

Identifying Critical Success Factors for Enhancing SLA Compliance in Managed Print Services: An ITIL-Based Case Study at A Public Sector Organization

Irwan Bengkulah^{1*}, Teguh Raharjo²

^{1,2} Dept. of Computer Science, University of Indonesia, Jl. Kenari 2 No.4, RW.5,
Kenari, Kec. Senen, Kota Jakarta Pusat, DKI Jakarta 10430, Indonesia

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ABSTRACT

The adoption of Managed Services (MS) has become a key strategy for public sector organizations seeking to enhance operational efficiency and service quality. However, maintaining consistent Service Level Agreement (SLA) compliance remains a major challenge, particularly due to vendor delays and limited service visibility. This study aims to identify and prioritize the Critical Success Factors (CSFs) influencing SLA compliance within the Managed Print Services (MPS) environment of a public sector organization. Using a mixed-method approach, the research applies the Analytic Hierarchy Process (AHP) to evaluate four service success criteria and eight corresponding CSFs, validated through expert judgment from echelon-4 IT officials. The results indicate that Vendor Responsiveness (36.0%) and User Satisfaction (27.7%) are the most influential criteria, reflecting an organizational emphasis on external service quality and user value. At the CSF level, strategic management factors dominate: Planning (20.2%), Evaluation (18.3%), and Leadership (15.8%) emerge as the top contributors, whereas technical elements such as Troubleshooting (7.8%) and Team Performance (5.8%) rank lowest. These findings highlight that sustainable SLA compliance in the public sector relies primarily on strengthening governance and strategic oversight rather than operational execution. Accordingly, the study recommends enhancing structured planning and continuous evaluation mechanisms to ensure alignment between service delivery and user value, consistent with ITIL principles.

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Corresponding Author:

Irwan Bengkulah,
Dept. of Computer Science,
University of Indonesia,
Jl. Kenari 2 No.4, RW.5,
Kenari, Kec. Senen
Email: irwan.bengkulah@ui.ac.id

I. INTRODUCTION

The global advancement of Information Technology (IT) has significantly encouraged organizations to adopt more efficient and integrated operational models. This trend has led to an increasing adoption of IT Managed Services, in which organizations outsource the responsibility of managing IT

infrastructure to external providers. This approach enables companies to focus on their core competencies while ensuring security and operational efficiency through centralized software and hardware solutions [1]. In this context, the implementation of frameworks such as the Information Technology Infrastructure Library (ITIL) has

proven to be a significant driver in enhancing operational efficiency, service quality, and customer satisfaction [2].

The evolution of ITIL into its latest iteration, ITIL 4, emphasizes a transition from merely managing processes to adopting a comprehensive Service Value System (SVS). This system integrates the principles of service management, governance, and continual improvement to ensure that the services delivered consistently create value for the stakeholders [3]. Unlike previous models that focused narrowly on technical functions, ITIL 4 mandates that service outcomes, documented through the SLA, must be viewed through a holistic lens, prioritizing co-creation of value with the customer. This shift makes the identification of factors beyond operational efficiency such as strategic alignment and stakeholder relationships crucial for successful IT service delivery in modern organizational environments.

In the context of ITIL, Service Level Management (SLM) is a highly significant process that formalizes the relationship and commitment between the service provider and the customer. The primary objective of SLM is to ensure that all agreed-upon IT services are delivered consistently in accordance with the approved target levels, which are thoroughly documented in the Service Level Agreement (SLA). The SLA functions not only as a legal contract but also as a crucial operational document that translates business expectations into measurable technical metrics, such as service availability, resolution time, and quality standards [4].

Thus, the success of any outsourced or managed service relationship including Managed Print Services is ultimately determined by the ability of the Managed Services Provider (MSP) to achieve and sustain SLA compliance, making this metric the primary measure of service value delivery.

The adoption of Managed Services is closely related to the core processes within IT Service Management (ITSM). One of the critical processes in ITSM is Incident Management, which is integrated within the ITIL framework and aims to restore services to normal operation as quickly as possible while minimizing the impact of incidents on the business. This process — responsible for logging, categorizing, prioritizing, and resolving incidents — plays a vital role in ensuring business continuity [5]. However, although Managed Services offer significant potential, their implementation is often challenged by issues related to Service Level Agreements (SLAs) and service quality [4].

