SI CANTIK LPD: A Supervisory Information System for Village Credit Institutions in Bali

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ABSTRACT:

This study develops a supervisory information system to strengthen oversight of Village Credit Institutions (LPD) in Bali. Weak monitoring practices during and after pandemic have exposed LPDs to persistent fraud risks and financial reporting failures. Using a mixed-method design, the study combines qualitative case evidence with descriptive quantitative analysis to identify supervisory processes, control requirements, and risk indicators. These inputs are translated into a system and control framework. The resulting system—SI CANTIK LPD (Supervisory Information System Model for LPD)—extends the earlier SIPEDAL model by integrating supervisory workflows across the operating cycle and embedding risk mapping and red flags detection mechanisms. The model was piloted at LPD Padang Luwih, Badung, Bali to support the supervision process and internal control effectiveness. Conceptually, the study links supervisory information systems to moral-hazard conditions arising from concentrated authority and limited monitoring while recognizing religious spiritual values as context-specific governance resources in customary financial institutions. The findings provide a structured approach to integrating general and application controls into a supervisory information system. The pilot nature of the implementation limits generalizability and calls for broader multi-site evaluation.

Keywords: LPD; SI CANTIK; monitoring system; supervisory information system; internal control; fraud risk; Balinese customary institutions.

JEL code: G21, M15, M42, D82

INTRODUCTION

Village Credit Institutions (Lembaga Perkreditan Desa / LPDs) constitute one of Bali s most consequential community-based financial infrastructures. Embedded in the institutional architecture of desa adat (customary villages), LPDs operate at scale across Bali and collectively mobilize very large financial resources. This scale creates a dual reality. On the one hand, LPDs have substantial economic potential to sustain local savings mobilization, expand access to credit, and support micro- and small-enterprise activity. On the other hand, they could also create a financial tsunami with systemic impacts on the Balinese economy, as their cumulative assets reach 25 trillion rupiah, facing inherent problems such as liquidity and other issues inherent to financial institutions. This is a concern given the varying expertise required for financial structures and the uneven quality of human resources to understand and manage different LPD financial entities. These conditions imply that weaknesses in governance, liquidity management, and financial reporting are not merely internal organizational issues; they can propagate wider trust and stability risks for the Balinese economy.

In recent years particularly during the pandemic period LPDs have faced growing reputational and operational pressure. Reported cases of fraud, administrative errors, and alleged misconduct among administrators have eroded stakeholder confidence and revived persistent concerns regarding accountability and supervisory effectiveness. For community-based financial institutions, trust is not a peripheral asset; it is the core infrastructure that sustains deposit behavior, loan repayment discipline, and institutional legitimacy. Once confidence deteriorates, the resulting liquidity pressure and governance turbulence can escalate rapidly, especially in institutions that rely heavily on relationship-based intermediation.

LPDs are expected to advance financial inclusion and local economic resilience. As a village-rooted microfinance institution, an LPD is intended to reduce vulnerability to informal debt traps, widen community access to productive credit, and sustain local entrepreneurship objectives that are particularly salient in periods of economic shock. Beyond the economic role, LPDs are also frequently positioned as instruments for preserving Balinese customary life, because they operate within the moral and institutional order of desa adat. This positioning introduces a distinctive governance context: LPD performance and compliance are not assessed solely through conventional financial metrics, but also through the community s expectations of propriety, balance, and social legitimacy.

The uniqueness of LPDs is anchored in their ownership and decision-making arrangements. Control rights and accountability mechanisms are closely tied to customary village governance rather than to private shareholding. This structure produces a specific form of social ownership, where the community holds authority over key decisions, oversight, and legitimacy. Consequently, the governance model depends heavily on culturally embedded leadership and communication norms, as well as shared values that shape ethical conduct and compliance. In microfinance settings, such embedded values can be strategically relevant because institutions interact intensively and repeatedly with customers, making trust, norms, and relational accountability central to service delivery (Ashta & Hannam, 2014).

Within Balinese customary law, custom and religion are intertwined; therefore, ethical behavior and ritualized norms are not external to organizational life but are integral to it. Ethics, morality, and everyday ceremonial practices function as continuous reminders of appropriate conduct and balanced relationships, both vertically (individual accountability) and horizontally (community harmony). In principle, these values should strengthen the control environment supporting discipline, prudence, and responsibility. In practice, however, values alone are insufficient when supervisory mechanisms are weak, when authority is concentrated, or when monitoring is perceived as ineffective. Under such conditions, moral hazard may arise through opportunity, discretion, and the sense of being unsupervised resulting in fraud risk and financial reporting failures.

This tension highlights a critical governance gap: the need to translate normative expectations (customary rules such as awig-awig and perarem) into operational risk management and effective supervision. Inherent risks such as credit risk, liquidity risk, operational risk, and reporting risk are unavoidable in financial institutions. The differentiator is not the presence of risk, but the strength of oversight, internal control design, and the reliability of accountability processes. For LPDs, strengthening supervision is especially urgent because failures are typically experienced not as isolated technical errors, but as breaches of community trust.

Accordingly, this study is motivated by a practical and institutional question: how can LPD supervisory functions be strengthened through a monitoring information system that supports planning, implementation, and accountability while improving early detection of fraud and reporting anomalies? To address this, the paper develops an information system model SI CANTIK LPD (Supervisory Information System for LPD) intended to support the supervisory department with structured monitoring, clearer control points, and risk-area identification. The design logic emphasizes two complementary layers: (i) general controls that align the overall business model and governance process with supervisory requirements, and (ii) application controls that operationalize monitoring routines, documentation, and exception handling within the system. The expected outcome is a more consistent supervisory workflow that can function across heterogeneous LPD capacities, reduce discretion-driven vulnerabilities, and strengthen accountability to customary stakeholders.

This study contributes to the accounting and information systems literature in three ways. First, it frames supervision in LPDs as a control-environment problem in culturally embedded financial institutions, where formal monitoring must complement normative governance. Second, it operationalizes internal control and risk monitoring into a system design that is implementable in resource-constrained, community-based finance settings. Third, it positions culturally grounded values not merely as context, but as organizational assets whose effectiveness depends on the presence of compatible control mechanisms and information infrastructures.

The remainder of the paper proceeds as follows. The next section reviews the relevant literature on internal control, supervisory governance, and monitoring in community-based financial institutions. The methodology section explains the design and development approach used to derive system requirements and control specifications. The results section presents the SI CANTIK LPD model and its core modules, including identified risk areas and red-flag indicators. The discussion highlights theoretical and practical implications for LPD governance and customary village oversight.

