

Crisis Management Strategy for the Korean MICE Industry Using SWOT-AHP-TOWS Analysis

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Abstract

Purpose – This study presents strategies to overcome the COVID-19-induced crisis in Korea's meetings, incentives, conferences, and exhibitions (MICE) industry. It aims to quantitatively identify the environmental factors affecting the industry and their degree of influence, and derive optimal countermeasures.

Design/methodology – The study applied the SWOT-AHP-TOWS framework. An AHP analysis was first performed within the SWOT frame, and then a TOWS analysis was conducted using the results of the SWOT-AHP analysis. In the AHP analysis, the number of pairwise comparison questions was limited to four for each SWOT factor to increase the consistency of responses by reducing the burden on respondents.

Findings – The plunge in demand (threats factor) has had an overwhelming impact on the MICE industry, more than any other environmental factor. To overcome the crisis, the ST alternative that takes advantage of dynamic pop culture to minimize the business damage caused by the plunge in demand was the top priority measure. Based on the results, this study presents suggestions for overcoming the crisis in the MICE industry. First, the industry should develop profitable business models to supplement scarce financial resources by exploiting Korea's success with quarantine management. Second, the government must provide emergency relief funds or bailout support to protect MICE facilities and employees.

Originality/value – Unlike previous work on the MICE industry, this study utilized the SWOT-AHP-TOWS framework to derive quick research results in an abnormal situation. This approach can be expanded to other countries with different industrial environments and situations. Additionally, when applying this method to MICE sub-sectors, countermeasures should be tailored to each field.

Keywords: AHP, Crisis Management, MICE Industry, SWOT, SWOT-AHP-TOWS Analysis, TOWS

JEL Classifications: M31, M38, O14

1. Introduction

In recent times, the meetings, incentives, conferences, and exhibitions (MICE) industry has been growing rapidly, creating added value in the service sector. As a result, many countries have been treating it as a new growth engine for national economic development (Wang Ming-Sheng and Luo Qiuju, 2018). This is because the MICE industry contributes to the state and province's economic and social development (Crouch and Ritchie, 1998; Jiao Wei-Ling, 2013; Weber, 2001). At the national level, it provides many direct and indirect economic benefits such as production induction, income generation, employment generation, and an increase in tax revenue. Furthermore, it supports the development and expansion of a region's capacity to host an event using its own facilities and related infrastructure, and the inter-

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nationalization of local venues (Dwyer and Mistilis, 1999; Oppermann, 1996).

With respect to the economic effects, MICE events have positive ripple effects not only in directly related fields such as planning, venue installation, transportation, accommodation, food and beverage, but also in tourism, entertainment, and recreation (Buathong and Lai, 2017; Chen Ching-Fu 2006; Dwyer et al., 2001).

In addition, the economic effect can lead to post-events as well as fringe events during the preparation period and the event itself. This is because tourists continue to visit the venue and tourism consumption expenditure continues even after the event has concluded due to favorable media coverage and word-of-mouth advertising (Gartrell, 2002). A MICE delegate, who has multiple reasons to visit a destination, spends as much as four times more per event than a leisure tourist does (MPI, 2018).

This is why many countries provide policy support for industrial development, and pay special attention to MICE industry (Gartrell, 2002; Weber, 2001). However, the MICE industry also has its fair share of challenges. For instance, the problems of excessive resource consumption in the construction of large facilities and environmental protection issues due to heavy traffic have emerged. In addition, the growth in non-face-to-face communication, as evident from the popularity of e-commerce and video conferences, is an obstacle that cannot be ignored (Jiao Wei-Ling, 2013; Wang Ming-Sheng and Luo Qiuju, 2018).

Moreover, the industry, characterized by frequent contact between event participants, was hit particularly hard by the COVID-19 pandemic, which has resulted in a plunge in demand that threatens the continued sustainability of the industry.

According to an IMF report published on July 12, 2020, the pandemic has had a very negative impact on the global economy. The report expects the global economic growth rate to be -4.9% in 2020. This is clearly an unprecedented crisis for the MICE industry. Hence, academic input is urgently needed to ensure the survival of the MICE industry in these desperate times. However, no research thus far has addressed this issue. In addition, most of the previous works on the MICE industry have focused on subjective SWOT analyses based on assumption of a normal business environment; therefore, the industry cannot use their suggestions.

Against this background, this study aims to identify the internal and external environmental factors that have a positive or negative influence on the MICE industry. Ultimately, it aims to present strategic alternatives to overcome the crisis in the industry, especially within the Korean context. Regarding the research method, the SWOT-AHP-TOWS framework, which combines three analysis methods, is applied to examine the implications of the pandemic for Korea's MICE industry.

The remainder of this paper is structured as follows. Section 2 outlines the MICE industry and examines previous research. Section 3 describes the methodology of this study and sample collection. Section 4 describes the empirical analyses that were conducted using the SWOT-AHP-TOWS framework to derive results related to the research purposes. Finally, Section 5 concludes the paper, suggesting managerial strategies and directions for future research.

2. Literature Review

2.1. MICE Industry

The MICE industry has been recognized as an important sector for the national economy (Buathong and Lai, 2017; Tang Hui-Wen, 2014; Weber, 2001). However, the term MICE has

been used mainly in the Asia-Pacific region without academic consensus on its definition (Ahn Kyung-Mo et al., 2008; UNWTO, 2006/2008). Since MICE includes various sub-industries, it is difficult to unify its concept (Lee Chang Hyun and Lee Hee-Jun, 2016). For this reason, countries tend to use different terms, depending on the characteristics of their industries. Examples of alternative terms include business events, IBTM (incentives, business travel, meeting exhibitions), MC & IT (meetings, conventions, and incentive travel), and BT & MICE (business travel & MICE) (Cho Jae-Geun and Nam Tae-Suk, 2016).