In modern environments where business operations are highly dependent on IT infrastructure, ensuring its availability is imperative. Failures in handling changes particularly those involving system configurations can result in severe service disruptions. To mitigate such risks, Change Management becomes an essential discipline, as poorly executed processes can lead to serious consequences, including network failures and exposure to risks [6]. Guided by frameworks such as ITIL, Change Management assists in planning and evaluating changes to minimize potential risks that may affect the IT environment.

Although ITIL provides comprehensive guidance, its implementation within public sector institutions presents unique challenges that complicate SLA compliance. Government organizations typically operate under rigid bureaucratic procedures and complex procurement mechanisms, which slow decision-making and delay

responses to incidents or urgent changes. Budget limitations and inflexible annual budget cycles further restrict investments in modern tools, staff training, and automation needed for proactive service management. These constraints create a significant gap between SLA expectations and operational realities, making incident and change management prone to delays and increasing the likelihood of recurring SLA violations.

A Public Sector Organization, as a large-scale government institution, has adopted various advanced technologies to support its operations. In its effort to improve efficiency and service quality, the Organization has implemented Managed Print Services (MPS). Managed Print Services (MPS) are services offered by external providers to manage and optimize a company's document output, encompassing needs assessment, hardware replacement, and the provision of required services and supplies [7]. This shift aligns with findings from a case study in Malaysia, which showed that print service providers (PSPs) adapted to pandemic-related challenges and digital disruption by investing in new technologies to enhance efficiency and diversify their services [8].

The adoption of Managed Print Services (MPS) in large public sector organizations is primarily driven by the need to reduce operational costs, standardize IT assets, and improve document security through centralized management. However, the implementation of MPS at this scale introduces significant complexity, as services must be delivered across widely distributed locations and thousands of devices, often involving multiple vendors. This distributed environment makes it challenging to maintain service consistency, monitor device performance in real time, and ensure timely vendor responsiveness. Without strong governance and control mechanisms, these complexities pose substantial risks to meeting Service Level Agreement (SLA) targets.

The implementation of this MPS initiative was carried out through a partnership with the Managed Services Provider (MSP). In this role, the Provider not only delivers technical services but also acts as an "orchestrator" that integrates and manages various resources and capabilities required within the Organization's printing service ecosystem [9]. The Provider assumes full responsibility for service management, including toner supply, device repair, and routine maintenance, in accordance with the agreed Service Level Agreement (SLA). With this comprehensive responsibility, the implementation of MPS at the Organization can be categorized as a higher-level service adoption aimed at achieving IT alignment with business objectives. This degree of fidelity is known as Faithfulness of Appropriation (FOA), defined as the extent to which outsourced services are used in a manner consistent with both their structural features (e.g., Service Agreement) and the intended spirit or objectives (value and goals) of the service [10].

However, within the operation of this managed service, the Organization faces various challenges affecting SLA compliance, such as delays in toner fulfillment, substandard repairs, and limited visibility of device conditions in the field. It is important to note that frequent Service Level Agreement (SLA) violations can lead to substantial contractual penalties and increase the likelihood of losing the tenant [11]. Therefore, such reactive approaches must be replaced with proactive strategies that employ predictive models to act before SLA violations occur, in order to uphold provider

commitment, avoid financial penalties, and preserve reputation.

Empirical evidence further highlights the severity of the Organization’s challenges. Internal operational data from 2024 show that the 3-day SLA target for print service requests—covering table, spare-part, and toner fulfillment—was achieved in only 19% of cases. As illustrated in Figure 1, many requests exceeded 20 days, with the longest reaching 53 days. Although this example is taken from the Bogor Work Area, the pattern reflects a broader, systemic issue across the Organization’s distributed structure, indicating weaknesses in governance, monitoring, and proactive vendor management.