The final section concludes with limitations and directions for future research.

LITERATURE REVIEW

Human Resources Capacity and System Development

Capacity is the ability, skills, understanding, attitudes, values, relationships, behaviors, motivations, resources and circumstances that enable individuals, organizations, networks/sectors and broader systems to meet and achieve predetermined development goals. Then (Milèn, 2001). Human resources are people who are ready, willing and able to contribute to achieving organizational goals. Human resources include three aspects: education, experience and training. Staff must be good, because good staff also means good sense. People are responsible for managing the organization, so human resources are an important element and are always present in the organization (Hullah et al., 2012).

Further definition, Milen (2001), also provides the understanding of capacity building as a process in which individuals, groups, organizations, institutions and communities increase their abilities: (a) to carry out the main tasks and functions (core function), solve problems, formulate and implement the achievement of given goals and (b) understand and implement development needs in a broader context in a sustainable manner. This is in accordance with the concept of capacity development Grindle (1997), according to which capacity development is the ability to carry out the right tasks effectively, efficiently and sustainably (the ability to carry out the right tasks effectively, efficiently and sustainably).

According to Grindle (1997), capacity development has dimensions, focus, and types of activities. These dimensions are:

1. dimensions of human resource development, with a focus on professional personnel and technical capabilities as well as types of activities such as *training* , direct practice, work climate conditions, and recruitment
2. organizational strengthening dimensions, with a focus on management systems to improve the success of roles and functions, as well as types of activities such as incentive systems, personnel equipment, leadership, organizational culture, communication, managerial structure;
3. institutional reform, with a focus on institutions and systems *public sector organizations* (enhancing the capacity of public sector organizations) and macro structures, with types of activities such as political and economic regulations, policy and regulatory changes, and constitutional reform.

Human resource development activities include the procurement or provision of professional and technically skilled personnel. These activities include appropriate recruitment systems, education and training, salary/wage provision, and the regulation of working conditions and environments. Organizational strengthening focuses on management systems, improving the performance of existing tasks and functions, and structuring microstructures. Activities that must be undertaken include organizing incentive systems, optimizing existing personnel, leadership, communication, and managerial structures.

Risk Management at LPD

Discussing risk is inseparable from an organization's efforts to maintain sustainability. The sustainability of LPD financing can be viewed from two perspectives. First, on the supply side, LPD offers a range of environmentally focused financial products with low negative social externalities. LPD offers a special credit system for savers and residents working in the renewable energy sector. On the other hand, one can imagine if all of that credit were extended to individuals whose credibility in environmental management is still questionable. Demand-side factors must truly instill a sense of responsibility into the company's operations.

These risks are not solely financial but also incorporate natural disaster risks into their business risk profiles. The daily operations of financial services institutions directly impact environmental quality, such as waste, water, and sewage issues. Furthermore, a well-organized and actionable regional disaster preparedness and preparedness plan is key to the company's operation. LPD products and services can cause environmental pollution if they do not implement proper environmental management and monitoring. Upstream (financial services institutions) and downstream (financial companies) share a common perspective and collaborate in assessing social and environmental issues.

Sustainable LPDs, as a central effort of traditional villages towards sustainability, will have both direct and indirect implications for LPD performance. Several studies have shown that the application of sustainability issues in business and industry practices generally impacts business performance, both financial and non-financial. The application of sustainability issues in LPD businesses will also impact LPD performance, both financial and non-financial.

Risk is a danger, a threat, or the possibility of an action or event that contradicts a desired goal. However, risk should also be viewed as an opportunity, seen as the opposite of achievable goals. Therefore, the key words are goals and the effects on the opposite side. Both LPDs and financial institutions in general are managed in the same way: they take funds from the public (LPD customers) and then distribute them to those in need (LPD customers) in the form of loans. Given these risks, it's appropriate for LPDs to implement a risk-based management concept. This means that the risks they face can be mitigated by implementing risk management across all divisions and sectors. This requires LPD managers and directors to possess risk management skills or have participated in a risk management certification program. The concept offered is naturally tailored to the LPD's business risk level.

One step that can be taken to minimize existing risks is by implementing risk management in LPD business practices. Upon closer examination, the risk factors inherent in cooperative businesses, particularly LPDs, are numerous and diverse. These include:

1) Credit Risk, this risk is defined as the risk of loss in connection with the borrower being unable and/or unwilling to fulfill the obligation to repay the funds borrowed in full at maturity or thereafter.
2) Liquidity Risk, the risk caused by LPD being unable to fulfill its obligations as they fall due.
3) Operational Risk, operational risk is defined as the risk of loss or inadequacy of internal processes, human resources and systems that fail or from external events.
4) Business Risk is the risk associated with the competitive position between Cooperatives and the prospects for the Cooperative's success in market changes.
5) Strategic Risk is the risk associated with long-term decisions made by managers and administrators.
6) Reputational Risk, the risk of damage to LPD resulting from negative public opinion.
7) Legal risk is a risk that arises due to negligence with existing customary rules.
8) Political risk is the risk that arises due to political stability.
9) Compliance Risk is the risk that arises due to non-compliance with regulations.
10) Environmental Risk is LPD mitigates environmental risks through the products and services provided.

The implementation of risk management in LPD operations is naturally in line with business growth. For small LPDs, minimal risk management implementation helps mitigate credit risk, liquidity risk, and operational risk. LPDs with large business sizes and complexities that have suffered losses from legal, reputational, strategic, and compliance risks that could threaten their business continuity must implement risk management for all of these risks.

There are several main keys to controlling risks that LPD actors need to pay attention to:

1) Avoidance. Risk avoidance is generally difficult to achieve because it is impractical and impossible.
2) Reduction. This can be done for several reasons, such as preparing a certain amount of liquidity to ensure the cooperative's ability

to meet maturing obligations and reviewing existing financial records.

3) Distributing risk can be done in several ways, essentially reducing the risk of loss. For example, cash isn't stored in a single location.

4) Making assumptions. Making assumptions about risk is the most practical tool if other alternatives are no longer available. For example, we might assume that in certain months, the LPD must stop or reduce its financing activities due to the potential for *side-steaming* or vice versa.

5) Transferring. Risk transfer can be done by using another party to shoulder the burden of potential losses. For example, credit insurance.

6) Monitoring. The implementation of risk management has been progressing well, and ongoing reviews are being conducted to ensure continuous *improvement*.

