

ANALYSIS OF SHIFT-ARRANGEMENT STRATEGIES FOR URGENT CHINESE TOURIST AFFAIRS IN A CONTINGENCY RESPONSE UNIT

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ABSTRACT. *The 24-hour Contingency Response Unit is designed by Taiwan tourism authority to cope with eventualities of urgent Chinese tourist affairs, such as misadventure, complaints, tourist misbehavior, and regulatory violations. Given their time and responsibility constraints, they must re-arrange their shifts in order to better balance their heavy workload with enhanced efficiency. This study applied a TOPSIS approach that incorporates sub-objective weights to finding a feasible approach to alter a sensitive tourism entity. The result shows that a 24-hour duty design based on the prevention concept is the most consistent with the employees' interests. Therefore, the employee turnover and morale can be improved as well.*

Keywords: Shift arrangement, TOPSIS, Contingency response, Chinese outbound market, Tourism administration

1. **Introduction.** The relationship between Taiwan and mainland China is a critical issue in Asia. The tourism cooperation with China since 2008 has provided significant economic benefits for Taiwan. However, these cannot be measured only by figures such as the number of arrivals and their expenditures; quality and safety issues are important as well. Taiwan had planned carefully at the outset to ensure that opening their tourism market to mainland China happened smoothly. The system needed to coordinate effectively and design a sound report system to prevent and manage adverse incidents. The Contingency Response Unit (CRU), an informal unit intended for duties beyond normal tourism promotion, therefore, was established. This effective reporting and management team is part of Taiwan's tourism quality and safety mechanism and bears many responsibilities. The CRU is responsible for handling contingencies involving Chinese tourists. The strenuous missions include giving permission to qualified travel operators, administering security deposit, confirming the rationalities of the group itineraries, maintaining travel quality by conducting surveys, coordinating the multi-agency inspection on service providers, addressing reports from travel operators and tour guides, collecting the market information, applying administrative penalties, and handling tourist complaints. This study tried to find a feasible approach to alter a sensitive unit like CRU which is a must, relatively confidential and wide-connected government entity. Juggling with the budget, efficiency and morale, the evidences for decision maker shall be easy to be interpreted and practical. This issue combines tourism administration and human resource considerations. The existence of the unit is administrative dominance. Some debate the operation of CRU can be shrank to a minimum size. For example, total outsourcing is an option. The budget allocation is another obstacle. With a rigid and economical

accounting frame, a more effective and efficient arrangement can ease the qualm about displacement. There are negotiations needed to be achieved. The particular attention to several tasks and 24-hour shift arrangement are the main courses that the CRU appeals for an improvement. Along with administering the tourism industry and market, they have to exchange information immediately with other related and responsible agencies, including associations and government departments to identify market trends influenced by government policies and creating the appropriate strategies in response, as well as the tourist suggestions and complaints. These tasks are responding to emergencies. A quick, effective workflow is required to handle all of the abovementioned tasks; thus, the CRU is required to operate on a 24-hour basis. Due to their heavy workload and professional obligations, the employees often complain about their shift arrangements, despite knowing the nature of the job when applying. They have reported problems such as deteriorating health, trouble of sleeping, the need to work on holidays, long extra hours, low overtime pay, and heavy overtime. The resultant atmosphere has hurt morale and led to a high turnover rate. The superintendents require strenuous effort to distribute assignment while facing the low morale and diminishing productivity. The unit explored powerful and clear methods of turning those propositions into practicable alternatives. Our approach constructs a reliable and easy-to-explain model by which superintendents may make decisions and communicate with team members. If outsourcing is an option, however, addressing the CRU's budget, transferring its governing authority, and initiating layoffs should be considered. We use the easily applied TOPSIS method to illustrate the most effective solution among the alternatives the employees presented. The solution improves the CRU's shift arrangement and morale in a way that integrates the diverse opinions of the unit's employees.

