

# INTEGRATED HOME CARE CENTERS EVALUATION SYSTEM BASED ON THE RESOURCE CONSTRAINT OPTIMIZATION MODEL

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## Abstract

Long-term care budget has reached NT\$87.6 billion in 2024 in Taiwan, and it continues to build a diversified and continuous long-term care service system centered on service users to implement the policy goals of local aging. In this project, the Decision Making and Trail Evaluation Laboratory (DEMATEL) and Analytic Network Process (ANP) are used to explore the importance of understanding the evaluation indicators of different facets, and then to use ZeroOne Goal Programming (ZOGP) Construct a key evaluation model for the best home care institutions, so as to facilitate the development of evaluation indicators for long-term care institutions with weighted dependence, and if limited resources are considered, the best operation and management model with target needs can be developed.

Keyword: Long-term care system, evaluation system, Analytic Network Process (ANP).

## INTRODUCTION

Facing the rapid increase in the senior population and the rapid establishment and development of long-term care service institutions, the Ministry of Health and Welfare has confirmed and improved the service quality provided by long-term care service institutions for the elderly, and established an evaluation system to effectively supervise and manage the quality of long-term care services. Under the new task environment, it is not easy stand foot both on government and industry practitioners to avoid the challenges and pressures of resource constraints and policy norms, resulting in a dual-track government evaluation for the actual operational efficiency of the rated institutions.

In order to expand the capacity of long-term care services and provide case-centered care services, the Ministry of Health and Welfare has implemented a long-term care payment and payment system since 2018 years, and the long-term care services are priced separately, and the disabled are evaluated by the long-term care management centers of cities and counties. The long-term needs level and service allowance amount will be approved for those who meet the criteria, including care management and policy encouragement services, care and professional services, transportation services, assistive device services, home barrier-free environment improvement services, respite services, etc.

Since the launch of the long-term care 2.0 plan, the number of long-term care services and the service coverage rate have increased year by year, and the total number of people served by long-term care payment services, long-term care service fee subsidies for residential institutions, and group homes has increased from more than 370,000 in 2019 years to more than 480,000 in 2021 years. The coverage rate of these services in the estimated number of people in long-term care needs in each year

also increased from 47.27% in 2019 to 56.62% in 2021. As for the deployment of resources for the overall community care service system, the Ministry of Health and Welfare, in order to build a community-based integrated service system, continues to subsidize local governments to deploy various service units such as community integrated service centers (hereinafter referred to as Unit A), compound service centers (hereinafter referred to as Unit B) and alley long-term care stations (hereinafter referred to as Unit C) through the long-term care 2.0 plan. According to the "Administrative Operation Instructions for the Community Overall Care Service System Plan of the Ministry of Health and Welfare" issued by the Ministry of Health and Welfare, Unit A is mainly responsible for case management, formulating care service plans for the disabled (hereinafter referred to as "care plans") and linking up the care resources of units B or C; Unit B is a unit that has been specially contracted, licensed, entrusted or subsidized by the municipal and county governments to handle long-term care services, and is responsible for providing long-term care services such as home services, day care, family care, home care, home and community rehabilitation, transportation and transportation, catering services, assistive device services, and respite services; Unit C provides social participation, health promotion, meal sharing services, prevention and anti-disability services, and respite services can be added to Unit C with capacity. As a result, the number of service units in the national community integrated care service system has increased from 5,050 at the end of 2018 to 11,144 at the end of 2021.

In order to respond to the development trend of Taiwan's aging society at any time, and the problems arising from the actual use of long-term care 2.0 services or the services provided by operators, the Ministry of Health and Welfare often responds to the policy content or implementation specifications through

rolling amendments, and in 2022, it proposed the "long-term care service quality verification mechanism" to improve the strategy and target benefits as follows (Ministry of Health and Welfare, 2022)

### QUALITY ASSESSMENT OF LONG-TERM CARE SERVICES

The quality assessment of long-term care services is based on the integration of long-term care as a holistic approach to life participation and health service assistance.

