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Public fund utilization and local resilience: examining the role of the LDRRMF and 20% development fund in pandemic crisis mitigation in Iligan City

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Abstract. The Local Disaster Risk Reduction and Management Fund is a program that mandates the local government units to set aside 5% of their total budgets for disaster risk reduction programs, projects, and activities. In like manner, the twenty percent (20%) Development Fund is an appropriation of the total annual budget no less than 20% for development projects. In March 2020, provisions of additional policy guidelines for the utilization of both funds were laid down to address the pandemic crisis. This study aims to examine and assess the utilization and expenditure of both funds in mitigating the pandemic crisis in the city government of Iligan, province of Lanao del Norte. It employs quantitative research design. The data collected were taken from official documents, namely, full disclosure policy forms no. 8 and no. 7; and the cases information in the COVID-19 tracker on the official website of the Department of Health. The Wilcoxon signed-rank test was used to measure the variable taken at two different time points and conditions, and a linear regression was used to analyze the relationship of the variables. The results show a significant difference ($z = –2.934$, $p < 0.001$) between the scores given before and after the implementation of the additional policy guidelines on the utilization of both funds, with a large effect size ($r = 0.88$). The Shapiro — Wilk test was conducted to test the normality of the data ($p > 0.5$) for regression analysis. Consequently, the data is normally distributed. The regression analysis shows a significant effect of the utilization of the fund to mitigate the crisis. The findings underscore the importance of policy enactments that provide temporary interventions in the aspect of fund utilization to combat the crisis. The study contributes to understanding how policy interventions contribute to mitigating the crisis, providing valuable initiatives for policymakers.

Keywords: budget allocation, regulatory adjustments, public health response, community resilience, municipal intervention strategies, adaptive local policymaking

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Управление местными государственными фондами и устойчивость города: оценка эффективности LDRRMF и 20-процентного фонда развития в период пандемии в городе Илиган

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Аннотация. Фонд по снижению риска бедствий и управлению ими на местном уровне — Local Disaster Risk Reduction and Management Fund (LDRRMF) представляет собой программу, обязывающую органы местного самоуправления выделять 5 % своих совокупных бюджетов на реализацию мероприятий, проектов и программ в области снижения риска бедствий. Аналогичным образом, 20%-й Фонд развития предусматривает ассигнование не менее 20 % от общего годового бюджета на проекты развития. В марте 2020 г. установлены дополнительные нормативные рекомендации по использованию обоих фондов в целях реагирования на пандемический кризис. Цель исследования — проанализировать и оценить использование и расходование средств фондов для смягчения последствий пандемии в органах городского управления Илигана (провинция Ланао-дель-Норте, Филиппины). Применен количественный исследовательский дизайн. Сбор данных осуществляли на основе официальных документов, а именно: форм политики полного раскрытия информации № 8 и 7, а также сведений о числе случаев заболевания, размещенных в COVID-19-трекере на официальном сайте Министерства здравоохранения Филиппин. Для оценки переменных в двух различных временных точках и условиях использовали критерий Уилкоксона для связанных выборок. Линейная регрессия применялась для анализа взаимосвязи между переменными. Результаты исследования продемонстрировали статистически значимое различие ($z = –2{,}934$, $p < 0{,}001$) между показателями до и после введения дополнительных нормативных рекомендаций по использованию фондов, причем наблюдается большой эффект ($r = 0{,}88$). Для регрессионного анализа провели проверку нормальности распределения данных с помощью критерия Шапиро — Уилка ($p > 0{,}5$), показавшую, что данные имеют нормальное распределение. Регрессионный анализ выявил значимое влияние использования фондов на смягчение последствий кризиса. Полученные результаты подчеркивают важность нормативных актов, обеспечивающих временные механизмы корректировки порядка использования бюджетных средств в условиях кризиса. Исследование вносит вклад в понимание того, каким образом такие политико-административные меры способствуют снижению последствий кризисных ситуаций, и предоставляет ценные ориентиры для лиц, принимающих решения.

