

# Development of Measuring System using CSI on ITIL V3 for Improvement at Oil Palm Plantation Company

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**Abstract**—Many information technology services firms now offer services and consider software availability to be a critical component of achieving excellence and competing in the industry. The most crucial factor for customers is the quality of service, consumer needs, the state of the organization/company, and the present market should all be considered when improving their service. In this study, an ITSM analysis will be carried out at an oil palm plantation company based in West Kalimantan Province using ITIL framework V3 by focusing on continual service improvement, which largely relies on service measurement because a process must be measurable to be regulated and improved. To achieve continuous service improvement (CSI) throughout the service life cycle, we use the 7-step process to improve is used to establish and take care of the stages involved in identifying, defining, collecting, processing, analyzing, presenting, and implementing changes. The result of this analysis is CSF and KPI analysis that produce metrics, such as the average resolution time, the percentage of events allocated more than once, and the initial response time, then create a measurement system that is in accordance with the needs and can be used as a reference for the company's system assessment.

**Keywords**— ITIL; CSI; System Measurement; System Assessment; Seven Step Process

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## I. INTRODUCTION

With the expansion of business interest and the rapid development of IT/IS comes the need for optimal system utilization of various current sources, as well as the need for time and fee performance, forcing every company to use information technology to excel in running its organization processes and compete with other competitors in similar industries [1]. As a result, many information technology services firms now offer services and consider software availability to be a critical component of achieving excellence and competing in the industry [2].

Information technology is continually advancing, and it has assisted organizations and businesses across a wide range of industries. Each organization/company continues to provide clients products and/or services that are more valuable and unique [3]. The most crucial factor for customers is the quality of service [4]. Consumer needs, the state of the organization/company, and the present market should all be considered when improving their service. Organizations or companies must take care of their IT/IS service to be optimal for their clients, as good IT service management can reduce or eliminate the impact of an incident, reduce rework, assist in monitoring employee performance results, and adjust IT service to the organization's or company's infrastructure, among other things [5].

From the perspective of consumer IT services, IT service management is a best practice for managing an organization's IT schema [6]. ITIL is a framework that focuses on IT-related activities and initiatives and is used to build linkages between IT managers and IT clients [7], well-known source of IT service management (ITSM) be active that is used by businesses all over the world [8], provides a systematically way to see and analyzed relevant systems in terms of humans, IT/IS, how to, and companies [6], [9]. The ITIL framework's identifying, developing, implementing, and evaluating processes can be used as a tool or method to look at more existence more problems and established easier for make references [10], [11].

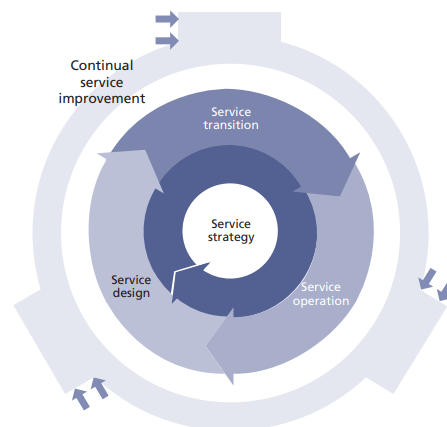
An oil palm plantation company based in West Kalimantan Province that was created in 1999. In 2017, the Company operated a Palm Oil Mill that processed Fresh Fruit Bunches into Crude Palm Oil (CPO) and Palm Kernel (PK). Until now, the Company and its subsidiaries have owned and operated oil palm plantations with a business area of 18,804 hectares and a planted area of roughly 17,401.7 hectares, as well as two PKS units with a processing capacity of 60 tons per hour each, one of which is currently operational and the other is in the development stage. This development stage makes more extended time taken to resolve incidents reported by customers, and can leading to decreased customer satisfaction and also potential business losses. To address this problem, a focused and specific approach to continual service improvement is necessary. With CSI within the ITIL v3 framework, can enables company to optimizing the IT services, align

them with business objectives, and ensure ongoing value delivery to customers. It promotes a culture of continuous improvement, efficiency, and innovation, ultimately helping companies stay competitive in a rapidly evolving technology landscape.