For this reason, the World Tourism Organization (UNWTO, 2006) has proposed the term “meetings industry” since the key element of any business event is a meeting of people, where meetings should have a minimum of ten participants and at least a four-hour duration in a contracted venue at a fee. Some experts have recommended to the UNWTO (2006) that the components of meetings should be comprehensive, and include conventions, congresses, conferences, symposia, seminars, company meetings, and incentive events. After consulting with experts, the UNWTO (2008) suggested that the term meetings should be understood in a holistic manner and encompass the three major areas:

- 1) Congresses, conventions, conferences, seminars,
- 2) Trade fairs and exhibitions, and
- 3) Incentive activities.

Meanwhile, international institutes related to the MICE industry tend to define the components of meetings according to the mission of the establishment. Looking closely at Table 1, as an example, the Convention Industry Council (CIC) classifies events into conventions and meetings depending on whether or not an exhibition is included. In contrast, the International Congress and Convention Association (ICCA) only defined meetings without mentioning the exhibition.

Table 1. Definition of MICE Components by Organizations

Component	Definition	Source
Meeting	A meeting is a general term indicating the coming together of a number of people in one place, to confer a particular activity.	ICCA
	An event where the primary activity of the attendees is to attend educational sessions, participate in meetings/discussions, socialize.	CIC
	There is no exhibit component to this event.	
Incentive	Meeting event as part of a program that is offered to its participants as a reward for prior performance.	ICCA; IAPCO
Conference	(Conference) Participatory meeting designed for discussion, fact-finding, problem solving and consultation. Conferences are generally on a smaller scale than congresses.	ICCA; IAPCO
Congress	(Congress) The regular coming together of large groups of individuals, generally to discuss a particular subject. A congress will often last several days.	CIC
Convention	(Convention) An event where the primary activity of the attendees is to attend educational sessions and participate in meetings/discussions. There is a secondary exhibit component.	CIC
Exhibition & Trade Fair	An event at which products and services are displayed, focused primarily on B2B customers for the purpose of sales and/or marketing.	UNWTO

Note: IAPCO, International Association of Professional Congress Organizers.

Source: UNWTO (2006).

The UNWTO (2006), through cooperation with the affiliates ICCA, Reed Travel Exhibitions, and Meeting Professionals International (MPI) proposed a Tourism Satellite Account: Recommended Framework (TSA: RMF) for measuring the economic value of MICE in 2006 based on the International Standard Industrial Classification code (ISIC). TSA was developed as a standard methodology to broaden public awareness of the MICE industry concept and to measure its contribution to a national economy. It is important to emphasize that TSA evaluates the size and overall significance of MICE in terms of contribution to gross domestic product (GDP), gross value added (GVA), and employment. This TSA has been applied in many countries such as the United States and Australia due to its effectiveness since the UNWTO (2006) suggested it (Lee Chang-Hyun and Lee Hee-Jun, 2016).

Looking closely at the TSA evaluation method, the measurement targets are classified into two groups: the supply side of providing event facilities and services, and the demand side of participating as event beneficiaries. In the two TSA evaluation groups, the supply side includes attributes such as the number of meetings held, employment, and businesses involved in the meetings. The demand side, by contrast, comprises the expenditure of participants attending meetings, the number of participants, participants' place of origin, and so on (UNWTO, 2008).

The global economic significance of business events can be assessed using the findings of the Event Industry Council (EIC, 2018). According to the EIC, business events, including meetings, conferences, conventions, exhibitions and incentive travel, attracted more than 1.5 billion participants across more than 180 countries in 2017. Business events generated more than USD 1.07 trillion of direct expenditure, which included spending to plan and produce business events, event-related travel, and other spending, such as exhibitors' spending.

In addition, such events generated USD 621.4 million toward direct GDP and supported 10.3 million direct employment opportunities in the same year. More importantly, as shown in Table 2, indirect effects are greater than direct effects. The generated indirect effects include downstream supplier industry impacts that are inclusive of induced impacts such as employees spending their wages, salaries in the broader economy.

These direct and indirect economic effects of business events are adequate to explain the importance of the MICE industry.

Table 2. Contribution of Business Events to the Global Economy in 2017

(Unit: '000, %)

Sectors	Direct	Indirect	Total
Event Expenditure (USD billion)	1,071.2 (42.4)	1,455.5 (57.6)	2,526.7
GDP (USD million)	621.4 (41.5)	874.3 (58.5)	1,495.7
Employment	10,307.8 (39.8)	15,613.6 (60.2)	25,921.4

Source: EIC (2018).

Recently, the International Congress and Convention Association (ICCA, 2020) and the Union of International Associations (UIA, 2020) announced that the associated meetings market maintains a promising consistent growth pattern. As shown in Table 3, ICCA statistics show 13,254 meetings taking place in 2019, with an increase of 317 additional meetings compared to the number recorded in 2018. The ICCA emphasized that the figure for 2019 is the highest ever recorded annual figure in its yearly statistics. UIA also submitted the number of meetings held in the world in 2019 at 12,472, an increase of 11.0% from the previous year.

Table 3. Number of Association Meetings

Associations	2018		2019		Remarks
	Meetings	Meetings	Increase		
ICCA	12,937	13,254	317 (2.5%)		Rotating meetings
UIA	11,240	12,472	1,232 (11.0%)		Association meetings

Source: ICCA (2020) and UIA (2020).