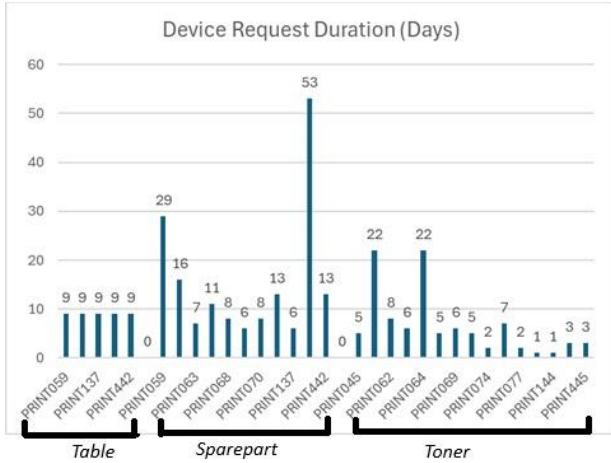


Fig. 1. Historical Service Fulfillment Lead Times (Days) in Bogor Work Area

In public sector environments, repeated SLA violations carry consequences beyond contractual penalties. Service disruptions hinder the delivery of governmental functions, damage institutional credibility, and reduce public trust. Financial penalties also divert public funds away from essential programs and technological improvements. These risks underscore the need for a shift from reactive service management to a preventive, governance-driven approach. Identifying the Critical Success Factors (CSFs) that most strongly influence SLA outcomes is therefore essential to guide strategic prioritization and sustainable improvement.

By applying ITIL principles and utilizing real-time monitoring applications, the Organization has taken proactive measures to address SLA compliance challenges [12]. This strategic step is essential to complement ITIL with a modern service perspective that emphasizes value and customer relationships, supported by real-time data analysis using cloud technology. The utilization of live data enables services to become more personalized and adaptive, allowing organizations to respond more quickly to customer interactions and trends, ultimately increasing customer satisfaction and loyalty [13].

Given the urgent need for proactive IT service management and the absence of a structured framework linking Critical Success Factors (CSFs) to SLA compliance in Managed Print Services, this study addresses a clear theoretical and practical gap. CSFs such as user satisfaction, management support, and process effectiveness are inherently qualitative and difficult to measure directly. Therefore, the Analytic Hierarchy Process (AHP) is adopted

to translate expert judgment into quantifiable priority weights, enabling a systematic evaluation of the relative importance of each factor and generating data-driven strategic recommendations.

This study focuses on identifying and prioritizing the critical factors that influence SLA compliance in Managed Print Services at the Organization using the Analytic Hierarchy Process (AHP). The use of AHP aligns with previous research that employed this method to determine the relative weights of service quality dimensions and sub-dimensions [14]. This approach is further supported by the ITIL framework to align service management practices. The results of this study are expected to provide strategic recommendations to enhance operational efficiency and the sustainable quality of Managed Services.

II. METHODOLOGY

A. Analytic Hierarchy Process (AHP)

The Analytic Hierarchy Process (AHP) is a multi-criteria decision-making method developed by Thomas Saaty. It is used to solve complex problems by decomposing them into a simpler hierarchical structure. AHP enables decision-makers to analyze various alternatives by considering multiple relevant criteria. The process begins by constructing a hierarchy that includes the main objective at the top level, the criteria at the intermediate level, and the alternatives at the bottom level. Subsequently, pairwise comparisons are performed to assess the relative importance of elements within each hierarchical level. These values are then normalized and used to calculate the priority weights of each element [15].

A key mathematical foundation of AHP is Saaty’s Fundamental Scale, which assigns numerical values from 1 to 9 (and their reciprocals) to represent the intensity of preference between two elements in a pairwise comparison. To ensure the reliability of these subjective judgments, AHP incorporates a consistency check through the Consistency Ratio (CR), which measures the deviation of the comparison matrix from perfect consistency. A CR value of ≤ 0.10 is generally accepted as the threshold for valid judgments, ensuring that the resulting priority weights are logically coherent and free from random or contradictory evaluations..

In this study, AHP is employed due to its capability to handle complex decisions in a structured and systematic manner [16]. This research focuses on ranking the Critical Success Factors (CSFs) that influence SLA compliance in Managed Print Services. It involves multiple criteria such as Service Availability, Incident Resolution Time, Vendor Responsiveness, and User Satisfaction, all of which contribute to overall service success.

AHP also has the capability to integrate both qualitative and quantitative data. This is achieved through pairwise comparisons to determine the relative weights among criteria, allowing qualitative perspectives to be converted into measurable weight values. This makes AHP an effective tool for addressing diverse perspectives that are otherwise difficult to quantify directly [17]. Therefore, AHP, as one of the Multi-Criteria Decision Analysis approaches, is selected as the most appropriate method to achieve the objectives of this research.

B. Project Success Criteria

Evaluating the success of IT services is often challenging because it involves many subjective aspects that are difficult to quantify. This study employs the Analytic Hierarchy Process (AHP) approach to prioritize IT service success criteria by considering the relative weights of each element [18]. In the context of Managed Print Services at the Organization, we identified four main criteria adopted from the ITIL framework and validated through interviews with officials at the Organization's Data and Information Center (Pusdatin).

