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A New Framework for Examining the Role of Local Knowledge and Technology Infrastructure on the Performance of Zakat Distribution Management

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Abstract

The primary goal of zakat distribution management is to strengthen the distribution process by efficiently distributing zakat aids to zakat recipients. Numerous organizations' performance has evolved recently due to emerging technological infrastructure. The incorporation of local knowledge and technology infrastructures such as IoT and cloud computing was highlighted in this article as a crucial component for the performance of zakat distribution management. The sample consists of employees from zakat institutions. A response rate of 65% (130) was obtained from the sample. Version 3.2.8 of Smart-PLS was used to evaluate the data. This study discovered a positive relationship between local knowledge, Internet of Things (IoT) service, and cloud computing with the performance of zakat distribution management. Any zakat organization attempting to improve zakat distribution management must pay close attention to these variables. Distribution management is a zakat institution's most significant and essential aspect. The zakat institution administers each part from the outset, including the zakat application, delivering aid to the recipient, and monitoring once the aid has been delivered. Managing a zakat distribution requires broad and accurate information platforms. As a result, it's crucial to deploy comprehensive dimensions such as local knowledge, IoT, and cloud computing in zakat distribution management.

Keywords: Zakat Distribution Management, Local Knowledge, Iot Services, Cloud Computing, Zakat Institution Performance.

Introduction

The consideration of sustainability in creating balance in society and never letting poor and needy people suffer has been enhanced by incorporating sustainable development approaches into zakat management and planning. By utilizing the innovation in information and communication technology, the beginning idea of sustainability in creating societal

balance has been recognized as a strategy for achieving sustainability (Wenyu et al., 2013). The zakat institution is gradually establishing and managing sustainability in attaining societal balance to satisfy the fundamental necessities of the entire ummah and improve efficiency. (Mutamimah, et al., 2021). Additionally, zakat institutions have advanced elements like technology, multiple zakat payer approaches, and asnaf assistance (Salleh & Chowdhury, 2020). In the context of asnaf, they suggest enhancements, including customized zakat aids, faster distribution, greater credibility, and high-quality aids (Owoyemi, 2020). Therefore, zakat institutions must adhere to guidelines and principles when distributing zakat, affecting quality and punctuality. The last factor to consider for a zakat institution to achieve well-being is versatility in speed and quality in the distribution of the zakat aids (Nawai & Ruzaiman, 2022).

On the contrary, research into zakat distribution management has become a notable area for offering cutting-edge ways for zakat institutions to create long-lasting performance (Abd Rahman et al., 2021). Most research concentrated on how information technologies could assist with zakat distribution management. According to research on the role of information technology in zakat distribution management, it dramatically benefits transparency and accountability (Utami et al., 2021). Today, the Internet of Things (IoT) or cloud computing creates an adequate basis to practically demonstrate every aspect of contemporary society (Brous et al., 2020; Modisane & Jokonya, 2021). Cloud computing strives to offer users a variety of IT-based facilities by ensuring their responsiveness, accessibility, security, and sustainability. Internet of Things (IoT), on the other hand, makes it possible for physical items and organizational databases to connect simultaneously (Kuzlu et al., 2021). IoT has revolutionized modern society by connecting multiple cutting-edge technologies and making life more interconnected (Lawal & Rafsanjani, 2022; Balaji et al., 2019).

Knowledge is also crucial for organizational survival, strength, growth, and success (Meinhold, & Malkus, 2005). It is the cornerstone for developing essential abilities that provide strategic advantages and enhance organizational performance (Nisar et al., 2019). Furthermore, the zakat distribution management aims to improve long-term results by establishing a harmonious society and preventing a poor or needy person from enduring (Ab Rahman & Yeap, 2019). Zakat distribution management has been considered an essential element to enhance the overall performance of zakat institutions because poverty is a significant problem in Malaysia (Rosli et al., 2018).