2.2. Country Cases

In order to take advantage of the great impact of the MICE industry on the national economy, since the 1990s, many countries have made every effort to develop the industry. Accordingly, there is intense competition between countries for not only building facilities, but also for attracting international events and attendees (Dwyer et al., 2001).

According to the Global Association of the Exhibition Industry (UFI, 2018), the number of venues offering more than 100,000 m² of exhibition space increased from 48 in 2011 to 62 in 2017, which is a remarkable growth of 29.1% in just six years due to a surge in venue construction projects. China, for example, opened a super-large National Exhibition and Convention Center (NECC) in Shanghai with an indoor exhibition space of 404,400 m² in March 2015. It is one of only two exhibition centers in the world that is larger than 400,000 m²; the other is the Messe Hannover in Germany, which 463,275 m² where the EXPO 2000 Hannover was held.

Countries' efforts to develop the MICE industry on a national level have led to the development of many travel destinations, especially in the Asia-Pacific region (Dwyer and Mistilis, 1999; Dwyer et al., 2001). Singapore, for instance, has developed two unique business travel and MICE (BTMICE) complexes and is regarded as one of the most successful countries in the MICE sector (Park Yong-Hee, 2016). One complex is nature friendly, while the other is an urban complex.

The first is Resort World Sentosa (RWS), which was developed with an investment of USD 4.9 billion in 2006 and opened in 2012 with the all-in-all MICE slogan. It provides experiential tour programs for family travelers and features a variety of attractions such as Universal Studio, Theme Park, Resort World Casino, and Marine Life Park. The second is Marina Bay Sands (MBS) located in the city center, which was built in 2010 with a USD 5.8 billion investment from the Las Vegas Group (Park Yong-Hee, 2016). The MBS is equipped with not only the Sands Expo, a famous exhibition center, but also many convenient facilities necessary for attracting international business, such as hotels, casinos, and shopping centers.

The Singapore Tourism Board (STB) (2019) announced in 2018 that it had recorded its highest number of international tourist arrivals and tourism receipts for the third consecutive year. The number of international tourists arriving in 2018 was 18.5 million, an increase of 6.2% in year-on-year growth. Tourist expenditure reached S\$26.9 billion which equals to USD 19.4 billion based on an average exchange rate of USD 0.72281 per Singapore dollar on December 31, 2018. Singapore, for the eight years in a row, is a top destination at both city and country levels in terms of the number of international association meetings taking place in 2019 (UIA, 2020). These facts imply that Singapore has successfully developed the MICE industry and its associated income streams from it.

In Korea, the government chose MICE as one of 17 new growth-engine industries in 2009. It has provided policy support in cooperation with not only local governments but also government agencies that have the authority to implement policies (Lee Chang-Hyun and Lee Hee-Jun, 2016; Nam Yoon-Seob and Lim Hwe-Soon, 2011). In order to achieve policy

goals, the Korean government has made efforts to attract foreign tourists by hosting large-scale international events as well as building facilities such as convention centers and sports stadiums, for a ripple effect on the national economy (Kim Young-Mi and Lee Yang-Lim, 2012). Examples of international events include the G20 Seoul Summit in 2010, Expo 2012 Yeosu Korea, Universiade Gwangju 2015, and the 2018 PyeongChang Winter Olympic Games.

As a result of the government's support and the industry's investment, the Korean MICE industry has grown remarkably. This can be verified by the statistics of the UIA (2020) and ICCA (2020), which ranked Korea 3rd and 13th, respectively, in the number of meetings per country in 2019. The reason for the difference in Korea's two rankings is due to the two institutes' different calculation standards for meetings. The UIA emphasizes the size and internationalization of the meetings, whereas the ICCA emphasizes sustainability even though the size of meetings may be small. The lower ranking of Korean meetings by the ICCA implies that its sustainability ranking still has potential to improve. Therefore, in order to increase the competitiveness of Korean meetings, efforts are required to grasp the industry's reality accurately and to address these deficiencies.

In order to diagnose the Korean MICE industry, it is necessary to understand its scale and economic contribution. According to the Korea Tourism Organization (KTO), 234,144 MICE events were held in 2018, a 4.3% increase on 2017, and the number of participants increased by 5.7% to more than 40 million during the same period, as shown in Table 4 (KTO, 2019a). Meanwhile, the MICE industry's economic contribution was USD 33.7 billion in 2018, which amounts to 1.95% of Korea's total GDP of USD 1,720 billion in the same year (KTO, 2019b).

Table 4. Number of Meetings and Participants, and Economic Contribution in 2018

Sector	Meetings (%)	Participants			Contribution (USD million)
		Total	Local	Foreigner	
Meetings	215,470 (92.0)	19,786,936	19,588,741	198,195	19,545.4
Incentives	12,827 (5.5)	537,893	-	537,893	2,053.4
Conventions	4,960 (2.1)	3,508,467	2,955,947	552,520	9,565.8
Exhibitions	887 (0.4)	16,625,319	16,275,985	349,334	2,634.1
Total	234,144 (100.0)	40,458,615	38,820,673	1,637,942	33,798.9

Note: Contribution amount converted into US dollars by applying the average exchange rate of 1,111.72 Korean won per dollar as on December 31, 2018.

Source: Korea Tourism Organization (2019a/2019b).

Moreover, the total expenditure of stakeholders in the four sectors of the MICE industry was USD 21.0 billion in 2018. The expenditure composition was USD 3.4 billion on facilities and service providers such as exhibition and convention centers, plus USD17.6 billion from attendees who were event end-users (KTO, 2019b).