In this study an ITIL V3 analysis focused by on Continual Service Improvement. One of the subfields IT service managements (ITSM), largely relies on service measurement [12]. Because processes affect service delivery, it's vital to keep track of IT service quality so that service providers are aware of what's going on [13]. A process must be measurable to be regulated and improved [14]. A benefit of using a measurement is the ability to evaluate it in a more transparent manner while preserving measurement results [15]. The result of this analysis will produce explanation of how the implementation service measurement of Continual Service Improvement (CSI) at Oil Palm Plantation Company.

## II. RESEARCH METHOD

Part of best guidance and practice publications for IT/IS service improvement [16]. ITIL supply and prepare guidance on the provision of quality IT services and the processes, goals and functions, other competencies required to help them services [17].



**Fig 1. ITIL Lifecycle [17]**

The ITIL V3 method is based on the life cycle of serviced and consists of many types of statements of life cycle stages on five (strategy of services, design of services, transition of services, operation of services, and CSI), each of which has its own supporting for implementing. Provide of specific best practice for any sectors in industry, many for organizations, models for operating, and architectures for IT/IS technology.

The ITIL life cycle is divided into five stages, can be seen in Figure 1 - ITIL Lifecycle [17]:

Strategy of services, strategically of vision and mission, development of design, and implementation of ITSM are all included under this heading. It is made up of 3 steps (management for portfolio, management for demand, management for financial). Design of Services, consists of seven processes that cover architecture, processes, policies, and documentation (design of catalogue, ITSM, Management of Supplier management of availability, Management of continuity, Capacity, and Management of IT/IS Security) [18], [19]. Transition of Services, consists of seven procedures that include aspects required to begin service production (building, testing, documentation, and training) (Management of configuration, Management of change, Management of knowledge, planning for transition and support, service of validations and testings, and to evaluated implementation of requests) [20], [21]. Operations of Services, covers the aspects necessary for service delivery and leads the development of technology management and service processes. It comprises of five procedures (managements of event, managements of incident, managements of problem, managements of request, and managements of access) and four functions (event managements, managements of incident, managements of problem, managements of request, and managements of access) (desks of services, managements of technical, managements of application and managements IT/IS of operations) [22], [23]. CSI, this category includes the processes of service improvement, measuring, and reporting [24].

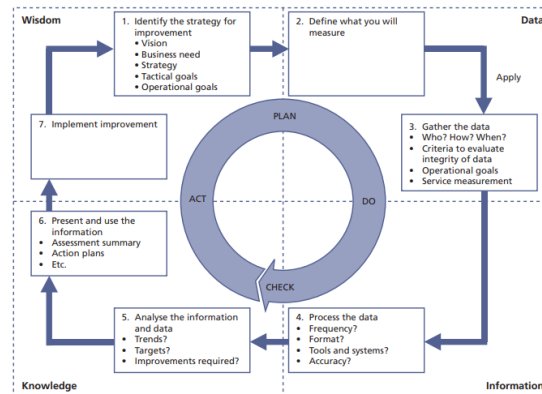
The CSI stage of the lifecycle is responsible for aligning IT services with changing business demands by relating and enforcing changes to IT services that support business processes. Throughout strategy of services, design of services, transition of services, and operation of services, these Enhancement conditioning round the lifecycle approach. CSI is constantly looking for new methods to improve service, procedure, and cost effectiveness [1]. The measurement of present performance is an essential aspect in identifying improvement prospects.

