BUDGETING BEHAVIOR: INDONESIAN LOCAL GOVERNMENT BUDGET PREDICTIONS

Mediaty ¹
Abdul Hamid Habbe ²
Sri Sundari ³
Anis Anshari Mas’ud ⁴
Andi Harmoko Arifin ⁵

ABSTRACT

Objective: The behaviors of overreaction and underreaction exhibited by public sector budget planners have an impact on the disparity between the initial budget set at the beginning of a period and the actual budget realization at the end of the period. This study aims to examine how budget planners in Indonesia predict budgets for local governments, specifically whether there is a difference in the overreaction or underreaction behavior of public sector budget planners among districts and cities in the South Sulawesi Province of Indonesia.

Theoretical Framework: This study aims to elucidate the cognitive mechanisms of representativeness bias and the anchoring-adjustment heuristic, which may impact the behavior of individual budget planners in determining budget amounts for future periods and their reliance on past information.

Method: This research employs a quantitative approach with a causal and explanatory study design. In this study, the independent variable is the behavior of public sector budget builders, while the accuracy of their predictions for the future budget of the public sector constitutes the dependent variable. The quantitative approach was selected because it aligns with the research’s objective of discerning potential misestimations in the behavior of budgeting teams when determining the budgetary allocations for the upcoming year in various patterns or conditions. The research’s respondents are the budgeting teams from various districts and cities in the South Sulawesi Province. To test the research subjects, a heuristic of representativeness and anchoring-adjustment is followed when utilizing patterns of revenue realization from previous years (time series).

Results and Discussion: This study found that the average Uncertainty in Budget Planner Predictions for Local Governments in each district and city in South Sulawesi, Indonesia, is consistent and does not exhibit significant differences. This research is highly significant as it can provide a valuable contribution to public sector budget planners in Indonesia when establishing budget amounts for the forthcoming period.

Research Implications: This study seeks to contribute to advancing research in the realm of public sector budgeting in South Sulawesi, particularly by providing an overview of the occurrence of overreaction and underreaction behaviors among the planners of Local Own-Source Revenue (PAD) budgets in South Sulawesi Province.

Originality/Value: The novelty of this study lies in the empirical validation of the utilization of the concepts of representativeness and anchoring-adjustment in the behavior of public sector budget planners when determining the budget amounts for the upcoming period.

¹ Faculty of Economics and Business, Hasanuddin University, Makassar, Indonesia. E-mail: unhasmediaty@gmail.com Orcid: https://orcid.org/0000-0003-1278-6402
² Faculty of Economics and Business, Hasanuddin University, Makassar, Indonesia. E-mail: hamidhabbe@gmail.com Orcid: https://orcid.org/0000-0002-9727-3499
³ Faculty of Economics and Business, Hasanuddin University, Makassar, Indonesia. E-mail: sriamir66@gmail.com Orcid: https://orcid.org/0009-0000-1116-0219
⁴ Faculty of Economics, Universitas Sulawesi Barat, West Sulawesi, Majene, Indonesia. E-mail: anisanshari177@gmail.com Orcid: https://orcid.org/0000-0003-2985-490X
⁵ Faculty of Economics, Universitas Terbuka, Banten, Tangerang, Indonesia. E-mail: andiharmoko@ecampus.ut.ac.id Orcid: https://orcid.org/0000-0003-1407-6797
COMPORTAMENTO ORÇAMENTAL: PREVISÕES ORÇAMENTÁRIAS DO GOVERNO LOCAL DA INDONÉSIA

RESUMO

Objetivo: Os comportamentos de reação exagerada e insuficiente exibidos pelos planejadores orçamentários do setor público têm um impacto sobre a disparidade entre o orçamento inicial definido no início de um período e a realização real do orçamento no final do período. O objetivo deste estudo é examinar como os planejadores orçamentários da Indonésia preveem os orçamentos para os governos locais, especificamente se há diferença no comportamento de reação exagerada ou insuficiente dos planejadores orçamentários do setor público entre os distritos e cidades da província de Sulawesi do Sul, na Indonésia.

Referencial Teórico: Este estudo visa a elucidar os mecanismos cognitivos do viés de representatividade e da heurística de ajuste de ancoragem, que podem afetar o comportamento de planejadores orçamentários individuais na determinação de valores orçamentários para períodos futuros e sua confiança em informações passadas.

Método: Esta pesquisa emprega uma abordagem quantitativa com um projeto de estudo causal e explicativo. Neste estudo, a variável independente é o comportamento dos construtores de orçamentos do setor público, enquanto a precisão de suas previsões para o orçamento futuro do setor público constitui a variável dependente. A abordagem quantitativa foi escolhida porque se alinha ao objetivo da pesquisa de discernir possíveis erros de estimativa no comportamento das equipes de orçamento ao determinar as alocações orçamentárias para o próximo ano em vários padrões ou condições. Os entrevistados da pesquisa são as equipes de orçamento de vários distritos e cidades da província de Sulawesi do Sul. Para testar os assuntos da pesquisa, é seguida uma heurística de representatividade e ajuste de ancoragem ao utilizar padrões de realização de receita de anos anteriores (série temporal).

Resultados e Discussão: Este estudo constatou que a incerteza média nas previsões do planejador orçamentário para os governos locais em cada distrito e cidade em South Sulawesi, Indonésia, é consistente e não apresenta diferenças significativas. Essa pesquisa é altamente significativa, pois pode fornecer uma contribuição valiosa para os planejadores orçamentários do setor público na Indonésia ao estabelecerem os valores orçamentários para o próximo período.

Implicações da Pesquisa: Este estudo procura contribuir para o avanço da pesquisa na área de orçamento do setor público em Sulawesi do Sul, especialmente fornecendo uma visão geral da ocorrência de comportamentos de reação exagerada e insuficiente entre os planejadores de orçamentos da Receita Própria Local (PAD) na província de Sulawesi do Sul.

Originalidade/Valor: A novidade deste estudo está na validação empírica da utilização dos conceitos de representatividade e ajuste de ancoragem no comportamento dos planejadores orçamentários do setor público ao determinar os valores orçamentários para o próximo período.