2.3. Prior Research on the MICE Industry

As the MICE industry contains many sub-sectors, there has yet to be consensus of the academic community on its definition and components. Therefore, researchers use not only the MICE term itself, but also other terms such as international meetings, corporate meetings, and business trips (BT) (Crouch and Ritchie, 1998). In this regard, Yoo and Weber (2005) argued that, as a result of a literature review over the period between 1983 and 2003, relatively

few papers used the term MICE, and researchers who used the term MICE were mainly from the Asia-Pacific region.

In a holistic view, works on the development of the MICE industry can be divided into two categories: the whole country and the specific regions perspective. It is necessary to look at these two types of studies to identify the SWOT sub-factors of the MICE industry.

The first type is studies on the development or revitalization of the MICE industry for major stakeholders at the national level. Buathong and Lai (2017) emphasized the importance of political stability based on the results of an important performance analysis (IPA) conducted on foreign participants who attended MICE events held in Thailand. Chiang, King and Nguyen (2010) suggested that in order to develop Taiwan as an attractive MICE destination in Asia, planners should organize events that combine business and leisure. Dwyer et al. (2001) noted that given Australia's price competitiveness in the global travel market, decision-makers in the governments and the private sector should focus on improving price competitiveness to make cities attractive tourist destinations. Oppermann (1996) found, in an IPA analysis of images of 30 convention destinations in North America, that meeting planners should strengthen promotional efforts to increase the profits of convention projects.

In Korea, Ahn Kyung-Mo et al. (2008) emphasized that strengthening overseas public relations (PR) by the government is the most important factor in securing Korea's MICE industry's competitiveness. Choi Byong-Choon (2010) argued the importance of cooperation between MICE agencies and the MICE firm's human resource training. Park Chang-Soo and Kim Seung-Hee (2011) raised the necessity of constructing convention centers and establishing convention visitor bureaus (CVB) by region through the analysis of regional growth rate differences (RGRD).

The second type is the research approach to the MICE industry in a specific region. Krip (2018) analyzed the current status of MICE businesses in the Hat Yai District, Songkhla Province in Thailand, through expert interviews. He suggested that security, transportation, and souvenir sectors should be strengthened to increase MICE performance in this district.

In Korea, many studies on the region-specific development of the MICE industry have been published. Cho Jae-Geun and Nam Tae-Suk (2016) recommended the development of sustainable travel products differentiated from other provinces by utilizing the unique culture of Cheongsong County in Gyeongbuk Province. Hong Heather, Jung Yu-Jin and Lee Joo-Hyung (2018) benchmarked the case of Sarawak, a small town in Malaysia. They advised unifying dispersed images of MICE in Jeonbuk Province into natural eco-tourism destinations. In the last case, Kim Young-Mi and Lee Yang-Lim (2012) evaluated whether physical infrastructure such as the convention center and high-speed railway were well equipped in Gwangju Metropolitan City. On the contrary, service facilities such as casinos and ethnic restaurants for foreign tourists were very poor.

It can be seen that most previous works before COVID-19 outbreak from both national and region-specific perspectives emphasized the necessity of constructing MICE infrastructure, building dedicated organizations, and improving the quality of services.

2.4. Research on the MICE Industry after the Outbreak of COVID-19

Several studies have been conducted to identify the damage situation of the MICE industry or suggest marketing measures to recover the decreased operating profit following the COVID-19 outbreak.

In the ASEAN region, Rittichainuwat et al. (2020) evaluated the change in Thailand's image as a MICE destination at three time periods: before, during, and after the COVID-19 crisis, via interviews with industry stakeholders. The researchers argued that Thailand's MICE

destination image has declined, and suggested that the industry should restore the favorable bleisure (business + leisure) destination image through price-quality realization.

Ranasinghe et al. (2020) claimed that the Sri Lankan MICE industry has been impaired since the outbreak of the pandemic. They suggested that the industry should promote flexi-services, such as flexible pricing and cancellation policies, as a strategic tool for the industry to recover from business losses. Phu (2020) studied the challenges that the MICE industry is likely to face after the pandemic, targeting four Destination Management Companies (DMCs) and six hotels in Yangon, Myanmar based on thematic technique analysis. He argued that laws and regulations to protect health would be the biggest challenge, and recommended collaboration between the public and private sectors to decentralize MICE destinations.

In the Middle East, Aburumman (2020) performed a DuPont system of analysis to determine the relationship between the U.A.E.'s MICE-related economic indicators and Return on Investment (ROI). It was found that U.A.E.'s sub-MICE industries were significantly hit by COVID-19 due to quarantine measures such as border closures and travel restrictions in most countries. The researcher proposed an outsourcing business process that can reduce costs as a strategy to strengthen the competitiveness of the U.A.E. MICE industry.

In Africa, Rwigema (2020) surveyed 38 hotels located in Kigali and found that, in response to the pandemic, MICE destination blockades and facility closures had the most negative impact on MICE tourism in Rwanda. He recommended that the government prioritize the protection of the MICE industry, where businesses are more active and have more workers than any in any other industry.

A closer look at these studies conducted since the outbreak of the pandemic, revealed that none of them could link the internal and external environment of the MICE industry. Regarding managerial implications, these studies suggested policies or management strategies for overcoming industrial crisis. However, it should be noted that these strategies do not provide specific action plans on what the industry should do, only management directions.