The aim of ITIL sub domain CSI is to [17]:

To review, analyze, and to prioritized, and make suggestions on improvement possibilities in each stage of lifecycle: strategy of services, design of services, transition of services, operation of services, and CSI themselves. Examine, evaluate the degree of service provided. Identify and carry out initiatives to improve the quality of IT services as well as the efficiency and effectiveness of the supporting procedures. Increase the efficiency with which IT services are delivered while maintaining client satisfaction. Ensure that appropriate quality management systems are implemented to support activities of continuous improvement. Make sure procedures have well-defined goals and metrics that lead to actionable changes. Know what you're measuring, why you're measuring it, and what a good result should look like. To achieve continuous service improvement (CSI) throughout the service life cycle, several tasks must be accomplished. Some of these may be considered processes in and of themselves, but for the reader's convenience,

they've been grouped jointly only 7- process for step improvement. 7 processes for step improvement are used to establish and manage the stages involved in identifying, defining, collecting, processing, analyzing, presenting, and implementing changes [25].

Figure 2 depicts the seven-step improvement process, with its interactions forming the Plan-Do-Check-Act (PDCA) cycle. A core element of CSI is the PDCA cycle, which enables steady and continual progress.



**Figure 2.** THE SEVEN STEP IMPROVEMENT PROCESS [17]

The following is how the PDCA cycle, and the seven-step improvement method are linked and how company implement the ITIL V3 Continual Service Improvement framework in the operations [17]:

#### A. Plan

The first step is to define specific CSI objectives aligned with the company's overall goals. For example, the objective could be to optimize IT processes, enhance system availability, or improve incident response times. This information should have been recognized early in the lifecycle through service strategy and service design. Defining key performance indicators (KPIs). Selecting relevant KPIs to measuring the effectiveness and efficiency of IT services. KPIs could include incident resolution time, system uptime, service availability, customer satisfaction ratings, and adherence to service level agreements (SLAs).

#### B. Do

Collect the data usage. To answers these questions are company getting there?' first: data must be collected (usually through operations of services). Data can be collected from various sources based on identified goals and objectives. At this point the data are still raw and no conclusions can be drawn. Process and analyzed of data. The data to be analyzed will be processed based on what has been set at the beginning CSF and key performance indicators. Develop a detailed plan that outlines specific initiatives and actions to address identified gaps and improve IT services. The plan should include clear timelines, responsible parties, and allocated resources for each

improvement initiative such as coordinating time frames, rationalizing and bringing disparate data sets into line, and identifying data gaps. The purpose of this stage is to analyze data from many sources to create a similar context. We may begin the analysis when we have rationalized the data.

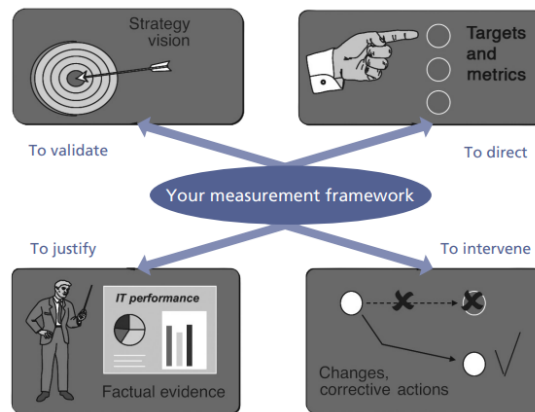
#### C. Check

Analyze the information and data. As we put more data into context, it transforms from raw data to information, allowing us to start answering questions like who, what, when, where, and how, as well as trends and their influence on the company. When rushing to deliver data to management, this is an analytical phase that is frequently skipped or ignored. Present and use the information. Are we getting there?' is answered here. Structured and distributed in any way necessary to offer a detailed description of the results to be improved activities to diverse stakeholders. Businesses are given information in a format and format that matches their needs and aids them in selecting their future moves.

