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Optimizing Regional Budget Planning: The Role of Information Systems and Human Resource Competence in Padang Panjang City

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ABSTRACT

This study aims to examine the effect of the implementation of the Regional Government Information System (SIPD) application and human resource (HR) capacity on the process of preparing the Regional Revenue and Expenditure Budget (APBD) of Padang Panjang City. The APBD preparation process must comply with applicable laws and regulations as well as the predetermined schedule to avoid delays in its ratification. The implementation of the SIPD application and the competence of the human resources involved in the APBD preparation process can be considered as crucial factors in the budgeting process of local governments. This research was conducted to ensure that stakeholders involved in the APBD preparation process in Padang Panjang City are aware of and can improve the factors that support the preparation process, so that the resulting APBD complies with statutory regulations and can be ratified according to the established timeline. This research employs a quantitative approach to analyze data by describing and illustrating the collected information. The data analysis technique used is Partial Least Square (PLS), with the population consisting of all Regional Work Units (SKPD) in Padang Panjang City and a sample of 50 respondents. The findings of this study indicate that both the implementation of the SIPD application and HR capacity have a positive and significant effect on the APBD preparation process.

Keywords:

Information System, Government Information System, Human Resources, Regional Revenue and Expenditure Budget, Budget Preparation

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1. INTRODUCTION

The Regional Revenue and Expenditure Budget (APBD) is the annual financial plan of local governments established through Regional Regulations, reflecting orderly, efficient, transparent, and accountable financial management [1], [2]. According to [3] encourages the integration of planning and budgeting systems to improve government effectiveness, while the implementation of the Regional Government Information System (SIPD) through Minister of Home Affairs [15] supports accurate, integrated, and accessible management of development and financial data. SIPD facilitates systematic, data-driven APBD preparation in accordance with Law No. 23/2014; however, its implementation in local areas, including Padang Panjang City, still faces technical challenges, nomenclature discrepancies, and limited socialization, requiring document adjustments and cross-agency coordination. The preparation of the APBD considers organizational policies, economic conditions, historical data, and research and development, with a planning cycle ranging from the RPJPD to the RKA-SKPD and regional regulations, while its effectiveness is measured by the achievement of development goals [4]. The implementation of SIPD requires adaptation from local government agencies, professionalism, and information transparency, enabling faster, more accurate, and accountable data-based decision-making [5].

Human resources (HR) are a crucial factor in the success of governmental organizations, as HR competencies determine the effectiveness of task execution, financial management, and the implementation of information systems. High-quality HR is characterized by adequate education, training, experience, and responsibility, enabling the organization to function accurately and accountably, prevent resource inefficiencies, and improve the quality of public services [6], [7], [8]. Previous studies have shown that HR competencies have a positive impact on government performance, the effectiveness of accounting information systems, and regional financial management (Ni Luh Dewi Tresna Mercika & I Ketut Jati, 2014; Dirgayuksa Sukma Putra & Ananta Wikrama, 2014; Muzaddik, 2017; Noprial Valenra Maksyur, 2015). Therefore, enhancing HR quality is key to supporting the implementation of the Regional Government Information System (SIPD) and ensuring the effective and accountable preparation of the Regional Revenue and Expenditure Budget (APBD).

In the context of implementing the Regional Government Information System (SIPD), several studies have shown the positive impact of this application on the quality of APBD preparation. SIPD supports the establishment of clean and accountable governance and helps achieve predetermined planning targets [9]. Emphasized that SIPD ensures that APBD preparation is carried out in an orderly manner and in accordance with the prevailing legal framework [10]. Further noted that SIPD provides up-to-date development data, thereby facilitating decision-making at both local and national government levels [5]. In addition, human resource (HR) competence is a crucial factor in the effectiveness of budget preparation. [11] found that low HR competence in Medan City had a negative impact on the optimality of APBD preparation. [12] asserted that HR quality is directly proportional to the quality of the budget produced, while [13] stated that enhancing government apparatus competence significantly improves the quality of budget preparation. Thus, the effectiveness of SIPD implementation and HR quality are interrelated in supporting accountable and high-quality regional financial management.

2. RESEARCH METHODOLOGY

This study employs a descriptive quantitative research method. Descriptive quantitative research is used to analyze data by describing or illustrating the collected data as it is, without the intention of drawing conclusions that apply generally or making generalizations.