In this paper, we discuss a crucial tourism administrative issue. While most of the destinations focus on the economic stimulations brought by Chinese tourists, a systematic service and management shall be valued. In the CRU case, the necessary but heavy workload has weakened their volition and the problem needs to be solved eagerly. The TOPSIS analysis is a familiar tool for tourism development and destination competitiveness. We further apply the powerful analysis incorporating different interests in the tourism administrative domain and anticipate more follow-up research.

2. Literature Review. While discussing about tourism issues, the tourism administrative effect is an important topic but somehow has been neglected. The quality of Chinese inbound market is highly addressed in Taiwan. And workforce re-allocation is the most imperative concern for the CRU. One of the feasible changes of organization reform is to seek for the support from private sectors and maintain a professional CRU team at the same time. The organizations seeking to outsource should certify that the vendor's staff is credentialed, knowledgeable, and properly trained; reciprocally, outsourcing firms should guarantee the confidentiality and security of the information they will handle [8]. In other words, the CRU's outsourcing requirements include a rapid coordinative capability with travel operators and related authorities. Of equal importance, the unit's relationship with and data exchanges among related departments must also be considered. The importance of the data exchanges involved in outsourcing; these data are vulnerable to systemic errors, and indiscretion is not acceptable in confidential cases [5]. As in any mass transportation and communication data system, the consistency of and examination mechanism for the data are crucial issues for the CRU because these data form the basis of most of the unit's administrative activity. The highly professional characteristic and data exchange demand explain some of the qualitative debates of administrative outsourcing.

In an E-government environment like CRU, not only are the data and system important, but the management support and strategy that make them feasible are important as well. Opinions of different levels shall be collected and valued. Every level of a government system shall conclude a more inclusive strategy [12]. This supportive approach originates from the top, with strong leadership; the whole system is based on a more effective coordination among departments. The leadership can promote a broader understanding: successfully implementing electronic interactive conception can bring the entire system into full play. In addition, using complicated routines must be approached with caution. A number of researchers have discussed the effects of E-government. With the support of research on tourism promotion policy, we further illustrate a comprehensive e-government unit, like CRU, needs to adopt a rational and convincing analysis on organization reform. The research of [11] also used TOPSIS to highlight the complexity and importance of that problem. The method helped urban management planners emphasize public participation, local government power, and an urban vision. There are some studies advocating to adopt variety considerations. In order to have a common view toward structural innovation, this study then improves the point to incorporate the sub-objective, superintendents and subordinates factors into TOPSIS. While assessing the sustainability of government bond funds using TOPSIS, [4] stressed that an assessment should consider expert opinions and investor interest. This study echoes that view and collects the opinions of both superintendents and employees to develop its TOPSIS model. For those discrete decision problems, the negotiation space may be defined through continuous variables [17]. The evaluating process shall not only focus on budget, but also the efficiency, especially when there are few studies that have measured the performance of institutions because it is very difficult to measure their output [3]. Among resources such as labor, capital, materials, energy, and information, productivity is the main purpose of all economic and industrial organizations and service enterprises [13]. The human factor and the main strategic resource depend on suitable labor conditions. Liu and Wu [10] constructed an evaluation indicator system based on the competency of human resources managers. They discussed an application process to illustrate their proposed evaluation procedures and demonstrate their practicality and effectiveness. The CRU's human resource problem requires an opinion-consulting program. Combined with the appropriate decision methodologies, the TOPSIS approach is widely employed in human resource decision making. The complex and important problems call for analytical methods rather than interviews and intuitive decisions. Using linguistic variables with TOPSIS, the arguments are more persuasive and their research made the evaluation process more realistic [7]. By ranking organizational units through a human capital approach, data on human capital levels are expressed through linguistic variables [15]. The approach generates decision-making knowledge, and thereafter, the developed combination of rules order allocation can easily be interpreted, adopted and at the same time if necessary, modified by decision makers [21].