Palavras-chave: Comportamento orçamentário, previsão orçamentária, planejador orçamentário, setor público, conceitos de representatividade, ajuste de ancoragem.

COMPORTAMIENTO PRESUPUESTARIO: PREVISIONES PRESUPUESTARIAS DE LA ADMINISTRACIÓN LOCAL INDONESIA

RESUMEN

Objetivo: Los comportamientos de sobreacción y subreacción de los planificadores presupuestarios del sector público repercuten en la disparidad entre el presupuesto inicial fijado al principio de un periodo y la realización real del presupuesto al final del mismo. El objetivo de este estudio es examinar la forma en que los planificadores presupuestarios de Indonesia predicen los presupuestos de los gobiernos locales y, en concreto, si existe alguna diferencia en el comportamiento de sobreacción o subreacción de los planificadores presupuestarios del sector público entre los distritos y ciudades de la provincia de Sulawesi del Sur de Indonesia.

Marco Teórico: Este estudio pretende dilucidar los mecanismos cognitivos del sesgo de representatividad y el heurístico de anclaje-ajuste, que pueden influir en el comportamiento de los planificadores presupuestarios
individuales a la hora de determinar las cantidades presupuestadas para períodos futuros y su confianza en la información pasada.

**Método:** Esta investigación emplea un enfoque cuantitativo con un diseño de estudio causal y explicativo. En este estudio, la variable independiente es el comportamiento de los planificadores presupuestarios del sector público, mientras que la exactitud de sus predicciones para el presupuesto futuro del sector público constituye la variable dependiente. Se seleccionó el enfoque cuantitativo porque se alinea con el objetivo de la investigación de discernir posibles errores de estimación en el comportamiento de los equipos presupuestarios a la hora de determinar las asignaciones presupuestarias para el año siguiente en diversos patrones o condiciones. Los sujetos de la investigación son los equipos presupuestarios de varios distritos y ciudades de la provincia de Sulawesi Meridional. Para poner a prueba los temas de la investigación, se sigue una heurística de representatividad y ajuste de anclaje al utilizar patrones de realización de ingresos de años anteriores (series temporales).

**Resultados y Discusión:** Este estudio encontró que el promedio de Incertidumbre en las Predicciones del Planificador Presupuestario para los Gobiernos Locales en cada distrito y ciudad en Sulawesi del Sur, Indonesia, es consistente y no exhibe diferencias significativas. Esta investigación es muy significativa, ya que puede aportar una valiosa contribución a los planificadores presupuestarios del sector público en Indonesia a la hora de establecer los importes presupuestarios para el próximo periodo.

**Implicaciones de la investigación:** Este estudio pretende contribuir al avance de la investigación en el ámbito de la presupuestación del sector público en Sulawesi del Sur, en particular, proporcionando una visión general de la aparición de comportamientos de sobrerreacción y subreacción entre los planificadores de los presupuestos de ingresos propios locales (PAD) en la provincia de Sulawesi del Sur.

**Originalidad/Valor:** La novedad de este estudio radica en la validación empírica de la utilización de los conceptos de representatividad y anclaje-ajuste en el comportamiento de los planificadores presupuestarios del sector público a la hora de determinar los importes presupuestarios para el próximo periodo.

**Palabras clave:** Comportamiento presupuestario, Predicción presupuestaria, Planificador presupuestario, Sector público, Conceptos de representatividad, Anclaje-Ajuste.

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1 **INTRODUCTION**

The economic activities of a regional government should experience growth from year to year. This can enhance the economic potential of the region and have an impact on regional development, ultimately improving the welfare of its people. With the increase in economic activities in an area, it can boost the region's revenue, reflecting the level of its self-reliance. The higher the region's local revenue (PAD), the more it indicates the region's capacity to implement fiscal decentralization, reducing its dependency on the central government. The push for decentralization occurring in various countries worldwide, especially in developing nations, is influenced by several factors, such as a country's background or experience, its role in globalizing the world, economic development setbacks, demands for changes in public services, signs of disintegration in some nations, and the numerous failures experienced by centralized governments in providing effective public services (Torres, L., Pina, V., & Acerete, B. 2005).
Differences between the budget and the actual realization of local revenue (PAD) often occur in various regions in Indonesia, including the province of South Sulawesi. One reason for these differences is the underestimation in estimating the budget for the upcoming period. Budget underestimation can occur due to unreliable measurements or the use of models that cannot be depended upon. Additionally, it could also be due to heuristic bias. Heuristic bias is the inaccuracy in predicting values for the future. This is because it doesn't use mathematical laws, ignores normative laws, and tends to think pragmatically (Dunleavy, P. 1994). This inaccuracy in expectations is then reflected in the budget underestimation for the future as a phenomenon of overreaction or underreaction to information (Habbe, 2017). This phenomenon is a psychological phenomenon influenced by heuristic factors Madachy, R. J. (1997).

