES						
Socialization and Education	**Database of Zakat Payers and Recipients**	**Optimization Zakat Program**	**Human Resources**	**Synergy**	**Zakat Regulation**	**IT System**

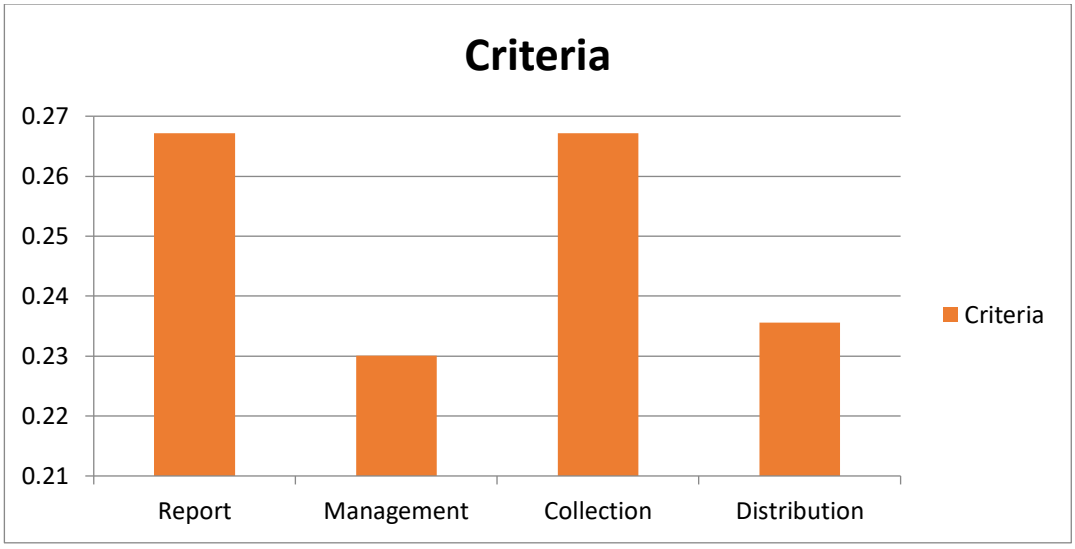
Source: Author's Own

Figure 4.1. ANP Network

Table 4.1. Assessment of Criteria

Criteria	Respondent 1	Respondent 2	Respondent 3	Average	Rank
Report	0.27496	0.31793	0.20872	0.26720	1
Management	0.19365	0.24427	0.25238	0.23010	4
Collection	0.27776	0.24012	0.28357	0.26715	2
Distribution	0.25364	0.19768	0.25532	0.23555	3

Source: Author's Own



Source: Author's Own

Figure 4.2. Assessment of Criteria

Reporting of zakat is important as it represents the professionalism, transparency, trust and responsibility of *amil* institutions in managing, collecting and distributing zakat fund from and to the society. Therefore, the provision of audited public financial reports both from internal and external auditors on regular basis play an important role of the performance of *amil* institutions. Reporting of zakat can build trust from the public and other zakat stakeholders that in the long run can positively influence the institutions performance. Once trust is built, the collection and distribution of zakat can be improved.

Following zakat reporting, the collection of zakat is also important as it can directly influence on how much zakat fund can be distributed to the zakat recipients. The more zakat fund is collected, the bigger is the opportunity of *amil* zakat to disburse it to the society. The high growth of zakat collection represents the high awareness of *muzakki* to fulfill their zakat obligation in accordance with the *shariah*. Besides, this can also show the high trust that *amil* institutions get from the public.

In the third place, the distribution is also crucial as it plays as the main indicator

determining the success of zakat development. Compared with the sequence and arrangement in the holy *Quran*, the verse related to zakat distribution (*Quran* 9: 60) appears earlier than the verse regarding zakat collection (*Quran* 9: 103). As Al-Qaradawi (2002) affirms that the basic objective of zakat is to solve tricky social problems such as poverty, unemployment, natural catastrophes, indebtedness and inequitable income distribution, the distribution of zakat hence should become top agenda. Kaslam (2007) argues that it is the duty of the responsible zakat-officials to be, at all times, fully aware of the persons under their jurisdiction, who are deserving of receiving zakat assistance. Zakat should be regarded as an instrument for improving social well-being.

Lastly, although the management of zakat has the least portion in the indicators of *amil* institution performance, the *amil* institutions should still provide standard operational procedures of zakat management, strategic planning, ISO certification or quality management and the annual working program in order to aim the good *amil* governance in a more comprehensive way.

ASSESSMENT OF ALTERNATIVES

In terms of alternatives, Table 4.2 and Figure 4.3 below depict the prioritization of the strategies to strengthen the role of *amil* institutions with respect to the four aforesaid elements. It can be observed that the optimization of zakat program becomes the first top strategy that should be implemented. This can be realized through variety of zakat distribution and empowerment program that should not only confine to the consumptive-based program, but also the productive-based program. Hafidhuddin *et al* (2015) opine that zakat program should be based on the Zakat Management No. 23/2011 chapter 1 article 2. In this regard, zakat program must be in accordance with the *shariah*, trusted, beneficial, just, integrated and accountable.

In the current time, zakat has been distributed to around 2.8 million beneficiaries through variation of distribution programs (Indonesia Zakat and Development Report, 2011). Around two third of zakat collection is allocated for consumptive-based programs, while the remaining one third is distributed for productive-based programs.

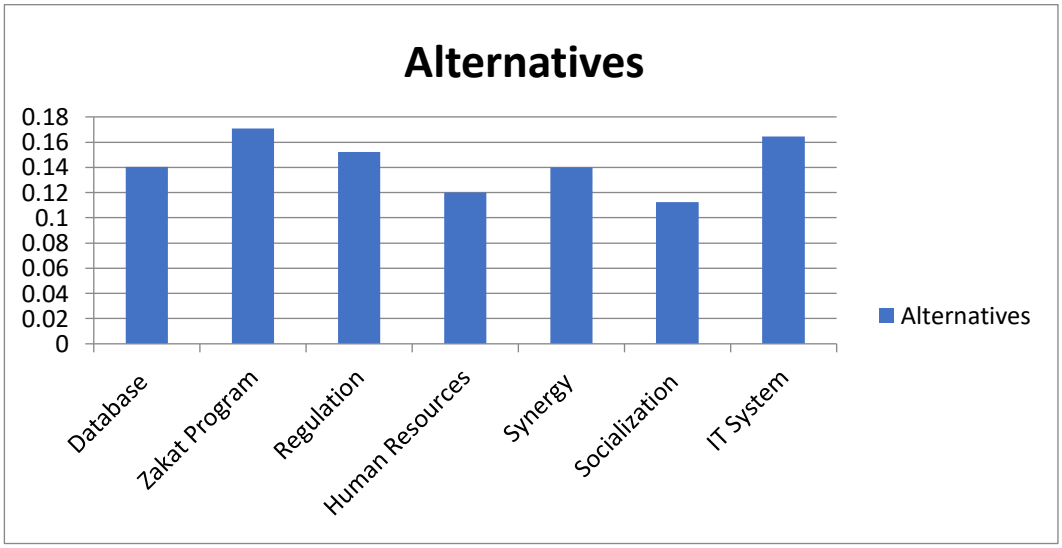
The former specifically aims at helping the beneficiaries without having long term objective to realize the independence of the *mustahik*. The latter aspires to achieve the financial independent status of the beneficiaries, which in the long-run they are expected to become zakat payers. Therefore, productive-based program should become the top priority for the zakat distribution program.

Strengthening the information and technology (IT) system of zakat places the second rank of the alternatives strategies needed to strengthen the role of *amil* institutions. The strong IT system can support the efficiency and effectiveness of *amil* function in managing zakat as a system as whole. It may reduce operational and other unnecessary costs as it improves the reporting, collection, distribution and management system.

Table 4.2. Assessment of Alternatives

Alternatives	Respondent 1	Respondent 2	Respondent 3	Average	Rank
Database of *Muzaki* and *Mustahik*	0.13113	0.12494	0.16435	0.14014	4
Optimization of Zakat Program	0.16651	0.15379	0.19271	0.17100	1
Strengthening Regulation	0.18778	0.14330	0.12570	0.15226	3
Strengthening Human Resources	0.09856	0.17267	0.08862	0.11995	6
Synergy between Amil	0.12875	0.12134	0.16952	0.13987	5
Socialization and Education	0.09925	0.09664	0.14116	0.11235	7
Strengthening IT System	0.18802	0.18733	0.11795	0.16443	2

Source: Author's Own



Source: Author's Own

Figure 4.3. Assessment of Alternatives

In the third rank, strengthening zakat regulation is also important in strengthening the role of *amil.* Zakat regulation should be strengthened and implemented in order to realize Good *Amil* Governance. This needs deep and similar understanding from *amil* institutions, governments and other zakat stakeholders.

Following the regulation of zakat, the alternative of strategy in the fourth rank is the improvement of database of zakat payers and recipients. This can support good management of zakat specifically with respect to the collection and distribution of zakat. The database should cover both potential and actual zakat payers and recipients in each area in order to road map the potential and actual zakat collection and distribution.

Moreover, the synergy between zakat stakeholders is in the fifth place of the alternative strategy. Zakat stakeholders include BAZNAS from the national level to the city and regency level, private zakat institutions, Ministry of Religious Affairs, government at the national and regional level, Islamic social organizations, educational institutions and other institutions at the national and even international level. Hafidhuddin *et al* (2015) opine that synergy between zakat stakeholders aims at achieving the role of zakat in realizing welfare in the society. Besides, it can also strengthen the brotherhood in Islam in general.