Ключевые слова: распределение бюджета, нормативные корректировки, реагирование системы здравоохранения, устойчивость сообщества, муниципальные стратегии вмешательства, адаптивная муниципальная политика

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Introduction

The socio-economic and political conditions of the Philippines have changed rapidly due to yearly crises and disasters brought about by various phenomena [1–4]. Study shows that these crises pose challenges for both national and local governments due to their failure of administrative execution in terms of legal systems, budgets, and other mechanics [5–8]. To address these issues, several studies suggest proper utilization of funds and legislation of timely policies are a means to an end [9–11]. However, fund utilization reaps particular attention in every aspect of financial management to frustrate negative effects of disasters and crises. When resources are utilized to its fullest potential, national and local governments can withstand destructive effects of the crisis. Therefore, it is crucial to guarantee that the state operates efficiently in the utilization of financial resources to combat crisis. Consequently, utilization of funds during the pandemic crisis played an important role in mitigating the spread of the virus. The Local Disaster Risk Reduction and Management Fund (LDRRMF) is a unique program that mandates the local government units to set aside five percent (5%) of their total budgets for disaster risk reduction programs, projects, and activities. Similarly, the twenty percent (20%) Development Fund is an appropriation of the total annual budget no less than twenty percent (20%) for development projects. In March 2020, provisions of additional policy guidelines for the utilization of both funds were laid down to address the pandemic crisis. With the approval of the utilization of the funds, local government units have no excuse for not being able to carry out projects, programs, and activities against the crisis. To assess the government initiatives on the provision of additional policy guidelines in the utilization of funds to combat the crisis, this study aims to identify and analyze the contribution of the extent of utilization and expenditure of both funds in mitigating the pandemic crisis in the city government of Iligan, province of Lanao del Norte. Iligan city is a highly urbanized city in region 10. Amidst the Pandemic, the city became one of the epicenters for Covid-19 transmission due to the regular commute of some residents in the nearby areas to the city [12].

Purpose of the study seeks to obtain the following objectives: 1) to examine the extent of utilization and expenditure of both funds before and after the implementation of the additional policy guidelines within the fiscal year 2020; and 2) to examine the relationship between the extent of utilization of the LDRRMF and contribution to the mitigation of the crisis.

Materials and methods

At the onset of Covid-19 pandemic, the world has observed an unprecedented enactment of laws to mitigate the crisis. In answer to the crisis, countries have reprogrammed their existing budgets, adopted supplementary budgets, and activated contingency funds through legislation. In addition, most countries even mobilized resources and accelerated emergency spending through dedicated Covid-19 extrabudgetary funds (EBFs) [12]. The study of Llosa and Zodrow [13] reveals the importance of legislation in reducing disaster risks. They highlighted the linking

of laws and policies across sectors. It was concluded in their study that legislation is the key requirement for effective, coordinating disaster risk reduction. In the Philippines, Section 4 of RA No. 11469 (The Bayanihan to Heal as One Act) granted the president the power to adopt temporary measures to combat the crisis brought about by the pandemic.[1] It allows the local government units to exercise their autonomy, defined by the parameters set by the national government to have a unified and orderly implementation of the national policy to address the pandemic. On March 26, 2020, Local Budget Circular No. 124 was issued to provide policy guidelines when allocating funds for programs, projects, and activities on the LDRRMF aimed at mitigating the pandemic crisis.[2] The LDRRMF is a program that mandates the local government units to set aside five percent (5%) of their total budgets for disaster risk reduction programs, projects, and activities. In addition, as stipulated in the local budget circular, the president suspended the mandated 30% cap on the amount appropriated for the quick response fund (QRF) on the LDRRMF for the purpose of timely and efficient response of the local governments to the crisis. In the same manner, the DILG-DBM Joint Memorandum Circular (JMC) No. 2020–1 dated March 27, 2020, provided an additional guideline on the utilization of the 20% development fund in view of the pandemic situation.[3] The twenty percent (20%) Development Fund is an appropriation of the total annual budget no less than twenty percent that is spent exclusively on development projects, programs, and activities. However, upon the advent of Covid-19 pandemic, the JMC authorized the local government units to utilize the funds in order to mitigate the spread of the virus. The JMC enables the local government units to undertake critical, urgent, and appropriate disaster response aid and measures to eliminate the threat of the virus. Thus, it offers greater leeway and flexibility in the utilization of funds for a response effort to contain the spread of the virus and a continuous provision of basic services.