The value of sustainable finance is expected to encourage LPDs (Lembaga Pembangunan Daerah) to develop financial products and services that implement sustainable finance principles, thereby positively contributing to financial system stability. Furthermore, sustainable finance values are also expected to reduce social inequality, mitigate and prevent environmental damage, preserve biodiversity, and promote efficient use of energy and natural resources.

According to Johnstone and Bedard (2003), risk evaluation is crucial for organizations or companies because it impacts the governance mechanisms developed by the company. Internal oversight will be effective when risk evaluation is conducted properly, systematically, and measurably. Johnstone (2000) and Kotchetova *et al.* (2006) also stated more or less the same thing: risk evaluation will determine the monitoring strategy to be implemented, meaning that the higher the company's risk, the greater the scope of supervision. However, not all risk management strategies will be effective if they are not reinforced by corporate culture and local wisdom that is still accepted and believed to be true. Since the large-scale fraud cases that befell large companies in the United States (US), which led Congress to sign the Sarbanes-Oxley Act, the need for a culture of compliance with risk management has increased.

According to Ramos (2009), evaluations conducted to assess a company must be accompanied by a thorough understanding of the company's internal control systems and business processes. Business processes also encompass the company's culture, which is the company's value system. This understanding impacts the evaluation results, resulting in more effective risk management.

Catur Purusa Artha as a showcase of cultural values can be used as a basis for business activities (Pancadana & Parwata, 2013). The culture or local wisdom of Catur Purusa Artha explains four important things for LPD in managing business risks. (1) Dharma, is the main basis of LPD in carrying out its business activities. Business activities carried out by LPD must always be based on Dharma, namely goodness or good *governance*. After practicing goodness in carrying out its business activities, God the Almighty will bestow blessings in the form of Artha to his people who have consistently practiced his teachings. Artha, in this case, after the main foundation is implemented by the LPD Institution in the form of carrying out the teachings of Dharma or goodness, then LPD emphasizes its business activities on the aspect of profit in the form of interest income from the banking business carried out. After the aspect of Artha, which is the second goal, is fulfilled, the next is Kama, namely lust or desire or the fulfillment of desires based on needs. With Artha, kama, or desires can be fulfilled with the profits obtained by LPD in its business activities. After the three stages above are achieved, the last is Moksa. Moksa referred to here is physical and spiritual happiness. Business activities can contribute to the community's economy, thus easing the burden of life. This will lead to greater happiness as their basic needs are met. These four aspects of Catur Purusa Artha encompass risk management within the values embraced by the managers or administrators, enabling LPDs to operate sustainably.

Research conducted by Astawa *et al.* (2012) shows that the practice of harmonious values represented in the Tri Hita Karana culture has an influence on the credit risk of LPDs (Village Credit Institutions). The essence of Tri Hita Karana will lead to a decrease in *NPLs* (*Non-Performing Loans*), which is one of the most important indicators in assessing the health of LPDs. Price, quality, risk, and service should be based on religious values expressed in religious literature that are believed to be true. Culture is inherent in a person's lifestyle related to the risks faced, including risks and responsibilities. Research by Suartana (2015) shows that LPD administrators who internalize the values of Tri Hita Karana and Catur Purusa Artha result in lower business risks compared to those without these two cultural values. The same thing is possible to be tested within LPDs. This result is in line with research by Thomson *et al.* (1990) in Ashta and Hannan (2014) on risk theory, which indicates that individuals expect risk perceptions and strengthen their commitments that come from the external culture they have as a *way of life*.

LPD organizations typically already have several focus areas for risk management. As organizations grow in complexity and serve broader markets, it becomes challenging to understand how various organizational units interact and relate to each other, and how risk is managed in an integrated and comprehensive manner, from simple risk reduction measures to sustainable risk management, which involves optimizing risk without harming the company.

Risk management also encompasses the potential for fluctuations that could adversely affect profits, cash flow, or capital, resulting from inadequate internal control systems. Figure 2.2 below presents the Sustainable Business Platform (Aon, 2013) as a framework for a sustainable business risk management model within an organization.

Figure 2.1 Sustainable Business Platform

Figure 2.1 shows how the LPD developed a sustainable business platform. Risk mitigation encompasses four key elements: sustainability, social and environmental sensitivity, and the development of shared values and agreements within the LPD organization.Culture helps indiv iduals or groups understand risks and contribute collectively to the problems faced by an organization. These values become the LPD's *way of life*. Efforts to develop a risk-sensitive organizational *culture* begin with the control environment. A poor control environment can lead to various problems affecting LPDs. Some of the identified indicators are as follows:

- Authority without control at the management level.
- Management is easily intervened, for example in decisions regarding granting credit.
- Poor compensation system.

Figure 2.2 (modified COSO) shows how LPDs implement risk management toward a risk-aware culture and values. The values that should remain eternal are Karma Pala. When LPDs face extraordinary challenges, such as those in 2020, they should respond with the value of "nrimo" (acceptance), but not despair. Despair is not the LPD's identity. Effort is effort and effort. Effort is synonymous with hard work accompanied by prayer.

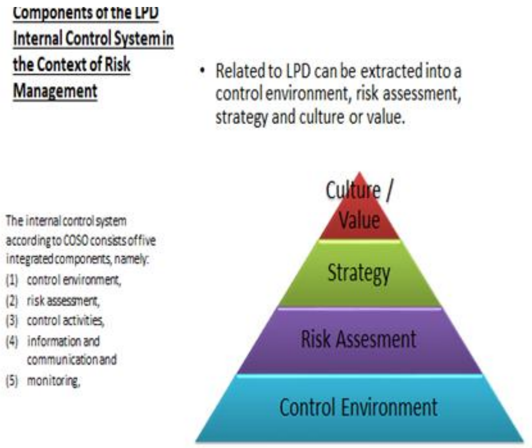

Figure 2.2 Implementation of LPD Risk Management

Fraud Theory

Fraud is a deliberate act with the aim of obtaining illegitimate benefits, either for oneself or an institution by using deception or false advice or suppression of truth or other unethical means, which is believed and relied upon by others. The Indonesian Institute of Public Accountants (IAPI, 2021) in Udayani and Sari (2017) explains accounting fraud as:

1) Misstatements that arise as a result of fraud in financial reporting are misstatements or deliberate omissions of amounts or disclosures in financial reports to deceive users of financial reports.
2) Misstatements arising from improper treatment, often referred to as misuse or embezzlement, involve the theft of an entity's assets, resulting in financial statements not being presented in accordance with generally accepted accounting principles in Indonesia. Misuse of an entity's assets can occur in various ways. For example, embezzlement of cash receipts, theft of assets, or actions that cause an entity to pay for goods or services not actually received. Misuse of assets may involve recording false or misleading documents and involve one or more individuals among management, employees, or third parties.

