**South East Asian Institute of Technology, Inc**

College of Information and Communication Technology

Crossing Rubber, Tupi, South Cotabato

A Research Project on

**ContractFlow: Simplifying Contract Management**

As partial requirement for the Subject

**IT ELEC 3**

**Web Systems and Technologies**

By:

DELGADO, KEYAN ANDY

OGATIS, JENER KEVIN

MAROT, ABDUL AZIS

LAURA, MACALANDA

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**TABLE OF CONTENT**

Title Page

Acknowledgment

List of Figures

List of Tables

Executive Summary

**1.0. Research Description**

1.1. Overview of the Current State of Technology

1.2. Research Objectives

1.3. Scope and Limitations of the Research

1.4. Significance of the Research

1.5. Definition of terms (operational definition)

**2.0. Review of Related Literature**

2.1 Conceptual Framework

2.2 Related Literature

2.3 Related Studies

2.4 Synthesis

**3.0 Results and Discussions (Chosen Topic)**

3.1. Overview

3.2. Current Technology

3.3. Advancement of Technology

4.4. Areas for Improvement

**4.0. Summary, Conclusion and Recommendations**

4.1 Summary

4.2 Conclusion

4.3 Recommendation

**CHAPTER I**

**RESEARCH DESCRIPTION**

**Overview of the Current state of Technology**

In the contemporary business landscape, contracts serve as the foundation for most transactions and agreements. Effective contract management is vital for organizations to ensure compliance, mitigate risks, and optimize their operations. The ContractFlow system represents a cutting-edge software solution designed to tackle the challenges associated with contract management, offering a comprehensive suite of tools for creating, tracking, and managing contracts in the context of project management. It is worth noting that ContractFlow has been developed using a powerful combination of tools and programming languages, with PHP for server-side scripting and SQL for database management. This technical foundation has given rise to a robust and efficient system that not only simplifies contract management but also facilitates real-time project progress monitoring, automated contract execution, and immutable record-keeping (Gai, K., Qiu, M., & Liu, Z., 2018).

A pressing concern in modern contract management is the heightened risk stemming from mismanagement. Ineffective tracking and monitoring of contracts can result in missed deadlines, overlooked obligations, and non-compliance with legal and regulatory mandates. These issues may lead to costly legal disputes, financial penalties, and reputational damage, all of which pose substantial threats to an organization's sustainability and growth. Furthermore, compounding this risk is the continued reliance on manual and paper-based contract management practices, which prove highly inefficient and susceptible to human error. These outdated methods not only consume valuable time but also drain productivity, contributing to a decline in overall operational efficiency. This situation is untenable in an era where businesses are perpetually pursuing process optimization to stay competitive (Smith, J., 2020).

To fully harness the potential of ContractFlow in addressing the pressing challenges of contemporary contract management, we propose several key recommendations. Firstly, organizations should invest in comprehensive training and onboarding programs to ensure that employees can maximize the system's benefits (Jones, R., 2019). These training sessions should encompass contract creation, tracking, and management within the context of their specific projects. Additionally, it is essential to establish a robust data governance strategy (Smith, J., 2020). This includes defining data ownership, access controls, and ensuring data security and privacy compliance. Furthermore, organizations should consider integrating ContractFlow with existing project management and customer relationship management (CRM) systems (Brown, J., 2017). Such integration will foster seamless communication and data sharing, enhancing the overall project and contract management experience. Finally, periodic audits and assessments are recommended to identify areas for system optimization and improvements, ensuring ContractFlow remains aligned with evolving business needs (Clark, M., 2018).

**RESEARCH OBJECTIVE**

* To be able to create a seamless user registration process, allowing new employees to easily input their details and store them securely in the system's database.
* To be able to create a contract that will be easily tracked by the client and supplier.
* To be able to provide an intuitive admin page upon successful login, where users can conveniently view their name and access various system functionalities.
* To be able to generate reports about the newest contract and contractors.
* To be able to provide the notice period and expiration of the contract.
* *Add objectives for comparison and evaluation*

**SCOPE AND LIMITATIONS**

**Scope of the research**

**Seamless User Registration Process**

The research will focus on designing and implementing a user-friendly and secure registration process for new employees.

It will cover the development of a system to store employee details securely in the database.

The scope includes ensuring data accuracy, validation, and encryption for secure storage.

**Efficient Contract Creation and Tracking**

The research aims to streamline the process of creating contracts within the ContractFlow system.

Tracking functionality will be developed to allow clients and suppliers to monitor the progress of contracts.