In other words, it is a common occurrence experienced by individuals facing high pressure and uncertainty when making decisions using heuristic factors. However, the use of heuristics can lead to biases in predicting assessments for the future. This heuristic bias occurs because individuals tend to underreact. Moreover, heuristic bias also occurs in individuals who adopt a progressive stance, making decisions based on information from previous years consecutively, or displaying an overreaction behavior towards information. This heuristic bias can cause decision-makers to react irrationally. Heuristic bias is believed to occur in budgeting as well. The evidence of discrepancies between the initially set budget and its realization is depicted in the Budget and Realization Report of the State Budget (APBN, 2019). Local Own-source Revenue (PAD) represents the revenue obtained by the region from its own sources within the area, collected based on regional regulations in accordance with the prevailing laws and regulations (Fahry, H. V., Muhdar, H. M., & Yusuf, S. D. 2021). The local revenue sector plays a crucial role as it reflects a region's capacity to finance government activities and regional development, aligning with the decentralization objectives set within the Regional Budget (APBD). PAD plays a vital role in improving the performance and development of the concerned regional government. The determination of PAD for future periods is discussed and decided upon by the local government's PAD budgeting team (Andria, Y., Elfindri, E., Handra, H., & Ridwan, E. 2019). At the end of the period, this predetermined PAD is compared with the actual realized PAD, yet discrepancies persist. These differences commonly occur in various regions in Indonesia, including the province of South Sulawesi. The variance between the projected PAD and its realization is due, among other factors, to the underestimation in estimating the budget for the upcoming period. Budgets are formulated based on estimations or forecasts made by the government, considering fiscal directions, macroeconomic policies, and economic assumptions.
The public sector budgeting system evolves and changes in line with the dynamics of public sector management and the emerging societal demands (Anessi-Pessina, Eugenio, et al, 2016). During budget formulation, inaccuracies in budget estimation or differences in budget projections might occur, necessitating alterations to the predetermined budget. The public sector entities have introduced the accounting approach for the business sector which leads to increased transparency and improved performance measurement (Surianti, M., & Dalimunthe, A. R. (2015). The variance between the realized Local Own-source Revenue (PAD) and the previously budgeted amount is a normal occurrence. Nevertheless, the government must analyze the reasons for these budget differences to better project PAD budgets in the following years. Hence, research in the field of budgeting in regional governments becomes relevant and crucial. Strategic leadership is significantly and positively related to both strategic planning and strategic thinking indicate that the role of leaders in other management levels (Mujennah, M., Artinah, B., & Safriansyah, S. 2019). Inaccuracies in decision-making or biases in budget projections occur because budgeting teams often resort to shortcuts based on the previous year's budget amount. These limitations lead individuals involved in financial decision-making to adopt a heuristic approach, a rapid yet potentially misleading conclusion-drawing model due to cognitive limitations (Gimeno, J. Á., 2020). This study focuses on individual behaviors within the South Sulawesi regional government in setting budget amounts for upcoming periods. Specifically, the aim is to test how these individual behaviors influence the determination of future budget amounts and their relation to reliance on past information (overreliance), the budgeting team's overreaction to current information similar to the previous year, and underreaction to information experiencing extreme positive or negative changes. In this study, the heuristic models pertinent to individual decision-making in budget estimation are representativeness and anchoring-adjustment, related to the biases or inaccuracies in predicting the PAD budget for the future. This research is related to the phenomenon of individual behavior in local government regarding the prediction of budgetary allocations. Specifically, the study examines how individual behavior influences the determination of budgetary allocations for future periods and is associated with the dependence (overreliance) on past information. It also explores whether budgetary drafting teams exhibit overreaction to unexpected or unforeseen current information.

The budgeting team relies on information from the realized budget amounts from previous and current years while setting the budget amounts. Additionally, the budgeting team establishes the realized budget amount from the previous year as the starting point (anchor) in estimating the budget for the future. This phenomenon has not been tested by previous
researchers (Bloomfield et al., 2003 and Habbe, 2017). Hence, the researcher intends to conduct experiments concerning the use of heuristic bias concepts in estimating PAD budget amounts in the public sector. The phenomenon of inaccuracies in the preparation of the Local Own-source Revenue (PAD) budget generally occurs annually in most regional governments in Indonesia, including the government in South Sulawesi. It is proven that differences always arise between the projected PAD budget and its realization at the end of the period (State Budget Report, 2022). Therefore, the researcher intends to conduct experimental research into the differences or the presence of overestimation (underestimation) in determining the PAD budget amounts in the regional government of South Sulawesi. This possibility arises due to decision-makers' behaviors such as reliance on the budget amounts from previous years and the budgeting team's overreaction (underreaction) to the PAD amount in the current unexpected or unforeseen year (experiencing extreme positive or negative changes).

This research pertains to the phenomenon of individual behavior within regional governance concerning the prediction and determination of budgetary allocations. Specifically, this study aims to examine how individual behaviors influence the determination of budget amounts for future periods, especially in relation to the dependency (overreliance) on past information and the actions of the budgeting team that involve overreactions to unexpected or unforeseen current information. This study is an extension of prior research conducted by Riduwan, A., & Andajani, A. (2019) as well as Krische (2005) regarding the testing of strategic disclosure benchmarks from past periods in profit announcements. It also builds upon research by Bloomfield et al. (2003) and Habbe (2017) related to representativeness bias and anchoring-adjustment in predicting future profits based on past and current profits, and their impact on the prediction of future stock prices Wang, L., Ma, F., Liu, J., & Yang, L. (2020). This research holds significant importance as it can empirically prove the utilization of the concepts of representativeness and anchoring-adjustment in the behavior of public sector budget preparers when determining the PAD budget for forthcoming periods. The contribution of this research helps in understanding that this approach is beneficial and plays a vital role in the decision-making of PAD budget allocations in the public sector. The research's contribution also enhances the insight for public sector budgeting teams. Experience gained can be beneficial in determining PAD budget amounts for future periods. Lastly, the outcomes of this research can serve as a reference for further studies related to decision-making using heuristic approaches.
2 LITERATURE REVIEW

2.1 COGNITIVE PSYCHOLOGY PERSPECTIVE

The cognitive approach is construed as a perspective on human psychological phenomena that underscores the roles of perception, knowledge, memory, and thought processes in human behavior. Consequently, cognitive psychology is often also referred to as information processing psychology (Solso, 2001), encompassing the existence of a sequential series of information and stages of processing associated with that information. In addition to this, cognitive psychology delves into the behavioral decisions made by individuals during decision-making processes, relying on a series of past information. This, in turn, has repercussions on the accuracy of decision-making, a phenomenon known as heuristic bias.

Moreover, the cognitive psychology framework encapsulates the intricate dynamics of individual behavioral decisions made during decision-making processes based on a series of past information. This intricacy contributes to the occurrence of inaccuracies in decision-making, commonly termed as heuristic bias. Thus, cognitive psychology serves as a lens through which one can explore and understand the complexities inherent in the decision-making processes of individuals, highlighting the multifaceted interplay of psychological factors involved in shaping behavioral choices.