According to the Association of Certified Fraud Examiner (ACFE) in Abdul Halim (Halim, 2015:140) fraud is anything that can be used cunningly to gain an advantage by hiding the truth, trickery or trickery and other dishonest means. From a criminal law perspective, accounting fraud is classified as an administrative crime. Sutherland as quoted by Geis and Meier (1977) explains that white collar crimes in business include misrepresentation of financial statements, capital market manipulation, commercial bribery, bribery and acceptance of public bribes either directly or indirectly, tax fraud and bankruptcy. From the various definitions above, a general indication can be drawn that according to the Indonesian Institute of Public Accountants (IAI), accounting fraud is misuse/embezzlement or improper behavior, while Sutherland (1940) as a legal expert considers accounting fraud as a criminal act or crime.

Based on the definitions mentioned, it can be concluded that Accounting Fraud Tendency is the desire to do anything to gain profit in a dishonest manner such as covering up the truth, fraud, manipulation, cunning or deception which can take the form of misstatements in financial reports, corruption and misuse of assets.

Fraud Hexagon

The fraud hexagon is a concept developed by Vousinas (2019). This concept builds on previous fraud theories, such as *the fraud triangle, fraud diamond,* and *fraud pentagon*. The components of *the fraud hexagon* are explained as follows:

1. *Pressure/Stimulus/Incentive*

Incentives (or motivations) are the impetus to commit fraud and can be financial or non-financial. These pressures can include financial needs, the desire to report better results to achieve goals, pressures related to the work environment, the desire to achieve a certain professional status, or sometimes simply the desire to demonstrate one's ability to cheat the system (Vousinas, 2019).

2. *Opportunity*

Opportunity is the ability to commit fraud. Fraudsters believe they can commit fraud undetected. Note that opportunity must be experienced concretely by the perpetrator, meaning it doesn't have to be implicitly real. Fraud research shows that certain positions and authority can offer opportunities within an organization (Vousinas, 2019).

3. *Rationalization*

Rationalization refers to the perpetrator's justification. Perpetrators see themselves as honest individuals and not criminals. Therefore, to accept the fraud, the perpetrator must rationalize it (Vousinas, 2019).

4. *Capability*

Ability or capability refers to an individual's character and abilities, which play a significant role in determining whether fraud actually occurs under pressure, opportunity, and rationalization. In some cases, particularly major frauds, the fraud would not have occurred without the right person with the right skills to execute the planned fraud (Vousinas, 2019).

5. *Ego*

One of the primary motives for white-collar crime (including fraud, deception, or collusion) is the desire to feel better, to feel superior, and to impress others. When it comes to ego, when scammers succeed in committing fraud immediately, they are happy because they can deceive others and demonstrate their superiority over them (Vousinas, 2019).

6. *Collusion*

Element *of fraud* is collusion, which refers to an agreement between two or more individuals to commit an act that harms another party. Collaboration can be unintentional when fraud is rampant within an organization and fraudsters use their positions and skills to exploit individuals who are not truly involved (Vousinas, 2019).

Based on the explanation above, the concept and components *of the fraud hexagon* can be described as follows:

Figure 2.3 Concept and Components of the Fraud Hexagon

Types of Fraud

The ACFE (2024) describes occupational *fraud* in the form of a *fraud tree. This fraud tree* explains that there are three main categories *of fraud* : *asset misappropriation, financial statement fraud,* and *corruption.*

a) *Asset Misappropriation*

Misappropriation of property or theft of property, misuse of company resources. In *the fraud tree,* misappropriation of funds consists of two categories, namely: 1) cash embezzlement (cash theft, cash receipt theft, and fictitious fund payments); and 2) embezzlement of property and other assets (embezzlement and theft). Asset embezzlement is a common type of employee fraud and involves a variety of different schemes. This type of fraud is common, but the losses per transaction are relatively small (Singleton & Singleton, 2010).

b) *Financial Statement Fraud*

Financial statement fraud schemes occur when the perpetrator intentionally causes material errors or omissions in an organization's financial statements. According to the ACFE fraud tree, there are two categories of accounting fraud: 1) overstatement of net worth/net income and 2) understatement of net worth/net income. This type of fraud is usually perpetrated by company executives, and although relatively rare, it is dangerous. Managers who commit accounting fraud are usually motivated by stock price-related motives (e.g., stock premiums, pressure to raise or inflate stock prices) (Singleton & Singleton, 2010).

c) *Corruption*

The third type of fraud is corruption, or graft, which includes crimes such as bribery, conflicts of interest, and extortion. The frequency and severity of this type of fraud fall somewhere between embezzlement and accounting fraud. In its fraud tree, the ACFE explains that there are several forms of corruption: 1) conflicts of interest, 2) bribery, 3) ill-gotten gains, and 4) financial extortion. Corruption usually involves both internal and external parties, even if one party is unwilling to do so (Singleton & Singleton, 2010).

The following is *the Fraud Tree* according to ACFE (2020):