This study is anchored on Resource-Based View (RBV) theory. The theory was developed by Birge in 1984. It suggests that effective and efficient utilization of all useful resources that an institution can muster will determine its performance and competitive advantage [14]. According to Barney [15], and Kong & Prior [16], RBV is a strategic management of organizations that involves the leveraging of resources to achieve its objectives. Amidst crisis, when funds are optimally utilized, it helps the government tackle the problem immediately and efficiently. Pande & Pande [9] suggests that on a severe crisis or disaster, a high level of financial assistance from the state is vital. Furthermore, the review paper

[1] Bayanihan to Heal as One Act (Republic Act No. 11469). The LawPhil Project. 2020. URL: https://lawphil.net/statutes/repacts/ra2020/ra_11469_2020.html (accessed: 18.07.2024).

[2] Department of Budget and Management (Philippines). Local Budget Circular No. 124. URL: https://www.dbm.gov.ph/ index.php/local-budget-circulars?view=article&id=1342:local-budget-circular-no-124&catid=82 (accessed: 25.07.2024).

[3] Department of Budget and Management; Department of the Interior and Local Government (Philippines). Joint Memorandum Circular No. 2020–001 (DBM–DILG). URL: https://www.dbm.gov.ph/index.php/joint%20memorandum%20circulars?view=article&id=1294:joint-memorandumcircular-no-2020-001-dbm-dilg&catid=75 (accessed: 22.08.2024).

of Villacin [10], focusing on disaster financing for recovery and reconstruction, concluded that to mitigate the impact of disaster, the state needs to improve its overall risk financing and must be anchored on adequate, effective, cost-efficient and timely strategy. Various studies have been conducted for a possible link between fund utilization and crisis mitigation. The study of Prastica & Suswanta [17], showed that the eight indicators that determine the village fund in Batu Lambag Village were all effective in mitigating the pandemic crisis. It was concluded that the village fund was utilized to obtain the predetermined goals such as Cash Transfer, and the procurement of medical tools and equipment to mitigate the spread of the virus. Furthermore, the utilization of the said fund was done in a timely and economically feasible manner as prescribed in the orientation of the fund. Moreover, a study focused on the impact of fund utilization to the community welfare in the Klungkung Regency during the Covid-19 pandemic was conducted by Marhaeni et al., [18]. The result showed that there was a significant positive effect of the use of village funds on the welfare level of the population in the regency. It was observed that the effect of the village funds on the welfare of the respondents was relatively large. One variable has contributed more than 44 percent to the welfare level. The study concluded that the funds were an important source for various activities during the pandemic crisis.

The study employed quantitative research design. However, some qualitative information is supplemented in the discussions. The pertinent data were obtained from the official website of the city government of Iligan on the transparency panel under the FDP and the cases information in the COVID-19 tracker on the official website of the Department of Health (DOH). The documents obtained on the official website of the city government of Iligan are the FDP form no. 8 no. 7. On the FDP forms, only quarters 1st to 4th of the fiscal year 2020 to 2021 were collected and analyzed. Moreover, the cases information in the COVID-19 tracker was focused on the weekly cases by date of the onset of illness of the aforenamed year. The confirmed cases reported are those that tested reverse transcription polymerase chain reaction (RT-PCR) positive by a department of health — research institute for tropical medicine (DOH-RITM) certified lab.

The extent of utilization of the funds was determined by measuring the percentage change of the expenditures for Covid-19 programs, projects, and activities from quarters 1–2, 2–3, and 3–4 respectively. The Wilcoxon signed-rank test was used to compare the extent of utilization and expenditures of the funds before and after the implementation of the policy guidelines. Furthermore, the Simple linear regression was employed using statistical package for the social sciences (SPSS) version 25 to analyze the relationship between the predictor variable and the response variable. The predictor variable identified in the study is the extent of utilization of the LDRRMF. On the other hand, the response variable is the number of the weekly Covid-19 cases by date of onset of the illness in the year 2020. In addition, a trend analysis was used to observe a significant pattern of the two variables.