The first criterion is **Service Availability**, a crucial metric used to assess how frequently the printing service can be accessed by end users at the Organization, and the primary objective of Incident Management [19].

In addition, **Incident Resolution Time** is also essential because it directly reflects the effectiveness of the response from the IT team and vendor to printer-related issues. In the case of the Organization, rapid resolution time is vital to minimize disruptions to daily work activities [20].

Another criterion is **Vendor Responsiveness**, which in IT service management is measured by the readiness of the service provider to deliver timely services. Vendor service quality depends on dimensions such as Responsiveness (willingness and timeliness) and Processing Time (speed of service delivery), both of which significantly influence the client's perception of overall performance. For the Organization, this criterion serves as a primary benchmark for evaluating the service provider. Improvements in vendor responsiveness can be achieved through automation and customization of incident management processes, which help the service team respond more efficiently to staff requests, ultimately increasing customer satisfaction [21].

Finally, **User Satisfaction** is the ultimate benchmark of service success. User satisfaction in the context of IT services is positively influenced by system quality, service quality, and user self-efficacy [22]. In the Organization's context, the satisfaction of more than 15,000 employees who rely on the centralized printing service serves as a key indicator of overall operational performance.

The selection of these four criteria aligns with widely recognized service quality evaluation models, particularly those adapted for the IT services domain. Service Availability and Incident Resolution Time represent core technical performance indicators commonly specified in Service Level Agreements (SLAs). In contrast, Vendor Responsiveness and User Satisfaction capture the service quality and user-centric dimensions that determine the perceived value of managed services. This balanced combination is essential because technical performance alone is insufficient in a managed service environment; overall service success is strongly influenced by vendor interaction quality and end-user experience. Accordingly, prioritizing these four dimensions provides a comprehensive foundation for evaluating SLA compliance and assessing the value delivered to the Organization.

C. Critical Success Factors

The success of managed IT service implementation is significantly influenced by a number of critical factors. These factors do not solely depend on technical elements, but also on interconnected organizational and behavioral aspects,

which are classified into dimensions such as Stakeholder Management, Project Team, and Organizational Process Assets [23]. From the four project success criteria adopted from ITIL, this study identifies eight Critical Success Factors (CSFs) to be used.

Following the identification of the four Project Success Criteria (Level 2), this study identifies eight Critical Success Factors (CSFs) that constitute the alternatives at Level 3 of the AHP hierarchy. Each criterion governs two distinct CSFs, resulting in four pairwise comparison matrices at the alternative level. The selection of CSFs was conducted through a literature review and validated by subject-matter experts to ensure relevance to the managed service environment, particularly within the public sector context. This hierarchical structure provides a systematic basis for prioritizing the strategic drivers of SLA performance.

Within government settings, the importance of CSFs such as Leadership and Thorough Planning becomes more pronounced. SLA compliance in public sector managed services often depends less on technical execution and more on strong governance, clear accountability, and well-defined contractual and operational frameworks. Emphasizing these CSFs enables the analysis to move beyond operational metrics toward understanding the managerial and strategic mechanisms that drive sustained service performance.

Thorough Planning is essential for optimizing service delivery. This includes developing models that integrate various criteria such as customer value, impact, and urgency to prioritize interactions dynamically and in real time, thereby minimizing miscommunication between third parties and the Organization's internal stakeholders [20].

Next, **Effective Troubleshooting** is a crucial component of service management, in which operational log analysis and complaint tickets are used to identify the root causes of incidents affecting printer service availability at the Organization. This process includes both investigation and incident resolution steps [19].

Additionally, **Stakeholder Satisfaction** particularly that of end users is recognized as a critical performance metric. In service management, such satisfaction can be enhanced by prioritizing service interactions according to factors such as customer value, impact, urgency, and the emotional dimensions of complaints or requests [20].

Enhancing Team Performance and Top Management Support is also vital. This is because service quality depends on strong operational processes, which require IT service management initiatives that are aligned with business needs across the Organization [19].

The effectiveness of services provided by the third party to the Organization can be measured through continuous **Evaluation** of customer interactions. This factor involves collecting and integrating information from various sources, such as interaction history data, emotional sentiment, and impact/urgency information, to obtain an accurate global assessment [20].

