

A CIRO-Based Evaluation of Context, Input, Reaction, And Outcome in The Management of The HSC Massage Therapy Clinic, Yogyakarta State University

Sugiyanto¹, Sigit Nugroho², Sigit Kustriyono Munajad³

^{1,2}Department of Sports Science, Faculty of Sports Science and Health, Universitas Negeri Yogyakarta

³Department of Physical Education of Elementary School, Faculty of Sports and Health Science, Universitas Negeri Yogyakarta

ABSTRACT: This study aims to evaluate the management of the Physical and Manipulative Therapy Clinic at the Health and Sport Center of Yogyakarta State University based on the four components of the CIRO model (Context, Input, Reaction, Outcome) and to assess the level of management optimization. The study uses a mixed methods approach with the CIRO model as an evaluative framework, integrating quantitative and qualitative data to obtain a comprehensive picture. Purposive sampling was used to select participants consisting of one manager, two front office staff, twelve therapists, and fifty-six active patients who had undergone therapy for at least two years. Data were collected through in-depth interviews, documentation, and a five-point Likert scale questionnaire.

The results of the descriptive analysis show that all CIRO components are in the high category, namely Context ($M = 4.20$; $SD = 0.55$), Input ($M = 4.25$; $SD = 0.56$), Reaction ($M = 4.18$; $SD = 0.60$), and Outcome ($M = 4.22$; $SD = 0.58$). Spearman's correlation test revealed a very strong and significant relationship between components ($r = 0.723-0.852$; $p < 0.01$), indicating that improvements in one aspect contribute directly to improvements in other aspects. Qualitatively, the results showed that the clinic met health service standards through the presence of certified therapists, adequate facilities, and effective administrative and promotional systems. However, improvements were needed in the integration of service information systems and digital data-based evaluation to support managerial efficiency.

Overall, the management of the Physical and Manipulative Therapy Clinic is considered effective, adaptive, and has a positive impact on patient satisfaction and the effectiveness of therapy services, thus proving the relevance of the CIRO model as an evaluative approach in the context of health services.

KEYWORDS: therapy management evaluation, HSC

I. INTRODUCTION

Healthcare is one of the sectors that plays an important role in improving public health. In Indonesia, various reforms have been carried out to strengthen healthcare services, including efforts to improve quality, equal access, and consumer protection. Health Law No. 17 of 2023 provides a legal framework that emphasizes the importance of integrated promotive, preventive, curative, and rehabilitative efforts as the basis for the implementation of national health services (Law No. 17 of 2023). In this context, health care facilities serve as the backbone of the health system, as they determine the effectiveness, affordability, and quality of services received by the community (Government Regulation No. 47 of 2016).

Public health services, both individual and group, are vital components in maintaining and improving the health of the population. As emphasized by Mamik (2014), health services not only function in treating diseases, but also include efforts to prevent disease and promote sustainable health (Mamik, 2017). One form of service that is widely used by the community is massage therapy, which is used to treat fatigue, muscle tension, and minor musculoskeletal disorders. The high level of interest in massage therapy services reflects the community's need for effective and accessible alternative health services.

In the context of healthcare, patient satisfaction is a key indicator of a facility's success. Musanto (2004) emphasizes that users' positive perceptions of service quality play an important role in building loyalty and improving service sustainability (Musanto, 2004). Therefore, systematic evaluation of managerial aspects, service quality, and user response is essential for healthcare facilities. This evaluation aims to ensure that services run according to established standards and are able to respond to the

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dynamic needs of patients and adapt to changes in the environment and community demands (Permenkes, 2016; Sumarta et al., 2025).

The Massage Therapy Clinic at the Health and Sport Center of Yogyakarta State University is one of the facilities that provides massage therapy services to the general public. This clinic serves more than 300 patients every month and experienced a significant increase in visits, reaching more than 700 patients in October 2024. This surge indicates the high demand for services and the need to review managerial and operational factors to ensure the sustainability and quality of services. Effective clinic management must involve good planning, competent human resource organization, standard-compliant service delivery, and continuous monitoring and evaluation (Buchbinder et al., 2019).