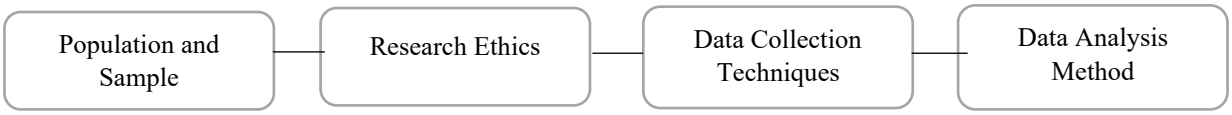

Figure 1. Research Structure

2.1 Population and Sample

The population of this study consists of several members of the Regional Budget Team (TAPD) and all 23 Regional Work Units (SKPD) in the Government of Padang Panjang City, with a total of 1,976 employees. The sample was determined using purposive sampling, a technique based on specific purposes or characteristics relevant to the research. The sample criteria included: (1) the Head of Planning Subdivision or Functional Planning Officials responsible for budget planning in each SKPD (23 individuals), (2) budget staff or operators in all SKPD (23 individuals), and (3) members of the TAPD (4 individuals). Based on these criteria, a total of 50 respondents were selected from the population to represent the sample of this study.

2.2 Research Ethics

This study was carried out in accordance with ethical principles, including obtaining informed consent from respondents, ensuring the anonymity of informants, and maintaining the confidentiality of both organizational and individual data. In addition, the researcher submitted a formal request to the institution where the study was conducted.

2.3 Data Collection Techniques

This study employs primary data, namely information obtained directly from the original sources and relevant to the research variables. The data was collected through field research by distributing questionnaires to respondents, in which respondents selected from predetermined answer choices. Measurements were conducted using a five-point Likert scale, ranging from "strongly disagree" (score 1) to "strongly agree" (score 5), representing the respondents' level of agreement with the given statements.

2.4 Data Analysis Method

After the primary data were obtained from respondents, the next stage was data analysis. This study employed descriptive quantitative statistics to obtain the distribution of respondents' answers through measures of mean and standard deviation, as well as inferential statistics using the Structural Equation Modeling (SEM) approach with Partial Least Squares (PLS) to analyze the relationships among variables. Data processing was carried out using SmartPLS 3. According to [14], SEM-PLS is a multivariate statistical method used to simultaneously test a series of relationships among variables with the objectives of prediction, exploration, or structural model development. SEM-PLS was chosen because it does not require the assumption of normal data distribution, is capable of handling complex models, and focuses on model testing as well as predictive and structural model development, rather than on generating new theories. Data processing with SmartPLS version 3.0 was conducted in three stages, namely:

1. **Outer Model or Measurement Model Analysis**
   The purpose of this stage is to assess the validity and reliability of the research instruments. Convergent validity is measured using factor loadings, with a minimum threshold of 0.60; items falling below this threshold are removed and the estimation is re-run[14]. Discriminant validity is evaluated through cross-loading, the Fornell-Larcker criterion, and the Heterotrait-Monotrait Ratio (HTMT), where a variable is considered valid if the square root of AVE is greater than the correlation with other variables and the HTMT value is less than 0.90. Internal consistency is assessed using Composite Reliability (CR) and Cronbach's Alpha, with a minimum value of 0.70 for confirmatory research, while values between 0.60–0.70 are still acceptable for exploratory studies. In addition, the Average Variance Extracted (AVE) is used to measure the extent to which the measurement items reflect the construct, with a minimum threshold of 0.50. The evaluation of the outer model ensures that the indicators and constructs in the study have sufficient validity and reliability before proceeding to the inner model analysis.
2. **Inner Model Analysis**
   The purpose of this stage is to evaluate the relationships among latent variables in the structural model. The goodness of fit (GoF) is assessed using the Q^2 value, where higher Q^2 values indicate that the model better fits the data. The GoF index evaluates not only the measurement model but also the structural model, while providing a simple measure to assess the overall predictive quality of the applied model [14].
3. **Hypothesis Testing**
   The objective of this stage is to explain the relationships and the direction of influence between endogenous and exogenous variables. The effects among variables are represented by path coefficients. Hypothesis testing begins with assessing the significance of the path coefficients, conducted using the bootstrapping method. A t-statistic value greater than 1.96 or a p-value less than 0.05 indicates a significant effect between variables; if p-value < 0.05, the null hypothesis (H_0) is rejected [14]. Subsequently, a 95% confidence interval of the path coefficients is calculated, which shows both the minimum and maximum range of the estimated effect between variables, thus providing an indication of how strong and consistent the influence is at the 95% confidence level.