2.2 REPRESENTATIVENESS

Representativeness is depicted as a decision-making process undertaken by individuals that relates to future information, grounded in experiences or past information. When individuals make decisions, they typically rely on a combination of past information and newly acquired information. The utilization of heuristics is deeply ingrained in human behavior. This is due to the general inclination of human thinking to be practical and swift in decision-making processes (Kahneman and Tversky, 1973). This tendency is deeply rooted in human cognition, as individuals often lean towards quick and practical decisions by drawing upon both their past experiences and fresh information available to them. The reliance on heuristics manifests as a natural inclination, reflecting the human cognitive predisposition to streamline decision-making processes for efficiency and expediency.
2.3 ANCHORING-ADJUSTMENT

Anchoring-adjustment reflects an inclination of individuals to make estimations by commencing with an initial value (anchor) and subsequently adjusting it based on new information (Tversky and Kahneman, 1974). Additionally, Shefrin (2007) elucidates that anchoring and adjustment heuristics come into play when someone predicts future values by starting with a specific reference point and then making adjustments, but tends to struggle with making adjustments adequately. Anchoring and adjustment heuristics have been widely employed in various instances for predicting future values based on initial values, yet sometimes result in erroneous decisions. This is attributed to the adjustments being made not being comprehensive and profound (Epley and Gilovich, 2006). Therefore, to achieve more accurate decisions without inducing biases, repeated adjustments to the initial value (anchor) are essential. Moreover, a thorough understanding of the aspects of the final assessment to be predicted is crucial.

The phenomenon of overreaction (underreaction) faced by decision-makers such as investors or auditors toward information remains a research topic that requires further analysis in different fields. For instance, in the context of public sector budgeting, some entities still employ approaches like line-item budgeting or incremental budgeting. This arises due to difficulties in establishing success indicators for a program in the performance-based budgeting approach, with its application limited to technical changes and format adjustments only. The public organization budgeting process begins once strategic formulation and planning are completed, encompassing aspects of planning, control, and public accountability (Mardiasmo, 2009). Budget planning is the initial and most critical stage in the government budget cycle. Furthermore, government budget planning requires a considerable amount of time and involves multiple stakeholders.

2.4 HYPOTHESIS DEVELOPMENT

This study utilizes concepts and findings from Bloomfield (2003) and Habbe (2017) to assess whether budgeting teams exhibit overreaction or underreaction behavior concerning certain past information (three consecutive years) and unexpected or unforeseen current information when predicting the amount of local revenue (PAD) for the upcoming period. Additionally, it aims to investigate the presence of heuristic bias in the decision-making process related to budget determination. This heuristic bias is a cognitive psychology phenomenon that
links the dependence on past and unforeseen current PAD information with individual behaviors (overreaction and underreaction) when making decisions, potentially resulting in an overestimation or underestimation of the PAD budget for the future. The research focuses on analyzing the Local Own-Source Revenue (PAD), considering different conditions or patterns, as described below:

**Table 1**
*Relationship between Local Own-Source Revenue (PAD) Pattern-Level, Misestimated PAD and Heuristic*

<table>
<thead>
<tr>
<th>Pattern/Level of Local Own-Source Revenue (PAD)</th>
<th>Current PAD (Low)</th>
<th>Current PAD (High)</th>
</tr>
</thead>
<tbody>
<tr>
<td>PAD Last Year (Low)</td>
<td>I Low and Low: indicates overreaction and results in underestimated PAD target (representativeness)</td>
<td>II Low and High: indicates underreaction and results in an underestimated PAD target (anchoring-adjustment).</td>
</tr>
<tr>
<td>PAD Last Year (High)</td>
<td>III High and Low: indicating underreaction and resulting in overestimated PAD targets (anchoring-adjustment)</td>
<td>IV High and High: indicates overreaction and results in overestimated PAD targets (representativeness)</td>
</tr>
</tbody>
</table>

The representativeness heuristic explains that dependence on past local revenue (PAD) budget information from the last three years results in overreaction behavior, leading to overestimated or underestimated PAD for the upcoming period (Quadrants I and IV). Similarly, using the PAD information from the previous year as an anchor point results in underreaction behavior, which also leads to overestimated or underestimated PAD for the future period (Quadrants II and III). With this anchoring effect, predictions of the public sector's PAD amount become inaccurate, indicating the presence of heuristic bias (Habbe, 2017).

**2.5 BUDGETING BEHAVIOR CHARACTERIZED OVERRELIANCE ON PAST INFORMATION**

Morries (1993) explains that when auditors overly rely on negative information, it can lead to an increase in audit procedures, thereby raising audit costs and diminishing effectiveness. This implies that individuals or investors unconsciously use a heuristic approach in making judgments for the future. Dependence (overreliance) on the anchoring heuristic is
not exclusive to laypeople. Even experienced individuals unconsciously employ the anchoring heuristic in their decision-making process when predicting desired final assessments (Simon, 1958). This occurs when these individuals find it impractical to analyze data using statistical methods with extensive calculations. In the context of budgeting local revenue (PAD), if the trend in past PAD budget realization is positive (negative), then the budget for future PAD will also be positively (negatively) influenced. The use of heuristics by budgeting teams is described as an instance of overreaction behavior. Based on this explanation, the hypothesis formulated for this study is as follows: H1: Budgeting teams exhibit overreliance on the magnitude of PAD in previous years.

H1: Budgeting behavior exhibit overreliance on the magnitude of PAD in previous years.