The sixth prioritized strategy is strengthening human resources. This includes improving the quality of human resources in the zakat world to become knowledgeable, professional and trustable as well as to have good attitude (*akhlak*).

In the last rank, socialization and education should be undertaken specifically that relates to the definition, wisdom, benefit, object, advantage and regulation of zakat. Besides that, the link between zakat and tax should also be included in the zakat campaign. The socialization and education of zakat can improve people's awareness of zakat so that zakat can be accepted and implemented as a system as a whole.

CONCLUSIONS

As the third pillar of Islam, zakat mainly aims to improve the social and economic well-being of the society. To realize this goal, the role of *amil* institutions as assigned in the several *Quranic* verses should be strengthened. This study hence attempts to formulate strategies in strengthening the role of *amil* institutions based on the judgment of zakat experts and practitioners.

This study constructs *amil* performance indicators based on the National Zakat Index that consists of collection, distribution, management and reporting of zakat. It is found that among four zakat institutions' indicators, the reporting of zakat shared the highest portion of the important indicators of *amil*, followed by the collection, distribution and management of zakat.

Besides that, the study also finds that the strategies that needs to be given top priorities in order are optimizing zakat distribution program, strengthening Information and Technology (IT) System, strengthening zakat regulation, improving database of zakat payers and beneficiaries, strengthening the synergy between *amil* boards, institutions and other zakat stakeholders, strengthening human resources and improving the socialization as well as education pertaining to zakat and the role of zakat board and institutions.

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Zakat and Technology: A Bibliometric R Analysis

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ABSTRACT

This study aims to determine the development and trend map of the Zakat and Technology outbreak research that is published by reputable journals in the theme of Islamic economics and finance. The data analyzed covering more than 440 publications of indexed research publications. The export data is then processed and analyzed using the R Biblioshiny application program to find out the bibliometric map of the development of the role of Islamic economics and finance in zakat and technology research. The results showed that the number of publications on the development of the role of Islamic economics and finance research experienced a significant increase. The results show that the highest number of document types are journaled articles. The most popular authors are Kuran T, and the most popular keyword topics are zakat, Islam, and Indonesia.

Keywords: Zakat and Technology; IEF; Bibliometric; R

INTRODUCTION

Today, in the digital era that has been increasingly developed, the people's behavior in all aspects of life has changed. One of the most interesting topics relates to the use of the internet and financial technology, where the use of the internet shows an increasing trend (Friantoro & Zaki, 2018). Indonesia today's digital era is marked by the increasing use of the internet by the community. According to the Global Digital Report Data in 2018, the number of internet consumers in Indonesia has reached 132 million people, equivalent to 50% of Indonesia's population who can access the internet (Rachman & Nur Salam, 2018).

Of course, the daily activities of the Indonesian cannot be separated from the use of the internet, from buying food for consumption, ordering transportation online, sending goods, to ordering tickets and doing Islamic financial transactions.. It is well known that zakat, infaq and, sadaqah (ZIS) are forms of social financial instruments. Where currently zakat institutions make the collection and distribution process easy with the presence of technology in financial transactions (Wulan et al., 2018).

In the *ayah* (verse) of the al-Qur'an and al-Hadith that discuss economics, it is explained the way zakat must be properly organized and managed for the benefit, through the government, non-governmental organizations (NGOs), Islamic organizations, and other stakeholders who can regulate and distribute zakat services and professionally performed (Rizki, 2019). This makes zakat has great potential to build prosperity with the majority of Muslims in Indonesia.

Based on the results of research by the National Zakat Agency (BAZNAS), the potential for zakat in Indonesia reached 217 trillion. However, in reality, the collection of zakat funds reaches 1.729 trillion

(Setiawan, 2019). It is thus significant effort is deemed necessary to actualize Indonesia's zakat potential.

Towards a disruptive era, there are many Financial Technology (Fintech) companies that are increasingly growing everywhere. Such as peer-to-peer lending, crowdfunding, mobile payment or online banking, marketplaces, and so on. Fintech companies provide efficient financial services by basing their activities on smartphone technology. This has a direct impact on the institutions that are still manually running their business activities, including BAZ and LAZ.

There are more than 440 published scientific research papers that cover the object of research both nationally and internationally within the time frame of this paper; August 2020. The paper that is the object of this research is a paper that discusses Zakat and Technology in Islamic economic and financial research. Research with this theme is interesting to do considering the theme of zakat and technology has been emerging in scientific research to produce ideas and innovations that can answer problems in Islamic economic and financial research.

LITERATURE REVIEW

Zakat is one of the most basic obligations in Islam which is a fundamental component in forming an economic community (Abdelaziz et al., 2017). Zakat means to purify or increase or grow. Meanwhile, the literal meaning of zakat is that a person's wealth can be cleaned with zakat. This makes one's wealth grow and increase not only physically but spiritually because paying zakat which leads to an increase in blessings from Allah SWT (Obaidullah & Manap, 2017; Muneeza & Nadwi, 2019). Zakat can also help those who are unable to meet their needs independently, such as orphans, widows, people with disabilities, poor people, and others (Fahlefi et al., 2019).

Today, zakat management payments has been no longer performed with manual system. Technology zakat online has been developed. According to Sakka and Qulub (2019), online zakat is a mechanism for paying zakat without having to come in person, so that it eases muzakki to distribute their zakat. One of them is through ATMs, the internet, websites, and zakat providers, and Financial Technology (Fintech).

Fintech is a term that comes from two words, namely financial and technology. In simple terms, the meaning of financial technology is an innovation that involves modern technology in the field of financial services (Ulya, 2018).

A few zakat institutions in Indonesia have the largest collection of zakat funds, namely Dompet Dhuafa, BAZNAS, and Rumah Zakat. The three institutions provide examples of strategies in increasing the collection which is quite good. As a result, the three institutions have collaborated with various digital financial platforms such as mobile banking services from various banking service providers, digital crowdfunding, and e-commerce services. The digitization of zakat payments is one of the important things in increasing the collection of zakat maal for individuals. This is because the convenience provided by digital services in paying zakat is one of the factors that affect one's intention in paying zakat (BAZNAS Strategic Studies Center, 2019; Hudaefi et al., 2020).

Several previous studies have conducted research related to zakat and technology. Where the role of technology at this time cannot be separated from the optimization of the potential of zakat owned in each country. The previous studies that discussed this theme include, Ulya (2018); Andiani et al. (2018); Muhammad (2019); Rizki (2019); Ghozali et al. (2019); Fahlefi et al. (2019); Ichwan

(2020), Hudaefi et al. (2020) and Kailani & Slama (2020).

METHODOLOGY

Bibliometric mapping is a research topic in the bibliometric field (Borner et al., 2003). Two bibliometric aspects that can be distinguished are the construction of the bibliometric map and the graphical representation of the map. In the bibliometric literature, the greatest concern has been with the construction of bibliometric maps. Research is related to the effect of differences in similarity in size (Ahlgren et al., 2003), and they were tested by different mapping techniques (Boyack et al., 2005).

The graphical representation of the bibliometric received less attention. Although some researchers seriously study problems related to graphic representation (Chen, 2003). Most of the articles published in the bibliometric literature rely on simple graphical representations provided by computer programs. This study uses publication data in the form of papers sourced from various scientific journals and other sources with the theme of research on the application of Zakat and Technology in Islamic economic and financial research. From the search results, 440 published articles were obtained.

RESULTS

Source

Table 1. Source by Document Types

No	Document Types	Number of Articles
1	Journal article	312
2	Book chapter	48
3	Monograph	14
4	Preprint	20
5	Proceeding	46
	TOTAL	440

The table above shows the number of document collections studied on the theme of zakat and technology, namely a total of 440 data consisting of 5 different types of documents, with the following explanation: (1) the types of published journal articles are 312 documents, (2) types of interest a book chapter of 48 documents, (3) monograph type of 14 documents, (4) type of preprint design (preprint) of 20 documents, and (5) proceedings of 46 documents.

Based on the table above, it can be concluded that the documents that are most widely used as objects of study in research that discuss zakat and technology in the first rank are journal articles with a percentage of 70.9% or 312 documents. Meanwhile, the least used documents were monographs with a percentage of 3.1% or 14 documents. This data shows that the references used are quite valid because they come from written documents that are scientific and are mostly dominated by published papers.

Average Citation per Year

Table 2. Average Citation per-year

Year	N	Mean TC per Article	Mean TC per Year	Citable Years
1986	2	22.00	0.65	34
1992	4	10.75	0.38	28
1993	2	0.00	0.00	27
1994	1	0.00	0.00	26
1995	1	45.00	1.80	25
1996	1	0.00	0.00	24
2000	2	113.00	5.65	20
2001	4	23.50	1.24	19
2002	2	4.00	0.22	18
2003	3	12.67	0.75	17
2004	2	46.00	2.88	16
2005	2	63.00	4.20	15
2006	6	5.83	0.42	14
2007	2	9.00	0.69	13
2008	5	7.80	0.65	12
2009	6	38.00	3.45	11
2010	12	9.50	0.95	10
2011	14	6.93	0.77	9
2012	8	5.25	0.66	8

2013	17	8.65	1.24	7
2014	23	4.83	0.80	6
2015	32	2.44	0.49	5
2016	31	3.03	0.76	4
2017	32	1.25	0.42	3
2018	73	1.16	0.58	2
2019	107	0.21	0.21	1
2020	46	0.28		0
Total	440			

The table above shows the number of citations or quotes from the average per article and year in papers on the theme of zakat and technology. This research examines documents on this theme which were published for 36 years or from 1986 to 2020. Based on the table, it can be seen that most paper publications on the theme of zakat and technology were published in 2019 with a total of 107 documents. However, the data is still temporary because 2020 has not been completed and it is still possible to add more. The collection of papers studied in this study is limited to August 2020.