The Pearson's correlation coefficient of –0.769 confirms the linear relationship between the predictor and response variable. Considering the small sample

cases N = 8 < 50, the Shapiro-Wilk test was performed to assess the normality of the data set. For the predictor variable, the Shapiro-Wilk test showed normally distributed data, W(8) = 0.87, p = 0.158. Similarly, the response variable was found to be normally distributed, W(8) = 0.89, p = 0.244. The Durbin-Watson statistic was conducted to check the independence of observations. The result showed that the data met the assumption of independent errors, Durbin-Watson value = 1.848 [19–21]. The Dixon's Q test was conducted to check outliers for small cases of observation [22]. The Q statistic was calculated as follows:

For a Q statistic with sample size (n) of between 8 and 30, where $\mathbf{X_1}$ is the extremely low suspected value

$$Q_{\text{exp}} = \frac{x_2 - x_1}{x_{n-1} - x_1},$$

and $\mathbf{X_N}$ is the extremely high suspected value

$$Q_{\text{exp}} = \frac{x_n - x_{n-1}}{x_n - x_2}.$$

The corresponding Q-value for data set $\mathbf{X_1}$ of the predictor variable (utilization) is

$$Q_{\text{exp}} = \frac{32.56 - 6.09}{83.29 - 6.09} = 0.342;$$

and

$$\mathbf{X_N} \text{ is } \; Q_{\text{exp}} = \frac{84.29 - 83.29}{84.29 - 32.56} = 0.019.$$

For data set $\mathbf{X_1}$ of the response variable (Covid-19 cases) is

$$Q_{\text{exp}} = \frac{31 - 24}{113 - 24} = 0.078;$$

and

$$\mathbf{X_N} \text{ is } \; Q_{\text{exp}} = \frac{114 - 113}{114 - 31} = 0.012.$$

Consequently, Q-values of data set X_1 and X_N of the predictor and response variables are less than Q_{crit} value (=0.554, at CL:95% for N = 8). Thus, the suspected values are retained and used in all subsequent calculations [23].

White's General Test for heteroscedasticity and the Breusch-Pagan Test was performed to check if the residuals from a regression model exhibit heteroscedasticity. Homoscedasticity was confirmed, with a White's General Test result of X^2 = 5.14, p = 0.076; and Breusch Pagan Test result of X^2 = 3.27, p = 0.071 [24; 25].

Results

Table 1 shows the expenditure on the LDRRMF, and 20% development expended for Covid-19 PPAs. Considering that the policy guidelines for the LDRRMF and 20% development were issued in the last week of the month of March, the utilization of the funds was elevated in the second to fourth quarter. As observed in the table, the expenditure for Covid-19 projects, programs, and activities (PPAs) in 20% development funds was incurred in the third and fourth quarters. The observed utilization of the 20% development fund can be attributed to the issuance of additional guidelines under the department of interior and local government — department of budget and management (DILG-DBM) JMC No. 2020–1, which was released in the last week of March 2020. As presented in the accompanying table, a substantial portion of the fund was allocated to the procurement of emergency food and non-food supplies for locally stranded individuals (LSIs), frontliners, and constituents. Further allocations were directed toward the acquisition of personal protective equipment (PPE), COVID-19 testing kits, and rent expenses. Notably, a significant share of the resources dedicated to emergency food and non-food assistance for constituents reflects the local government's proactive engagement in aid distribution, emergency response, and relief operations during the COVID-19 pandemic (Table 1).