Zakat distribution management has recently received considerable academic and professional research attention (Rosli et al., 2018; Alshater et al., 2021; Ahmad et al., 2015). As a result, an effort to create a structure for implementing a successful zakat distribution management emerges. The effectiveness of organizational processes and performance can be improved with a well-structured and precise achievement distribution management. Several obstacles regarding zakat distribution management in Malaysia include expenses, complexity, implementation of distribution parameters, and visibility (Ab Rahman & Yeap ,2019). Consequently, zakat distribution management issues can be resolved using modern technologies like IoT service and cloud computing. This article presents a conceptual framework to investigate the role of local knowledge, IoT services, and cloud computing in the performance of the zakat distribution management system.

Literature Review

According to Mutamimah et al. (2021), the zakat distribution management incorporates every aspect of infrastructure, resources, procedures, and activities to generate benefits for zakat institutions. One of the applied techniques is to improve the performance of zakat distribution management (Elsayed & Zainuddin, 2020). It involves managing the zakat collection and distribution (Beik et al., 2021; Ag Omar, 2019). Zakat institutions must implement strategic zakat distribution management to reduce poverty and enhance economic empowerment (Bouanani, & Belhadj, 2020). Hence, this section summarizes the literature on zakat distribution management systems, local knowledge, information technologies, and organization performance in zakat institutions.

Razak (2020) have created a simple method that identifies key factors to consider when enhancing sustainability for achieving social harmony and never letting poor or needy people suffer. The information was acquired using a repository research technique and semi-structured interviews with Malaysian-based practitioners. The outcome demonstrated that in order to alleviate poverty, it should take into account management, accessibility, infrastructure, services and technology in order to provide its people with a sustainable and prosperous.

Wang (2020) studied the IoT's impact on alleviating poverty. The results of this study show how cutting-edge operations made possible by technologies (such as mobile phones, online platforms, blockchain and the Internet of Things) may encourage people to fight against poverty and starvation by promoting their accessibility to clean water, education, and employment opportunities.

Syed Yusuf et al. (2022) assess the feasibility of zakat distribution management. This study found that technology improvement and governance significantly influence the performance of zakat distribution management. According to this study, technology plays a crucial part in the efficiency of zakat distribution by enabling faster data analysis, easy access to data, and reduced work completion durations. This study further assists zakat institutions in creating effective zakat distribution plans and enhancing their management and governance structure by using modern technology.

Research hypotheses and conceptual framework

Research hypotheses and a conceptual framework are displayed in Figure 1. This framework illustrates how local knowledge, IoT services, and cloud computing could improve the performance of the zakat distribution management. The constructs chosen for this study include local knowledge, IoT services, cloud computing, and organizational performance. This study shall thus investigate the following hypotheses.

Local knowledge

Knowledge has become expensive due to numerous advancements in a new information culture (Bordignon, 2022). The traditional definition of knowledge is accurate and justified beliefs (Bolisani et al., 2018). Incorporating local knowledge is a good strategy for collecting fundamental aspects for zakat institution management. Local knowledge includes problems, awareness, and high knowledge (Canagarajah,2002). Local knowledge enables relief agencies to comprehend the specific needs of those affected. Locals are familiar with the customs, cultures, and way of life in their neighborhoods, which has an essential effect on the kinds of aid needed and how it should be delivered. Beside that, local information regarding the area's geography, including access routes, road conditions, and potential hazards, is crucial. Planning and carrying out a secure and efficient aid distribution need this information. In light of this,

this research regards the performance of zakat distribution management systems as dependent upon local knowledge. This study presumes whether local knowledge enhances the performance of zakat distribution management systems by:
H1. Local knowledge has a positive relationship with the performance of zakat distribution management.