However, the interactions among sectors and stakeholders are the quality issue beyond decision making alternatives in TOPSIS. The CRU's customers comprise travel operators, travel guides, related government agencies, and tourists; as managed subjects, they also need professional guides from the CRU. Complaints are inevitably accompanied by bureaucratic intolerance. The customer-management relationship can be damaged through employee exhaustion. And empathy, responsiveness, and efficiency are the most critical factors for performance [14]. All of an organization's routine activities should be based on the perceived needs and values of its customers if it is to have a long-term and mutually profitable relationship with them [9]. The operational integrity of the models used to ensure that organizational strategies lead to sound missions, perspectives, and macroeconomic policies [2]. Strategic planning is very significant for organizational success and

competitive advantage in an increasingly competitive business environment; implementing applicable strategies is important for organizations' success [6]. An ANP-TOPSIS hybrid fuzzy model was constructed in the work of [16] to assess a community's overall e-government readiness from a citizen relationship management perspective. There are extensive studies on TOPSIS combined with exogenous conditions, such as applying fuzzy TOPSIS to evaluating the effectiveness of E-government in promoting local tourism industries [20]. With the complicated and confidential nature of CRU, the significant risk is a potential factor in a multi-criteria decision-making problem. The most relevant risk factors were identified in the study of [19] in a complex and fuzzy environment by developing an evaluation model based on the interval analytic hierarchy process and extending the technique to create an order of preference according to similarity to the ideal solution. The study of [1] found the technical ability, accommodation capacity, discipline, and teamwork are criteria for selecting a team member based on AHP results. Along with TOPSIS, the results can be implemented as an effective decision aid for improving human resource management in various areas of economic activity. The work of [18] measured the efficiency and effectiveness of job shops by using a new framework that combines fuzzy TOPSIS, for measuring qualitative performance, with DEA, for measuring quantitative performance.

3. TOPSIS Method. Of all the multi-criteria decision models, TOPSIS (Technique for Order Preference by Similarity to Ideal Solution) is one of the most useful methods of providing information to decision makers by ordering alternatives. The TOPSIS process was developed by Hwang and Yoon in 1981. The decision value for each alternative is measured by the distances between the positive and negative ideal solutions, derived from the n alternatives with m attributes. We need to create a weighted normalized decision matrix with the intersection of each alternative and criteria given as x_{ij} , which constructs a matrix $(x_{ij})_{m \times n}$. The best alternative is the one closest to the positive ideal solution and farthest from the negative ideal solution. Two kinds of analyses are used to calculate the value function. The first is the weight of the value function of each alternative as Equation (1), and the second is the total value function of the TOPSIS values, found by combining the weights of all alternatives as Equation (2):

$$V(S_j) = w_{1j}V(x_{1j}) + w_{2j}V(x_{2j}) + \dots + w_{mj}V(x_{mj}) \quad (1)$$

$$V(S_j) = V(w_{1j}x_{1j} + w_{2j}x_{2j} + \dots + w_{mj}x_{mj}) \quad (2)$$

where, $V(S_j)$ is the value function of each alternative; w_{ij} is the weight of each intersection; x_{ij} is the value of each intersection; $V(x_{ij})$ is the value function of each intersection; $i = 1, 2, \dots, m$; $j = 1, 2, \dots, n$. Clarifying the decision objective and applying an appropriate multi-criteria decision model are critical. The decision frame of TOPSIS is shown in Figure 1. In the identification stage, all the factors must be considered: (1) Number of decision makers; (2) possible alternatives; (3) certainty and risk of the decisions; (4) types of information; (5) the depth of the problems; (6) connection with the hierarchy; (7) competitors; (8) the recoil effect of the decision; and (9) the objective and coverage of the decision. The objective is the target on which the decision makers are expending effort or cost; it determines their direction, information collection, and communication. The decision makers must not only elucidate the type, hierarchy, and network of the objective but also establish a set of objectives. This process includes developing a wish list, identifying alternatives, considering problems and shortcomings, predicting consequences, identifying goals and constraints, considering different perspectives, determining strategic