Table 1

The expenditures for Covid-19 PPAs on the LDRRMF and 20% development fund FY 2020

LDRRMF	1st quarter	2nd quarter	3rd quarter	4th quarter
Medicines	P 836.174.00	P 4.336.174.00	P 6.336.134.00	P 6.999.260.00
Food supplies	8.140.830.37	49.527.520.37	94.624.764.67	120.657.202.05
Equipment	105.000.00	2.232.550.00	5.048.966.00	9.328.631.44
MOOE	3.090.582.34	5.221.112.73	7.211.530.33	20.948.803.34
Transfers to LGU	—	3.806.106.21	604.090.61	10.637.502.63
20% Development Fund				
Emergency food and non-food for LSI	—	—	—	13.510.609.77
Emergency food and non-food for frontliners	—	—	—	14.999.850.00
Emergency food and non-food for constituents	—	—	29.999.905.00	—
PPEs	—	—	—	6.200.200.00
Covid–19 test kits	—	—	—	9.733.220.00
Rent expense	—	—	—	16.670.000.00
Total	**P 12.172.586.71**	**P 65.123.463.31**	**P 143.825.390.61**	**P 229.685.279.23**

Source: developed by L.M. Ozarraga according to the data[4] on full disclosure policy (FDP) forms.

[4] City Government of Iligan. Full Disclosure Policy. URL: https://www.iligan.gov.ph/transparency/fulldisclosurepolicy? 1204028001 (accessed: 15.09.2024).

The percentage change, detailed in figure 1, comprehensively explains the extent of utilization of the LDRRMF. It shows a percentage increase in the expenditures for Covid-19 PPAs from quarters 1–2, 2–3, and 3–4 respectively.

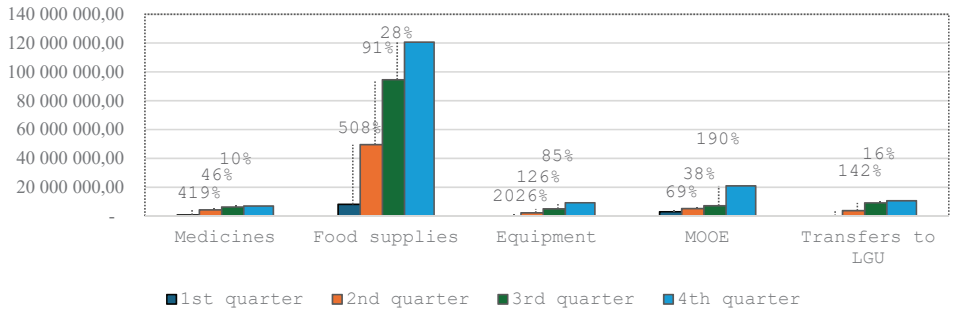

Fig. 1. Percent change of expenditures for Covid-19 PPAs in the LDRRMF
Source: made by L.M. Ozarraga according to the data with the use of MS Word.

The LDRRMF and expenditures for Covid-19 PPAs and the 20% development fund were spent predominantly on Food supplies. The underlying reason is the movement restriction imposed the government — locally known as the enhanced community quarantine (ECQ). It affected not only transportation but also the food supply and production of goods and services. Consequently, the implementation of the ECQ restricted household access to food supplies, leading the local government unit to augment its expenditure on food provision as a measure to mitigate food insecurity within the city.

The prevalence of food insecurity induced by the COVID-19 pandemic was not confined to Iligan City but was a widespread issue throughout the Philippines. This observation aligns with the findings of Angeles-Agdeppa et al. [26], who evaluated the food security status of Filipinos during the COVID-19 pandemic in the country. The result confirmed the premise as it showed almost two-thirds (62.1%) of the Filipino households experienced moderate to severe food insecurity when the strict community quarantine started. Villanueva et al. [27] also corroborated the idea as they concluded in their study that the majority (73%) of the respondents in Luzon, Visayas, and Mindanao were food insecure at the early stage of the community quarantine. The purpose of the ECQ is to contain the spread of Covid-19.

The measure is considered effective in mitigating the spread of the virus by interrupting person-to-person transmission. In April 2020, Mayor Celso Regencia announced that the city had stockpiled approximately 12.000 to 13.000 bags of rice (each weighing 25 kg), which were to be repackaged into 3 kg portions per family and distributed across 44 barangays. This initiative was funded through calamity and Bayanihan provisions.[5]

[5] Enriquez J. Iligan City Mayor Regencia commits at least PhP360 million to help Iliganons survive the coronavirus pandemic crisis. 2020.