To address these needs, this study uses the CIRO (Context, Input, Reaction, Outcome) Model as an evaluation framework. This model is considered effective for systematically evaluating programs and services by taking into account the context of implementation, quality of input, user response, and service outcomes (Valarmathi et al., 2024). Through this approach, the study can identify strengths, weaknesses, and areas for improvement in clinic management.

In addition, the data analysis process in this study uses the Miles and Huberman Data Analysis Scheme, which includes the stages of data reduction, data presentation, and verification or conclusion drawing (Spradley & Huberman, 2024). This approach ensures that the analysis is carried out in a thorough and structured manner and is capable of describing the findings comprehensively.

Thus, this evaluation is expected to provide evidence-based recommendations to improve service quality, strengthen operational management, and support the development of clinics as part of health services that are oriented towards quality and user satisfaction.

II. METHOD

Quality healthcare is an important element in improving public welfare and ensuring access to promotive, preventive, curative, and rehabilitative services as mandated by Indonesian Health Law No. 17 of 2023. Massage therapy is one of the services widely used to address musculoskeletal discomfort, fatigue, and functional limitations. The effectiveness of this service is greatly influenced by patients' perceptions of service quality, management efficiency, and treatment outcomes. Therefore, a systematic evaluation is needed to ensure that services are provided according to standards, while also identifying managerial weaknesses and supporting evidence-based decision-making (Akter et al., 2019; Permenkes, 2016). In addition, patient feedback plays an important role in strengthening service quality and increasing user loyalty (Musanto, 2004).

The Massage Therapy Clinic at the Yogyakarta State University Health and Sports Center serves more than 300 patients each month and recorded more than 700 visits in October 2024. Despite high utilization rates, fluctuations in visit numbers indicate the need for structured and comprehensive managerial evaluation. To meet these needs, this study uses the CIRO Evaluation Model Context, Input, Reaction, and Outcome which provides a systematic framework for assessing environmental conditions, resource readiness, client response, and program outcomes, as applied in program evaluation research by (Mahardika dan Sudrajat, 2024). In addition, this study integrates Miles and Huberman's Qualitative Data Analysis framework, which includes data reduction, data presentation, and conclusion drawing and verification to ensure a more rigorous qualitative interpretation and improve the validity of managerial evaluation (Miles & Huberman, 1994).

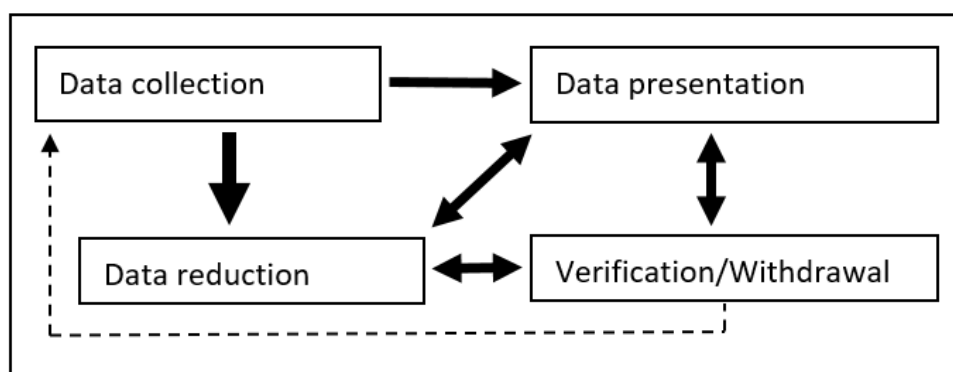


Figure 1. Miles and Huberman Data Analysis Scheme (Miles & Huberman, 1994)

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III. RESEARCH RESULTS

A. DESCRIPTION OF RESEARCH DATA

1. Respondent Characteristics and Data Collection Procedures

A total of 71 respondents participated in the evaluation of the management of the Physical and Manipulative Therapy Clinic, Health and Sport Center, Yogyakarta State University. The composition was as follows: 1 (one) manager, 2 (two) front-office staff, 12 (twelve) therapists, and 56 (fifty-six) patients. Quantitative data was obtained through a 42-item closed questionnaire representing the four components of CIRO (Context, Input, Reaction, Output). To complement the numerical findings, qualitative data was also collected through in-depth interviews with key stakeholders. The interview findings are summarized in Table 1.