2.6 BUDGETING BEHAVIOR EXHIBITING EITHER AN EXCESSIVE OVERREACTION OR UNDERREACTION RESPONSE TO PAST INFORMATION

Overreaction is demonstrated by irrational behavior exhibited by decision-makers, such as analysts and investors in the stock market (De Bondt and Thaler, 1985). Typically, these decision-makers use information from previous years and current year data to predict future assessments. This information serves as an initial value or anchor, acting as a reference point. This leads to individual behavior, resulting in underreaction to past-year data and ultimately introducing bias into their decisions. Overreaction occurs due to dependence on persistently low or high historical information without extreme changes in current data, while underreaction happens because of persistent low or high historical information combined with extremely positive or negative current data (Habbe, 2017). The consequence of heuristic usage is biased decision-making, including overreaction or underreaction to the actual local revenue (PAD) budget for the previous year (three consecutive years), resulting in a misestimation of the determination of the Local Own-Source Revenue (PAD) for the future period. Based on this explanation, the hypothesis for this study can be formulated as follows:

H2a: Budget preparers overreact to persistently low and high levels of PAD in the long run.

H2b: Budget preparers’ behavior is underreaction to the amount of PAD that changes extreme positive or negative in the short term.
2.7 THE BUDGET PLANNERS' BEHAVIOR OF OVERESTIMATING OR UNDERESTIMATING THE LOCAL OWN-SOURCE REVENUE (PAD) BUDGET FOR THE FUTURE PERIOD

Individual decisions in predicting or estimating target values are sometimes subject to bias, leading to overestimation or underestimation. This bias is influenced by beliefs regarding the likelihood of an event or the use of heuristic models (Tversky and Kahneman, 1974). Furthermore, Calegari and Fargher (1997) explain that the observed prediction inaccuracies consistently align with analysts' forecasting inaccuracies, which are partially attributed to the occurrence of judgmental heuristics in forecasting. Misestimation can be influenced by various factors, including unreliable information and model accuracy. With limited information available for consideration, decision-makers or the Local Own-Source Revenue (PAD) budgeting team will base their budget determination primarily on the past three consecutive years' PAD budget realization and the current year's PAD budget realization, which is considered unexpected (extremely positive or negative) information. This approach to setting the PAD budget for the future period can result in bias or inaccuracy in predictions (underestimated/overestimated). Based on this explanation, the hypothesis formulated for this study is:

H3a: The behavior of budget planners exhibiting overreaction behavior leads to decisions of underestimation when determining the Local Own-Source Revenue (PAD) for the future period.

H3b: The behavior of budget planners displaying underreaction behavior results in decisions of overestimation when determining the Local Own-Source Revenue (PAD) for the future period.

3 RESEARCH METHOD

This research employs a quantitative approach with a causal and explanatory study design. Causal relationships imply a cause-and-effect connection between independent and dependent variables. In this study, the independent variable is the behavior of public sector budget builders, while the accuracy of their predictions for the future budget of the public sector constitutes the dependent variable. In terms of explanatory power, this research falls into the category of comparative research, which differentiates between varying factors. Testing comparative hypotheses means assessing population parameters to identify differences. The
quantitative approach was selected because it aligns with the research's objective of discerning potential misestimations in the behavior of budgeting teams when determining the budgetary allocations for the upcoming year in various patterns or conditions. The research's respondents are the budgeting teams from various districts and cities in the South Sulawesi Province. To test the research subjects, a heuristic of representativeness and anchoring-adjustment is followed when utilizing patterns of revenue realization from previous years (time series).

This full factorial design is employed to examine the effects of all possible combinations or patterns of the manipulated independent variables. The statistical analysis used in this research is a two-way ANOVA, which helps determine interactions among independent variables, specifically the information about revenue realization in the previous three years (t-3, t-2, t-1) and the information for the current year (t-0) used. The ANOVA test results are evaluated based on p-values. If the p-value is less than 0.05, the hypothesis is considered significant and accepted. Conversely, if the p-value is greater than 0.05, the hypothesis is considered insignificant and rejected. Before hypothesis testing is conducted, normality and homogeneity tests are carried out as prerequisites for the ANOVA. The normality test aims to determine if each variable is normally distributed or not, typically conducted using the Kolmogorov-Smirnov test. If the significance value (p-value) is greater than 0.05, the data is considered normally distributed. On the other hand, the homogeneity test assesses whether the population variances of data are equal or not. Levene's Test is often used to test homogeneity, and if the significance value is greater than 0.05, it indicates that the data group variances are homogeneous. The dependent variable in this study is Budget Predictions (BP). The budgeting team is tasked with predicting the amount of the Public-Asset Revenue (PAD) budget for the upcoming period (t+1) based on the PAD from the three consecutive previous years (t-3, t-2, t-1), as well as the PAD for the current year (t-0). Prediction inaccuracy is obtained by subtracting the budget estimate (PAD Estimate) set by the PAD budgeting team from the target budget (PAD Target), which is derived from the use of data from the previous years and the current year. This calculation can be expressed as follows:

\[
\text{Budget Prediction (BP)} = \text{PAD Estimation} - \text{PAD Target} \quad (1)
\]

Meanwhile, the Public-Asset Revenue (PAD) Target is obtained from the equation:

\[
\text{PAD (t+1)} = a + b_1 \text{PAD (t+0)} + b_2 \text{PAD (t-1)} + b_3 \text{PAD (t-2)} + b_4 \text{PAD (t-3)} \quad (2)
\]
The budget set at the beginning of a period will be compared with the budget's realization at the end of that period. However, in reality, there is always a difference between the budget and its actual realization due to inaccuracies or biases in predicting (misestimating) the magnitude of the public sector budget for the upcoming period. This is caused by several factors influencing the behavior of the budgeting team when making these decisions. In this study, the factor analyzed is whether there is the use of heuristics like representativeness and anchoring-adjustment in the decision-making behavior of the budgeting team based on the information they possess. The theoretical framework proposed in this study is as follows:

**Figure 1**

*Theoretical Study Model*

![Theoretical Study Model Diagram](image)

**4 RESULTS**

Hypothesis testing in this research is conducted using the method of multiple regression analysis, which aims to examine the relationship and influence between one variable and another. The influenced variable is called the dependent variable (endogenous), while the influencing variable is called the independent variable (exogenous). Here is the equation model to test hypotheses H1, H2, and H3:
Y = a0 + a1X1 + a2X2 + e  

(3)

Description:

Y = Budget Prediction (BP)
X1 = PAD Estimation
X2 = PAD Target

4.1 BIVARIATE ANALYSIS

Bivariate analysis is an examination used on two variables suspected of having a relationship or correlation. In this study, before data analysis is conducted, a normality test is initially performed to determine the normality of the available data. This normality test is carried out using the Shapiro-Wilk test. If the data is normally distributed, bivariate analysis is conducted using a correlation test. The results of the bivariate analysis using the correlation test are as follows:

Figure 2

Results of Bivariate Analysis

<table>
<thead>
<tr>
<th>Correlations</th>
<th>BP</th>
<th>PAD E</th>
<th>PAD T</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pearson Correlation</td>
<td>1</td>
<td>.143</td>
<td>-.017</td>
</tr>
<tr>
<td>Sig. (2-tailed)</td>
<td></td>
<td>.166</td>
<td>.872</td>
</tr>
<tr>
<td>N</td>
<td>96</td>
<td>96</td>
<td>96</td>
</tr>
<tr>
<td>PAD_E Pearson Correlation</td>
<td>.143</td>
<td>1</td>
<td>.987**</td>
</tr>
<tr>
<td>Sig. (2-tailed)</td>
<td></td>
<td>.166</td>
<td>.000</td>
</tr>
<tr>
<td>N</td>
<td>96</td>
<td>96</td>
<td>96</td>
</tr>
<tr>
<td>PAD_T Pearson Correlation</td>
<td>-.017</td>
<td>.987**</td>
<td>1</td>
</tr>
<tr>
<td>Sig. (2-tailed)</td>
<td></td>
<td>.872</td>
<td>.000</td>
</tr>
<tr>
<td>N</td>
<td>96</td>
<td>96</td>
<td>96</td>
</tr>
</tbody>
</table>

**Correlation is significant at the 0.01 level (2-tailed).

Based on the analysis results above, it is explained that:

1. The significance value (2-tailed) of Estimated GDP (PAD Estimasi) on Budget Prediction (BP) is 0.166, indicating that there is no relationship between Estimated GDP and Budget Prediction because the significance level is greater than 0.05 (0.166 > 0.05);
2. The significance value (2-tailed) of Target GDP (PAD Target) on Budget Prediction (BP) is 0.872, meaning that there is no relationship between Target GDP and Budget Prediction because the significance level is greater than 0.05 (0.872 > 0.05);
3. The significance value (2-tailed) of Estimated GDP (PAD Estimasi) on Target GDP (PAD Target) is 0.000, indicating that there is a relationship between Estimated GDP and Target GDP because the significance level is less than 0.05 (0.000 < 0.05).

4.2 DESCRIPTIVE STATISTICAL ANALYSIS

Descriptive statistics involve presenting data in an informative manner to facilitate its interpretation. Descriptive statistical analysis provides a numerical overview of data based on maximum and minimum values, mean, and standard deviation. The indicators used in this research are from 24 Districts/Cities in the South Sulawesi Province over 4 years. Based on the descriptive statistical analysis, it is observed that there are a total of 96 research samples. The results of the analysis indicate that the highest average Prediction Uncertainty (KP) value is in Sopeng District at 18.4825, while the lowest is in North Luwu District at 46.0161.

4.3 HOMOGENEITY TEST

If the normality test shows normally distributed data, a homogeneity test is conducted using the Levene test. The results of the homogeneity test using the Levene test are as follows:

Figure 3
Results of Homogeneity test

<table>
<thead>
<tr>
<th>Test of Homogeneity of Variances</th>
<th>Levene Statistic</th>
<th>df1</th>
<th>df2</th>
<th>Sig</th>
</tr>
</thead>
<tbody>
<tr>
<td>PROSENTASE BP</td>
<td>1.135</td>
<td>23</td>
<td>72</td>
<td>.332</td>
</tr>
</tbody>
</table>

Based on the homogeneity test results above, it is evident that the data is homogeneous with a significance value of 0.332, indicating that the significance value is greater than 0.05 (0.332 > 0.05).

4.4 ONE-WAY ANOVA (ANALYSIS OF VARIANCE)

One-Way ANOVA is a parametric statistical technique used to test the differences among means of multiple groups, where there is only one independent variable divided into several groups and one dependent variable.
Based on the results of the One-Way ANOVA test above, it is determined that the average Budget Prediction (BP) among Districts/Cities in the South Sulawesi Province, Indonesia, is the same, with a significance value of 0.870, indicating that the significance value is greater than 0.05 (0.870 > 0.05). Based on the given results, it is evident that the average Budget Prediction (BP) among Districts/Cities has a significance value greater than 0.05 (0.782 > 0.05). Consequently, this indicates there is no significant difference or, in other words, the average Budget Prediction (BP) among Districts/Cities is the same.

The statement provides an understanding of the post-hoc procedure following ANOVA results. If the null hypothesis (H0) is not rejected in ANOVA, the work is considered concluded with the inference that all means are relatively similar. However, if the analysis of variance results in rejecting H0, it indicates that there are differences among the means. In this research, the multiple comparison test employed is the Tukey test.

### Figure 4

The results of the One-Way ANOVA test

<table>
<thead>
<tr>
<th>PROSENTASE_BP</th>
<th>ANOVA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sum of Squares</td>
<td>df</td>
</tr>
<tr>
<td>Between Groups</td>
<td>22978,435</td>
</tr>
<tr>
<td>Within Groups</td>
<td>109315,983</td>
</tr>
<tr>
<td>Total</td>
<td>132294,417</td>
</tr>
</tbody>
</table>