3. RESULT AND DISCUSSION

This section presents the research findings and discusses the research topic, with a focus on the application of the employed methods. This can be achieved by clearly presenting the data obtained from the study.

3.1 Respondent Description

Of the 50 respondents from the Regional Government Units of Padang Panjang City, 46% were Functional Officials/Heads of Planning Subdivisions, 46% were Budget Operators, and 8% were members of the Regional Budget Team (TAPD). The majority (56%) had served for more than three years, while 22% had served for 2–3 years, 18% for

1–2 years, and 4% for less than one year. In terms of education, 76% held a bachelor's degree (S1), 12% a senior high school diploma, 8% a diploma (D3), and 4% a master's degree (S2). These results indicate that most respondents were experienced and had an adequate educational background to support the analysis of APBD management through SIPD.

3.2 Descriptive Statistical Analysis

The analysis results indicate that all statements were categorized as "Excellent," with the highest score of 94.00% obtained for the statement, "The process flow and features of the SIPD application are very clear, easy to understand, and facilitate its use," and the lowest score of 87.60% for the statement, "The information required for preparing the regional budget (APBD) is clearly and comprehensively available in the SIPD application." This shows that the implementation of SIPD is generally well-received and considered effective by users. The descriptive analysis further reveals that the overall competence of human resources is classified as very good. The highest score of 96.00% was obtained for the statement, "The need to assign employees with strong work ethics, skills, and experience in preparing the APBD," while the lowest score of 83.60% was recorded for the statement regarding the ease of using the SIPD application without special expertise, which is still considered good. Meanwhile, the APBD preparation process was also positively assessed by respondents, with the highest score of 93.20% for the statement on accurate projections of revenue, expenditure, and financing as key factors in maximizing government performance, and the lowest score of 85.60% for the statement concerning the need for guidance and supervision by the TAPD, which still falls into the good category. Overall, the data demonstrate that both human resource capacity and the APBD preparation process in Padang Panjang City support the effectiveness of budget management through the adequate implementation of SIPD.

3.3 Outer Model Testing

The feasibility of the data was tested prior to measurement to ensure the validity and reliability of the variables. The results of the factor loadings were subsequently used to assess whether each indicator is valid in measuring its respective variable, as illustrated in the following figure:

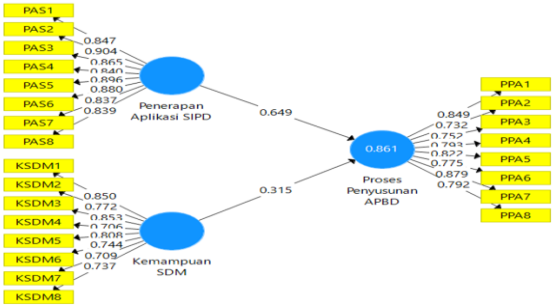

Figure 2. Factor Loading Path Diagram

Based on the table, all indicators have factor loadings greater than 0.7, indicating good convergent validity and confirming that all indicators are valid for measuring their respective variables. An indicator is considered valid if the factor loading exceeds 0.7, according to the recommendation by [14] notes that in the early stages of research, loading values between 0.5 and 0.6 are still acceptable, while [14] suggest that the rule of thumb for convergent validity testing is an outer loading greater than 0.5. Discriminant validity was assessed using Average Variance Extracted (AVE), Cross Loadings, and Latent Variable Correlation. AVE measures the proportion of variance in the measurement items that can be explained by their respective constructs (Hair et al., 2021). A high AVE value indicates that the indicators explain their respective construct better than other constructs, thereby achieving discriminant validity. The following table presents the results of discriminant validity testing using AVE.

Table 1. Discriminant Validity Test Using AVE

Matrix	Cronbach Alpha	Rho_A	Composite Reliability	Average Varience Extracted (AVE)
Penerapan Aplikasi SIPD	0,951	0,953	0,959	0,747
Kemampuan SDM	0,906	0,924	0,922	0,599
Penyusunan APBD	0,919	0,922	0,934	0,641

Based on the table above, all variables demonstrate good discriminant validity with Cronbach's Alpha values greater than 0.60, indicating that each construct has reliable inter-item correlations. In addition, the Average Variance Extracted (AVE) values exceeding 0.50 for each variable confirm that the constructs meet the criteria for discriminant validity. Therefore, all variables in this research model can be considered valid and reliable, while any variable with an AVE value below 0.50 would be regarded as not meeting adequate discriminant validity.