Internet of things
A network of physical objects that collect, transmit, and exchange data over the internet is known as the Internet of Things (IoT). Examples of IoT devices include detectors, surveillance equipment, household devices, and automobiles (Ma et al., 2019). IoT devices in the public sector will provide individuals and government agencies with cutting-edge services (Ma et al., 2019; Chohan & Hu,2020). IoT may benefit users by providing solutions that not only reduce both money and time but also improve life and assist governments in optimizing the allocation of resources. Although there is no denying that IoT can contribute to economic prosperity and social welfare, its adoption cannot be assured without deliberate efforts to foster a pro-innovation atmosphere. In order to maximize the distribution of aid to recipients, the Internet of Things (IoT) can play a critical role. IoT sensors can be installed on equipment and transportation. Aid teams may track the movement of assets and ensure that aid efficiently serves its targeted recipients by using these sensors, which can offer real-time location data. IoT technology can allow recipients and zakat institutions to communicate in both directions. Recipient input on the effectiveness of aid delivery and quality can be provided via mobile applications or SMS-based systems, enabling organizations to improve continuously. Beside that, zakat institutions may respond to recipients more quickly and provide aid where needed by utilizing IoT technology. Since zakat institutions can leverage IoT services to strengthen communities, this research advocated the following:
H2. IoT service has a positive relationship with the performance of zakat distribution management.

Cloud computing
A revolutionary new strategy for utilizing the potential of the internet to provide infrastructural and software assistance for organizations worldwide is called cloud computing. Using this technology can improve organizational communication and benefit small businesses fiscally and logistically. Additionally, organizations can leverage web-based software to streamline interactions with wholesalers, clients, and manufacturers while using these interactions to assess their external setting (Alqahtani et al., 2022). In several studies such as Shetty & Panda (2021); Assante et al. (2016); Carcary et al. (2014), authors have outlined the factors that lead small enterprises to migrate to the cloud and the effects of this migration. The fundamental discovery is that it enables small organizations to accelerate activities and reduce time for delivery.

Zakat distribution management can store essential information about recipients, inventories, and logistics using cloud systems, which offer a centralized private archiving setting. In remote areas or from any place with access to the internet, such information makes it easier for zakat institution workers to collaborate. In addition, no matter where they are physically located, zakat institution workers can correspond with those involved and organize operations using cloud-based communication tools, including email, video conferencing, and document-sharing platforms. This is essential for the efficient management and delivery of aid. Hence:

H3. Cloud computing has a positive relationship with the performance of zakat distribution management.

Methodology

The staff of the zakat institution participated in a cross-sectional survey between December 2022 and Mac 2023. A random sampling technique was from various institutions that could be reached and were open to participating in the survey. Hair et al. (2019) assert that the power analysis should determine the minimum sample size according to the number of predictors in the research framework. Cohen (1992) created a method for estimating sample size based on statistical power, the smallest R^2 value, the significance level, and the path's complexities. In the present study, a minimum number of samples of 114 was needed to find an R^2 value of at least 0.10 with 80% indicated statistical power and a 5% significance level.

One hundred thirty valid responses were gathered from 200 surveys given to zakat institution staff. The actual response percentage was 65%. According to Goudy (1976), the appropriate range for percentages of responses might span from 30% to 70%. The 130 total responses in the current study meet the minimal sample size criterion for PLS-SEM analysis because they are higher than the 103 response threshold Cohen (1992).

Measures

All of the constructs' measurement items were modified from existing research. The individual level served as the analysis unit because the study focused on the perceptions of zakat institution staff. The construct of local knowledge, including awareness, experience, and knowledge, was extracted from Gatersleben et al. (2002). This item utilized one represented for strongly disagree and five for strongly agree. Meanwhile, the four-item scale created by Papert & Pflaum (2017) was chosen to measure IoT services. Responses were scored using a 5-point Likert scale, where one represented strongly disagree, and five represented strongly agree. Finally, four items for cloud computing were selected from Jun & Wei (2011). The responses were scored on a 5-point Likert scale.