Table 1. Interview Excerpts and Thematic Analysis Based on CIRO Model Components

Component	Interview Findings	Thematic Interpretation
Context	The clinic complies with HSC service standards, and patient needs continue to increase.	High alignment between institutional policies and user needs.
Input	Therapists are experienced and facilities are adequate, although administrative systems require digitalization.	Resource availability supports high-quality service delivery.
Reaction	Patients perceive the services as friendly and professional; however, waiting times are occasionally long.	High patient satisfaction with identifiable areas for improvement.
Output	The number of patients has increased, and therapy effectiveness is considered good.	Positive service impact contributing to clinic sustainability.

Source: Primary data

2. Validity and Reliability of the Instrument

a. Context Aspects

Table 2. Validity and Reliability of the Context Component

No	Indicator	r-count	Sig.	Description	Cronbach's Alpha	Reliability
1	Human Resources (HR)	0.886	0.000	Valid	0.865	Reliable
2	Facilities and Equipment	0.810	0.000	Valid		
3	Administration and SOP	0.853	0.000	Valid		
4	Promotion and Public Relations	0.886	0.000	Valid		

Source: SPSS Output 29, 2025

Description, All indicators in the Input component show very strong validity ($r = 0.81-0.89$; $p = 0.000$). Cronbach's Alpha value of 0.865 (> 0.70) indicates that the Input component has high reliability.

b. Input Aspects

Table 3. Validity and Reliability of the Input Component

No	Indicator	r-count	Sig.	Validity	Cronbach's Alpha	Reliability
1	Human Resources (HR)	0.886	0.000	Valid	0.865	Reliable
2	Facilities and Equipment	0.810	0.000	Valid		
3	Administration and SOP	0.853	0.000	Valid		
4	Promotion and Public Relations	0.886	0.000	Valid		

Source: SPSS Output 29, 2025

Description, All four indicators showed very strong validity ($r = 0.810-0.886$; $p < 0.001$). A Cronbach's Alpha value of 0.865 (> 0.70) indicates that the Input component has high reliability.

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c. Reliability Aspects

Table 4. Validity and Reliability of the Reaction Component

No	Indicator	r-count	Sig.	Validity	Cronbach's Alpha	Reliability
1	Patient Decision	0.826	0.000	Valid	0.831	Reliable
2	Patient Response	0.911	0.000	Valid		
3	Clinic Reputation	0.879	0.000	Valid		

Source: SPSS Output 29, 2025

Description. All indicators show very strong validity ($r = 0.826\text{--}0.911$; $p < 0.001$). Cronbach's Alpha value of 0.831 (> 0.70) indicates that the Reaction component has high reliability and the instrument is suitable for use.

d. Output Aspects

Table 5. Validity and Reliability of Output Components

No	Indicator	r-count	Sig.	Validity Description	Cronbach's Alpha	Reliability
1	Number and Growth	0.924	0.000	Valid	0.854	Reliable
2	Clinic Effectiveness	0.958	0.000	Valid		

Source: SPSS Output 29, 2025

Both indicators show a very strong correlation ($r > 0.9$) with the total results. Cronbach's Alpha value of 0.854 indicates very high reliability.

All aspects of the CIRO evaluation showed excellent validity and reliability. This means that the Physical and Manipulative Therapy Clinic Management Evaluation instrument at the Health and Sport Center of Yogyakarta State University is suitable for use as a research measurement tool because it meets psychometric requirements (valid & reliable).