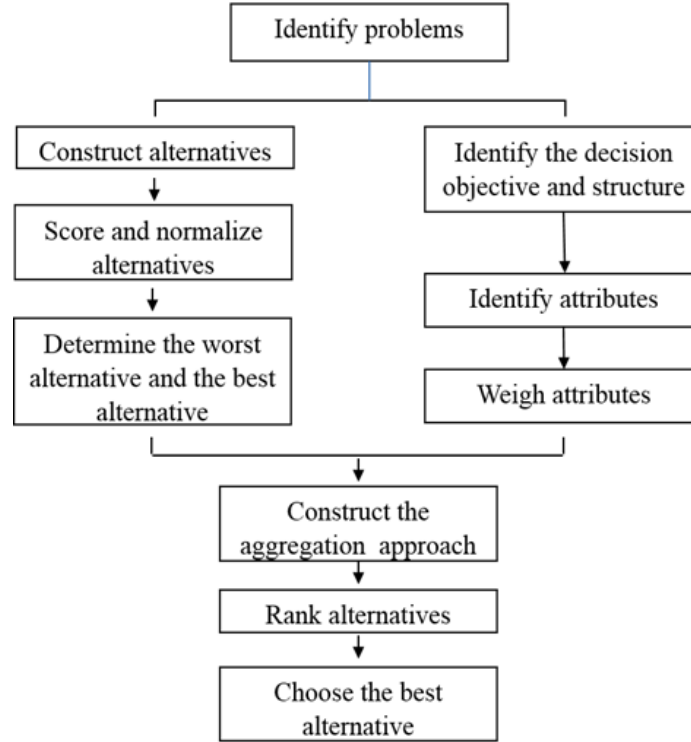


FIGURE 1. Decision frame of TOPSIS

objective, and determining generic objectives. To evaluate the achievement of the objective, the alternatives' attributes, which complete the objective, are formed; these must be measurable, decomposable, non-redundant, and minimal.

Several feasible accesses are required from which decision makers and other brainpower may extract better alternatives. First, this requires challenging their direction, information collection, and communication; therefore, a better alternative requires a barrier breakthrough. When pondering the existing business model, an innovation or new rules that breach current limitations sometimes solve the problem. Decision makers also need a calmative attitude and in-depth thinking. Learning from experience and consulting experts are also essential. The number of alternatives should be operationally limited and multi-faceted. Finally, the decision frame can be revised when a better alternative is discovered. To eliminate the effects of extreme scores and the variety of scales, we use the standardization process as $r_{ij} = \frac{x_{ij}}{\sum_{i=1}^n x_{ij}}$, where, r_{ij} is the normalized value of each intersection. Then, the weight on each attribute w_j with each element is derived as $g_{ij} = w_j * r_{ij}$, $i = 1, 2, \dots, n$; $j = 1, 2, \dots, m$. The weight of w_i is derived from the hybrid value of the subjective weights from experts' experience and the objective entropy from the collected data; then we can obtain the hybrid subjective-objective weights. In the i -th alternative with respect to j attribute, the degree of closeness (or the degree of near distance) $x_i(j)$ to reference value $x_0(j)$ is defined as follows:

$$d(x_i(j), x_0(j)) \equiv d_j^i = \begin{cases} \frac{x_i(j)}{x_0(j)} & \text{if } j\text{th attribute is the positive attribute} \\ \frac{x_0(j)}{x_i(j)} & \text{if } j\text{th attribute is the negative attribute} \end{cases} \quad (3)$$

Next, we calculate the entropy of each attribute as $e(d_j) = -K \sum_{i=1}^n \frac{d_j^i}{D_j} \ln \frac{d_j^i}{D_j}$, $j = 1, 2, \dots, m$, where $D_j = \sum_{i=1}^n d_j^i$, $K = \frac{1}{e_{\max}} = \frac{1}{\ln n}$. Then, we obtain the total entropy as $E = \sum_{j=1}^m e(d_j)$.