Then, the highest average total citation for each article was 2000 with an average of 113 citations. Interestingly, the highest mean total citation per year was in 2000 as well, with an average value of 5.65. These results indicate that the paper published in 2000 was the paper most cited or cited on the theme of zakat and economics when compared to the previous and subsequent years which experienced fluctuation but generally tended to be lower.

Three Fields Plot

The Three Fields Plot in Figure 1 is an illustration of 3 elements consisting of a list of journal names, a list of authors' names, and a list of topics used. These three elements are plotted with a gray plot that shows their relationship to each other, starting from the name of the journal, then each journal shows the author, and each author is shown on the topic they use in their paper on the theme of zakat and technology. The size of each rectangle in the list of names shows the quantity of paper associated with that element.

The first element, namely the journal. There are 8 journals indexed in the Three Fields Plot that publish papers on the theme of zakat and technology, but the top journal that publishes the most papers on this theme is the SSRN Electronic Journal which is depicted in a blue rectangle and connected by several authors, namely Mamouni, Marka. and Hasan S.

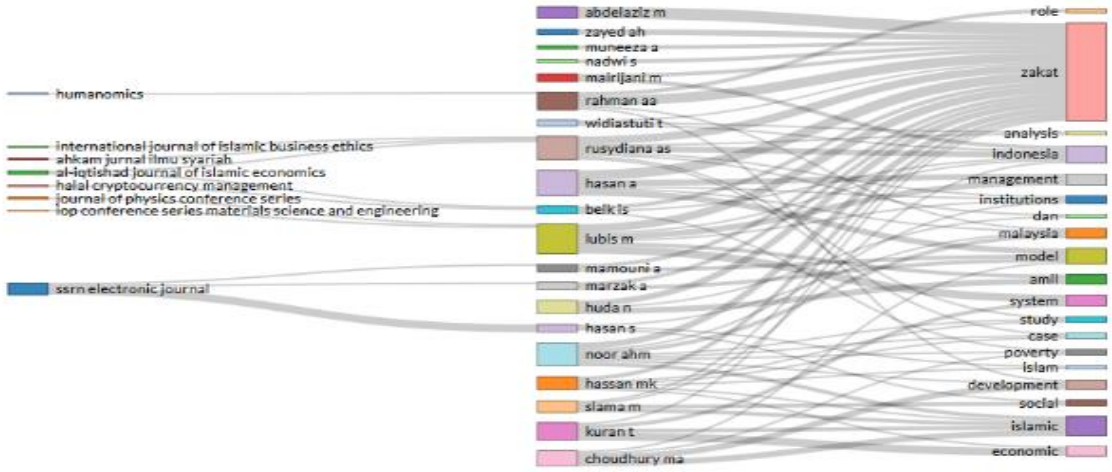

Figure 1. Three Fields Report Zakat and Technology

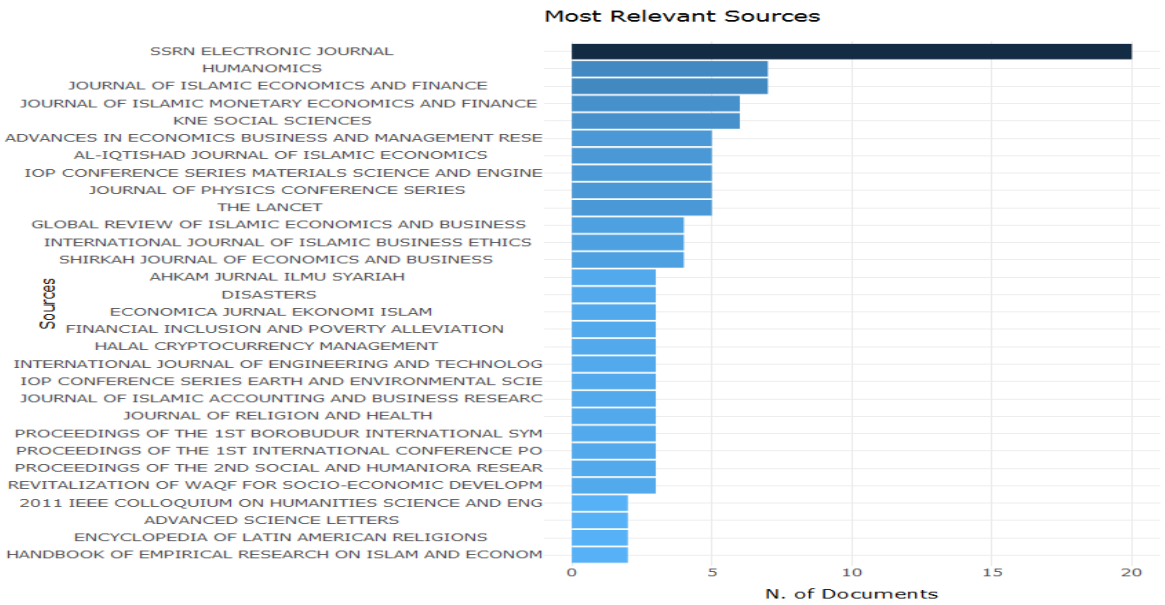

Figure 2. Most Relevant Sources Zakat and Technology

The second element in the middle is the author's name. Some writers whose published journals are recognized will be associated with previous elements, such as the writer Rahman A who is linked to the Humanonics journal on the journal element. However, some others are not indexed so that they do not have any connection with any of the journals listed. Also, each of these authors will be associated with frequently used keyword topics on the right. There are the top 20 authors listed in this plot. The size of the rectangle shows the quantity of the number of papers written by each author. In this plot, Lubis M occupies the widest rectangle which shows that he writes mostly on the theme of zakat and technology.

The third element is the keyword topic that appears the most in the paper which is the object of research. Each topic is associated with an author who uses the topic a lot. There are 19 keyword topics listed and the most frequent keyword is Zakat, as indicated by the size of the pink rectangle that dominates the rest of the rectangle. It also appears that the topic of zakat is used by almost all registered authors, this data is following the theme of this study, namely discussing scientific papers related to zakat and technology. Apart from zakat, this plot also shows several other widely used keywords, such as Indonesia, Islamic, and Model.

Most Relevant Sources

Figure 2 shows the number of paper documents published by each journal based on the level of relevance to the theme of this research, namely zakat, and technology. The data shows the list of names of the top journals published and the interval for the number of documents published with a blue bar chart. The darker the blue color indicates the more quantity and relevance of the research theme, the number of documents published by all journals ranges from 0 to 20 documents.

SSRN Electronic Journal is in the top position with the number of documents 20 as shown by the bar chart which is dark blue, darker than the bars of other journals because it is more relevant to the theme

discussed. The bottom journal is the Handbook of Empirical Research on Islam and Economics with a bright blue bar chart showing a number less than 5, which is exactly 2, which means that there are not many published papers in quantity and less

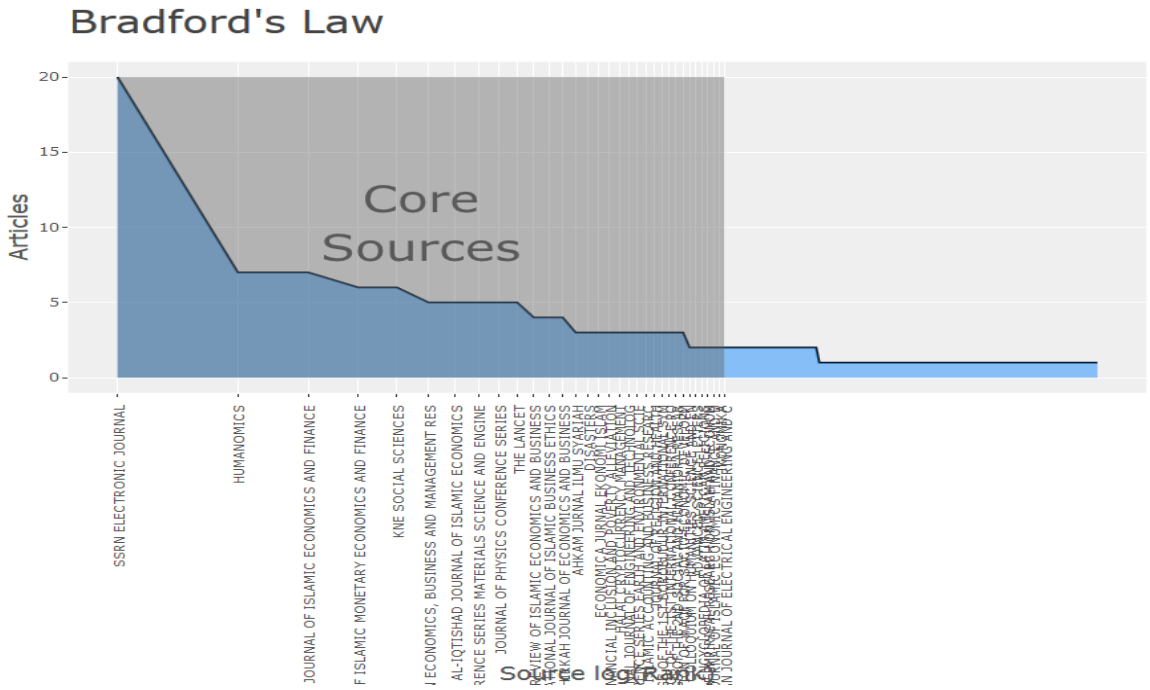

Figure 3. Bradford's Law Zakat and Technology

relevant to the theme of zakat and technology research. Apart from these 2 journals, a total of 30 journals are listed in the most relevant data sources.