#### D. Act

Improvement for Implement CSI. The previously collected information is used to improve, optimize, and improve some of the existing services and processes. The problem is found, and a solution will be given which will be implemented later information is being used with wisdom. Improvements to services or procedures that need to be made are reported and explained to the organization. The organization then adopts a new baseline, and the cycle begins all over again. Establishing a baseline as a marker or starting point for subsequent comparisons is a crucial first step in emphasizing progress. Baselines are also used to provide baseline data points for determining whether a service or process need improvement [26]. It is very important to know that the baseline has been established, recognized, and accepted as a whole. so that strategic objectives are obtained, the tactical maturity process is obtained, and several operational indicators are obtained as well as existing KPIs should all be created as baselines.

The effectiveness of implementing the ITIL V3 Continual Service Improvement (CSI) framework in oil palm plantation companies can be assessed using a variety of techniques, including tracking Key Performance Indicators (KPIs), collecting feedback from clients and conducting surveys, conducting compliance and audit assessments, examining incident and problem trends, performing cost-benefit analyses, interacting with stakeholders, and conducting continuous improvement reviews. These evaluation techniques give businesses the ability to evaluate how CSI initiatives affect the caliber, effectiveness, customer satisfaction, and financial results of IT services. Oil palm plantation companies can assess the success of their CSI efforts, pinpoint areas for additional improvement, and confirm the value delivered by the adopted CSI practices by utilizing a thorough evaluation framework.



**Fig 3.** Reasons Why We Measure? [17]

There are four reasons for monitors and measurements, as depicted in Figure 3 [17]:

Validation of earlier judgments by monitoring and measuring. Direction, the most typical purpose for monitoring and measuring is to determine the direction of operations to accomplish the goals that have been established. Justify, provide evidence Monitoring and measuring are used to demonstrate that an action is necessary using evidence or factual evidence. Interventions, monitoring and measuring are used to pinpoint intervention spots, as well as modifications and remedial measures.

According to PDCA, the majority of the seven process tools are utilized for identifying problems, with process improvement being the primary goal of PDCA application [27]. When process improvement is carefully planned out from the beginning, it produces corrective and preventive measures supported by the right quality assurance instruments, resulting in real process improvement [28], [29].

Continuous quality improvement methodologies may vary depending on the organization [30]. Every company necessity to implement a proper combination and selection of high-quality tools in the execution process in accordance with the requirements and specifications of the organization, as well as used effectively to the proper procedure and approach in the organization, whatever the approach that is used of the continuous improvement programmed [31], [32].

### III. RESULT AND DISCUSSION

#### A. Identify the Strategy for Improvement

Before moving on to additional tasks, it is necessary to determine the overarching vision. What are our goals for the company overall? What initiatives does a corporation have that could be compromised by poor IT support? To put it differently, how may IT improvements aid the

organization in achieving its objectives? Walking throughout a seven-step improvement process will provide answers to these issues. What corporate and IT initiatives and goals do you have in the works for the upcoming months and years? All technical, operational, and strategic goals must be established and assessed [33].

The notion is complex, needing not just to servers and desktop computers, but also cutting-edge services that protect and enable the entire corporation.

What we want to achieve for business is how to define service quality measurement and how to maintain service quality [34]. To achieve that goal, at this stage we need to approach and study all data about the current system, such as system and device maintenance, how the system works, objectives that must be considered, analysis of critical success factors and key performance indicators, metrics so that later we can achieve good system measurements and in accordance with company needs.

#### B. Define What You Will Measure

The steps taken are related to the existence of strategic, tactical, and operational objectives that are determined to be able to evaluate several services and processes that occur in service operations, as well as the technology used and existing capabilities to always support and measure CSI operations [35], [36].

What can you measure exactly? Make a list of all the resources you already have. Tools for service management, monitoring, reporting, investigation, and other tasks will be included. Make several lists of what each tool is currently and how can be measured, without any adjustments occurring or configuration.

However, we must first establish what we can truly measure, such as gap analysis, current service evaluation, legislative and governance standards, error reports, and customer satisfaction surveys, to obtain the proper measurement [37].