2.5. SWOT-AHP-TOWS Analysis

SWOT (strengths, weaknesses, opportunities, and threats) analysis allows the public or private organizations to be cognizant of their business environment (Eslamipoor and Sepehriar, 2014; Tahernejad, Khalokakaie and Ataei, 2013). From a business perspective, this analysis is widely used as an effective strategic planning tool to suggest ways to improve the quality of products and services by scanning the company's internal and external environments. The goal of this analysis is to derive an appropriate strategy with balanced coordination between the SWOT factors. If it is used correctly, it can provide a good basis for future strategy formulation and derive meaningful managerial implications (Aslan, Cinar and Kumpikaite, 2012; Eslamipoor and Septhriar, 2014).

Against this background, SWOT analysis has been applied in various industries for optimal decision-making according to environmental conditions since the 1960s (Phadermrod, Crowder and Wills, 2019). Further, the SWOT technique is also used in combination with other qualitative market analysis methods to expand its advantage. Examples of other analyses combined with SWOT include Kipling's five Ws (What, When, Where, Who, and Why), and McCarthy's four Ps plus additional P (Product, Price, Place, Promotion, and People). Such attempts can be evaluated as a useful approach to market analysis while extending the simple SWOT technique (Kurtila et al., 2000).

The use of the SWOT method is based mainly on the subjective assessment of the situation, providing a list of factors' priority rankings (Phadermrod, Crowder and Wills, 2019). Due to the inherent characteristics of the SWOT technique, it has been pointed out the drawbacks of

not knowing by how much each factor influences corporate business, and the relative importance of the factors. This problem does not disappear even if SWOT is used with other subjective market analysis methods such as Ws and 4Ps (Aslan, Cinar and Kumpikaite, 2012).

In order to overcome the limitations of SWOT analysis, researchers have tried to derive quantitative results by combining SWOT and other statistical analysis methods. At the start of such an attempt, Proctor (1992) tried to use the computer to derive the SWOT variables necessary for corporate decision-making (Kurttila et al., 2000). Since then, statistical analysis methods such as the analytic hierarchy process (AHP) and analytic network process (ANP) have been applied to work with SWOT. AHP can provide a solution that can extract the relative importance between comparison items in a hierarchical structure similar to a family tree in a short time. ANP can examine the vertical, left, and right relationships of comparison items, although it takes some time (Gottfried et al., 2018; Sevkli et al., 2012).

With the MICE industry finding itself in a dire situation due to the rapid spread of COVID-19, it is necessary to look more toward the AHP, which can quickly derive industrial countermeasures. Since Saaty (1997) introduced the technique, AHP has been used in many fields for providing a systematic analysis (Abdel-Basset, Mohamed and Smarandache, 2018; Kim Nam-hyun, Park Joung-Koo and Choi Jeong-Ja, 2017). Additionally, it is a well-known multi-criterion decision-making (MCDM) technique based on hierarchy in terms of selecting strategies and prioritizing policies (Zahedi, 1986). The hierarchical structure of the AHP can be constructed according to the complexity of the problem and the details of the analysis content required (Chen Ching-Fu, 2006; Shahabi et al., 2014).

Although there is no limit to the number of levels of AHP, a four-level structure is widely used in academia. In the four-level structure, the goal is placed on the top; criteria and sub-criteria are placed on the second and third levels, respectively; and alternatives on the bottom level (Chen Ching-Fu, 2006; Tahernejad, Khalokakaie and Ataei, 2013). The AHP provides numerical values for comparing items through a mathematical calculation of the primary data. The pairwise comparison produces the weighting of each item and its relative importance using one of the estimators, such as eigenvalue, arithmetic mean, log least squares, and least squares (Shahabi et al., 2014). While there is no consensus on the choice of estimator, the eigenvalue has been widely used with a long-proven great advantage (Zahedi, 1986).

The algebra of pairwise comparison together with checking Consistency Ratio (CR) is described in Equation (1), where A is the pairwise matrix, $W1n$ are the weightings of element for 1 to n . Thus, $W1/Wn$ and $Wn/W1$ denote the relative weightings in rows and columns, respectively. The value of Wn can be evaluated using Saaty's (1997) 9-point scale. A score of 1/1 indicates the same importance between two comparison items, while a score of 9/1 represents the extreme importance of 9 relative the other one (Gottfried et al., 2018; Kurttila et al., 2000; Zahedi, 1986).

$$A = \begin{pmatrix} 1 & W_1/W_2 & \dots & W_1/W_n \\ W_2/W_1 & 1 & \dots & W_2/W_n \\ \cdot & \cdot & \dots & \cdot \\ \cdot & \cdot & \dots & \cdot \\ W_n/W_1 & W_n/W_2 & \dots & 1 \end{pmatrix} \quad (1)$$

After a comparison of the items by Equation (1), the importance eigenvector value of \hat{W} , and the observed matrix of pairwise comparison \hat{A} can be obtained using Equation (2) (Eslamipour and Sepehriar, 2014; Zahedi, 1986). λ_{max} is the largest eigenvector of \hat{A} and is

always greater than n , or equal to n if the pairwise comparison has no inconsistencies (Eslamipour and Sepehriar, 2014). Additionally, \hat{W} constitutes the estimation of W indicating its desired eigenvector. This means that the closer the calculated value of λ_{\max} is to n , the more consistent the observations of \hat{A} are (Tahernejad, Khalokakaie and Ataei, 2013).

$$\hat{A} \cdot \hat{W} = \lambda_{\max} \cdot \hat{W} \quad (2)$$

The property of Equation (2) directs to the construction of the consistency index (CI), as depicted in Equation (3). In this formula, CI is a measure of the degree of logical consistency in a pairwise comparison, where n is the number of items in the pairwise comparison matrix (Kurttila et al., 2000; Zahedi, 1986). Subsequently, the consistency of the sample is determined by the consistency ratio (CR) calculated using Equation (4). Checking consistency is essential in applying AHP because the value of CR indicates how useful the sample is. Here, consistency indicates the reliability of a response; for example, if $A > B$ and $B > C$, it follows that $A > C$.