Bradford's Law

Next is the journal classification based on Bradford's law in Figure 3. Namely the classification of journals based on their productivity level by dividing them into several sections, including the core journal group, the intermediate journal group, and the broad journal group. Core journal groups are indicated by shaded sections and annotated core sources. Journals that fall into this category are journals with the highest level of productivity in the subject of zakat and technology for a specified period.

The top Junal is the Ssrn Electronic Journal with the highest quantity, which has published 20 paper documents related to the

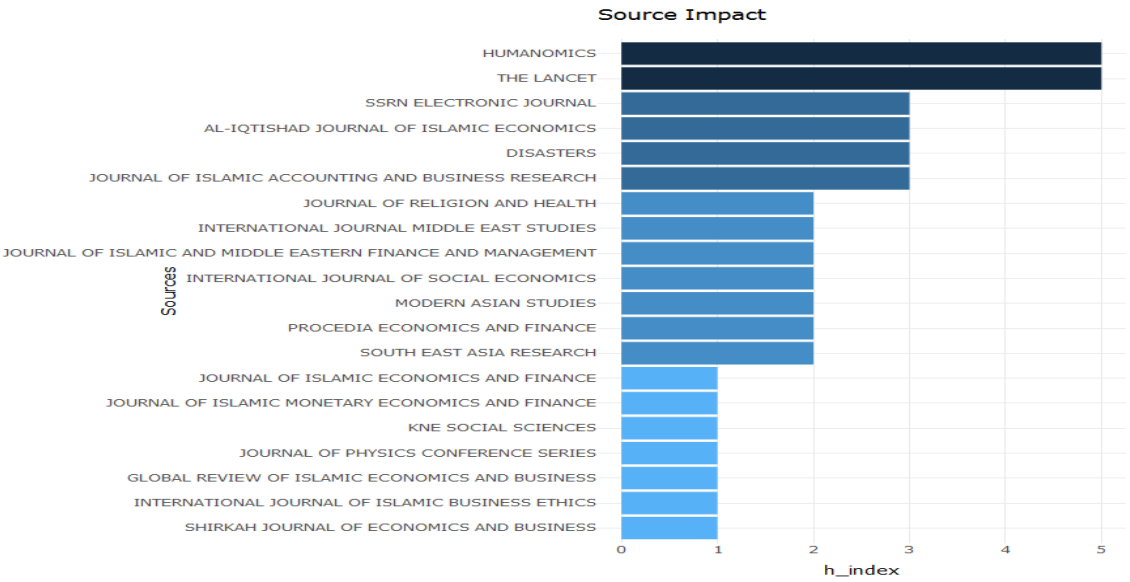

Figure 4. Source Impact Zakat and Technology

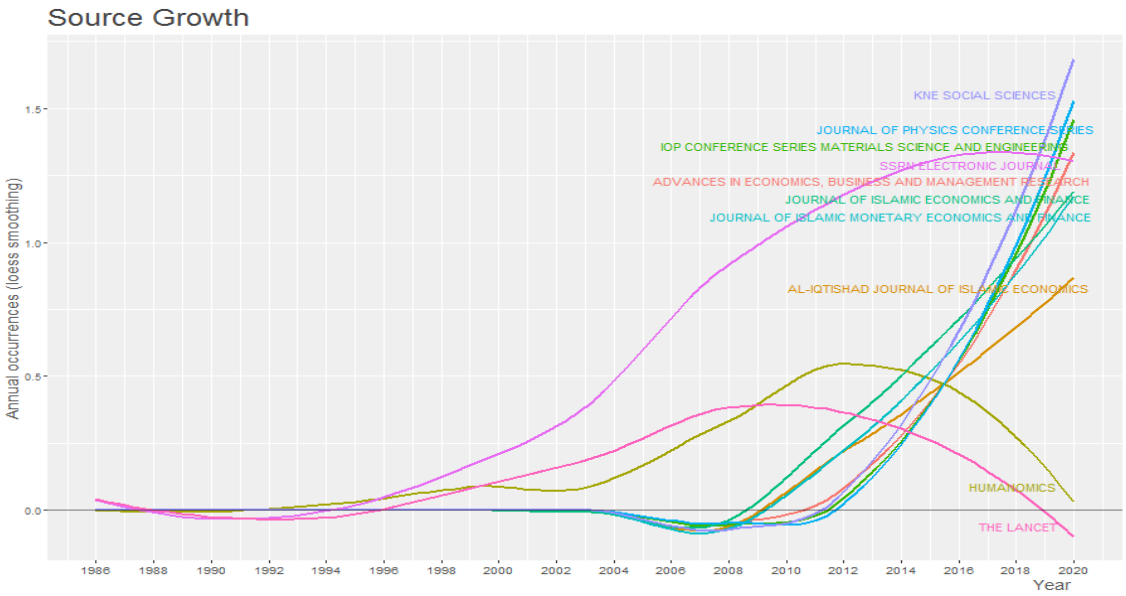

Figure 5. Source Growth Zakat and Technology

research theme, then in the second place there is the Humanomics journal, then the Journal of Islamic Economics Finance in the third place, the quantity of publication of the two journals is above 5 documents but below 10 paper documents. Followed by other journals that are categorized as core journals on the theme of zakat and technology.

Source Impact

Journal calculations are not only seen in terms of quantity or relevance, but this study also discusses the impact of each journal that publishes papers on the theme of zakat and technology by calculating the journal's h-index which is then depicted in a blue bar chart. Apart from showing the h-index value of each journal, this diagram also shows the impact of each journal through the blue color shown, the darker the blue in the diagram, the bigger the journal's impact.

The data found that the journals Humanomics and The Lancet were in the top position with an h-index value of 5 and a dark blue bar chart (Figure 4), indicating that these two journals had the greatest impact compared to other journals. The journals with the lowest h-index with a value of 1 are occupied by 7 journals that are colored light blue on the diagram, indicating a low level of impact.

Source Growth

This study also discusses the development of journals which are the source of research documents for this paper on the theme of zakat and technology. The data above shows the development of the annual occurrence of each journal from 1986 to 2020 so that you can get a picture of whether the journal has increased or decreased with a curved line during the research period, especially in the publication of papers on zakat and technology.

Figure 5 shows several journals that began to develop since the late 2000s and continue to increase, including the purple line, namely Ssrn Electronic journal, which has continued to increase in the last few years since 2010, but in 2020 it has stagnated and decreased slightly. Another paper that has experienced a drastic increase and until 2020 continues to outperform the annual occurrence value even exceeding 1.5 is shown by the journal Kne Social Science line.