Furthermore, **Leadership** plays a highly significant role in IT service management. Leaders, such as the head of Pusdatin and IT service managers, facilitate structured group decision-making to select the most relevant Key Performance Indicators (KPIs) to measure performance and achieve business objectives [24]. In the public sector context,

management must also ensure that employees' KPIs adequately reflect their areas of responsibility in order to improve service performance and achieve organizational goals [25].

Finally **Monitoring** Effectiveness is an important factor in ensuring the availability of services. Performing constant measurement, evaluation, and progress monitoring helps ensure that change initiatives undertaken by the third party for the Organization's services remain on track [26]. The mapping of project success criteria and critical success factors is shown in Figure 2.

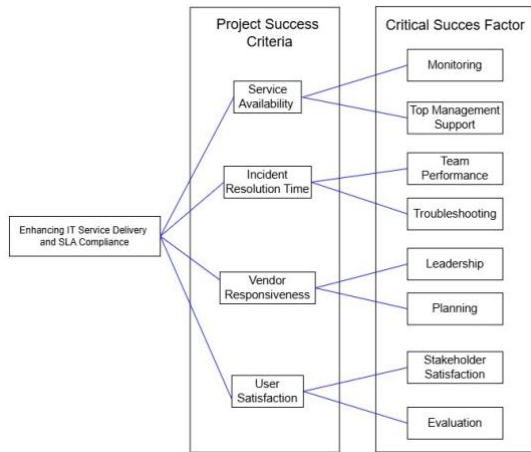


Fig. 2. Hierarchical Model of Criteria and Critical Success Factors (CSFs)

D. Theoretical Framework

The theoretical framework in this study is designed by adapting the hierarchical structure of the Analytic Hierarchy Process (AHP) to prioritize Critical Success Factors (CSFs) that influence Managed Print Services at the Organization. The ranking of CSFs is conducted by adopting criteria from ITIL 4 process areas, which have been proven to enhance service quality and team efficiency. The ITIL 4 principles emphasize the need for performance assessment and continuous evaluation to achieve higher service quality. The identified criteria are then validated and weighted by experts, where leadership and technical competence are recognized as fundamental factors in service effectiveness [26]

The core theoretical foundation of this framework rests on the ITIL guiding principles, particularly the emphasis on Focus on Value and Progress Iteratively with Feedback. These principles provide the necessary conceptual lens to ensure that the chosen success criteria (Level 2) are not purely technical but reflect the overall value delivered to the public sector organization. Specifically, the framework adopts ITIL's holistic view of service management, which recognizes that effective service delivery, and thus SLA compliance, requires the successful orchestration of resources, processes, and governance practices. This study, therefore, uses ITIL as the overarching management philosophy to contextualize the relevance and interdependence of the identified CSFs within the service ecosystem

The theoretical framework consists of three main levels:

1) **First Level (Main Objective):** Defines the research objective, which is to identify the key factors in improving

SLA compliance in Managed Print Services at the Organization.

2) **Second Level (Criteria):** Comprises four success criteria used to evaluate the CSFs. These include Service Availability, Incident Resolution Time, Vendor Responsiveness, and User Satisfaction, identified through literature review and the ITIL framework.

3) **Third Level (Alternatives):** Focuses on eight IT service management CSFs that serve as the alternatives to be prioritized. These CSFs are derived from relevant literature.

This study integrates various CSFs identified in previous literature to support the AHP hierarchical structure used in this research [27].

E. Research Design

The overall research design utilizes a mixed-method approach consisting of both qualitative and quantitative methods [28]. This phased structure (as illustrated in Figure 3. Research Stages) was specifically implemented to ensure both content validity and the organizational relevance of the study's hierarchical model.

The research began with the qualitative phase, involving structured interviews with selected officials equivalent to Echelon-4 positions within the Organization. This initial step was crucial to adapt the generic ITIL and literature-based success criteria and Critical Success Factors (CSFs) to the unique operational reality of the Public Sector Organization's Managed Print Services environment.