Integration with real-time notifications and updates will be explored to enhance transparency.

**Intuitive Admin Page**

The research will design an intuitive admin page accessible upon successful login.

Users will be able to view their names and access various functionalities from this centralized interface.

The scope includes creating a user-friendly and responsive dashboard.

**Report Generation**

The research will focus on developing a reporting system for the ContractFlow system.

It will cover the generation of reports specifically related to the newest contracts and contractors.

The scope includes defining report parameters, data visualization, and export functionalities.

**Notice Period and Contract Expiration**

The research aims to implement features that provide information on notice periods and contract expiration.

The system will notify relevant parties about upcoming contract expirations and notice periods.

The scope includes designing automated alerts and reminders.

**Limitations of the Research**

* The integration of ContractFlow with existing systems (e.g., project management, CRM) may face technical challenges.
* While the research suggests the implementation of a robust data governance strategy, the actual enforcement may encounter challenges.
* The success of the system depends on user adoption, and achieving this may be challenging.
* Periodic audits and assessments are recommended, but the extent of system optimization may be constrained by resource limitations.
* The research does not explicitly address the legal and regulatory compliance aspects related to contracts.

**Definition of terms**

Audit - An audit refers to a systematic examination of the ContractFlow system, conducted periodically to identify areas for optimization and improvements. It involves a comprehensive review of processes and data to ensure alignment with evolving business needs.

Business Landscape - The business landscape encompasses the overall environment in which organizations operate. It includes market dynamics, industry trends, and competitive factors that influence business strategies and decisions.

Compliance - Compliance refers to the adherence to legal and regulatory mandates in the context of contract management. Ensuring compliance is vital to avoid legal disputes, financial penalties, and reputational damage.

Data Governance - Data governance involves the establishment of policies and procedures for managing and protecting data within the ContractFlow system. It includes aspects such as data ownership, access controls, and ensuring data security and privacy compliance.

Efficiency - Efficiency refers to the ability of the ContractFlow system to optimize operations, streamline processes, and reduce manual efforts. It is crucial in the context of modern business, where organizations aim for continuous process optimization.

Financial Penalties - Financial penalties are monetary sanctions imposed on organizations for non-compliance or breaches in contract management. These penalties can result from missed deadlines, overlooked obligations, or other mismanagement issues.

Governance Strategy - Governance strategy refers to the comprehensive approach organizations take to manage and control their processes, particularly in data governance. It includes defining policies, procedures, and controls to ensure effective contract management.

Human Error - Human error refers to mistakes or inaccuracies that may occur in manual and paper-based contract management practices. The ContractFlow system aims to minimize human error through automation and efficient tracking.

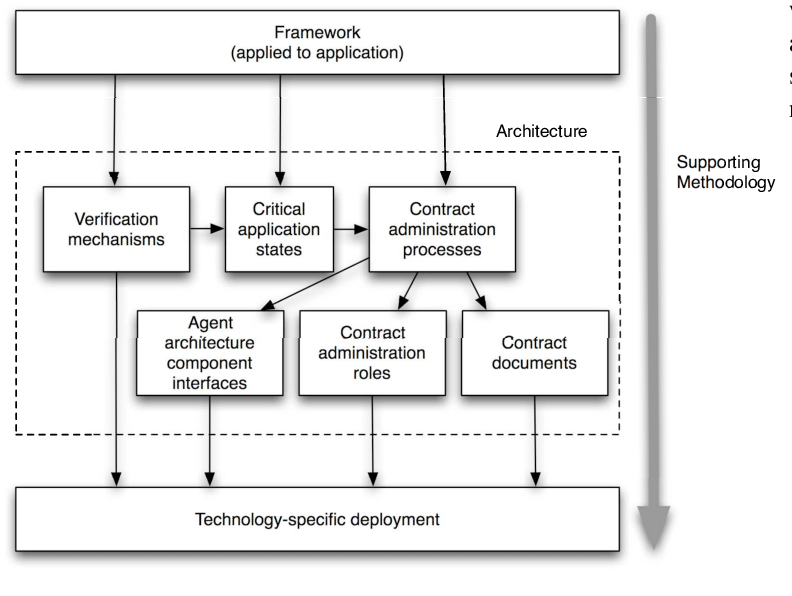
Integration - Integration involves the seamless combination of ContractFlow with existing systems, such as project management and customer relationship management (CRM). It fosters communication and data sharing, enhancing the overall management experience.

Jurisdiction - Jurisdiction refers to the legal authority or control within which the ContractFlow system operates. Understanding and complying with legal jurisdictions is crucial for effective contract management and risk mitigation.