Results

Profile of respondents

The respondents' profile demonstrates that respondents have the necessary background and position to participate in the study. Men comprised a significant number of the respondents (60.8%), while women comprised 39.2%. Only 37.7% of respondents were under the age 35, with approximately 62.3% being beyond that age. The results showed that the majority of respondents (82.7%) had a history of employment that reached more than ten years, whereas just a small number of people (17.3%) had employment that spanned fewer than ten years.

Data analysis

Partial least squares (PLS) modeling with the SmartPLS 3.2.8 version was used to evaluate the measurement and structural model (Ringle et al., 2015). The partial least squares was used as a statistical technique because it does not demand the premise of normality (Goodhue et al., 2012). PLS-SEM was used in the present study because it contains several independent and dependent relationships and reflective measurements (Sheko & Spaho, 2018). Since the data were gathered from a single source, testing the collinearity is recommended to solve the common method bias problem (Sohnchen, 2007). The analysis reveals that the VIF value is less than 5, demonstrating that single-source bias did not represent a serious issue.

Measurement model

Following the recommendations of Hair et al. (2020), the reliability and validity of the employed instruments were first evaluated by examining the measurement model. After that, the established theory was tested using the structural model. The loadings, average extracted variance (AVE), and composite reliability (CR) were evaluated for the measurement model. The values of loadings = ≥ 0.5, AVE = ≥ 0.5, and CR= ≥ 0.7. Table 1 demonstrates that all AVEs and CRs were greater than 0.5 and 0.7, respectively. The loadings were also accepted. Henseler et al. (2015) evaluated the discriminant validity using the HTMT criterion. The HTMT values ought to be between 0.85 and 0.90. As seen in Table 2, none of the HTMT values met the higher requirement of 0.85. As a result, it can be said that the respondents were aware of the differences between the four constructs. These validity evaluations demonstrate that the measuring items were reliable and accurate.

Table 1:
Measurement analysis

Constructs	Items	Loading (>0.5)	CR (>0.7)	AVE (>0.5)
Local knowledge	RK1	0.784	0.899	0.726
	RK2	0.796		
	RK3	0.801		
IoT Service	IOTS1	0.892	0.870	0.691
	IOTS2	0.776		
	IOTS3	0.712		
	IOTS4	0.800		
Cloud computing	CB1	0.723	0.856	0.755
	CB2	0.775		
	CB3	0.811		
	CB4	0.840		
Zakat distribution performance	ZOP1	0.816	0.932	0.854
	ZOP2	0.733		
	ZOP3	0.719		
	ZOP4	0.722		

Table 2:
Discriminant validity (HTMT)

	Local knowledge	IoT service	Cloud computing	Zakat distribution performance
Local knowledge				
IoT Service	0.423			
Cloud computing	0.551	0.624		
Zakat distribution performance	0.573	0.620	0.652	-

Structural model

The structural model was examined using the path coefficients, standard errors, t-values, and p-values (Hair et al., 2019). First, the relationship of the three variables on the performance of zakat distribution was evaluated in Table 3. The R^2 value of 0.485 indicates that local knowledge, IoT services and cloud computing explained 48.5% of the performance of zakat distribution. Local knowledge (β = 0.233, t = 2.999, p = 0.001), IoT service (β = 0.233, t = 2.999, p = 0.001), and cloud computing (β = 0.233, t = 2.999, p = 0.001) had a positive relationship to zakat distribution management performance. H1, H2, and H3 were therefore accepted.

Table 3:
Hypothesis testing

	Paths	Std. Beta	Std. Error	t-value	p-value	BCI		Decision	R^2
						LL	UL		
H1	LK→PER	0.254	0.088	2.898	0.002	0.096	0.387	Supported	0.485
H2	IOT→PER	0.287	0.097	2.911	0.003	0.212	0.436	Supported	
H3	CC→PER	0.212	0.109	1.996	0.024	0.018	0.397	Supported	

Discussion

Table 3 presents the results of the path coefficient suggesting that local knowledge strongly influences the performance of zakat distribution management (β = 0.254, t = 2.898, p = 0.002). The performance of zakat distribution management will benefit from local knowledge. Local knowledge has been demonstrated to be indirectly related to organizational performance in earlier investigations (Kordab et al., 2020).