#### C. Gather the Data

Data collection and service evaluation are interchangeable terms. Data collection necessitates monitoring. Monitoring can be done via software, such as applications, system, and part monitoring tools, or manually for certain duties, as in the event management process (covered in service operations). The data's authenticity and integrity must be always maintained.

What details are required? The company will collect any relevant data that will be deemed necessary and will be measurable. Manual procedures will be required since not all information is collected automatically. A vast amount of data is manually entered. Policies that encourage appropriate behavior are essential.

What need to be gathered? Error reports for the last 6 months, last service evaluation (1 April 2022), last customer satisfaction surveys and gap analysis (5 January 2022).



#### D. Process the Data

As diverse volumes of data are condensed into information for use in the analytical process, report-generating technologies are often used at this step. The data is usually formatted in such a way that it provides an end-to-end view of a service's entire performance. The conversion of raw data into structured information begins with this action.

Data processing is a crucial CSI task that is sometimes disregarded. While it's necessary to monitor and collect the data that is in one part of the infrastructure, it is also important to understand how these components will affect other infrastructure and of course larger IT services in the future. Retrieve data from enterprise components, such as mainframes, software, WAN, LAN, servers, etc., and process them into multiple service frameworks from start to finish from a user perspective is an example of data processing.

What do we do with the data? Data validation check, calculate the average customer satisfaction score and compare with gap analysis, grouping error reports according to the type of error.

#### E. Analyze the Information and Data

Data analysis converts data into knowledge about the activities that are affecting the business. Data analysis requires more skill and experience than data collection and processing. During this exercise, you should check your work against your aims and objectives. This verification ensures that goals are being met and that value is being created. It is not enough to merely create various sorts of graphs; you must also document your findings and conclusions.

What exactly do you examine? You may then analyze the results to see if there are any clear trends, changes that need to be made, if things are going according to plan, if targets are being met, if improvements are needed, and if there are any underlying structural problems.

What do you analyze? From the results of data analysis, information is generated, error reports indicate that there are still minor errors, such as the system has doubled the index number several times so that one user experiences data loss. Then there is also a system error when saving because the index number has the same primary key, so that in the database storage an error occurs.

From the data analysis, it can also be concluded from critical success factors and key performance index that can produce metrics for system measurement.

#### F. Present and Use the Information

The sixth stage is to convey our knowledge to the audience in a simple, consumable, and timely manner, as indicated in reports, monitoring, strategic plan, reviews, evaluations, and opportunities. Consider your target demographic and be sure to note any exclusions to the service, as well as any advantages that have been revealed or can be predicted. The operational level of

an organization is where data is gathered. Transform this information into knowledge that people of all levels can understand and use to better understand their own requirements and aspirations. This step entails will present some of the data in a way that is easy to understand, at a level that suits the need, will also add value, introduce service exclusions, demonstrate some of the benefits that will accrue during this time, and enable everyone who will receive the data to make strategic decisions, as well as tactical, and operational.

Most organizations produce reports and convey data to some level; nevertheless, it is frequently done poorly. Many businesses just report the acquired raw data (sometimes directly from the tool) to all, without processing or analyzing it. The report should highlight and stress areas where the receiver should act.

From the information that has been concluded, the use of double index number information is carried out because the system has not stored input in one user but the other user inputs at the same time so that both inputs from 2 different users are stored in the same index number. As a result, one of the users will lose their input. The solution is to add an auto save system every time a user opens a new input to avoid double index numbers.

Then the results of the CSF and KPI analysis that produce metrics such as initial response time, average resolution time, percentage of incidents reassigned more than once, will produce a measurement system that is in accordance with the needs and can be used as a reference for the company's system assessment [38].

#### G. Implement Improvement

Decisions will be made based on accurate information regarding the matter for optimization efforts, significant improvements, and some service corrections based on the knowledge received and collected and of course from previous experience. Managers must recognize existing problems and provide optimal solutions.