A Wilcoxon signed-rank test indicated that the extent of utilization on both funds was significantly higher after the implementation of the additional policy guidelines in the third and fourth quarters than before the implementation in the first and second quarters, $z = –2.934$, $p = 0.000977$, with large effect size $r = 0.88$. The effect size was calculated by dividing the absolute value of the standardized test statistic z by the square root of the number of pairs:

$$\frac{z}{\sqrt{n}} = \frac{2.934}{\sqrt{11}} = 0.88.$$

The results demonstrate a sharp increase rate in the utilization of the LDRRMF in the 3rd and 4th quarters to address the impacts of Covid-19. This was done through the enactments of a policy response and several stimulus packages of the Acts legislated by the government.

As observed in the figure 2, Covid-19 hit hard in the city in the month of August. Despite the considerable amount appropriated to combat the spread of Covid-19 in the third quarter, an upward trend is observed in the active cases of Covid-19 in the city. Moreover, the city even imposed ECQ on the 17th day of the same month to mitigate the situation according to Iligan news 2020; however, the cases continue to rise. Consequently, it is important to consider the PPAs's estimated time to completion, which is most likely to take place at the end of the third quarter. Hence, a downward trend was observed in the month of September. Furthermore, a continued increase in the utilization rate is observed in the fourth quarter and thence the downward trend of the active Covid-19 cases continued into the last quarter of the year.

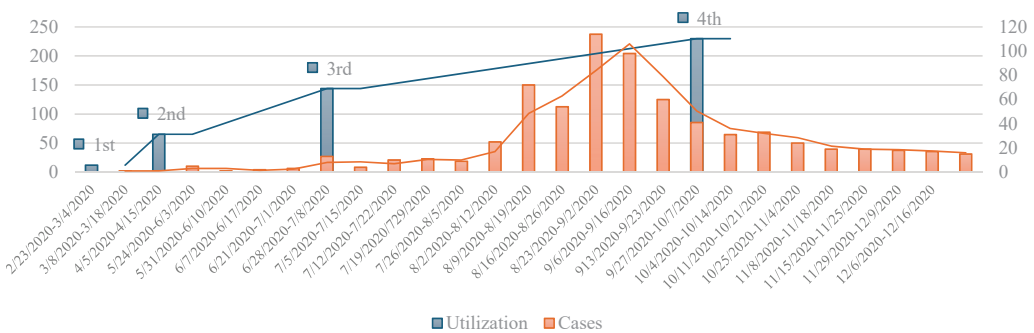

Fig. 2. Trend analysis on the extent of utilization and Covid-19 cases year 2020

Note. Utilization in millions.

Source: made by L.M. Ozarraga according to the data[6] using MS Word.

A similar trend can be observed in the relationship of the two variables in the year 2021. A substantial amount was utilized in the second quarter resulting

[6] Department of Health (Philippines). COVID-19 Case Tracker. URL: https://doh.gov.ph/diseases/covid-19/covid-19-case-tracker/ (accessed: 18.08.2024).

in a moderate upward trend in the active Covid-19 cases in the month April to May and a significant decline between the months of June to July. However, the decrease in the amount of fund utilization in the third quarter ensued a sharp increase of Covid-19 cases, specifically in the months of August and September. Moreover, a notable increase in the amount of fund utilization in the fourth quarter shows a relevant decrease in the Covid-19 cases from October to December. Therefore, the trend revealed in figures 2 and 3 suggests a consequential relationship between the extent of utilization of fund and the active Covid-19 cases.