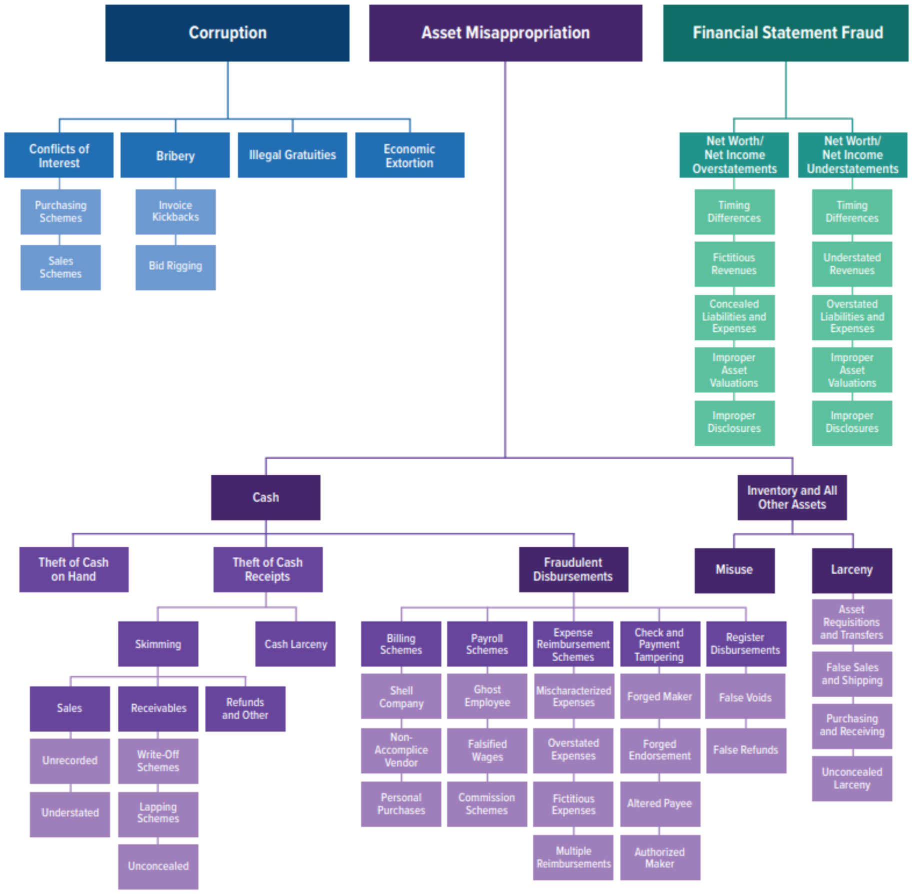

Figure 2. 4 Fraud Tree (ACFE, 2020)

LPD Business Processes and Fraud Prevention

LPD as a Village Financial Institution is engaged in savings and loan business, where the service products offered by LPD in its business are through savings, deposits and loans from the community which are then distributed in the form of effective credit provision. The LPD has made a significant contribution to the Balinese community compared to other microfinance institutions (Bisnisbali.com, 2018). There are 1,433 LPDs spread across traditional villages in Bali, with total assets of IDR 21 trillion (Balipost.com, 2019). LPDs have also employed 8,000 employees and 4,000 internal supervisors. LPDs contribute not only to traditional villages but also to Bali. LPDs contribute to managing community funds to make them more productive, building the rural economy by providing loans to communities for businesses, and playing a role in developing the creative economy in rural areas (Sari & Mahyuni, 2020). It can be said that LPDs' contribution to the development of the people's economy in traditional village environments is successful, but despite this, not all LPDs are able to thrive. This is confirmed by a number of LPDs whose companies are listed as experiencing difficulties, even bankruptcy. Based on data obtained by the LPD Special Committee in 2017, 158 LPDs (11.03%) in Bali were declared bankrupt due to their inoperability. According to Sujana et al. (2018), the unhealthy condition of LPDs is caused by embezzlement and corrupt practices.

Preventing fraud in LPDs requires a collective commitment from all stakeholders (the Paraman village community, the customary village apparatus, and the LPD management) to protect the LPD from fraudulent behavior. Fraud within an organization disrupts its operations and can even potentially damage it. In financial institutions, particularly LPDs, fraud not only causes financial losses but also discourages villagers from depositing funds with LPDs. To avoid these losses, LPDs must improve their human resources to prevent fraud, ensuring that the LPD's objectives are met and fulfilled as expected.

Several factors causing problems to arise in internal and micro LPDs include poor LPD governance, LPD managers and supervisors who have not yet optimally designed and operated control systems. Internal controls, as well as sustainable financial management, are not well understood by LPD actors (Suartana & Jati, 2015).

RESEARCH METHODOLOGY

There are 1,438 LPDs in Bali engaged in savings and loans, so the approach used in this study is a combination of qualitative and quantitative. The qualitative approach is a case study, focusing on in-depth aspects to obtain more comprehensive data, including written, spoken, actions, symbols, physical objects or visual images, and numbers, not only converted into numbers but also non-standard shapes, sizes, and forms. The quantitative approach is descriptive, presenting descriptive statistical data. Qualitative approaches generally rely on data collection through *interviews*, observation, documentation, and focus group discussions. These techniques are relevant because a phenomenon's meaning will be better understood if the researcher interacts with the research subjects where it occurs. The compiled data consists of secondary data obtained from various sources. Primary data, as the main data, is obtained through observation, interviews, and/or in-depth interviews with key informants. Further analysis, namely descriptive analysis, involves sorting the data into information, such as trends and patterns.

RESULTS AND DISCUSSION

LPD Supervision Model in Bali

Researchers collected data through observations and interviews throughout the study. To develop SI CANTIK LPD (LPD Supervisory Information System), we analysed data and business processes from the LPDs used as *pilot projects* in this research. With the support of this system development, LPDs are expected to fulfill their role as pillars of village economic activity and function as social and commercial institutions.

The LPD studied and used as a *pilot project location* is the LPD of Padang Luwih Traditional Village, Dalung Village, Badung Regency. *The pilot project* itself is a trial implementation of a system related to the development of a new information system, which is generally carried out in several work units using a pilot method. The LPD's business processes have been observed and will form the basis for the design of SI CANTIK LPD (LPD Supervisory Information System) . The hope is that the information system is on target and can help related parties to carry out optimal supervision of LPDs.

Padang Luwih Traditional Village LPD Business Process

The LPD is a financial institution owned by the Village of Pakraman, which carries out financial functions and manages financial resources belonging to the Village of Pakraman in the form of savings and loans. The presence of the LPD in the Village of Pakraman provides enormous benefits for the economic life of the village community. The benefits obtained are being able to provide credit to Village of Pakraman residents with relatively low interest rates, in the process of granting credit to prospective customers is flexible or not complicated, equalizing the economy in the Village of Pakraman, creating jobs, and the presence of the LPD can maintain the development of the Village of Pakraman. With the presence of the LPD, it is hoped that the poverty rate in the area covered by the LPD will decrease.

Of the many LPDs in the Traditional Village, the Padang Luwih Traditional Village LPD is one of the LPDs that is considered "sound". The results of the 2021 LPD Health Assessment are proven by obtaining a score of 94.51 and the results of the 2021 risk rating assessment obtained a score of 78.13 Rank II, where the score is categorized as low risk. The existence of the "Healthy" category LPD Padang Luwih Traditional Village is inseparable from a series of activities in the form of well-conducted business processes. The competitive value of the LPD Padang Luwih Traditional Village is able to respond to every change and maintain the economic life of the Village community. The following is an overview of the business processes carried out by the LPD Padang Luwih Traditional Village.

The LPD of Padang Luwih Traditional Village has 18 administrators and employees, consisting of 3 administrators (Head, Administration and Treasurer) and 15 employees. The number of LPD internal supervisors is 7 people consisting of 1 chairman and 6 members. The LPD of Padang Luwih Traditional Village has participated in various training activities, technical guidance and other activities organized by the Bali Provincial Government, Badung Regency Government, LPLPD and BKS-LPD. The knowledge and skills obtained during training or during technical guidance in general have been implemented in the LPD of Padang Luwih Traditional Village.