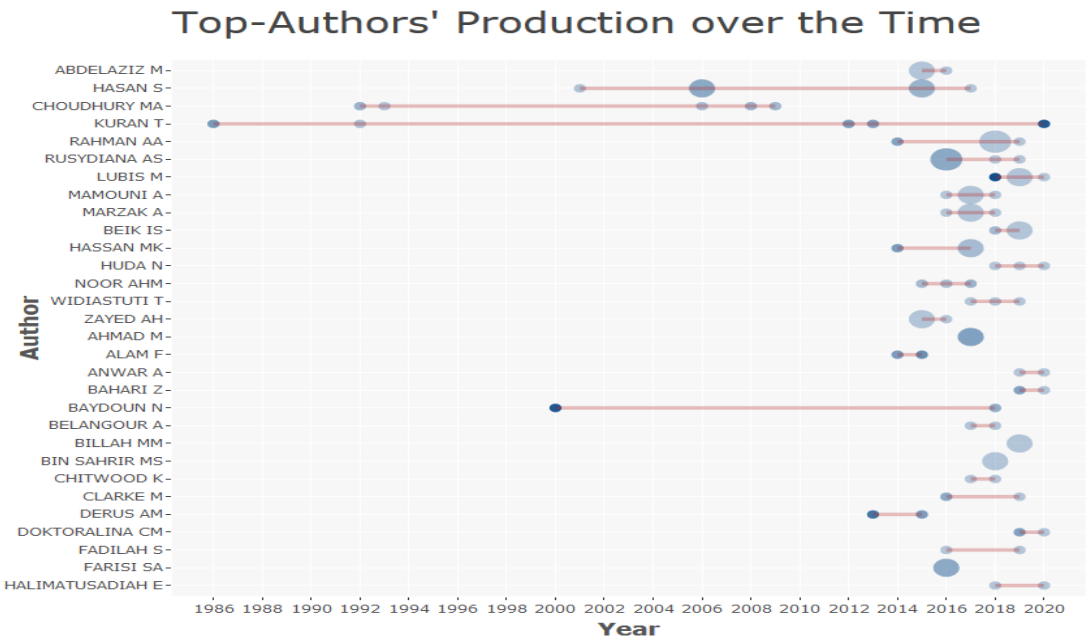

Figure 6. Top Authors Production over the Time Zakat and Technology

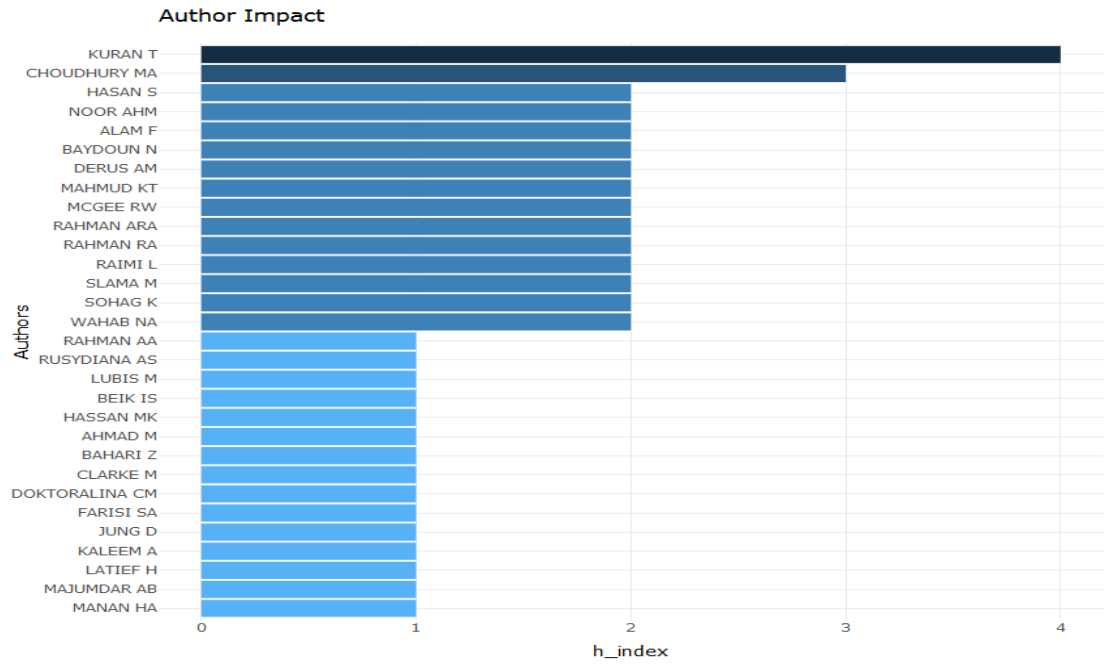

Figure 7. Author Impact Zakat and Technology

Several other journals also experienced an increase, although not as significant as the two journals above, 2 journals had experienced an increase in early 2000 but began to decline since 2012, namely the journal Humanomics and The Lancet which in 2020 reached the lowest position with an annual occurrence value 0.0.

Top Authors Production over the Time

Productivity can not only be measured in journals, but also on the author in particular. Figure 6 shows the production of some of the top authors during the period of the study, namely from 1986 to 2020 which is shown by a red line from the beginning of the author of the publication until the last

year the author published his paper, besides that the circle in the red line shows the number of papers published according to the year. applicable.

The research produces data as shown in the picture, where it appears that there are writers who have started writing papers on the theme of zakat and technology for a long time and some have recently written. The author who has long written based on data, namely Kuran T, has been recorded writing since 1986 and is still productive writing until 2020 even though the quantity is not much. Also, writers who have long tracked colleagues are occupied by Choudury MA who wrote from 1992 to 2009, Baydoun N who wrote from 2000 to 2018, and Hasan S who wrote from 2001 to 2017 where he published the most paper in 2006 and 2015.

Author Impact

Authors who have published their papers can also be sorted based on their impact rating with the h-index rating. My h-index values range from 0 to 4 and the impact level is shown in blue in the bar chart, where the darker the color indicates the bigger the impact.

Figure 7 shows the results that the author who achieved the highest h-index value, namely 4 with the maximum impact with the dark blue bar chart color was achieved by Kuran T, then followed in second place by Choudury MA who achieved the h-index value 3 and had a very good impact. but not as high as the impact generated by Kuran. Also, several other authors achieved h-index values of 2 and 1 as well as lower levels of impact as shown in the diagram above.

Corresponding Authors Country

Figure 8 shows the correspondence countries of the authors contained in each article with the calculation of the total form of collaboration of SCP (single country collaboration) or collaboration of one country, not MCP (multiple country collaboration) or collaboration between several countries. There are 5 top countries

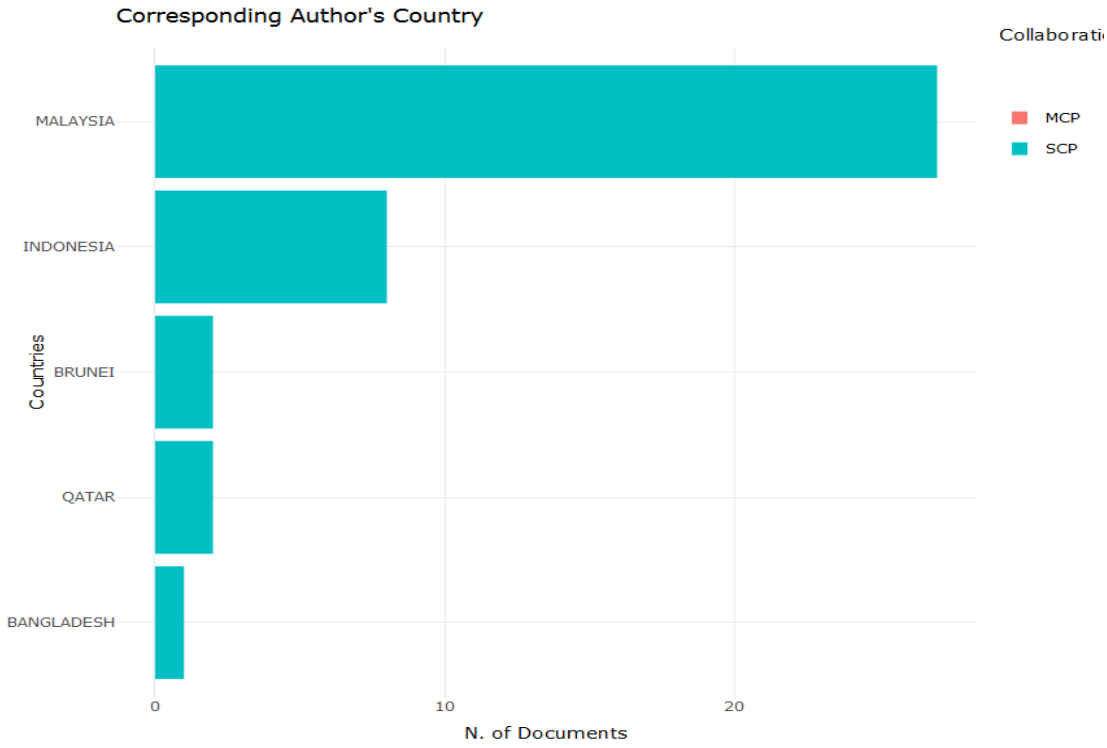

Figure 8. Corresponding Authors Country Zakat and Technology

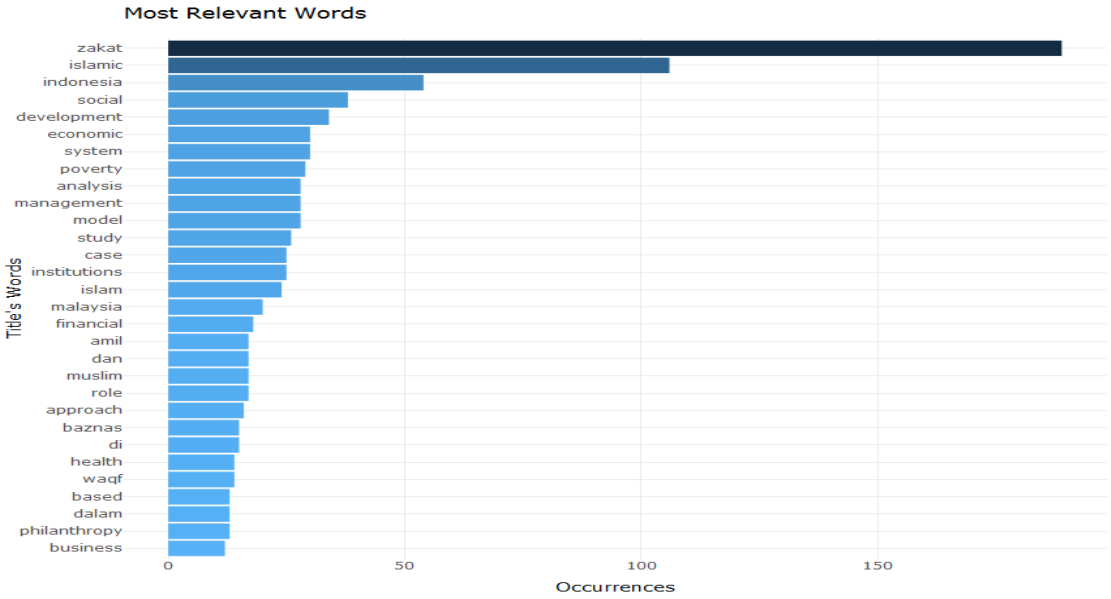

Figure 9. Most Relevant Words Zakat and Technology

Figure 10. Word Cloud Zakat and Technology

included in this data and the document quantity interval is between 0 and more than 20 papers published on the theme of zakat and technology.

The results obtained are that Malaysia ranks first as a country with the highest quantity of author correspondence with more than 20 published papers. Furthermore, the second rank is Indonesia with the number of published papers less than 10 but more than 5. The rest, namely Brunei, Qatar, and Bangladesh publish less than 5 articles, even Bangladesh ranks fifth with the lowest quantity of papers but more than 1.