$$CI = (\lambda_{\max} - n) / (n-1) \quad (3)$$

$$CR = (CI) / (RCI) \quad (4)$$

As can be seen in Equation (4), CI is divided by the random consistency index (RCI), which is an average of CI of randomly generated pairwise comparison to obtain CR (Chen Ching-Fu, 2006). If, the CR value of the response is 10% or less, it can be used as a sample. Conversely, if the CR value exceeds 10%, the response of the questionnaire cannot be used; consequently, it should be removed from the sample for research because of its low reliability. CR calculation and judgment criteria are applied equally to the factors to which individual items belong (Kurttila et al., 2000; Tahernejad, Khalokakaie and Ataei, 2013; Zahedi, 1986).

Lastly, the TOWS analysis is an enhanced method to derive strategies using the results of the SWOT analysis. In TOWS, SWOT written in reverse, was originally introduced by Weihrich (1982) for the formation of company strategies (Weihrich, 1999). It provides a framework for developing a firm's strategies by analyzing internal strengths and weaknesses that integrate them with external opportunities and threats (Aslan et al., 2012; Jafari, Jafari and Loyes, 2013).

The TOWS analysis can produce four sets of strategies with combinations of SWOT sub-factors in a matrix (Sevкли et al., 2012; Tahernejad, Kholokakaie and Ataei, 2013). These four types of strategies can be summarized as follows:

- 1) SO (maxi strength and maxi opportunity) is a favorable strategy to make the most of an external opportunity by using the existing internal strength.
- 2) ST (maxi strength and mini threat) represents the strategy associated with a good use of the strength to reduce the threat impact.
- 3) The mini-weakness and maxi opportunity (WO) strategy seeks to minimize the impact of weakness by taking advantage of the opportunity given from outside.
- 4) The WT (mini weakness and mini threat) is regarded as the toughest strategy to implement. It is necessary to avoid damage to the threat as much as possible while minimizing weakness.

Despite the advantage of a systematic approach to produce a strategy formation, the TOWS analysis inherently has drawbacks like SWOT (Jafari, Jafari and Loyes; 2013). This is because

the TOWS is based on qualitative evaluation in connection with the results of the SWOT analysis. Therefore, the results of TOWS analysis cannot show the degree of importance of each priority between alternatives, but only a list of expert opinions in a matrix (Abdel-Basset, Mohamed and Smarandache, 2018).

To overcome this problem of a TOWS analysis, the SWOT-AHP-TOWS framework was introduced as an extension of the SWOT-AHP analysis model. Industrial development strategies have been proposed in many countries using the SWOT-AHP-TOWS framework. Examples include strategies to revitalize private investment in China's biogas industry (Gottfried et al., 2018), optimal decision-making for new product development in a Turkish consumer electronics firm (Seker and Ozgurler, 2012), and measures to enhance the competitiveness of the Iranian stone quarrying industry (Tahernejad, Khalokakaie, and Ataei, 2013).

The SWOT-AHP-TOWS analysis, in which three methods are integrated, is composed of two steps. The first step is to conduct an AHP analysis within the SWOT framework. In this process, the SWOT factors and sub-factors are compared with each other to calculate their relative importance using the AHP application. The second is the TOWS analysis. Combinations of SWOT sub-factors are made using the AHP analysis result, and then alternatives with high priority among them can be displayed in a TOWS matrix. Finally, the SWOT-AHP-TOWS analysis has the advantage of quickly presenting countermeasures objectively to overcome the industrial crisis.

3. Methodology and Data Collection

3.1. SWOT-AHP-TOWS Framework

By examining the analysis methods, this study decided to apply the SWOT-AHP-TOWS framework while considering the characteristics of the MICE industry and the current situation. First, this study performed the SWOT-AHP analysis to produce the quantitative relative importance weights of SWOT factors and their sub-factors. Subsequently, a TOWS analysis was conducted to produce four sets of strategies to be presented to the MICE industry using the results of the previous stage analysis.

The study utilized an Excel program on AHP analysis and SPSS statistics 26. The overall procedure of this study consisted of the following five steps:

- Step 1: Construct a four-level AHP structure with the goal of this study placed at the top. The SWOT factors (criteria) and SWOT sub-factors (sub-criteria) to be surveyed for data were located on the 2nd and 3rd levels, respectively. Then, the TOWS strategies using the best alternatives were placed at the bottom.
- Step 2: Determine the attributes as sub-factors of SWOT factors after collecting opinions from MICE experts. A number of items of each SWOT factor were restricted to four only to reduce the burden of respondents (Wehrich, 1982).
- Step 3: Design a questionnaire using Saaty's 9-point scale. Collect data from respondents in a pairwise comparison manner between decision items.
- Step 4: Run the AHP to calculate the weightings of the SWOT factors as relative priorities as well as the weightings of sub-factors as local priorities within their parent factors. Then, the weightings were produced as global priorities of sub-factors by multiplying each local priority by the value of the corresponding SWOT factor.
- Step 5: Complete a TOWS matrix represented by four sets of strategies consisting of SO, ST, WO, and WT alternatives with high values for each sector.

3.2. Measurement Items and Data Collection

It is difficult to identify which internal and external environmental factors affect the MICE industry under the unprecedented pandemic. Therefore, it is important to listen to the opinions of experts before determining the attributes of SWOT factors (Crouch and Ritchie, 1998; Dwyer et al., 2001; Weber, 2001). Before deciding them, candidates were selected for this study in consideration of prior research claims as well as the current pandemic situation.