### Figure 5

Multiple comparison test results using the turkey test

<table>
<thead>
<tr>
<th>(I) Year</th>
<th>(J) Year</th>
<th>Mean Difference (I-J)</th>
<th>Std. Error</th>
<th>Sig.</th>
<th>95% Confidence Interval</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Lower Bound</td>
</tr>
<tr>
<td>2019</td>
<td>2020</td>
<td>26.95799*</td>
<td>7.73169</td>
<td>.004</td>
<td>6.7271</td>
</tr>
<tr>
<td>2021</td>
<td>2022</td>
<td>71.64465*</td>
<td>7.73169</td>
<td>.000</td>
<td>51.4138</td>
</tr>
<tr>
<td>2021</td>
<td>2022</td>
<td>-44.68666*</td>
<td>7.73169</td>
<td>.000</td>
<td>24.4558</td>
</tr>
<tr>
<td>2020</td>
<td>2021</td>
<td>-44.68666*</td>
<td>7.73169</td>
<td>.000</td>
<td>-64.9175</td>
</tr>
<tr>
<td>2022</td>
<td>2021</td>
<td>-52.61277*</td>
<td>7.73169</td>
<td>.000</td>
<td>-72.8436</td>
</tr>
<tr>
<td>2020</td>
<td>2021</td>
<td>7.92611</td>
<td>7.73169</td>
<td>.735</td>
<td>-12.3047</td>
</tr>
<tr>
<td>2021</td>
<td>2022</td>
<td>52.61277*</td>
<td>7.73169</td>
<td>.000</td>
<td>32.3819</td>
</tr>
</tbody>
</table>

* The mean difference is significant at the 0.05 level.
The analysis results show that the highest average Budget Prediction (BP) was in 2019 (26.95799), while the lowest was in 2021 (-71.64465). (1) The difference in average Budget Prediction (BP) between 2019 and 2020 was 26.95799, with the average difference in Budget Prediction (BP) ranging from -6.7271 (Lower Bound) to -47.1888 (Upper Bound) at a 95% confidence level. The obtained p-value was 0.004 < 0.05, concluding that the Budget Prediction (BP) in 2019 and 2020 is different and the descriptive difference in the average Budget Prediction (BP) between these two years is significant. For the Budget Prediction (BP) data in 2021 for 24 districts/cities in South Sulawesi Province, it means that the average Prediction Uncertainty (KP) in the 24 districts/cities in 2021 does not have a significant difference, in other words, the average KP for the 24 districts/cities in 2021 is the same. (2) The difference in average Budget Prediction (BP) between 2019 and 2020 was 71.64465, with the average difference in Budget Prediction (BP) ranging from 51.4138 (Lower Bound) to 91.8755 (Upper Bound) at a 95% confidence level. The obtained p-value was 0.000 < 0.05, concluding that the Budget Prediction (BP) in 2019 and 2020 is different and the descriptive difference in the average Budget Prediction (BP) between these two years is significant. (3) The difference in average Budget Prediction (BP) between 2019 and 2022 was 19.03187, with the average difference in Budget Prediction (BP) ranging from 1.1990 (Lower Bound) to 39.2627 (Upper Bound) at a 95% confidence level. The obtained p-value was 0.073 > 0.05, concluding that the years 2019 and 2022 are the same and the descriptive difference in the average Budget Prediction (BP) between these two years is not significant.

5 DISCUSSION

In this study, budget prediction (BP) in the regencies/cities of South Sulawesi, Indonesia, showed no differences or remained consistent. Consequently, the average budget prediction (BP) did not significantly impact the regencies/cities in the province of South Sulawesi. It can be noted that the total data quantity for the research comprised 96 samples. The analysis results revealed that the highest average Uncertainty of Prediction (UP) value was in the year 2019 (19.03187), while the lowest was in the year 2021 (52.61277).

1. The difference in the average budget prediction (BP) between 2019 and 2020 in South Sulawesi Province, Indonesia, is 26.95799. Meanwhile, the average budget prediction (BP) difference ranges from 6.7271 (Lower Bound) to 47.1888 (Upper Bound) at a 95% confidence level. Based on the output, a significance value of 0.004 < 0.05 indicates that the budget predictions (BP) for 2019 and 2020 are not the same. Descriptively, the
average budget prediction (BP) difference between these two years is significant. There is data for budget predictions (BP) from 24 districts/cities in 2021. This suggests that the average budget prediction (BP) for the 24 districts/cities in 2021 does not have a significant difference. In other words, the average BP for the 24 districts/cities in 2021 is the same. Overall, the budget prediction (BP) in South Sulawesi Province, Indonesia, displays overreaction behavior concerning the patterns of Last Year's the Local Own-Source Revenue (PAD) and Current Year's the Local Own-Source Revenue (PAD). This behavior influences the misestimation of the PAD budget for the upcoming year. It contributes to the behavioral accounting literature, particularly regarding individual behaviors within the South Sulawesi Province's budget prediction (BP). Ultimately, this behavior can affect the budget preparers in setting estimates for South Sulawesi Province's PAD in the upcoming period. Moreover, it provides insights into public sector management accounting literature and public sector budgeting. The research findings confirm previous results and add insights into the heuristic approach of representativeness and anchoring-adjustment within budget prediction (BP) and the determination of estimates for the Local Own-Source Revenue (PAD) for local governments. In addition to research conducted in Indonesia, there is parallel research developed in Kenya by Cherono, I. (2018). According to their findings, budget prediction can induce overreaction behavior in local governments, making them more transparent and providing sufficient information. Simultaneously, it can improve the perception of accountability by involving the community in decision-making. The results of this study align with Mediaty (2021) findings, which discovered a similar pattern regarding Local Own-source Revenue (PAD) in the previous year and the current year. This pattern manifests in the form of regional self-reliance and high accountability in the financial reporting of local governments. Muraiya and Nadirsyah (2018), as well as Mudhofar and Afrizal Tahar (2016), have also found that budget prediction has a positive impact on the accountability of financial reporting in local governments in Indonesia. This research contributes to the pace of economic growth in districts and cities in the South Sulawesi Province. It underscores the significance of budget prediction not only in enhancing financial transparency but also in fostering community involvement and accountability, aligning with global research trends that emphasize the importance of these factors in effective governance. As such, the findings of this study not only add to the existing body of knowledge but also have practical
implications for policymakers and stakeholders involved in regional economic development in the South Sulawesi Province;