**CHAPTER II**

**REVIEW OF RELATED LITERATURE**

**Conceptual Frame Work**



**Related Literature**

**Local**

**Contract approaches for sustainable community-based access to e-service provision: a comparative study between Bangladesh and the Philippines**

According to Jeremy Brown and Shah Md. Safiu Hoque (13 Jul 2022) Public–Private Partnerships are touted as a ‘silver bullet’ to address issues surrounding the sustainability of community-based ICT projects. This paper considers the PPP’s role in the provision of sustainable services at community access sites in Bangladesh and the Philippines. A comparative analysis of current community access operations in Bangladesh and the Philippines has been made in this study. The study investigates how the different adopted contract approaches (PPP vs. Public) have impacted the telecenter infrastructure attributes, and specifically, the impact on the types of services offered at telecenter sites. The data collection procedure utilized a mixed-methods approach, including user surveys, combined with telecenter operator interviews, and site observations. Simple descriptive statistics were used to compare the quantitative data collected regarding each of the telecenter infrastructures and telecenter services. This analysis contributes to the current understanding of telecenters concerning the adoption of PPPs toward the sustainability of public access initiatives.

**Effective Agile Contracts Framework for Software Innovation Projects**

According to Adriano Gomes (14 June 2023) This research explores the challenges in agile contract modeling for software innovation projects, particularly for outsourced projects. Literature has presented various methods and frameworks for agile contract management, but there is still a gap in effectively establishing the best contract approach for each project based on specific conditions. This work aims to contribute with a framework definition that effectively applies practical approaches for contract deployment suitable for software innovation projects, considering the best contractual practices related to projects specific context. The study will conduct action research at CESAR, a prominent Brazilian Institute of Science and Technology (ICT) with 1200 employees and 26 years old, to establish effective agile contract models and its implementation that better support agile management and project success. The study hopes to contribute to understanding the relationship between the type of contract and project outcomes and to provide better agile contract implementation for software innovation projects developed by outsourced companies.

**Foreign**

**Application of the Principle of Consensuality and its Legal Implications In Electronic Contracts at Shopee**

According to Bambang SUTIYOSO and Indah PARMITASARI (2023) This study aims to examine and analyze the application of the principle of consensuality in electronic contracts at Shopee: and how the legal implications of the application of the principle of consensuality in electronic contracts at Shopee. The research method used is normative juridical with a statutory and conceptual approach, using secondary legal data and analyzed with a qualitative descriptive method. The results showed that in electronic contracts at Shopee, the principle of consensualism has been applied. In this case, the electronic contract is carried out by means of a click-wrap agreement, namely to determine the agreement in the e-contract is when the party receiving the offer "clicks" on the agreement section. E-contract in Shopee can be said to be an agreement between computer users (users) in interacting with producers or electronic service providers. The application of the principle of consensuality in electronic contracts at Shopee, raises several legal implications, namely: 1) the existence of consensualism gives birth to an electronic contract; 2) the enactment of the principle of Pacta Sun Servanda, meaning that the agreed electronic contract is fully binding and therefore must be obeyed; 3) and for the transfer of rights, consensualism must be followed by a material contract (zakelijke overeenkomst), with the concrete form of this material contract being the act of delivery (levering) of the object in question from the seller's hands to the buyer's hands.

**Effectiveness Of Construction Contract Procurement Processes In Public Projects In Kenya: A Survey Of County Government Projects**

According to Owiti, Jacob Omondi (2022-05-26) Procurement process is an important dimension of project management component especially during pre-construction stages of any project. Globally, the economic worth of construction industry's contribution to the growth of a nation can never be overlooked. Failure to effectively manage procurement processes can lead to problems for the entire project and construction team. County governments in Kenya have been accused in the past for flouting procurement rules and processes especially in contract procurement thereby leading to massive losses of public funds. Effective procurement process is one which is transparent and is corruption free. The study sought to investigate effectiveness of procurement process in public projects in Kenya with a special focus on County government projects in Kenya. The objectives of the study were to; describe factors affecting construction contract procurement processes in Counties, establish the relationship between construction contract procurement process and its explanatory variables and develop a model for predicting the effectiveness of procurement processes of public projects by Counties. The study adopted a survey research design where 10 Counties were selected using stratified random sampling technique. The target population consisted of all projects that had been undertaken by County governments in Kenya in the last three years. Random sampling was used to select five projects from each of the selected Counties and respondents consisted of County’s procurement departments and contractors who have undertaken specific selected County projects. Descriptive and inferential statistics were used to analyze the data and results presented inform of tables. The study identified three key factors that affect contract procurement processes at Counties; Government policies, Resources dedicated for procurement and Procurement planning. Correlation analysis results showed a positive and significant relationship between the dependent variable and all predictor variables, which included government policies, procurement resources and procurement planning. The model had R2 of 0.603 indicating that the factors considered for analysis could explain 60.3% of the unit change on the effectiveness of procurement process at the Counties. The study recommends that County governments should ensure strict adherence to PPOA guidelines to boost procurement processes for contractors.