By using these items, the opinions of authors who had published their studies in academic journals related to MICE industry were collected via email and phone calls. They commented on which items should be used or removed from each corresponding SWOT factor, and which items ought to be added. Through the collection of their opinions, as described in Table 5, the attributes were determined for a total of sixteen items, four for each SWOT factor.

Table 5. Selected Attributes of SWOT Factors

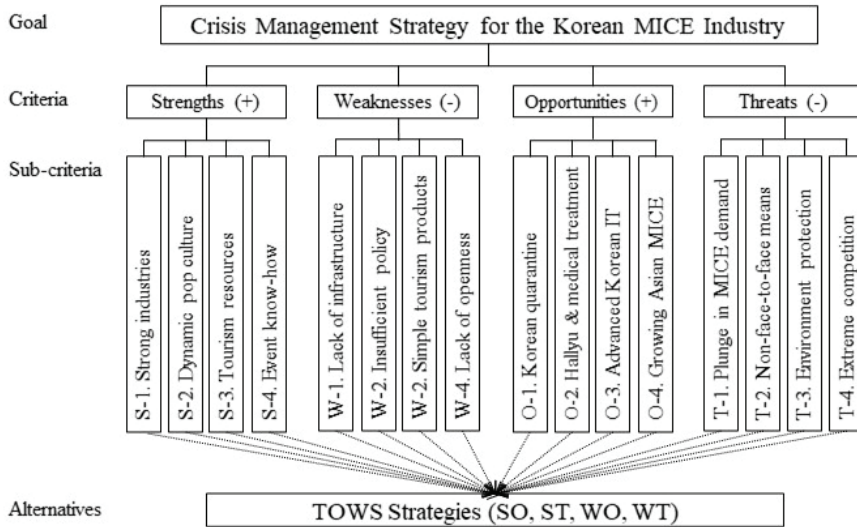
Factors	Sub-factors (Attributes)	Key Words	
Internal factors	Strengths	(S-1) Presence of strong manufacturing industries such as automobile and ship, capable of developing fusion events.	Strong industries
		(S-2) Korean dynamic pop culture such as K-pop and K-drama can be linked with meetings, tours, conventions, and exhibitions.	Dynamic pop culture
		(S-3) Abundant tourism resources such as various festivals, seasonal attractions, and food cultures throughout the country.	Tourism resources
		(S-4) Possibility of attracting international events using know-how of hosting mega-events such as the Olympic games.	Event know-how
	Weaknesses	(W-1) Lack of infrastructure such as integrated MICE complex, lack of hotels, and no casino near tourist complex.	Lack of infrastructure
		(W-2) Insufficient policy consideration, failure to establish strong public-private partnerships, no tax benefits or fund investments.	Insufficient policy
		(W-3) Simple tourism products that do not adequately connect industries and entertainment due to the smallness of industry.	Simple tourism products
		(W-4) Lack of public openness to attract various races and ethnicities due to a sense of distance from foreigners.	Lack of openness
External factors	Opportunities	(O-1) Opportunities to host mega-events by exploiting Korea's image as a country with good quarantine measures, due to its successful prevention of the spread of COVID-19.	K-quarantine
		(O-2) Increased interest in Korean wave and medical treatment in the trend of independent travel and experiential tourism.	Hallyu & medical
		(O-3) Opportunity to utilize advanced Korean IT, due to digital trends in MICE such as apps and social media used by attendees.	Advanced IT
		(O-4) The growth of the Asian MICE industry is a favorable condition to attract international events to Korea.	Growing Asian MICE
	Threats	(T-1) MICE demand plunges due to the spread of COVID-19, e.g., cancellation of events and curbs on travel.	Plunge in demand
		(T-2) Rapidly growing non-face-to-face contact means that video conferences and webinars threaten the industry.	Non-face-to-face means
		(T-3) Environmental protection causes have a negative impact on MICE, which entails a lot of resource consumption.	Environment protection
		(T-4) Extreme competition, such as building large-scale MICE complexes and hosting events, especially in Asia.	Extreme competition

After determining the attributes of SWOT factors, a pairwise questionnaire was designed using Saaty's (1997) 9-point scale, ranging from 1 (equal) to 9 (extreme) to make relative comparisons between two items. According to the pairwise comparison technique, a total of 30 question items were formulated, including 6 for SWOT factors and 24 for sub-factors. In addition, questions about policy priorities for the government to overcome the crisis and characteristics of respondents were added to the last part of the questionnaire.

The questionnaires were sent to 50 potential respondents by email. They were selected from various fields in consideration of the characteristics of the Korean MICE industry. This group consisted of representatives of the government and its agencies, exhibition/convention centers, professional exhibition/convention organizers (PEO/PCO), convention and visitor bureaus (CVB), and academia.

After sending e-mails to the target survey candidates, most of them were phoned to explain in detail the purpose of this survey and how to answer the pairwise comparison questions to ensure consistency. The survey was conducted from August 12 to September 14, 2020, during which 41 questionnaires were returned. The consistencies of four pieces were not secured. Consequently, 37 pieces were confirmed as final samples for this study. Fig. 1 shows the research model of the SWOT-AHP-TOWS of this study.

Fig. 1. The SWOT-AHP-TOWS Analysis Model of This Study



4. Empirical Analysis

4.1. Respondents Profile and Policy Demand

The job titles of the respondents mostly included directors (43.2%), followed by managers (24.3%). Job careers ranged from less than five years to more than 15 years. Their occupations were evenly distributed in ten fields including the government and its agency, association, academia, and companies related to MICE. Details of the respondents are described in Table 6.