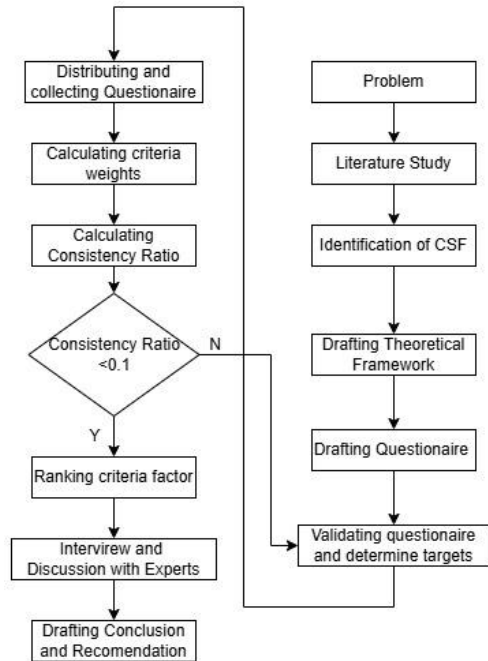


Fig. 3. Research Stages

Following the qualitative validation, the quantitative phase was conducted using the Analytic Hierarchy Process (AHP). A total of *five (5) respondents* participated in the AHP survey. All respondents were Echelon-4 officials serving as IT Area Coordinators within Pusdatin. Their selection was deliberate, as these roles possess the required strategic oversight, managerial authority, and cross-functional process knowledge needed to provide informed judgments on the prioritization of factors influencing SLA outcomes. The five officials were stationed across geographically distributed

work areas—Jakarta, Bogor, Tangerang, Bandung, and Yogyakarta—ensuring that the collected data accurately represents the overall operational environment of the Organization’s Managed Print Services.

For this research, the AHP questionnaire required respondents to perform pairwise comparisons. The small, focused sample size is consistent with AHP’s methodological reliance on expert consensus over large-scale statistical generalization. Prior to filling in the questionnaire, the researcher provided a brief instruction session on how to complete the AHP instrument to minimize potential bias in the responses and ensure consistency in the scoring.

The AHP questionnaire was structured using a set of comparative matrices derived directly from the hierarchical model, encompassing three main comparison sections: Criteria comparison (Level 2), CSF comparisons within each criterion (Level 3), and a consistency check. Specifically, the process involved distinct pairwise comparisons necessary to evaluate the four criteria and the eight CSFs. The respondents utilized the nine-point intensity scale proposed by Saaty to express their relative judgment, and this structured numerical input was vital for converting the qualitative, experience-based judgment of the experts into a formal, ratio-scale measurement.

Upon retrieval of the completed questionnaires, the data processing commenced with a rigorous quality control procedure aimed at ensuring the logical coherence of the overall group judgment. Initially, the individual expert judgments for each comparison matrix were aggregated using the geometric mean, synthesizing the diverse perspectives into a single, unified group priority matrix. Following aggregation, the Consistency Ratio (CR) was calculated for this Group Composite Matrix. As is standard practice in AHP, the final group judgment was accepted only if the CR value was less than or equal to the acceptable threshold of 0.10.

III. RESULT AND DISCUSSION

After retrieving the previously distributed AHP questionnaires, the data processing commenced with a rigorous validation phase. As established in the methodology, the individual expert judgments were synthesized using the geometric mean, and the Consistency Ratio (CR) of the resulting aggregate matrix was verified to ensure the logical coherence of the expert consensus. Once the data passed this crucial consistency check, the calculation of all priority weights was performed using the SpiceLogic software. The matrices, which form the primary data input for the AHP calculation, are presented in detail below. Tables 1 through 5 present the Pairwise Comparison Matrices used for calculating the weights of the success criteria (Level 2) and the Critical Success Factors (Level 3).

TABLE I. GROUP COMPOSITE MATRIX AND PRIORITY VECTOR FOR PROJECT SUCCESS CRITERIA

Criteria	Service Availability	Incident Resolution Time	Vendor Responsiveness	User Satisfaction	Priorities
Service Availability	1	1.48	0.72	0.90	0.227
Incident Resolution Time	0.68	1	0.21	0.67	0.136
Vendor Responsiveness	1.38	4.68	1	0.84	0.360

Criteria	Service Availability	Incident Resolution Time	Vendor Responsiveness	User Satisfaction	Priorities
User Satisfaction	1.10	1.47	1.18	1	0.277

TABLE II. PAIRWISE COMPARISON MATRIX AND LOCAL PRIORITY WEIGHTS FOR CSFs UNDER SERVICE AVAILABILITY

Service Availability (0.227)	Monitoring	Top Management Support	Priorities
Monitoring	1	0.80	0.445
Top Management Support	1.24	1	0.555