**Related studies**

**Local**

**BIM Cost Calculator: Contract Costing of Building Information Modeling Services Using Parametric Estimates for BIM-Based Projects in the Philippines**

According to Nel Ann Beloso & Dante Silva (31 August 2023) This study aims to develop a web-based tool for cost estimation that will simplify the process of estimating contract price for design projects utilizing BIM technologies. It becomes a highly complex matter when financial issues influencing contracts are at stake. This research will concentrate on the BIM aspects of the services, scope, and procurement that are involved in a project and how they affect contract price. This initiative also aims to provide a framework that can be used as a basis in the Philippines for contract pricing of BIM-related services and will focus on BIM design and pre-construction or tender stage costs. A quantitative survey was used to gather data from BIM professionals of local and international companies based in the Philippines which involved in projects that utilized BIM into construction. The findings of this study have concluded the key parameters that are significant contributors to the overall cost estimation and determined the average project duration and manpower for each project type for different Level of Development of BIM services. Considering high level of accuracy and appropriateness, the researchers discovered that parametric cost estimating is commonly used. These parameters were then utilized in the development of web-based costing tool. Similarly, the BIM Cost Calculator produces consistent findings, and the underlying indicators reveal that it is effective. It was suggested that the construction industry in the Philippines may consider the use of the developed framework and the BIM Cost Calculator tool to support for their costing need.

**Designing financeable ancillary services revenue contracts in developing economies: Learnings from the Philippines**

According to Jose Barroco (May 2021) Increasing variable renewable energy penetration, climate change, and global uncertainties will make it harder to stabilize and balance power systems. This situation will be especially challenging for developing economies with limited capital and institutional capacity, poor infrastructure, and rapid economic growth. Using the Philippines as a case study for a developing economy, the paper identified chronic underinvestment in the supply of ancillary services that play a crucial role in balancing energy supply with demand and building grid resilience. To diagnose the cause, the paper created a novel dataset with all ancillary services revenue contracts in effect at the end of 2019 and analyzed their key terms and conditions. The paper concludes that these contracts are not conducive to financing due to short durations, low and soft buying commitments, exclusive focus on incumbent versus new entrants, hour and season constraints, and a poorly implemented remuneration methodology. The literature rarely analysis this topic from a financing perspective and at this level of detail. Revenue contracts need to switch to long-term, firm, and technology-specific cost recovery mechanisms with new entrants, to incentivize financing. Storage technologies such as batteries and hydropower should be prioritized, followed by gas turbines. These changes will result in a more secure, resilient, and affordable power system.

**Foreign**

**Prototype Blockchain Based Smart Contract For Freelance Marketplace System**

According to Irawan Afrianto and Christover Ramanda Moa (09 December 2021) Freelancing marketplace is a site or platform that connects two parties in processing service transactions at an hourly rate or per project. A conventional freelancing marketplace is a place for freelancers to find work and transact digitally. This study aims to propose a prototype of a freelancing marketplace system that is distributed and decentralized, secure, and transparent using smart contract-based blockchain technology. The method used in this study is a prototype which is a fast method of developing a software system. The developed prototype is a system that is based on the Ethereum public blockchain network, utilizes a smart contract mechanism in its transaction activities, and use IPFS in the storage and sharing of documents on it. According to the findings of the research, transaction data input in the freelancing marketplace system prototype environment can be executed by smart contracts and saved on the blockchain network, indicating that the transaction data will be stored more securely, tamper proof, and transparent.