3. Descriptive Analysis of CIRO Components

Table 6. Descriptive Analysis of CIRO Components

Component	N	Mean	Std. Deviation	Minimum	Maximum
Context	71	4.43	0.60	2.00	5.00
Input	71	4.38	0.61	2.00	5.00
Reaction	71	4.35	0.63	1.00	5.00
Output	71	4.33	0.58	2.00	5.00

Source: SPSS Output 29, 2025

All CIRO components obtained an average score above 4.20 with low variation ($SD < 0.65$), indicating consistent perceptions and falling into the "very good" category. Context ($M = 4.43$) was rated the strongest, followed by Input ($M = 4.38$), which reflects the readiness of resources and service systems. Reaction ($M = 4.35$) showed a high level of user satisfaction, while Output ($M = 4.33$) described positive service outcomes. These findings are in line with previous studies showing that structured and holistic clinic service management tends to result in high evaluation scores (Ahmad, Lee, & Cheong, 2021; Aljarallah, 2022; Winaryati et al., 2021).

B. DATA ANALYSIS

1. Normality Test

Table 7. Normality Test Results

Variable	Shapiro–Wilk Statistic	df	Sig.	Interpretation
Total Context	0.916	71	0.000	Not normal
Total Input	0.934	71	0.001	Not normal
Total Reaction	0.907	71	0.000	Not normal
Total Output	0.954	71	0.012	Not normal

Source: SPSS Output 29, 2025

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All CIRO components showed high evaluation scores, with an average value exceeding 4.20 and moderate variability ($SD < 0.65$), indicating consistent respondent perceptions. Context showed the highest average ($M = 4.43$), reflecting strong alignment between clinic policies, user needs, and operational conditions. Input ($M = 4.38$) indicates that human resources, facilities, and administrative systems are well prepared. Reaction ($M = 4.35$) describes user satisfaction and positive service experiences; while Output ($M = 4.33$) indicates service effectiveness and tangible benefits. These findings are consistent with empirical evidence that service quality and managerial improvements significantly increase patient satisfaction and loyalty in Indonesian health services (Adhi et al., 2018; Cahyo et al., 2025; Yusuf & Wasir, 2023).

2. Uji Spearman's

Because the data did not meet the assumption of normality, the relationships among variables were examined using Spearman's rho. This analysis assessed the strength and direction of associations among the four core CIRO components—Context, Input, Reaction, and Output—in evaluating the management of the HSC Massage Therapy Clinic at Yogyakarta State University.

Table 8. Spearman's Rho Correlation Matrix

Variable	Total Context	Total Input	Total Reaction	Total Output
Total Context	1.000	.842**	.845**	.723**
Total Input	.842**	1.000	.852**	.820**
Total Reaction	.845**	.852**	1.000	.742**
Total Output	.723**	.820**	.742**	1.000

Source: SPSS Output 29, 2025

With $N = 71$ and all correlations significant ($p < 0.01$), all CIRO components showed strong and positive relationships. Context was closely related to Input ($r = 0.842$) and Reaction ($r = 0.845$), indicating that policies and service needs influence resource readiness and patient satisfaction. The strongest relationship is seen between Input and Reaction ($r = 0.852$), confirming the role of human resources, facilities, and SOPs in shaping user experience (Arman et al., 2023; Toreh & Wuisan, 2023). Input also correlates strongly with Output ($r = 0.820$), reinforcing the theory that the quality of service structure and processes influences service outcomes (Marisyah et al., 2024). The Reaction-Output correlation ($r = 0.742$) is consistent with service quality models that place satisfaction as a predictor of clinic performance (Apryani, 2025).

Overall, these findings indicate that the CIRO model works in an integrated and relevant manner to evaluate the management of physical therapy clinics (Kirkpatrick & Kirkpatrick, 2006; Stufflebeam & Shinkfield, 2007).

IV. DISCUSSION

1. CONTEXT

The Context component assesses the alignment between institutional policies, operational standards, patient needs, and external factors such as government policies, socio-cultural factors, and the strategic location of the clinic. The Context score ($M = 4.43$) indicates a high level of alignment between internal policies and patient needs.

Government policies, such as Health Law No. 17 of 2023 and Government Regulation No. 47 of 2016, provide the legal basis for ensuring that all health services, including massage therapy, meet promotional, preventive, curative, and rehabilitative standards (Permenkes, 2016; Sumarta et al., 2025). In addition, government policies related to accreditation, human resource certification, and clinic facility standards strengthen the quality of services provided.