For attribute j , the larger entropy value $e(d_j)$ is, the less information the j th attribute transmits. Then, we can define normalized weight λ_j by Equation (4), and weight w_j can thus be defined as having sub-objective importance for each attribute as Equation (5).

$$\lambda_j = [1/(n - E)][1 - e(d_j)], \quad 0 \leq \lambda_j \leq 1 \& \sum_{i=1}^n \lambda_i = 1 \quad (4)$$

$$w_j = \frac{\lambda_j u_j}{\sum_{j=1}^m \lambda_j u_j} \quad j = 1, 2, \dots, m \quad (5)$$

Using the weight on each attribute w_j , we produce a standardized-weighted matrix with each element $g_{ij} = w_j * r_{ij}$, $i = 1, 2, \dots, n$; $j = 1, 2, \dots, m$. The relative advantage and disadvantage of each alternative is measured by its distance from the ideal and negative ideal solutions respectively. The ideal solution (Equation (6)) is a combination of the largest values in each of the greater-value-expected attributes and the smallest values in each of the less-value-expected attributes. The negative ideal solution (Equation (7)) is a combination of the smallest values in each of the greater-value-expected attributes and the largest values in each of the less-value-expected attributes.

$$A^* = \{\max g_{ij} | i = 1, 2, \dots, n, j = 1, 2, \dots, m\} = \{g_j^* | j = 1, 2, \dots, m\} \quad (6)$$

$$A^- = \{\min g_{ij} | i = 1, 2, \dots, n, j = 1, 2, \dots, m\} = \{g_j^- | j = 1, 2, \dots, m\} \quad (7)$$

The distance of each alternative to the ideal and negative ideal solutions is defined as $S_i^* = \sqrt{\sum_{j=1}^m (g_{ij} - g_j^*)^2}$, and $S_i^- = \sqrt{\sum_{j=1}^m (g_{ij} - g_j^-)^2}$, $i = 1, 2, \dots, n$, respectively.

We can define the relative closeness as follows:

$$RC_i^* = \frac{S_i^*}{S_i^* + S_i^-}, \quad j = 1, 2, \dots, m \quad (8)$$

When RC_i^* is smaller, the alternative is better because it is much closer to the positive ideal solution.

4. The Decision on the CRU's Problem. The employees' responsibilities, heavy workload, and 24-hour shift arrangement were preannounced conditions when they applied for their jobs. In their first six months of work, most employees manage to adapt. However, the continuous shift arrangement produces a turnover rate of 22.22% each year. The employees who have left were all male; most complained that night shifts damaged their health. The superintendents recognize the high turnover rate and low morale and seek for a solution. We would suggest outsourcing the heavy workload and performing a limited number of layoffs. Outsourcing the unpopular night shift is also an option. A pre-survey of the employees shows that the CRU's overtime pay (NT\$1,000 per day or night) is less than that of other businesses. Though employees can choose between overtime pay and a day off, they prefer a new overtime pay rate calculated according to their hourly salary, which would compensate them fairly for their long extra hours. To enhance the sustainability of the CRU, we propose four alternatives: (1) conducting night shift outsourcing; (2) authorizing a private agent to handle reporting at night and on holidays; (3) retaining the status quo, or (4) increasing the hourly pay. Besides differences in attributes, these four alternatives also have trade-offs. Reporting runs smoothly with 13 employees being responsible for it. If this task is delegated to another agent, the number of responsible employees will be reduced for budget purpose, and they will work on other tasks. The layoffs needed for alternatives (1) and (2) are two and three respectively, according to the superintendents' job reassignment evaluation. The third

alternative is used as a basis for others. In it, the employees can choose either pay for overtime or a day off after a night or a holiday shift. The fourth alternative is based on employees' rights as set out in the Law of Labor. If employees receive higher pay, however, they cannot choose a day off for productivity reasons. Four attributes were collected from the superintendents' and employees' views: (1) the annual human resource cost; (2) the accumulation of preferences; (3) the cases that need to be handled; and (4) daily work force. In alternatives 1 and 2, the human resource costs are addressed through potential outsourcing and reduced salaries due to layoffs. The outsourcing cost includes salaries, system operation, communication fees, and training. The human resource costs of the four alternatives are NT\$785,000 for night shift outsourcing: allocating three new persons for the outsourcing and two layoffs at the CRU. NT\$1,307,000 to handle all the reporting at night and on holidays: allocating five new persons for outsourcing and three layoffs at the CRU. NT\$310,000 for the status quo: the cost of the extra hours is NT\$1,000 per day or night. The record shows that 40% of employees choose extra pay rather than a day off. NT\$1,085,000 for increasing the extra hourly pay: a product of the hourly pay and the number of working hours and days/nights. A night shift is from 17:30 to 8:30 the next day, and a holiday day shift is nine hours.