**Smart contract-based land registry system to reduce frauds and time delay**

According to Sandeep Kumar Panda, Gouse Baig Mohammad, and Sachi Nandan Mohanty (15 June 2021) In today's scenario, many news related to counterfeit land titles, fraud land registry, delay in ownership transfer, the involvement of government officers in fraudulent activities is frequently being heard. However, this depicts that the existing land registry system is not efficient to provide security and timely settlement of transactions between the seller and buyer. To solve this problem, we proposed a blockchain-based land registry system in this article. The specialty and popularity of blockchain technology is its transparency and security. Blockchain is being inculcated with the trait of persistence, immutability, decentralization. Its ascent to new opportunity of efficiency and cost saving. It can provide right framing for digital asset, online payment, and transfer of remittance. Additional to this it can check upon black money laundering. Enterprise that can use blockchain technology can gain faith of consumer. In this article, we proposed a decentralized application. In particular, for creating and deploying the smart contract, we used Ethereum network. The deployed contracts are interacted through frontend web pages. React is used for the development of web page. For server and routing purposes, Next.js is used. Finally, the results and analysis show that our proposed model is efficient and viable.

**Synthesis**

**1.Public-Private Partnerships (PPP) in Community-Based ICT Projects:**

**Researchers:**

Jeremy Brown and Shah Md. Safiu Hoque

**Focus:**

This study explores the role of Public-Private Partnerships (PPP) in sustainable community-based Information and Communication Technology (ICT) projects, with a comparative analysis between Bangladesh and the Philippines.

**Methodology:**

The research adopts a mixed-methods approach, utilizing user surveys, telecenter operator interviews, and site observations.

**Findings:**

The study compares the impact of different contract approaches (PPP vs. Public) on telecenter infrastructure and services, contributing to the understanding of PPPs in the sustainability of public access initiatives.

**2. Agile Contracts Framework for Software Innovation Projects:**

**Researcher:**

Adriano Gomes

**Focus:**

This research addresses the challenges in agile contract modeling for outsourced software innovation projects, emphasizing the need for an effective framework based on project-specific conditions.

**Methodology:**

The study involves action research at CESAR, a Brazilian Institute of Science and Technology, to establish effective agile contract models supporting agile management and project success.

**Objective:**

The aim is to contribute a framework definition for practical approaches to contract deployment suitable for software innovation projects.

**3. Principle of Consensuality in Electronic Contracts at Shopee:**

**Researchers:**

Bambang SUTIYOSO and Indah PARMITASARI

**Focus:**

This study examines the application of the principle of consensuality in electronic contracts at Shopee and analyzes its legal implications.

**Methodology:**

The research uses a normative juridical approach with a qualitative descriptive method, employing secondary legal data to understand the application of the principle of consensually.

**Findings:**

The results indicate that electronic contracts at Shopee follow a consensual approach, with legal implications such as the binding nature of agreements and the requirement for a material contract for the transfer of rights.

**4. Effectiveness of Construction Contract Procurement Processes in Kenya:**

**Researcher:**

Owiti, Jacob Omondi

**Focus:**

This research investigates the effectiveness of procurement processes in public projects in Kenyan County governments, emphasizing transparency and corruption-free practices.

**Methodology:**

The study adopts a survey research design, analyzing factors affecting construction contract procurement processes in selected Counties.

**Recommendation:**

The study recommends strict adherence to Public Procurement Oversight Authority (PPOA) guidelines to enhance procurement processes for contractors.

**5. BIM Cost Calculator for BIM-Based Projects in the Philippines:**

**Researchers:**

Nel Ann Beloso & Dante Silva

**Focus:**

This study aims to develop a web-based tool for cost estimation in BIM-based projects in the Philippines, providing a framework for contract pricing of BIM-related services.

**Methodology:**

A quantitative survey involving BIM professionals from local and international companies in the Philippines is conducted.

**Outcome:**

The research identifies key parameters for cost estimation, emphasizing the common use of parametric cost estimating in the development of the BIM Cost Calculator.

**6. Ancillary Services Revenue Contracts in Developing Economies (Philippines Case Study):**

**Researcher:**

Jose Barroco

**Focus:**

The research examines ancillary services revenue contracts in the Philippines, with a focus on financing perspectives to address challenges related to variable renewable energy penetration.

**Findings:**

The study identifies shortcomings in current contracts and recommends changes, emphasizing the need for long-term, firm, and technology-specific cost recovery mechanisms to incentivize financing.

**7. Blockchain-Based Smart Contracts in Freelance Marketplace and Land Registry:**

**Researchers:**

Irawan Afrianto and Christover Ramanda Moa; Sandeep Kumar Panda, Gouse Baig Mohammad, and Sachi Nandan Mohanty

**Focus:**

This research proposes a prototype freelancing marketplace system using smart contracts and explores a blockchain-based land registry system for enhanced security, transparency, and efficiency in transactions.

**Findings:**

The studies highlight the effectiveness of smart contracts in securing transaction data and propose blockchain-based solutions for freelancing marketplaces and land registries.