The clinic's strategic location, in the center of the campus and easily accessible to students, staff, and the general public, strengthens service penetration and operational sustainability. This position enables the clinic to reach more patients while requiring effective capacity planning to maintain service quality, especially during periods of increased visits. These findings are in line with research (Valarmathi et al., 2024), which emphasizes the importance of environmental context and location in determining the effectiveness of institution-based health services.

2. INPUT

Input components, which include human resources, facilities, equipment, administrative systems, and promotional activities, received a high average score ($M = 4.25$; $SD = 0.56$), indicating that the clinic's operational capacity is well established. Clinic therapists have professional skills in manual therapy and exercise techniques, while administrative staff manage patient registration and flow effectively. Regular staff training supports continuous capacity development, in line with Owen's (2020) statement that continuous professional development is essential to maintain service competence (Frenk et al., 2010).

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The clinic's facilities meet safety and comfort standards, including the use of modern equipment such as ultrasound therapy, EMS, and thermal modalities. According to Donabedian (2005), the adequacy of tangible resources is an important factor in building patient trust and perception of service value (Donabedian, 2005). The clinic adheres to structured SOPs, maintains neat documentation, and implements reliable patient flow management in accordance with WHO (2021) guidelines on clinical information management. Promotional activities—including collaboration with hospitals and sports communities—expand patient reach.

A strong correlation between Context and Input ($r = 0.842$; $p < 0.01$) indicates that good policies directly strengthen resource readiness, consistent with Donabedian's (2005) structure-process logic. Nevertheless, improvements are still needed, including systematic evaluation of staff training, gradual integration of electronic medical records, and broader digital marketing strategies to optimize resource utilization and service accessibility.

3. REACTION

The Reaction component describes patients' perceptions of the quality of clinic services and their level of satisfaction. The average Reaction score ($M = 4.35$; $SD = 0.60$) shows that patients rate the services positively overall, although there are notes regarding sometimes long waiting times.

Patients appreciate the therapists' professionalism, the comfort of the facilities, and the efficiency of the service procedures. This is in line with the SERVQUAL dimensions (Parasuraman, Zeithaml, & Berry & Leonard, 1988), which emphasize responsiveness, empathy, and physical/tangible aspects as the main factors influencing patient satisfaction. Short waiting times, prompt handling of complaints, and participatory evaluation practices support positive patient experiences while encouraging organizational learning. Managerial support for therapists through supervision and rewards increases staff motivation, as emphasized (Frenk et al., 2010).

Social norms and cultural expectations also influence patient responses. In Yogyakarta, friendliness, politeness, and professionalism are key indicators of patient satisfaction. Government policies on service transparency, patient rights, and accountability also increase patient trust in services (Al Abri dan Al Balushi, 2014).

Patients' intention to recommend the clinic demonstrates the strong influence of word-of-mouth, reinforcing the clinic's positive reputation. Who found that service quality including facility adequacy, staff competence, and effective communication is a major determinant of patient satisfaction and loyalty in healthcare settings (Yusuf & Wasir, 2023).

The strong correlation between Input and Reaction ($r = 0.852$; $p < 0.01$) indicates that high-quality resources and management systems directly drive positive patient responses. According to Donabedian (2005), patient satisfaction is a direct result of the effectiveness of structural and process components (Donabedian, 2005). However, further improvements are still needed, including the adoption of digital patient feedback systems, scheduling automation, and the development of performance-based reward mechanisms to continuously improve patient experience and service quality.

4. OUTPUT

The Output component assesses the actual results of clinic services, including the number of patients, the effectiveness of therapy, and the perceived benefits. The Output score ($M = 4.33$; $SD = 0.58$) shows that patients consider clinic services to be effective and provide tangible benefits. The increase in the number of new and returning patients demonstrates the credibility of the services and user loyalty, while the expansion of cooperation with other institutions reflects continuous organizational development.