The second attribute, the accumulation of preferences, is collected from a pre-survey – a brief questionnaire sent to 13 employees. The result for each alternative represents the accumulation of the preferences, with 4 indicating “most favorite”, 3 “favorite”, 2 “less favorite”, and 1 “do not like”. The third attribute is to check if the workload can be lessened. It is a less-value-expected attribute presented as cases handled. Among the 36,594 reported cases in 2013, the night and holiday shifts were responsible for 24,482 and 12,112 cases, respectively. If the CRU conducts outsourcing, specialized employees will need to handle the cases involving injury, disease, and death. The night and holiday shifts handled 980 and 480 such cases, respectively. The total cases to be handled in alternatives (1) and (2) are 13,092 and 1,460. Finally, the last attribute is the daily work force. The work force for each alternative is found by deducting the number of layoffs or days off taken on a daily basis. The original values of the attributes for each alternative are shown in Table 1.

TABLE 1. The shift arrangement alternatives for the CRU

| Alternative | Human resource cost | Employee preference | Cases handled | Work force |
|-------------------------|---------------------|---------------------|---------------|------------|
| Night shift outsourcing | 785 | 35 | 13,092 | 16 |
| Totally outsourcing | 1,307 | 45 | 1,460 | 15 |
| The status quo | 310 | 21 | 36,594 | 16 |
| Increasing the pay | 1,085 | 29 | 36,594 | 18 |

After consulting with the accounting office and the superintendents, we concluded that the budget is the key factor. With their limited and rigid budget, they consider that the outsourcing proposal is feasible if done carefully. The CRU's coherence and morale are the critical issues for the employees, whose complaints launched the shift-adjustment discussion; they also helped identify problems and construct alternatives, which is why their preferences are respected. Meanwhile, the employees and superintendents are happy to see other tasks improved, as the relatively trivial report cases are transferred to trained agents. The “cases that need to be handled” attribute is prior to the daily work force, as the small differences between the daily work forces will not affect the organization greatly. The TOPSIS method uses a sequence of subjective weights (0.4, 0.3, 0.2, and

0.1). Then, we use the collected data shown in Table 1 to derive the normalized data shown in Table 2, and the derived entropy for the attributes is obtained as shown in the third row of Table 3. Next, we hybrid the subjective and objective weights and derive the sub-objective weights in the fourth row of Table 3. The outcome displayed in Table 4 $RC_2^* < RC_1^* < RC_4^* < RC_3^*$ explains that “totally outsourcing” produces the most powerful result, while “night shift outsourcing” is the second, and the non-outsourcing alternatives, “increasing the pay” and “the status quo” stand at the third and the last respectively.

TABLE 2. The normalized collected data

| Alternative | Human resource cost | Employee preference | Cases handled | Work force |
|-------------------------|---------------------|---------------------|---------------|------------|
| Night shift outsourcing | 0.2583 | 0.2692 | 0.2836 | 0.2462 |
| Totally outsourcing | 0.2084 | 0.3462 | 0.3278 | 0.2308 |
| The status quo | 0.3037 | 0.1615 | 0.1943 | 0.2462 |
| Increasing the pay | 0.2296 | 0.2231 | 0.1943 | 0.2769 |

TABLE 3. The entropy and sub-objective weight

| Alternative | Human resource cost | Employee preference | Cases handled | Work force |
|-----------------------------|---------------------|---------------------|---------------|------------|
| <i>Entropy</i> | 0.9927 | 0.9736 | 0.9808 | 0.9984 |
| <i>Subjective weight</i> | 0.4 | 0.2 | 0.3 | 0.1 |
| <i>Sub-objective weight</i> | 0.2057 | 0.3746 | 0.4083 | 0.0113 |