The LPD of Padang Luwih Traditional Village has a suitable office building to provide services to its village members (customers). In implementing financial administration, the LPD has been equipped with an LPD application program (*database*) capable of recording and processing financial transactions, and producing informative and auditable financial reports. In addition, the LPD application program has been able to carry out payment system transactions (electricity, PDAM) which have run as expected. As reported by the LPD Management, the acquisition cost of fixed assets and inventory has been financed by depreciation to obtain book value.

An organizational structure is necessary for the LPD because it systematically depicts formal relationships that illustrate the division of tasks, authority, and responsibilities, thereby creating harmony and work alignment. The organizational structure of the LPD in Padang Luwih Village aims to facilitate and clarify relationships between units, both vertically and horizontally.

1. Customary village
   a. The duties of the customary village are to ratify the accountability of LPD activities, ratify the LPD's annual work plan, ratify the distribution of profits, and ratify the use of social funds.
   b. The responsibility of the customary village is to be responsible for the smooth operation of the Village Credit Institution (LPD).
2. Internal Supervisor
   a. The duties of the internal supervisor are to carry out supervision of LPD activities, provide suggestions, considerations and participate in resolving existing problems, provide instructions to the management, socialize the existence of LPD, evaluate the performance of the management periodically, and compile and submit reports on the results of supervision to the village heads.
   b. The supervisory body is directly responsible to the Traditional Village Head
3. Head of LPD
   a. The duties of the Head of LPD are to coordinate the management of LPD, be responsible for the development of LPD management and be responsible for representing LPD both inside and outside the court, enter into agreements with customers/third parties, prepare work plans (RK), and draft income and expenditure budgets (RAPB), and determine LPD operational policies.
4. General Administration Section
   a. The task of the administration is to organize general administration
   b. The administration is responsible to the head of the LPD for the tasks assigned to it.

5. Treasurer (cashier) Section
   a. The treasurer's duties are to carry out financial transactions, make cash minutes, and store and withdraw funds placed at PT. BPD Bali.
6. Credit Section
   a. The duties of the credit section are to assist the management in coordinating activities related to credit, preparing plans for credit needs, use and monitoring of credit, carrying out administrative services related to credit applications that will be requested and credit that will be granted, receiving analysis results from the credit analysis section and approving them, and coordinating LPD receivables product bills to village karma.
7. Savings Section
   a. The task of the savings section is to create/record every savings transaction, send evidence of savings transactions to the bookkeeping section, match savings books, and socialize LPD products to village communities.
   b. The savings section is directly responsible for all tasks to the head of the cashier section.
8. Teller
   a. The teller's job is to receive installment payments, interest and other things from debtors, make receipts for payments for telephone, electricity, PDAM and other bills, and make cash minutes at each cash closing.
   b. The teller section is directly responsible for all tasks assigned to the cashier section.
9. Credit Analysis
   a. The credit analysis task is to receive credit applications, make credit analyses, submit the results of credit analyses, make a list of credit realizations with the approval of the head, make a list of credit deductions, and carry out credit billing tasks.
   b. The responsibility of credit analysis is to be directly responsible to the credit department for the tasks assigned.
10. General Administration
    a. General administrative duties include preparing general administrative services/recording, carrying out general affairs/correspondence, expedition agendas, equipment and others, as well as receiving criticism and suggestions from LPD employees through administration.
    b. The responsibility of general administration is to be directly responsible to the administration for the tasks assigned.
11. Field Officer of Savings Section
    a. The task of the savings field officer is to write down the amount of money saved in the savings book, check the amount of money saved in the savings book and make initials and stamps on the savings, and record the amount of money saved in the savings receipt and recapitulation book.
    b. The responsibility of the savings field officer is to be responsible to the savings section for the tasks assigned.
12. Security guard
    a. The security guard's job is to maintain LPD security every day.
    b. The security guard's responsibility is to be directly responsible to the head of the LPD through general administration.
13. *Cleaning Service*
    a. *The cleaning service's* duties are to open and close the office, maintain office cleanliness, and deliver letters.
    b. *Cleaning service* is directly responsible to general administration

LPD Padang Luwih Balance Sheet consists of Assets, Liabilities and Equities. Assets comprises of Cash, Interbank Assets/ABA (Giro, Savings, Deposit), Loans granted (CPRR), Fixed Assets & Inventory (Depreciation), and Miscellaneous Assets. Meanwhile the liabilities comprise of

Savings (Time Deposit, Interbank Liabilities, Loans received, and other liabilities. The Equity comprises Paid-in capital: Authorized Capital, General Reserves, Last Year's Profit/Loss and Current Year Profit/Loss.

Internal supervisors conduct substantive audits of LPD assets, liabilities, capital, revenues, and expenses. These audits are necessary to ensure the accuracy of LPD financial reports and to objectively measure quantitative performance. The quantitative performance measurements are as follows: (1) Cash balance check; (2) Interbank balance check; (3) Checking the balance of the loan provided; (4) Credit collectability check; (5) Examination of Voluntary, Mandatory and Tabermas Luwih Savings; (6) Capital Examination; (7) Income and Expense Check; (8) LPD health assessment

Regarding the professionalism of the administrators and employees of the Padang Luwih Traditional Village LPD, internal supervisors developed qualitative performance assessment indicators or parameters based on honesty (integrity), discipline, responsibility, communicative, and innovative.

Design for Supervisory Information for LPD (SI CANTIK LPD)

After conducting in-depth observations of the business process, The Padang Luwih Traditional Village LPD (Lembaga Desa Adat Padang Luwih) has developed a *web-* based information system called the LPD Supervisory Information System (SICANTIK LPD). The development of this web-based information system or application aims to create software that can be accessed and used via *a web browser* or mobile device.