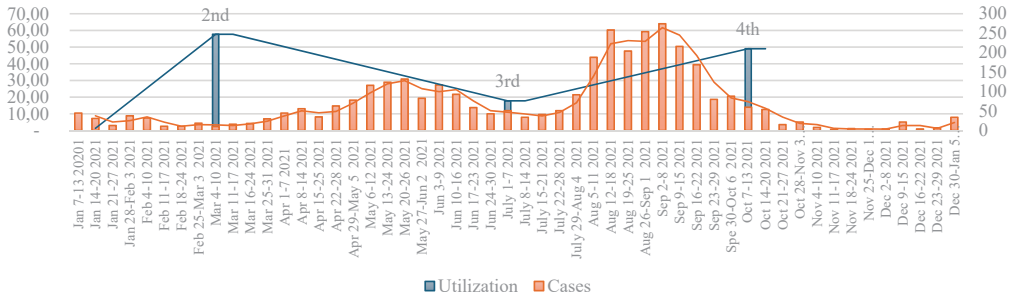

Fig. 3. Trend analysis on the extent of utilization and Covid-19 cases year 2021

Note. Utilization in millions.

Source: made by L.M. Ozarraga according to the data[7] using MS Word.

The result of the simple linear regression certifies a negative correlation between the two variables (–0.769). The model test confirms the utilization of funds as a precise model for predicting the active Covid-19 cases. This can be seen from the results of the ANOVA test with a significant value of 0.026. A significant regression was found $F(1,6) = 8.70$, $p = < 0.05$. Considering the small cases of observation, the adjusted R^2 is considered. The Adjusted R^2 is 0.524, indicating that the extent of the utilization of the funds explained approximately 52.4% of the variance of the active Covid-19 cases. The regression equation is:

$$Active\ Covid-19\ cases = \\ = 93.79 + \left[-0.80\left(extent\ of\ utilization\ of\ the\ funds\right)\right].$$

That is, for each additional unit in extent of utilization of the funds, there is an average decrease of –80 units in the active cases of Covid-19. This negative relationship between the extent of utilization of funds and the active cases of Covid-19 was found to be statistically significant $\beta = -0.80$, $t = -2.95$, $p = < 0.05$, affirming the predictive power of extent of utilization on active cases of Covid-19.

The results stress the significance of the extent of utilization as a determinant of the active cases of Covid-19. The significant regression coefficient underscores the importance of considering the extent of utilization of funds in assessing the

[7] COVID-19 Case Tracker. *Department of Health (Philippines).* URL: https://doh.gov.ph/diseases/covid-19/covid-19-case-tracker/ (accessed: 18.08.2024).

active cases of Covid-19 for the mitigation and evaluations of the spread of crisis brought about by the Covid-19 pandemic.

In the regression model, the adjusted R^2 is 0.524. This suggests that approximately 52.4% of the variance in the active Covid-19 cases can be attributed to the extent of utilization of the funds. This effect size reflects a relatively large effect, highlighting the substantial role of the extent of utilization of funds in mitigating the spread of Covid-19 as it predicts the active Covid-19 cases in the city.

The findings emphasize the importance of legislation of policy intervention focusing on the increased rate of utilization of funds in mitigating the spread of the Covid-19 in the city government of Iligan, Lanao del Norte. By doing this, the local government is empowered to implement necessary, timely, and suitable disaster response assistance and countermeasures to reduce and ultimately eradicate the spread of Covid-19. It also allows the local government to offer impacted populace essential services.

Conclusion

The study provides a comprehensive analysis of how legislation of additional policy interventions focusing on utilization of funds can significantly contribute to the mitigation of the spread of the Covid-19 virus. Through the Wilcoxon signed-rank test and the regression analysis, critical aspects of the extent of utilization of funds have been identified as a significant driver for assessing and evaluating the potential enormity of the spread of the Covid-19 virus. The study concludes that legislation or enactments focusing on additional guidelines in the utilization of funds are integral in mitigating the spread of Covid-19. By providing the local government with greater leeway and flexibility in the utilization of funds through policy and enactments, it empowers them to implement necessary, timely, and suitable disaster and crisis response assistance and countermeasures to curtail or eliminate the threat of the virus and continue to provide basic services to the affected population. However, it is essential to recognize some significant confounding variables that mediate and moderate the spread of Covid-19. Future research should explore these variables and assess their contribution in mitigating the spread of the virus brought about by Covid-19.

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