The definition, control, supervision, and evaluation of the quality of the main body have their specific meanings and purposes, so they operate and execute. It has its own uniqueness or assessment purpose, but in fact, Taiwan is subject to the announcement of the Taiwan authorities because various long-term care service agencies apply for long-term license subsidies. The annual evaluation shall be conducted on the spot corresponding to the annual evaluation indicators. Examining Taiwan's long-term care quality management is mainly to take care of the quality of the subject (professional nursing) as the main condition, supplemented by other auxiliary factors; In terms of the type of service, the first priority is institutional care, and the second is non-institutional care. However, in fact, the quality of long-term care services should be in no order or degree of importance, in fact, the establishment of an internal quality control mechanism and the construction of an external quality control (supervision and evaluation) mechanism should be implemented to achieve the effect of complementarity between internal and external.

The purpose of the evaluation of long-term care service providers in Taiwan is to effectively ensure the quality of service, to help the organization to discover and understand the problems of the care institution itself, and to guide and supervise it to meet the evaluation standards (objectives) through the self-improvement mechanism (internal control and external control quality mechanism), so as to improve the quality of service, strengthen the management of the institution's (hardware) environment, facilities and equipment, (software) case professional care ability and organizational administrative operation, and protect the rights and interests of stakeholders. In addition, the purpose of improving the quality of long-term care services and protecting the rights and interests of users of long-term care services is achieved.

According to the Audit Department's (2023) Project Audit Report - Report on the Implementation of the Government's Ten-Year Plan for Promoting Long-term Care 2.0, some county and city executive long-term care institutions have not fully implemented the supervision and assessment or evaluation operations, nor have they listed the lack of improvement in tracking and counseling, and occasionally the evaluation results of long-term care institutions have not been announced. It was found that the county governments of five cities, including Taoyuan City, Taichung City, Gaowei City, Pingtung County and Penghu County, did not fully implement the supervision and assessment or evaluation operations, nor did they list the deficiencies related to the improvement of tracking and counseling, or the assessment mechanism was not complete: the governments of Miaoli County and Changhua County did not timely announce the evaluation results of community integrated service centers or long-term care institutions: The governments of three cities, including Tainan City, Hsinchu City, and Chiayi City, identified the satisfaction survey of long-term care services, and did not properly handle the survey results.

In the forum report entitled "Long-term Medical Examination 2.0 System: The Industry Reflects on the Need to Review the Evaluation System" (Innovative Care, May 2023), the industry put forward suggestions on the current long-term care evaluation system and its implementation methods, including the lack of credibility of the evaluation committee, the different standards of the evaluation system, the cumbersome evaluation system and the formalization of content, etc., which need to be comprehensively improved.

### RESEARCH METHODS

#### A. Research Method

With the theme of "Resource Constraint Optimization Model to Build an Evaluation System for Long-term Care Institutions of Home-based Service Organizations", this project will first examine the relationship between the facets of the long-term care evaluation benchmarks announced by the Ministry of Health and Welfare, and use the Decision Laboratory Analysis Method (DEMATEL) method to confirm the causal relationship structure between the evaluation criteria, and then draw a network relationship map of the impact facets. Then, the steps of the analysis network procedure method (ANP) are introduced to find out the relative weights of the interaction between the evaluation criteria, and then the weights are evaluated according to the calculation results combined with the criteria to construct the most suitable evaluation application architecture for home service organizations. Considering the actual situation and possible constraints, the first phase of the project adopts the 0-1 Target Plan (ZOGP) to select the optimal home service organization evaluation system for planning and application under the estimated future resource constraints.

The most important feature of DEMATEL is to find out the interrelationship between facets or clusters, and to find out between representative elements/facets. The core criterion (Zhou and Yuan, 2014) can be applied to the capacity development dimension of group decision-making, and the key factors of the problem can be divided into cause groups and result groups, and a directional network relationship diagram can be drawn according to the interrelationship between them, so as to clarify the causal relationship between problems and solve complex problems.