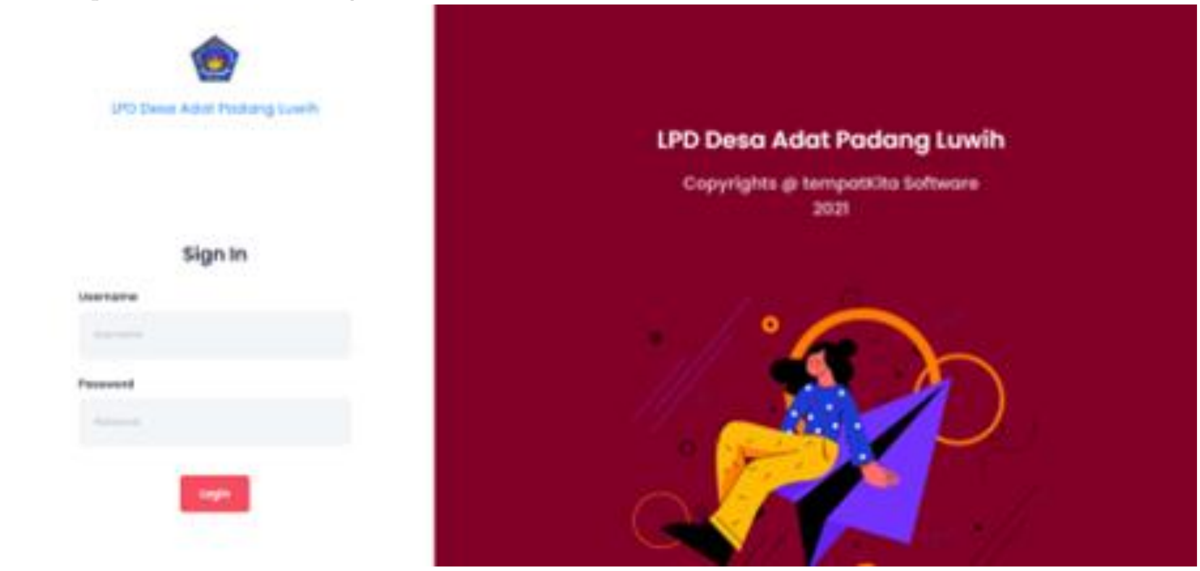

Figure 4.1 System Login Display

Note: Figure 4.1 taken from SICANTIK application. Own work.

Figure 4.1 shows the system login page, where users *can* enter their username and password to log in to the developed system. After successfully logging in, the system dashboard will appear, where they can then view financial reports and master data. The dashboard in question can be seen in Figure 4.2 below.

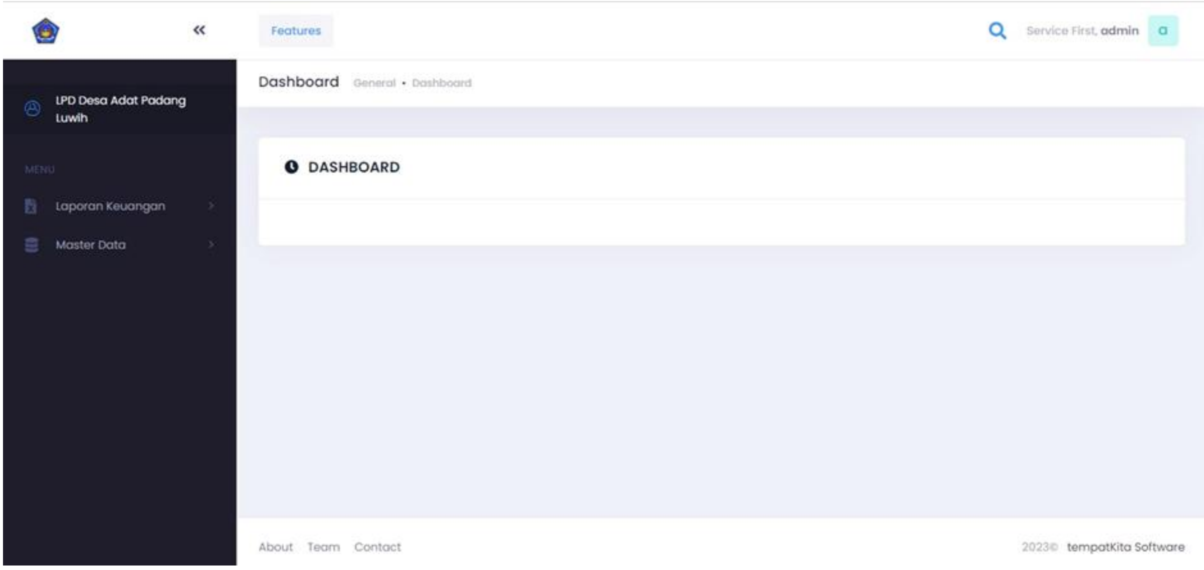

Figure 4.2. Dashboard Menu Display

Note: Figure 4.2 taken from SICANTIK application. Own work.

Figure 4.3 shows the financial report display, namely the LPD Balance Sheet, where the user can select the desired year period to view the LPD Balance Sheet data, which contains asset and liability information.

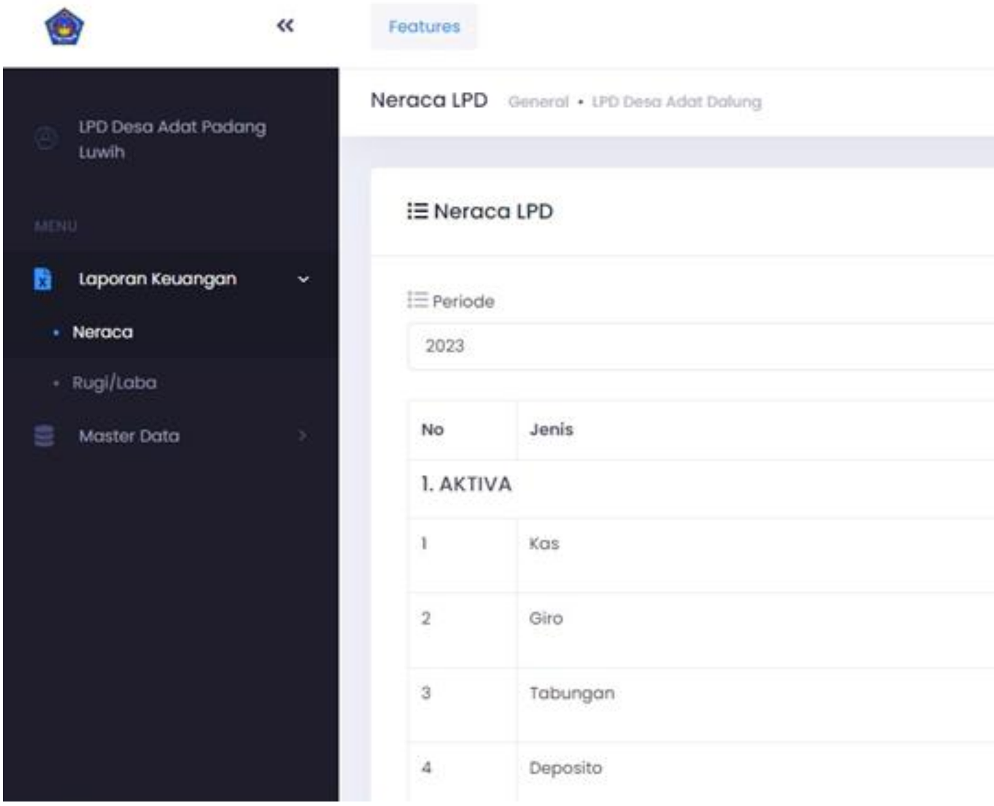

Figure 4.3. Financial Report Display – LPD Balance Sheet

Note: Figure 4.3 taken from SICANTIK application. Own work.