2. The difference in the average budget prediction (BP) between 2020 and 2021 in South Sulawesi Province, Indonesia, is 44.68666. Meanwhile, the average budget prediction (BP) difference ranges from 24.4558 (Lower Bound) to 64.9175 (Upper Bound) at a 93% confidence level. Based on the output, with a significance value of 0.000 < 0.05, it is concluded that the budget predictions (BP) for 2020 and 2021 are not the same, and descriptively, the average budget prediction (BP) difference between these two years is significant. There is data available for budget predictions in 24 districts/cities for both 2020 and 2021. This means that the average budget prediction in the 24 districts/cities of South Sulawesi Province in 2020 and 2021 shows a significant difference. In other words, the average predictions for the 24 districts/cities in 2020 and 2021 are not the same or are different. During the budget formulation process, inaccuracies or differences in predicting the budget sometimes occur, necessitating changes in the predetermined budget. This can disrupt the planned strategies and impact performance evaluations. Several factors contribute to discrepancies or biases in predicting budget amounts, including individual behavioral factors in local government budgeting. Differences between the Local Own-Source Revenue (PAD) and the previously budgeted amount are common. This research contributes to public sector budgeting and enhances the insights of local governments, highlighting the need to analyze the causes of budget differences for more accurate projections of Local Own-Source Revenue (PAD) in the following years. These findings are corroborated by Fahry, H. V., Muhdar, H. M., & Yusuf, S. D. (2021), who discovered that the low reception of Local Own-source Revenue (PAD) in Indonesia leads to regional powerlessness and dependence on the central government. Despite budgeting teams encouraging local budget preparers to enhance regional revenue realization and independence, the budget predictions for the formulation of budgets each year remain consistent and unchanged. This suggests that there is no variation in budget determination in the South Sulawesi Province, and there is no bias in regional finances. The research aligns with the conclusions drawn by Taek, F. M., Djhamhuri, A., & Baridwan, Z. (2020), asserting that if regions continue to rely on the central government, local governments in Indonesia cannot fulfill their governmental service obligations to the maximum extent. This study contributes valuable insights to the budgeting teams in Indonesia for establishing budgets in the future. The emphasis on the need for regional financial independence and effective
governance services underscores the importance of these findings in guiding budgetary decisions and policies for local governments, ultimately contributing to the enhancement of local governance and fiscal sustainability;

3. The difference in the average budget prediction (BP) between 2021 and 2022 in South Sulawesi Province, Indonesia, is 52.61277. Meanwhile, the average budget prediction (BP) difference ranges from 32.3819 (Lower Bound) to 72.8436 (Upper Bound) at a 96% confidence level. Based on the output, with a significance value of 0.073 > 0.05, it is concluded that the budget predictions (BP) for 2021 and 2022 are the same, and descriptively, the average budget prediction (BP) difference between these two years is significant. Data is available for BP in 24 districts/cities in South Sulawesi Province, Indonesia, for both 2021 and 2022. This means that the average budget prediction (BP) in the 24 districts/cities in 2021 and 2022 does not show a significant difference. In other words, the average budget prediction (BP) for the 24 districts/cities in 2021 and 2022 is the same. This research has implications regarding the confidence level held by the budget prediction team concerning Local Own-Source Revenue (PAD) in determining estimates for the upcoming period. The confidence level has a varying impact on each approach, whether it's the representativeness heuristic or the anchoring-adjustment heuristic. This aligns with the concept of the representativeness heuristic approach, explaining that when the information about the Local Own-Source Revenue (PAD) of the current year bears similarities to the Local Own-Source Revenue (PAD) of previous years, the estimation for the upcoming year also shares similarities with the Local Own-Source Revenue (PAD) of previous years in the local government of South Sulawesi Province, Indonesia. The research findings align with the theory of anchoring and adjustment (Shefrin, 2007), which elucidates that anchoring and adjustment heuristics come into play when someone predicts future values by starting from a specific reference point and then makes adjustments. However, individuals often struggle to make adequate adjustments. This alignment is reinforced by Punky, S., Anastasia, M. A. S., Indriyani, Y. N., Aldhina, H. D., & Sukmawati, F. (2020), who discovered that the confidence level held by budgeting teams regarding Local Own-source Revenue (PAD) has a positive and significant impact on the financial performance of local governments when determining estimates for future periods. The interconnection between the research findings and the anchoring and adjustment theory underscores the psychological aspects involved in budgetary decision-making processes. The inclination to anchor estimates based on specific reference points and the challenges in making
appropriate adjustments highlight the importance of understanding cognitive biases in financial forecasting. Moreover, the positive influence of confidence levels on financial performance emphasizes the significance of psychological factors in shaping the outcomes of budgetary decisions. These insights contribute to a comprehensive understanding of the behavioral aspects influencing budget preparation and financial performance in local government settings.

6 CONCLUSION

In this study, the Budget Prediction in the districts/cities of South Sulawesi Province, Indonesia shows no differences or is the same. Thus, the average certainty of the Budget Prediction does not affect the districts/cities in South Sulawesi Province. Comparing the Budget Predictions for each year based on the percentage of budget amounts over the last four years from 2019 to 2022, it is observed that the average Budget Prediction for the 24 districts/cities between 2021 and 2022 differs significantly. However, there is no significant difference between 2019 compared to 2020 and 2021. This study attempts to explain the cognitive mechanisms of the representativeness bias and anchoring-adjustment heuristic that can influence individual behaviors in determining the size of the Local Own-Source Revenue (PAD) budget for the upcoming period. Overall, the specific aim of this research is to examine how budget planners in Indonesia predict local government budgets. Specifically, it aims to investigate whether there are differences in overreaction or underreaction behaviors among budget planners in the public sector among districts and cities in South Sulawesi Province, Indonesia. This study seeks to contribute to advancing research in the realm of public sector budgeting in South Sulawesi, particularly by providing an overview of the occurrence of overreaction and underreaction behaviors among the planners of Local Own-Source Revenue (PAD) budgets in South Sulawesi Province. Furthermore, with competent knowledge and experience concerning Budget Prediction, more accurate predictions and a reduction in biases can be achieved in determining the Local Own-Source Revenue (PAD) budget.

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