TABLE III. PAIRWISE COMPARISON MATRIX AND LOCAL PRIORITY WEIGHTS FOR CSFs UNDER INCIDENT RESOLUTION TIME

Incident Resolution Time (0.136)	Troubleshooting	Team Performance	Priorities
Troubleshooting	1	1.34	0.573
Team Performance	0.74	1	0.427

TABLE IV. PAIRWISE COMPARISON MATRIX AND LOCAL PRIORITY WEIGHTS FOR CSFs UNDER VENDOR RESPONSIVENESS

Vendor Responsiveness (0.360)	Planning	Leadership	Priorities
Planning	1	1.28	0.562
Leadership	0.78	1	0.438

TABLE V. PAIRWISE COMPARISON MATRIX AND LOCAL PRIORITY WEIGHTS FOR CSFs UNDER USER SATISFACTION

User Satisfaction (0.277)	Stakeholder Satisfaction	Evaluation	Priorities
Stakeholder Satisfaction	1	0.51	0.338
Evaluation	1.95	1	0.662

TABLE VI. RANKINGS OF PROJECT SUCCESS CRITERIA

Criteria	Weight (%)	Rank	CR
Service Availability	22.7	3	0.062
Incident Resolution Time	13.6	4	
Vendor Responsiveness	36.0	1	
User Satisfaction	27.7	2	

The final synthesis of the Analytic Hierarchy Process (AHP) results provides two primary sets of findings. The Group Consistency Ratio (CR) for the criteria matrix was confirmed to be 0.062, validating the reliability of the expert consensus across all hierarchical levels. The final rankings and normalized weights of the four project success criteria (Level 2) are summarized in Table 6. The subsequent discussion analyzes these prioritized factors in depth.

Vendor Responsiveness received the highest weight (36.0%), indicating that the service provider’s ability (Managed Services Provider) to respond and act quickly is the primary determinant of managed service success within the Organization, as it directly affects the speed of issue resolution and compliance with contractual commitments..

User Satisfaction ranked second (27.7%), showing that service success is highly evaluated from the end-user's perspective. This finding reinforces that the success of Managed Print Services is not solely measured by technical metrics but is also driven by a user-centric value perspective, which aligns with the principles of the modern ITIL framework.

Meanwhile, **Service Availability** ranked third (22.7%), implying that service availability remains a fundamental aspect. The **Incident Resolution Time** criterion had the lowest weight (13.6%). Although fast resolution is desirable, experts tend to prioritize the certainty and quality of the vendor's response (Vendor Responsiveness) and its positive impact on users (User Satisfaction) as the main benchmarks of success.

The weighting analysis of AHP at Level 3 aims to identify the dominant factors contributing to each project success criterion. Detailed information regarding the priority of each Critical Success Factor (CSF) within the context of its respective criterion is presented in Table 7. The results of these factor weightings per criterion are then synthesized with the criterion weights to obtain the final ranking of the Global Weight Critical Success Factors (Table 8).

TABLE VII. RANK FOR CSF WITHIN EACH CRITERION

Criteria	CSF	Weight (%)	Rank	CR
Service Availability	Monitoring	44.5	2	0.0
	Top Management Support	55.5	1	
Incident Resolution Time	Troubleshooting	57.3	1	0.0
	Team Performance	42.7	2	
Vendor Responsiveness	Planning	56.2	1	0.0
	Leadership	43.8	2	
User Satisfaction	Stakeholder Satisfaction	33.8	2	0.0
	Evaluation	66.2	1	

TABLE VIII. GLOBAL WEIGHT CRITICAL SUCCESS FACTOR

CSF	Weight (%)	Rank
Monitoring	10.1	5
Top Management Support	12.6	4
Troubleshooting	7.8	7
Team Performance	5.8	8
Planning	20.2	1
Leadership	15.8	3
Stakeholder Satisfaction	9.4	6
Evaluation	18.3	2