In this step may include a variety of jobs, including authorization of continuous improvement, to prioritization and submission of a strategic plan, integration with strategy implementation, integration with the other lifecycle stages, and guidelines on how to successfully be managing a project of continual improvement, as well as verifying whether the improvement met its goal.

At this stage, the implementation of solution recommendations and implementation of the new measurement system application is carried out.

Organizations can improve their IT service management procedures, streamline operations, and boost the effectiveness and quality of their services by implementing the ITIL V3 Continual Service Improvement (CSI) framework. Companies can decrease the time it takes to resolve incidents, increase system availability, and improve customer satisfaction by methodically evaluating and improving IT services [39]. The framework encourages a proactive strategy for

resolving problems and averting future incidents, which reduces downtime and boosts operational resilience [40]. The organization is also better able to adapt to shifting business requirements and cutting-edge technologies thanks to the implementation of CSI, which also promotes a culture of continuous improvement, innovation, and collaboration. In general, the adoption of the ITIL V3 CSI framework equips oil palm plantation companies to provide top-notch IT services, satisfy client needs, and promote overall company success.

The implementation of the ITIL V3 Continual Service Improvement (CSI) framework and evaluations in palm oil companies is insignificantly hampered by resource limitations. The organization's ability to implement improvement projects and carry out thorough evaluations may be hampered by a lack of resources, including money, time, and skilled personnel. Investments in the necessary equipment, technologies, and training programs may be hampered by a lack of funding. Additionally, time restrictions may limit the range of improvements that can actually be made in a given amount of time.

#### IV. CONCLUSION

The contents of the conclusions are answers to the objectives of the study, not a summary of the results of the study.

The implementation of the ITIL V3 Continual Service Improvement (CSI) framework in oil palm plantation companies provides a structured and systematic approach to enhance IT service management practices. By addressing specific problems, such as high incident resolution time, companies can optimize processes, improve service quality, and increase customer satisfaction. Key elements of implementing the ITIL V3 Continual Service Improvement (CSI) framework include strategy and planning, baseline assessment, defining KPIs, carrying out improvement initiatives, monitoring performance, performing root cause analysis, encouraging continuous learning, and involving stakeholders. Company can promote continuous service improvement, streamline IT operations, and improve the effectiveness and quality of their services by adopting this methodical approach. Identifying areas for improvement, creating measurable goals, carrying out improvement projects, keeping track of performance, and promoting a culture of learning and improvement are all part of the implementation process. The framework is kept in alignment with business needs and industry best practices through regular reviews and adjustments. Organizations can achieve measurable results by implementing the ITIL V3 CSI framework, including improved service performance, proactive problem management, increased customer satisfaction, and ongoing IT optimization.

Although there may be limitations and challenges, such as resource constraints, overcoming these obstacles and aligning the implementation with the needs and characteristics of the industry

can unlock the benefits of improved operational efficiency, reduced downtime, and enhanced overall business performance. Embracing the ITIL V3 CSI framework empowers oil palm plantation companies to stay competitive, adapt to changing market dynamics, and deliver exceptional IT services that meet the evolving demands of their stakeholders.

The findings of this study on the implementation of the ITIL V3 Continuous Service Improvement (CSI) framework in oil palm plantation companies have practical implications for organizations in all industries. The research highlights the following benefits of adopting CSI practices: B. Improved incident resolution, improved service quality, and increased customer satisfaction. It emphasizes the need to adapt the framework to the needs of specific organizations and points out the importance of customizing it for different industries. Other research opportunities include cross-industry comparative studies, long-term sustainability assessments, technology integration studies, and investigations of organizational culture and the role of change management. These research areas provide valuable insights for optimizing the implementation of the ITIL V3 CSI framework and driving continuous service improvement in various organizational contexts.

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