3.4 Inner Model Testing

The Inner Model, or structural model, is tested to predict the relationships among latent variables by evaluating the R-Square of the dependent variables and the Q-Square predictive relevance. A Q-Square value greater than 0 indicates that the model has predictive relevance, whereas a value ≤ 0 suggests that the model lacks predictive relevance. In terms of interpretation, a Q-Square value of 0.35 is considered strong, 0.15 moderate, and 0.02 weak [14]. Furthermore, the structural model is evaluated using R-Square values, path coefficients, and t-values for each path to test the significance of the hypotheses. Higher R-Square values indicate better predictive capability of the model for the dependent constructs, as emphasized.

3.5 Hypothesis Testing

Hypothesis testing was conducted to analyze the causal relationships among variables, specifically to determine the effect of exogenous variables (not influenced by other variables) on endogenous variables (influenced by other variables). An exogenous variable is considered to have a significant effect on an endogenous variable if the p-value is less than 0.05. Therefore, hypothesis testing provides the basis for drawing conclusions regarding the significance of the relationships among variables in the research model, with the results presented in the following table:

Table 2. Hypothesis Testing

Hopotesis	Original Sample (O)	Sample Mean (M)	Standar Deviation (STDEV)	T-statistic (|O/STDEV|)	P-values
Penerapan Aplikasi SIPD -> Proses Penyusunan APBD	0,649	0,621	0,111	5,838	0,000
Kemampuan SDM -> Proses Penyusunan APBD	0,315	0,326	0,111	2,835	0,005

The results of hypothesis testing indicate that the implementation of the SIPD application has a significant positive effect on the APBD preparation process, with an original sample value of 0.649. This means that a one-unit increase in SIPD implementation will increase the APBD preparation process by 0.621 units. This is supported by a T-statistic of 5.838 (>1.96) and a p-value of 0.000 (<0.05), leading to the rejection of H_0 and acceptance of H_1. Furthermore, human resource (HR) competence was also found to have a significant positive effect on the APBD preparation process, with an original sample value of 0.315, indicating that a one-unit increase in HR competence will enhance the APBD preparation process by 0.326 units. The T-statistic of 2.835 (>1.96) and p-value of 0.005 (<0.05) support this conclusion. Therefore, it can be stated that the better the implementation of the SIPD application and the higher the HR competence, the more optimal the APBD preparation process.

3.6 Discussion

The findings of this study demonstrate that the implementation of the SIPD application has a significant positive impact on APBD preparation, meaning that the better the implementation of SIPD, the more effective the budget preparation process. The study shows that SIPD implementation received an “excellent” score across all indicators, with respondents experiencing ease in their work due to the clear process flow, user-friendly features, continuity of data between development planning and finance, and document outputs that comply with regulations and can be directly used as reporting materials. These findings are consistent with the study by [9], which emphasizes the benefits of SIPD in terms of timeliness, relevance, and convenience; [10], who states that budget preparation through SIPD complies with applicable legal provisions; and [5] who assert that SIPD enables local governments to provide up-to-date development data and supports decision-making.

Based on the research results, human resource (HR) competence has a significant positive effect on the APBD preparation process, indicating that employee competence is a critical factor in successfully preparing the budget according to plan. The study shows that the HR competence variable received an “excellent” score across nearly all indicators, suggesting that the knowledge, experience, and understanding of SKPD employees regarding their respective duties and functions play a vital role in producing an accurate APBD. Furthermore, improving HR quality through training, regulatory socialization, and mastery of the SIPD application serves as a major supporting factor. These findings are consistent with previous studies, including [11] who stated that HR competence significantly affects APBD preparation; [12] who emphasized that HR quality is directly proportional to the quality of budget preparation; and [13] who concluded that improving the quality of government personnel positively impacts the quality of budget preparation.

4. CONCLUSIONS

The study conducted on the Government of Padang Panjang City concludes that the implementation of the SIPD application and human resource (HR) competence have a significant positive effect on the APBD preparation process. SIPD supports the effectiveness and efficiency of planning through to accountability, while competent HR ensures the accuracy and quality of budget preparation. Therefore, it is recommended that the Government of Padang Panjang City prepare the APBD on time, enhance the development of the SIPD application through coordination with developers, and

strengthen HR capacity within SKPDs through training and dissemination of the latest regulations, in order to produce a higher-quality APBD that supports regional development and public welfare.

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