This data shows the need for an increase in the number of paper publications on the theme of zakat and technology in other countries, especially Indonesia, to research better new ideas and innovations for the development of zakat and domestic technology so that it is hoped that they can produce better output.

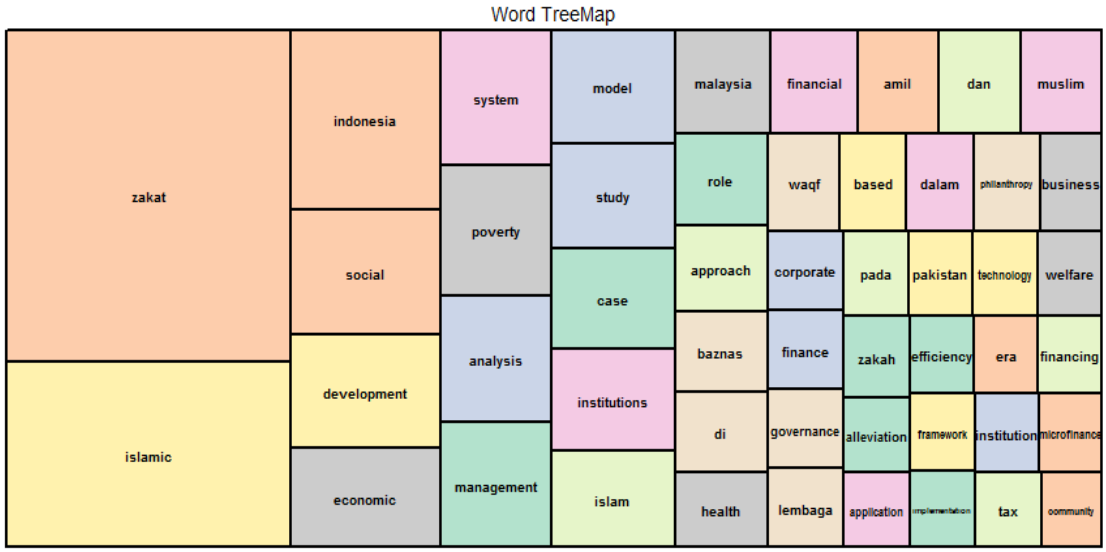

Figure 11. Word TreeMap Zakat and Technology

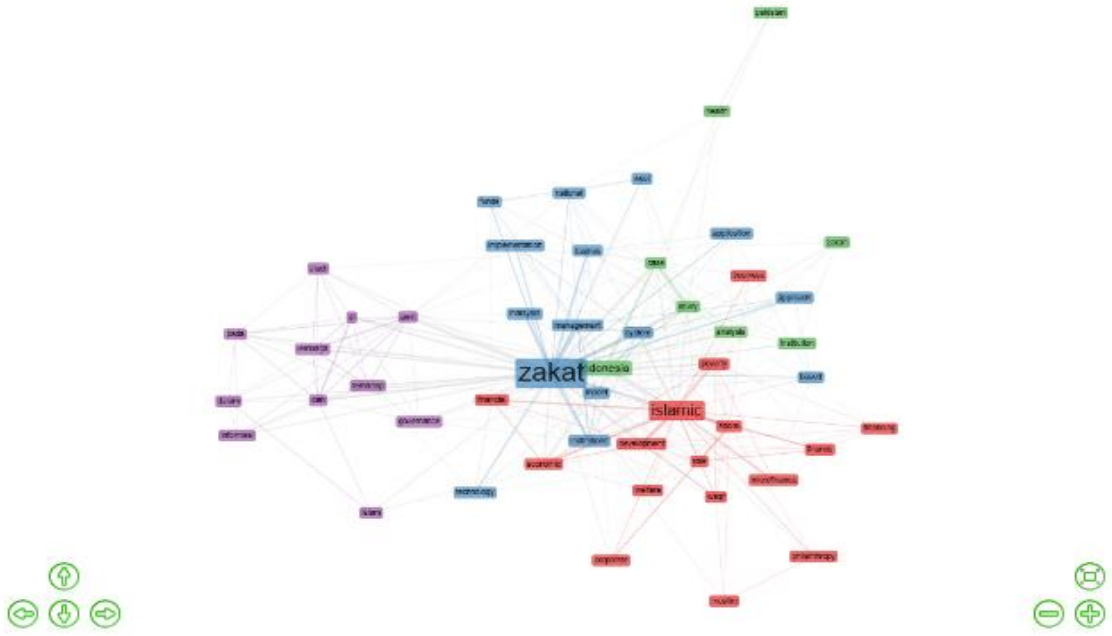

Figure 12. Clustering Zakat and Technology

Most Relevant Words

This study also calculates the relevant words used in the collection of documents that are the object of the study, there are several words with the number of occurrences between 0 and more than 150 times and the top 30 words are listed and the blue table diagram shows the comparison of the number of occurrences of each. the use of the word and its relevance to the theme of zakat and technology (Figure 9).

The top word with the highest number of occurrences and the most relevant to the theme of this research is 'zakat' with total usage of more than 150 times and is most relevant as shown by a dark blue line diagram, the word zakat also corresponds to the theme of zakat and technology research, hence the dominant word. what appears in the data collection under study is the word zakat.

Furthermore, in second place is the word 'Islamic' with several occurrences of

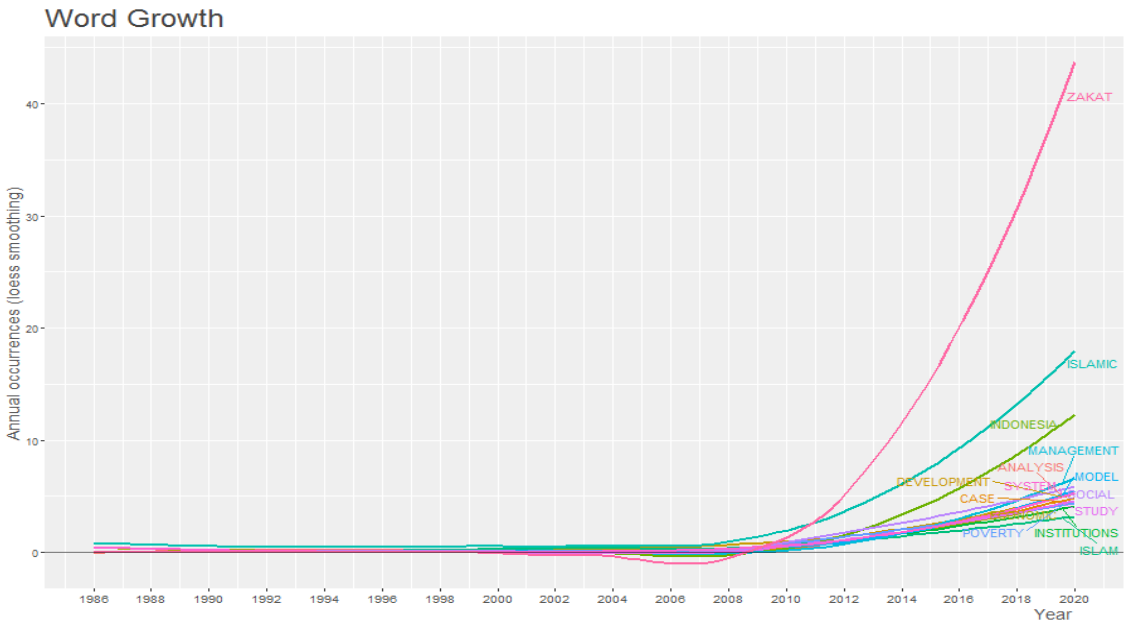

Figure 13. Word Growth Zakat and Technology

more than 100 times, but less than 150. This word is of course widely used, especially in describing zakat as a form of Islamic social finance, and especially in the scope of discussion of Islamic economics. Then in third place the word "Indonesia" with a quantity of more than 50 but less than 100 times. The appearance of country names in the list of word relevance that most often appears indicates that zakat is closely related to Indonesia, or that Indonesia is quite often used as the object country of study in the paper under study.

Word Cloud, Clustering and Word TreeMap

Word cloud, word treemap, and clustering in Figures 10, 11, and 12 reveal a description of the words that often appear in the data collection of papers studied in the theme of zakat and technology in different forms, but the results are the same, namely the most common words. often appears in the first order, namely zakat, in second place namely Islamic, and the third place, namely Indonesia.

The Word cloud displays a picture of words in various sizes according to the quantity of the number of words appearing. In terms of placement, the word cloud tends to be random, but the dominating words are placed in the middle so that they are more visible with their large size. Meanwhile, the Word TreeMap displays words that often appear in boxes similar to regions on the map, where the more words appear, the larger the square area. The clustering displays the words in the form of colored clusters by considering the relationship between one word and another.

Word Growth

In this study, the words that often appear are also translated into a development curve each year with an annual occurrence value that shows the average value of the number of occurrences of these words in the data collection studied in the theme of zakat and technology per year. Figure 13 shows that the majority of words that often appear have started to develop and are used since 2010 and continue to increase every year.

The highest increase was achieved by the word 'zakat' with the value of annual occurrence which increased every year with a large enough number resulting in a steep curve and 2020 the value exceeded 40.