The effectiveness of therapy is reflected in measurable improvements, such as pain reduction, increased joint mobility, and overall improvement in patient well-being. These results are in line with Donabedian's (2005) definition of effective healthcare services, which emphasizes the achievement of outcomes that benefit patients (Donabedian, 2005). The clinic continues to increase its therapeutic capacity, modernize its equipment, and expand its service portfolio. The clinic's function as both a therapy center and an academic laboratory supports the faculty's mission of integrating education, service, and applied research.

Clinic output is influenced by the synergy between Context, Input, and Reaction. Government policies that emphasize service standards, transparency, and clinic accreditation encourage improvements in output quality. Sociocultural factors influence patient compliance with treatment recommendations, thereby optimizing service effectiveness. The strategic location of clinics facilitates patient access and supports continuity of care, thereby strengthening service outcomes (Cahyo et al., 2025; Marisya et al., 2024).

This approach is consistent with program evaluation theory that emphasizes the importance of comprehensively assessing all layers of service (Kirkpatrick & Kirkpatrick, 2006; Stufflebeam & Shinkfield, 2007) and aligns with Patton's (2015) emphasis on utilization-focused evaluation (Patton, 1997). Recent evidence also highlights that high-quality management systems play a crucial

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role in improving clinic performance and service outcomes. For example, integrated management practices have been shown to significantly enhance healthcare service quality (Prayogo et al., 2023), while empirical findings indicate that better service quality and managerial effectiveness are strongly associated with increased patient satisfaction and clinic performance (Cahyo et al., 2025).

The strong correlation between CIRO components — Context–Input, Input–Reaction, Reaction–Output ($r = 0.820$; $p < 0.01$; $r = 0.742$; $p < 0.01$) — confirms that effective service management requires the integration of all aspects. Supportive policies, adequate resources, and positive patient responses directly improve clinic Output. This approach is consistent with program evaluation theory that emphasizes the importance of comprehensively assessing all layers of service (Kirkpatrick & Kirkpatrick, 2006), aligns with Patton's (2015) emphasis on utilization-focused evaluation, and is supported by evidence that effective health management strategies significantly enhance service quality and patient satisfaction (Azwa et al., 2025; Novitasari, 2022).

5. SYNTHESIS ACROSS CIRO COMPONENTS

The significant correlations among all CIRO components ($r = .723-.852$; $p < .01$) demonstrate that the clinic operates as a coherent and integrated system. This reflects Stufflebeam's (2003) concept of systemic interaction, wherein improvements in one dimension strengthen others.

The structural components (context and input) consistently shape the process dimension (reaction), culminating in strong output performance consistent with Donabedian's (2005) structure–process–outcome model. Similarly, the strong linkage between reaction and output aligns with Kirkpatrick's (2016) reinforcement of the reaction learning results pathway in evaluating service programs.

Overall, the clinic demonstrates a continuous improvement cycle, with evaluation outcomes informing strategic decisions and adaptive service enhancements. The CIRO model not only measures performance but also facilitates organizational learning and evidence-based management, positioning the clinic as a strong model for university-based therapeutic service systems.

V. CONCLUSIONS

This CIRO-based evaluation demonstrates that the management of the Physical and Manipulative Therapy Clinic at Yogyakarta State University functions effectively and aligns well with user needs and regulatory requirements. **Context** scores indicate strong policy–needs alignment and operational compliance, while **Input** shows the highest performance, reflecting adequate human resources, facilities, and administrative systems. High **Reaction** scores highlight strong patient satisfaction, strongly influenced by the quality of inputs ($r = .852$; $p < .01$). Positive **Output** results confirm effective therapeutic outcomes and stable patient growth, with satisfaction contributing significantly to service effectiveness ($r = .742$; $p < .01$).

Overall, strong correlations across CIRO components ($r = .723-.852$; $p < .01$) show that the clinic's success results from integrated policy clarity, resource readiness, service experience, and measurable outcomes. These findings reinforce the theoretical perspectives of Stufflebeam (2003) and Donabedian (2005), emphasizing that effective health-service performance depends on coherent and continuous system evaluation.

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