#### (2) Network Level Analysis (ANP)

ANP is an effective way to handle complex decisions involving dependencies and feedback relationships, and it has two parts: The first part is the structure of the hierarchy or network, i.e., the interaction between norms and sub-norms within the system; The second part is the network influence relationship between elements and clusters, including the inner dependence between elements in the same cluster or the outer dependence between elements in different clusters. The ANP can be determined by calculating the weight of influence among the criteria

ANP can calculate the influence weights between the criteria to determine the strategy ranking, but the calculation results of the DEMATEL method need to be established before the calculation process to determine the correlation between them. DEMATEL can obtain the scope of mutual influence from the comparison between the two criteria, and find out the direct and indirect relationship between the criteria.

The derived criterion network relationship is applied to the ANP method (Weng, 2016).

## (3) 0-1 Objective Planning Method (ZOGP)

In the face of the challenges that may be faced in the implementation of the long-term care plan, such as budget constraints, time constraints, insufficient human resources and service capacity constraints, etc., the structure of ZOGP can be used as a model to select the optimization model. ZOGP is an attempt to minimize the gap between the results of the practice and the desired goal, so the goal should be based on the priority.

Priority levels are prioritized, and the target is met through different variables of goal planning. The second stage is to integrate the functions of the care system into the home service evaluation application system constructed in the first stage, and conduct a discussion with key experts, and at the same time carry out the design and development of the home service evaluation system, and then carry out the steps of trial, modification, correction and write technical reports and publish articles on the findings and results of the implementation process of the plan.

## CONCLUSION

In 2022, the Ministry of Health and Welfare will continue to adjust the evaluation index template in real time according to the actual situation to achieve the following four expected benefits: 1. Evaluate the effectiveness of long-term care services; 2. Improving service quality, 3. Providing the basis for the public's choice of long-term care services, and 4. Improving the overall long-term care service delivery system, that is, the main implementation purpose and effectiveness of the evaluation application system for home service organizations constructed by this plan.

1. Design a resource constraint optimization model to construct a long-term care institution evaluation application system for home service institutions: Based on the fact that the home service system and the evaluation system should have an auxiliary and supportive relationship with each other, but so far no operator has developed and promoted the use of this information system, resulting in the inability to show the intention and function of the organization's evaluation, so this plan attempts to establish a hierarchical structure of the home service evaluation benchmark, and then links the existing home service system functions to the evaluation system and develops the platform;
2. Pre-test and productization after system development: Develop a practical and highly accepted application system model for long-term care institutions for home-based service institutions, and invite long-term care institutions to simulate and try out the simulation trial platform developed by this program, and continuously improve and modify the mode of system and user demand model, so as to increase the frequency of use and improve the performance management efficiency and characteristics of the institution.

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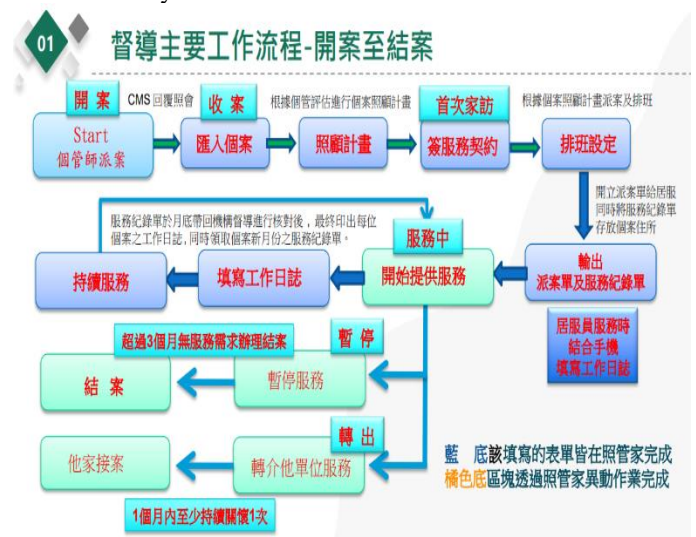
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## ANNEXURE:

## Assessment System Model from the Research



## 開案至結案-匯入個案作業流程

## 直覺式引導(周/單次循環) - 多緯度智能排班作業

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