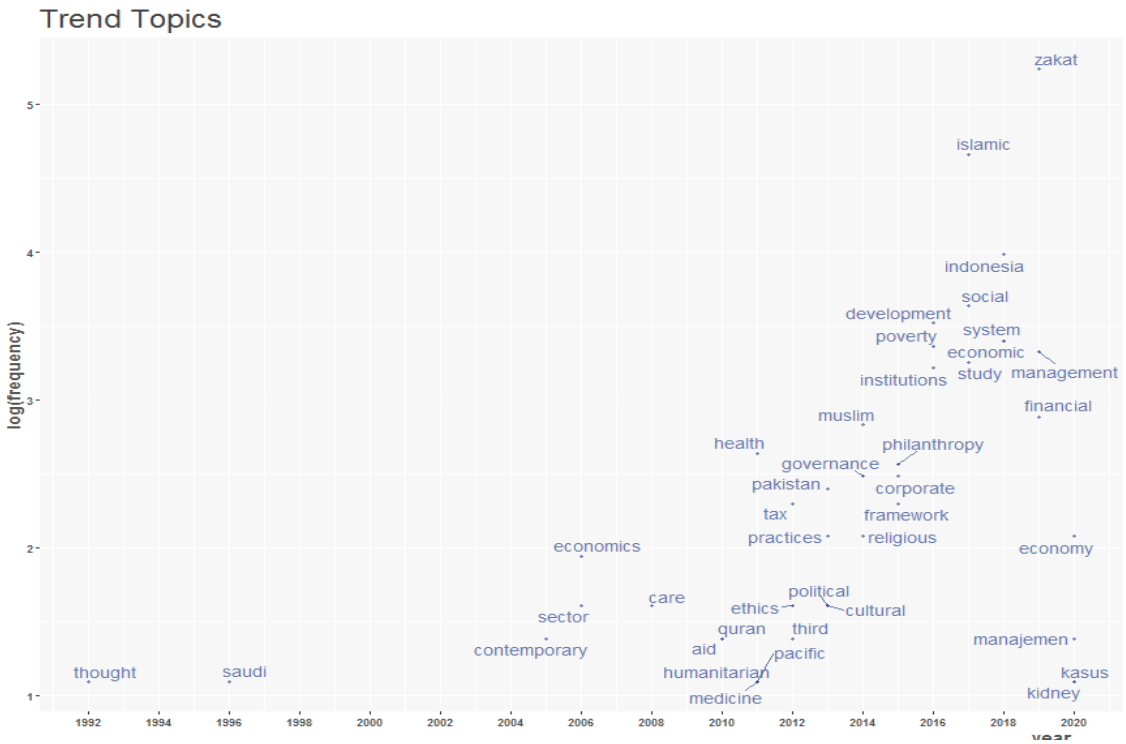

Figure 14. Trend Topics Zakat and Technology

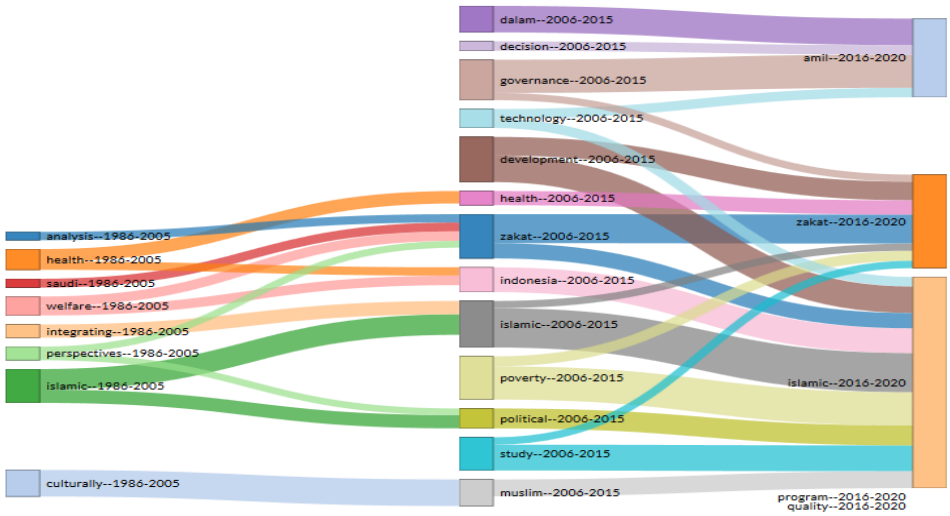

Figure 15. Thematic Evolution Zakat and Technology

Then the second place was the word 'Islamic' which until 2020 the value of annual occurrence exceeds the number 15. And in the third place, the word 'Indonesia' also continues to increase but is not as high as the two previous words with a value exceeding the number 10.

Trend Topics

Topic trends are also part of this research, where the picture above shows an overview of the development of topics from time to time with a division per year so that it is known what topics have been used for a long time and what topics have been recently used. The emergence of topics is also adjusted to the frequency of the quantity of the word appearing in this research on the theme of zakat and technology, the higher it indicates the more

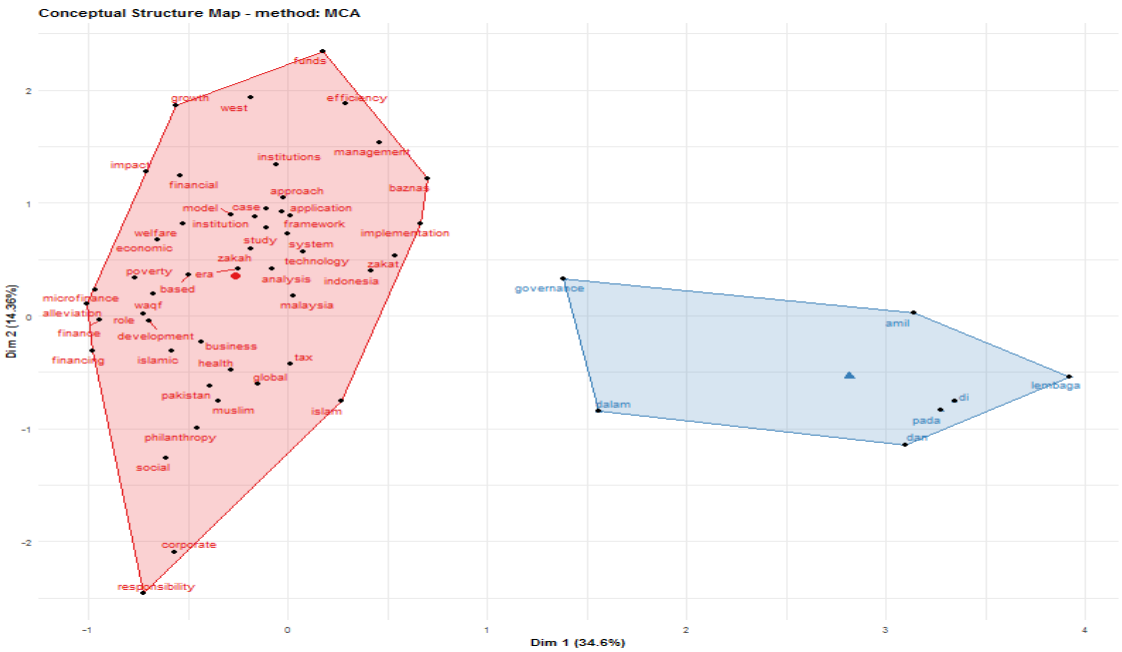

Figure 16. Conceptual Structure Map- method: MCA

words are used, and then to the right, the more recent the word is used. The development of the topic began to experience a significant increase since 2010.

Based on the data in Figure 14, the topic that has been used since 1992 is 'thought', especially related to zakat and technology, then in 1996, the topic 'Saudi' began to emerge. Although it has been quite a while, the quantity of the two topics that have emerged under 2000 is still small. The topics that are widely used in 2020 include 'kidney, cases, management, economy' with different quantities, the topic of 'kidney' at least being at the bottom and the topic of 'economy' being the highest with being higher.

Thematic Evolution

The themes used in papers that are the object of research continue to change, especially from papers that have recently been published when compared to papers that have been published for a long time. The evolution of the theme is shown in the image above. Although the theme of this research is zakat and technology, this data shows several sub-themes that are widely used. The left side in Figure 15 shows some of the themes that are widely used from 1986 to 2005, there are 8 themes listed with different sizes depending on the quantity of use of these themes. The theme "Islamic" took first place, followed by the theme "culturally" and "health".

The second or middle part shows several themes that are widely used from 2006 to 2015. Some of the themes that emerged during this period are evolutionary from previously used themes and have a connection in their content, for example, the theme 'Indonesia' emerged as a form of revolution from the theme. 'health' and 'welfare', this shows that research using the Indonesian theme is an extension of the research on the theme of health and welfare in previous research. In this section, the most used themes are development, islamic and poverty.

The third or right section shows the most recently used themes in the period between 2016 and 2020. There are 5 listed themes, of which 3 themes are an evolution of the themes that appeared in the previous period, namely the theme 'amil, zakat, Islamic 'which is an extension of several

themes as indicated by the colorful grooves. Two other themes that are not evolutionary or emerging are the theme "program, quality" which also has a period between 2016 and 2020.

Conceptual Structure Map- method: MCA

This study also describes a conceptual structure map or map of the contextual structure of each word that often appears in research papers on the theme of zakat and technology by dividing it based on mapping the relationship between one word and nother through area mapping. Each word is placed according to the values of Dim 1 and Dim 2, resulting in mapping between words whose values are not much different (Figure 16).

In this data, there are 2 parts of the area which are divided, namely the red area and the blue area, each area contains words that are related to each other. Based on the picture above, the red area shows more and more various words included in it, this shows that many research papers link between the words listed in this area.