Furthermore, Figure 4.4 shows the financial report display, namely LPD's Profit/Loss. Users *can* select the desired year period to view LPD's profit and loss data, which contains information on LPD's revenue, expenses, and profit/loss.

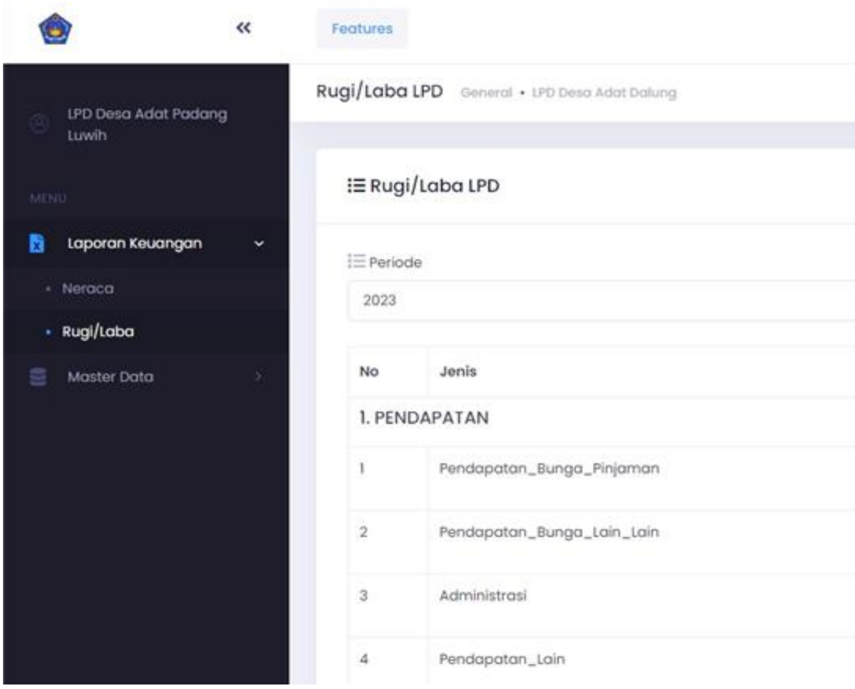

Figure 4.4. LPD Financial Report Display – Profit/Loss

Note: Figure 4.4 taken from SICANTIK application. Own work.

In Master Data (Figure 4.5), there are sub-menus, namely 1) Master Data Menu consisting of LPD Health, Financial Reports, Master Data, and LPD Health Assessment, 2) Employee Master Data, and 3) User Master Data. Users can select menus according to their needs and can make changes to the data if desired.

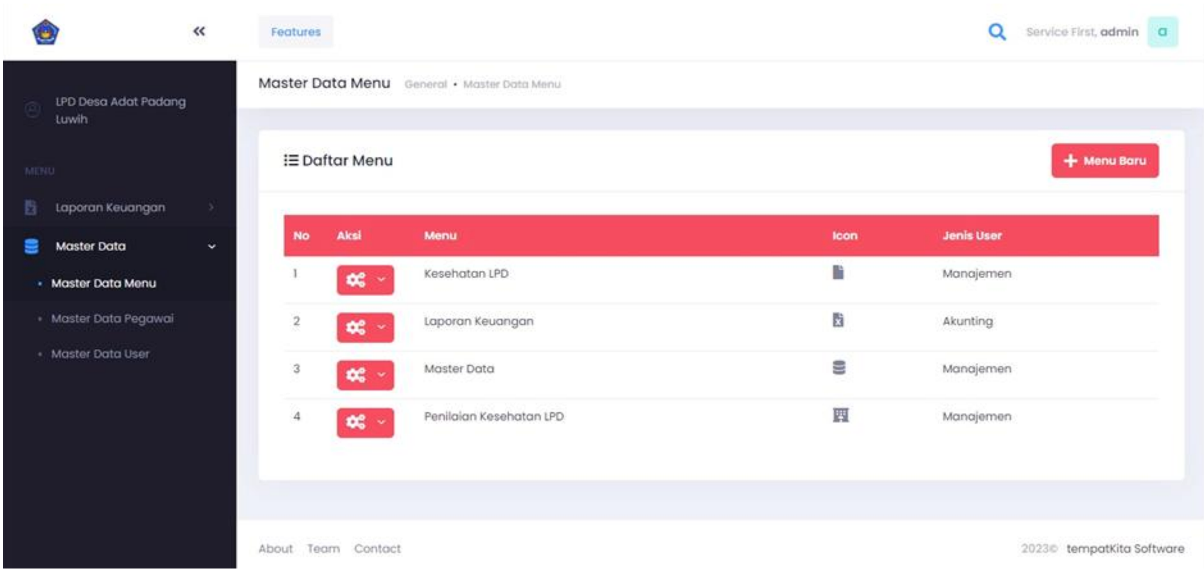

Figure 4.5. Master Data Menu Display

Note: Figure 4.5 taken from SICANTIK application. Own work.

CONCLUSION

LPD is in dire need of an information system that facilitates its operations from planning to accountability, especially in the supervisory department. Based on the business processes at LPD Padang Luwih, an information system model called SI CANTIK LPD (LPD Supervisory Information System) was developed, which is expected to provide descriptions of risk areas or *red* *flags* indicating fraud or cheating, thus assisting the LPD supervisory process. With the assistance and support of this system development, it is hoped that LPD can become the main foundation in economic activities in the village and play a role as a social and commercial institution. The development and application of SICANTIK LPD is currently a pilot project being run and tested at LPD Padang Luwih, Badung, Bali. Furthermore, there is an opportunity to further develop the SICANTIK LPD application to achieve effectiveness and efficiency in the internal monitoring process and can be tested again at the same or different LPDs. Furthermore, discussions with related LPDs are essential to continuously refine a system so that it can function optimally according to expectations.

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