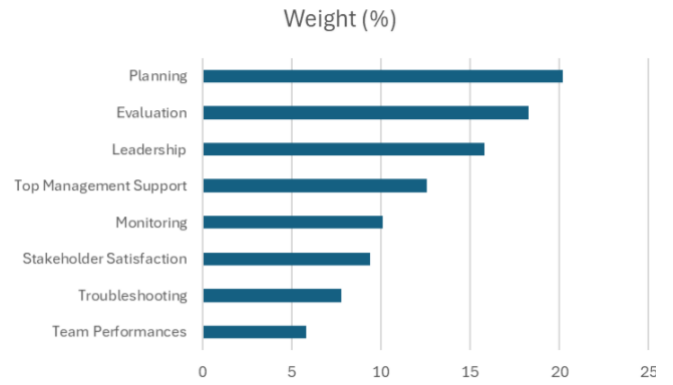


Fig. 4. Global Weight Critical Success Factor

The final Global Weight (WG) of each Critical Success Factor (CSF) was computed by multiplying its Local Weight (WL) derived from the Level 3 pairwise comparison with the Global Weight of its corresponding criterion (WC) obtained from the Level 2 comparison. This relationship is expressed mathematically as:

$$WG = WL \times WC \quad (1)$$

This procedure ensures that the final priority of each CSF reflects both its relative importance within its own criterion and the strategic importance of the criterion itself in influencing SLA performance.

The final synthesis results (Overall Global Priority) of the Critical Success Factors (CSFs) indicate that the improvement of SLA compliance is predominantly driven by aspects of strategic management and service control, rather than purely by technical execution. The **Planning** factor ranks the highest with a weight of 20.2%, emphasizing that well-defined contracts, procedures, and expectations established from the outset are essential prerequisites for ensuring service performance. This is followed by **Evaluation** in second place (18.3%), highlighting the importance of a continuous improvement cycle driven by data and systematic feedback to achieve User Satisfaction. Next, the **Leadership** factor ranks third (15.8%), indicating that managerial ability to make quick decisions and ensure accountability plays a key role in managing vendor and team relationships.

Factors ranked in the middle tier provide important nuances regarding the priorities of the Organization's officials. **Top Management Support** (12.6%, Rank 4) and **Monitoring** (10.1%, Rank 5) demonstrate the necessity of a sustained organizational commitment to service success. The high ranking of Top Management Support, although below Planning and Leadership, signifies that governance and resource endorsement from the executive level are critical for maintaining the long-term viability of the MSP contract. Similarly, Monitoring being ranked fifth confirms its essential role in providing the real-time data needed for proactive decision-making, directly supporting the Evaluation factor. Meanwhile, **Stakeholder Satisfaction** (9.4%, Rank 6) indicates that while end-user perception is valued, the managerial experts prioritize the organizational mechanism (Planning, Leadership) to deliver the service, over the direct metric of satisfaction itself.

In contrast, factors directly related to operational execution, such as **Troubleshooting** (7.8%) and **Team**

Performance (5.8%), occupy the lowest ranks, reinforcing the conclusion that the Organization's primary priority lies in strengthening governance and strategic planning as the foundation for the success of its Managed Print Services.

IV. CONCLUSION

This study successfully identified and prioritized the Critical Success Factors (CSFs) that most significantly influence Service Level Agreement (SLA) compliance in Managed Print Services at a Public Sector Organization by applying the Analytic Hierarchy Process (AHP) within the ITIL-based framework. The main findings reveal that the success is highly dependent on strategic management disciplines: Planning is the most critical CSF (20.2%), followed by Evaluation (18.3%) and Leadership (15.8%). These results firmly indicate that SLA success in the public sector is primarily driven by proactive management and governance factors (such as defining procedures and accountability), rather than purely operational factors like *Troubleshooting* (7.8%) or *Team Performance* (5.8%). Accordingly, it is recommended that the Public Sector Organization prioritize resource allocation toward strengthening strategic planning and formalizing continuous evaluation cycles to achieve greater operational efficiency and sustainable SLA compliance, while simultaneously focusing on Leadership to ensure accountability and effective vendor management. This emphasis on governance translates into practical steps, suggesting that future Managed Print Services contracts must incorporate strong incentives and punitive measures tied directly to the Evaluation framework, transforming the vendor relationship from a mere service transaction into a performance-driven partnership.

This study has several limitations, primarily due to its nature as a single case study focused on Managed Print Services within a single government institution and its reliance on expert judgment evaluated through AHP. The resulting factor rankings, therefore, cannot be directly generalized to other industries or sectors that may exhibit different operational dynamics or success criteria (e.g., fast-paced private sectors). For future research, it is recommended to expand the study scope by validating this model across more diverse IT service organizations (such as those in private sectors or state-owned enterprises) to test the robustness of the identified CSFs. Additionally, the methodology can be further refined by integrating Fuzzy AHP or DEMATEL techniques to mitigate any potential ambiguity in expert judgments and to more deeply analyze the causal relationships among the Critical Success Factors.

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