Additionally, H2 asserts that IoT positively correlates with the performance of zakat distribution management by β = 0.287, t = 2.911, p = 0.003. IoT is the term used to describe data collection, sharing, and processing over an internet connection or other forms of communication. It has been widely adopted and has succeeded in many fields, including statistical analysis and intelligent distribution management. IoT services will benefit the performance of zakat distribution management in zakat institutions. The findings for this hypothesis are in line with those from Nayal et al.(2022);Ahmad et al. (2021); Yu & Moon (2021).

Furthermore, zakat distribution management's performance was substantially impacted by cloud computing (β = 0.212, t =1.996, p = 0.024). H3 was consequently accepted. Due to the growing complexity of the zakat aid distribution process, data and information must be exchanged in more significant quantities. Cloud computing could help with several issues with aid distribution management, including inadequate time management and scheduling, inadequate planning, inappropriate delivery, defective (inaccurate) item deliveries, and inefficient on-site coordination. The performance of zakat distribution management in distant areas of recipients will thus be influenced favourably by cloud computing. This hypothesis's findings align with those of Cao et al. (2017); Mukherjee et al. (2022). Table 3 presents a summary of the findings from the hypotheses tests.

Contribution

Theoretical contribution

In order to improve our comprehension of how zakat aid is distributed and its effects on asnaf, theoretical contributions to the study of zakat distribution management are crucial. The most effective and efficient way for zakat institutions to distribute zakat aid has been investigated via a theoretical framework. Various parties involved in zakat distribution, such as zakat payers, zakat institutions, and zakat recipients, can communicate, coordinate, and share data more easily with the help of technology infrastructure, such as IoT services and cloud computing. Additionally, a framework for local data collecting and monitoring investigates the use of local knowledge to gather and analyse data pertinent to zakat distribution, assisting zakat institutions in making achievable decisions.

Managerial contribution

For zakat institutions involved in providing zakat aid to asnaf, having an understanding of local knowledge is a crucial aspect. Local knowledge assists the zakat institution in carrying out needs evaluations that are more precise and situation-specific. Zakat institutions can deploy resources more wisely if they know the local environment. The most significant benefit is that by considering local knowledge, zakat institutions may create zakat aid programs that will have a longer-lasting effect on the zakat recipient because it will follow community needs and promote sustainable growth.

There are several significant advantages of utilizing IoT (Internet of Things) in zakat aid distribution by zakat institutions, which can improve the efficiency and effectiveness of their efforts to help asnaf. IoT can assist zakat institutions in decreasing their operational expenses, allowing them to invest more money toward charity projects. To safeguard the integrity of the zakat institution operations, IoT can prevent and identify theft or fraud in delivering zakat aid. Furthermore, IoT can support healthcare-related aid projects by monitoring asnafs' health and well-being, particularly in remote or less fortunate locations.The application of IoT will eventually improve the social impact of zakat institutions, enhancing the lives and livelihoods of asnaf.

Limitations and future work

This study's first drawback is that it focuses on a small number of industries and is not advised to extend its conclusions to other fields. Since each respondent provided their information, the responses may have been biased. It is advised that other charity/philanthropy intuitions be used to determine the practicality of this research framework. In the future, research may concentrate on establishing a data and network structure for the completely merged IoT devices in zakat distribution management, reviewing the guidelines needed to employ IoT technology, simulating distribution management via IoT and cloud computing, and assessing the upfront costs needed for setting up these technologies in numerous sectors. Additionally, the zakat institution leverages technology and information to improve public services, encourages economic growth, and offers a sustainable method by enhancing distribution management facilities. Therefore, future studies might look at the condition of the existing and required infrastructure for utilizing these technologies.

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