TABLE 4. The selected alternative using TOPSIS

| Alternative | Human resource cost | Employee preference | Cases handled | Work force | RC_i^* |
|-------------------------|---------------------|---------------------|---------------|------------|----------|
| Night shift outsourcing | 0.0531 | 0.1009 | 0.1158 | 0.0028 | 0.3892 |
| Totally outsourcing | 0.0429 | 0.1297 | 0.1338 | 0.0026 | 0.1821 |
| The status quo | 0.0625 | 0.0605 | 0.0793 | 0.0028 | 0.8179 |
| Increasing the pay | 0.0472 | 0.0836 | 0.0793 | 0.0031 | 0.7567 |

5. Conclusions and Discussion. Chinese tourists began to dominate Taiwan’s inbound market two years after the nation’s open policy was implemented. Chinese arrivals are expected to keep increasing. The tourism consensus across the strait is urging authorities to apply effective measures in response. Among the CRU’s 24-hour administrative responsibilities, reporting is the most often criticized by employees. An average of 366 cases per day must be handled, and 67% of the incidents happen during the night shift. The superintendents have sensed the worsening morale and are willing to listen to their hardworking employees. This study’s structural analysis of the feasible alternatives values the opinions of both the superintendents and the employees. Its powerful decision-making approach that is easy to apply and explain is suitable for the communication needs of a government agency. Its concept also allows the reaching of a consensus. This study’s proposal allows superintendents to embrace the employees’ suggestions and improve the high turnover rate and low morale caused by the CRU’s shift arrangement. The resultant alternatives have considered both the management and labor sides of the issue. By

applying a TOPSIS method with sub-objective weights given to possible alternatives according to the attributes of human resource cost, employee preferences, and cases to be handled, and work force, we find that the current unsatisfactory status quo is the last among the alternatives. The superintendents could realize the most powerful and solid support through an outsourcing design. This echoes the employees' wish to have their efforts more highly rewarded. The "totally outsourcing" option is superior to a "virtual-but-incomplete" night shift outsourcing. Interestingly, "increasing the pay" is the third option. Even though outsourcing is more popular, employees' wish for a raise should be respected.

This study found that the best alternative is totally outsourcing and that night shift outsourcing is the second-best option. Thus, decision makers should consider outsourcing some of their urgent cases. Furthermore, totally outsourcing is the alternative that can improve the CRU's turnover rate because it would reduce the workload significantly. We believe that the human resource cost of outsourcing will increase. We could also examine the structure of the outsourcing cost, the system operation, communication, and training fees, which increase as an organization grows. The overall costs of outsourcing require long-term budgeting. Another advantage of applying TOPSIS is the possible expansion and flexibility of the constructed structure. In a dynamic system, the impacts interacting among all stakeholders could influence the attributes. Due to the sensitivity of this unit, we are contemplating further analyses that will consider confidential data exchange and the satisfaction of related agencies, travel operators, and tour guides. The attributes used in this study are internal factors that can be controlled within the organization. If the unit's shift arrangement is changed, the data exchange process will need to be re-examined. The effect of a revised standard operational process discussed with related agencies shall be adopted as an extensive attribute. Moreover, the CRU plays an official administrative role and can support travel operators and tour guides and perform real-time monitoring of regulatory violations. The advantages and disadvantages of outsourcing will influence the satisfaction of travel operators and tour guides, while an administrative role will turn into a service function. The external intentions and factors can extend this consideration significantly. This study considers an empirical case of shift arrangement and emphasizes the importance of labor's perspective. We expect that further research using practical models will analyze the elasticity of this model by surveying more opinions from organizations' external and internal environments. The tourism and human resource researches rely on decision making related analyses to illustrate circumstances. The conclusion of this study has pointed out the priority of the alternatives. To evaluate endogenous and exogenous effects along with the CRU's reform, the quality effects, such as interactive influences within the stakeholders and the derived exogenous variables can be blended in. Hence the advantage of agency's structural change like CRU can be examined through a comprehensive model. As we elucidated earlier in the literature review on the technique-combined applications, this study then shall elicit more tourism administrative structure based on this TOPSIS result with other decision making techniques.

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