Topic Dendrogram

Next is a dendrogram tree diagram showing the most widely used topics and their relation to other topics as well as the classification of these topics depicted in different colors. The representation of the dendrogram diagram is often used in a variety of contexts, for example in a hierarchy of grouping, this diagram describes the distribution of links between elements in groups resulting from software analysis. This grouping is also arranged in such a way as to take into account the height of the coordination line between topics and between clusters.

This diagram (Figure 17) shows there are 2 classifications of topics, namely topics in red and topics in blue, this shows that the relationship between topics in the deep blue classification and topics in red classification. Each of them is further divided into several clusters, each cluster is further divided into several sub-clusters, and so on until the topic used, several topics are part of one cluster, indicating there is a relationship between the two in research papers on the theme of zakat and technology in recent years.

Collaboration Network

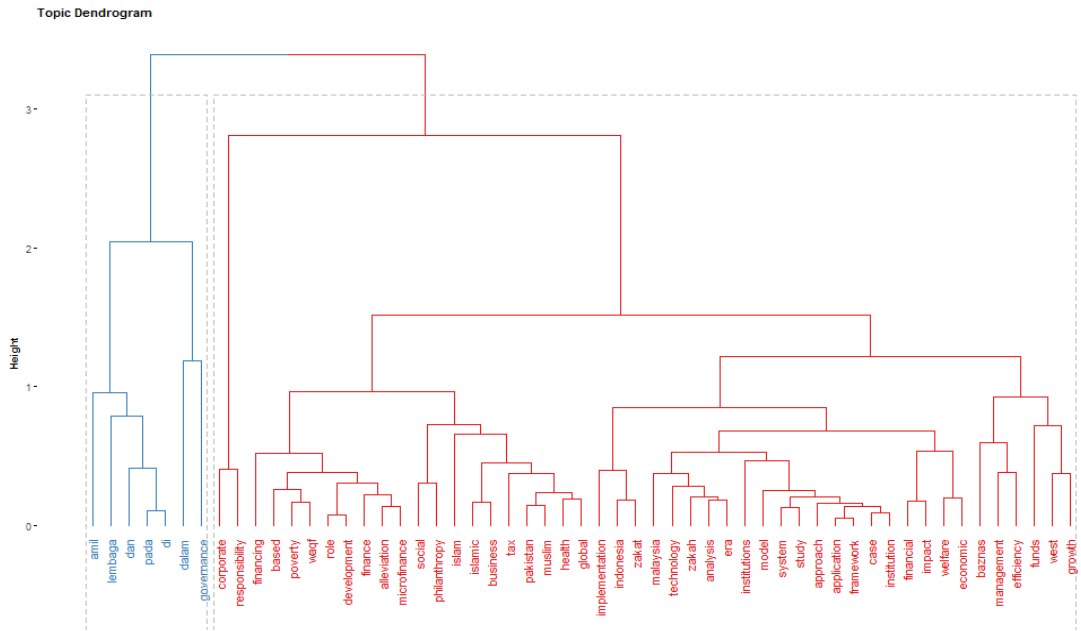

Figure 17. Topic Dendrogram Zakat and Technology

Furthermore, namely the collaboration network, or a collaboration network between the authors of the paper on the theme of zakat and technology. In the picture above, you can see several authors' names that are displayed and some have a connection and some are not. The relationship between the authors is shown by clusters of color equations and lines between one name and another. The size of each square also indicates the number of papers published on this theme.

From the results of the above analysis, it is known that the word 'zakat' is used more frequently or dominantly in research themes which are the subject of current research. Where the domination of the word zakat illustrates that the relationship between researchers or authors to do problems related to zakat is interesting to do. This is also influenced by issues related to technology in particular which are closely related to financial technology as a means of paying zakat.

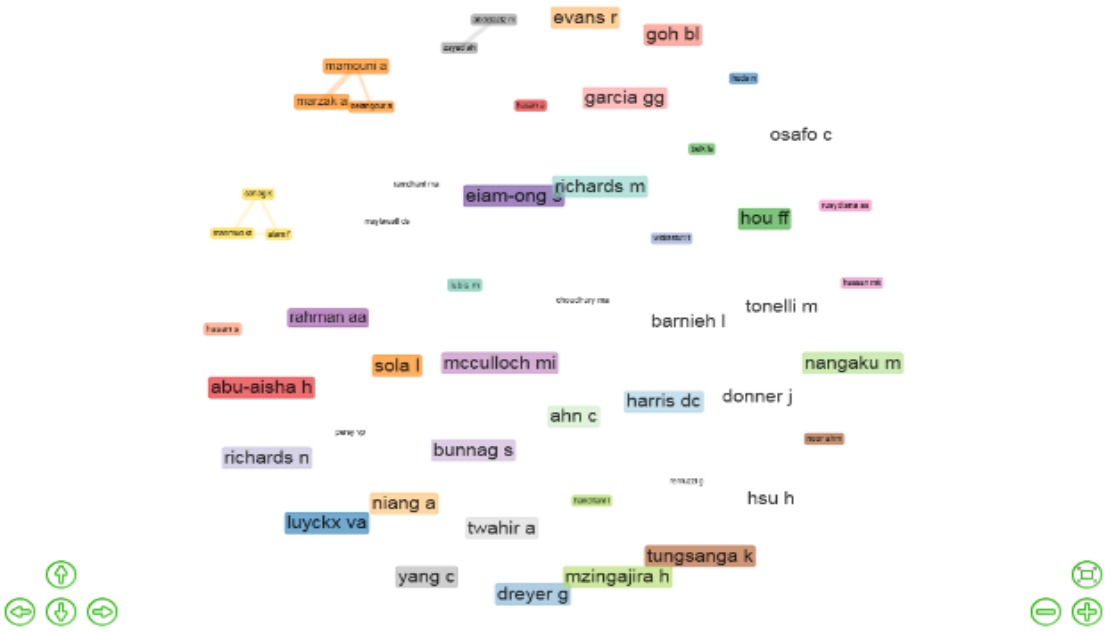

Figure 18. Collaboration Network Zakat and Technology

Figure 18 shows the collaboration between the 3 writer clusters. The first cluster in gray shows the collaboration between Abdelaziz M and Zayed Ah. Then the second cluster in orange shows the collaboration between Mamouni A, Marzak A, and Belangour A. Finally, the third cluster in yellow shows the collaboration between Sohag K, Mahmud Kt, and Alam F. There is a collaboration between the author and other writers in making papers related to the theme of zakat and technology.

DISCUSSION

The existence of fintech is a form of innovation made to make it easier for people to give Zakat. Like the National Zakat Agency (BAZNAS) in 2018 collaborating with one of the fintech companies, Gopay, by forming the GoZakat application to provide convenience for zakat digitally for the people of the capital city of DKI Jakarta (Ichwan, 2020). In line with these conditions, the topic of zakat on the Trend Topic chart above from 2018 to 2020 is at the top position compared to other topics that often appear.

Also, what is interesting about this research is that Indonesian topics or words include topics or words that are often used

in these studies. Where in Indonesia, the management of zakat is not only managed by the government and the private sector, but some are managed individually. Also, zakat management institutions in Indonesia are not only one institution, so this is one of the factors that Indonesia's topic is high in this study. Like the research conducted by Hayati and Putri (2019) which measures the efficiency of OPZs in Indonesia such as BAZNAS, Rumah Zakat, PKPU, and Yatim Mandiri in their research and many more OPZs both registered and not.

In the collection of zakat in Indonesia, namely related to corporate zakat or business undertaken. Three bodies play an important role in the implementation of zakat on businesses/companies in Indonesia including the government, the Indonesian Accountants Association (IAI), BAPEPAM, and the Indonesia Stock Exchange (BEI). The role of the Indonesian government is to form laws related to business zakat, while IAI establishes accounting standards related to business zakat. Meanwhile, the Indonesian capital market sector through BAPEPAM and IDX through the establishment of regulations in the stock market regarding business zakat (Andriani & Mairijani, 2017).

Another finding in this study is that Malaysia is the country with the highest correspondence for authors in the study. This condition cannot be separated from the high level of research related to zakat in Malaysia. Malaysia itself is one of the countries that regulate the issue of zakat, even though this is determined by the power of each country (Wira, 2019). Administratively, all aspects of zakat in Malaysia are managed by each state Islamic Religious Council (MAIN). Where MAIN's task is to centralize the implementation of all religious activities at the state level, including the collection and distribution of zakat (Yusuf & Derus, 2013).

Also, based on the correspondence country of the highest authors, there are Brunei Darussalam and Qatar in the 3rd and 4th positions after Indonesia. This is because of the zakat potential of the two countries, which are OIC member countries with the highest income according to the World Bank. Brunei Darussalam itself manages zakat by the Islamic Religious Council of Brunei (IRCB) under the Brunei Ministry of Religion. In 2017 the IRCB reported that the total zakat collected was BN $ 18,434,856 which came from zakat fitrah and zakat maal. Meanwhile, Qatar's management of zakat is under the Ministry of Awqaf and Islamic Affairs with total zakat funds distributed of QR 13,699,623 in October 2018 (Muhammad, 2019).

CONCLUSIONS

The research was conducted to determine the development of research on Zakat and Technology in Islamic economic and financial research during the period 1986 to 2020. The 440 documents used in this study indicate that research with the theme of zakat and technology has increased every year. As for the author who often researches with zakat and technology, namely Kuran T during the research period, he consistently researches this theme. While the keywords that are often used in research on zakat and technology are the words zakat, Islamic, and Indonesia.

So that the development of research on the method of zakat and technology is increasingly developing and inseparable in Islamic economic and financial research. Therefore, research with the theme of zakat and technology needs to be developed extensively in Islamic economic and financial research.

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