Table 6. Respondents Profile

Category	Freq.	Percent (%)	Category	Freq.	Percent (%)
<i>Job title</i>			<i>Occupation</i>		
Researcher	3	8.1	Government	1	2.7
CEO/Executive	5	13.5	Govt. agency	5	13.5
Director	16	43.2	Association	2	5.4
Manager	9	24.3	Academia	2	5.4
Others	4	10.8	Exhibition/Convention	5	13.5
<i>Career</i>			Sub-contractor ¹		
Less 5 years	10	27.0	PEO/PCO ²	6	16.2
5 to 10 years	10	27.0	CVB ³	5	13.5
11 to 15 years	5	13.5	Tourism	3	8.1
More 15 years	12	32.4	Other	1	2.7

Note: Sub-contractor¹ includes design, booth installation, and transportation. PEO/PCO² and CVB³ stand for professional exhibition/convention organizers, and convention and visitor bureau, respectively.

As can be seen in Table 7, respondents assessed that the Korean MICE industry suffered from the COVID-19 pandemic in the following categories with decreasing scores: exhibitions, conventions, incentive tours, and meetings. When it came to policy measures to prevent the industry's collapse, urgent policy funding was ranked first (46.6%). Bailout support (21.9%) and tax relief (16.4%) were also identified as important policy measures.

Meanwhile, two policy demands with low rankings are also worth consideration. If the government holds an important international event, its ripple effect will help to arrest the deterioration of the industry. Further, the demand for the formation of a MICE fund that can be used to revitalize the industry in preparation for the post-pandemic era cannot be overlooked.

Table 7. Ranking of Industrial Damage and Policy Demand

Industrial damage			Policy demands		
Rank	MICE sub-sectors	Scores ¹	Rank	Policies	Freq. (%) ²
1	Exhibitions	115	1	Urgent policy fund	34 (46.6)
2	Conventions	106	2	Bailout support	16 (21.9)
3	Incentive tours	94	3	Tax relief	12 (16.4)
4	Meetings	55	4	Large-scale MICE event	6 (8.2)
			5	Raising MICE fund	5 (6.8)

Notes: Scores¹ are summed by converting damage ranking 1,2,3,4 to 4,3,2,1 points. Freq.², one respondent only selected one item in a multiple-choice question.

4.2. Results of SWOT-AHP Analysis

4.2.1. Relative Priorities of SWOT Factors (Criteria)

By conducting the AHP analysis, the results of a pairwise comparison between four items of SWOT factors constituting the second level of the hierarchical structure were produced, as shown in Table 8. The consistency ratio (CR) of this assessment group was extracted as 0.004, ensuring the consistency of the responses. Using the weightings of the relative priorities of

the four factors, the threats were calculated at 0.5834, which was identified to have the greatest influence on the MICE industry. And the opportunities were calculated as having the second highest impact with a weighting of 0.1753, followed by the strengths and weaknesses with weightings of 0.1413 and 0.1000, respectively.

With respect to the intensity of influence of factors on the MICE industry, the threats were three and four times stronger than the opportunities and strengths, respectively, and almost six times more than the weaknesses. At a glance, it is possible to assess how much of a negative impact the current COVID-19 pandemic has had on the Korean MICE industry and the seriousness of the industry's crisis.

Table 8. Result of Pairwise Comparison of SWOT Factors (Criteria)

Factors	Strengths	Weaknesses	Opportunities	Threats	Weightings	Ranking
Strengths	1	1/9	1	1/6	0.1413	3
Weaknesses	9	1	9	3	0.1000	4
Opportunities	1	1/9	1	1/6	0.1753	2
Threats	6	1/3	6	1	0.5834	1
Total	17	1 5/9	17	4 1/3		

Note: The CR value of 0.004 is less than 10% indicating the reliability of the data.

4.2.2. Local and Global Priorities of SWOT Sub-factors (Sub-criteria)

The AHP for the sub-factors located in the third level of the hierarchical structure was conducted in two steps to produce their local and global priorities.

As the first step, the weightings of the sub-factors (sub-criteria) that were to be local priorities were calculated in the same way as the SWOT factors (criteria) level. As can be seen in the CR weightings of each group in Table 8, the consistency test results of the four groups were all acceptable with CR values of less than 10%. The results of the pairwise comparison between sub-factors within their corresponding factors are as follows.

As for the strengths of internal environments, dynamic pop culture was rated as the most important item and strong industries were also identified to have a fairly high influence. This implies that these items can be regarded as valuable assets for the industry. On the other hand, tourism resources and event know-how have little influence. In terms of weaknesses, insufficient policy and lack of infrastructure were found to have a strong influence on the industry. Conversely, like the strengths, the other two items, simple tourism products and lack of openness, were evaluated as having very low importance in this factor.

In the opportunities in the external environment, successful Korean quarantine was identified as having the highest influence within its factor. The influences of the remaining three items appeared low, in order of importance, Hallyu and medical treatment, Korean information technology (IT), and the growing Asian MICE industry. In terms of threats, the weightings of local priorities when comparing items showed the greatest difference. Within this factor, the plunge in demand was identified as having an overwhelming and dominant influence on the industry, followed by the degree of importance of non-face-to-face alternatives, but not quite as influential. The other two items were of very little importance.

In the second step, the weightings of the global priorities of 16 sub-factors were produced by multiplying each item's local priority by the weighting of its parent SWOT factor.

By carefully examining global priority rankings, three items from the threats were ranked in the top five by importance as having a significant influence on the MICE industry. The

three threat items were a plunge in demand with a weighting of 0.2905, followed by non-face-to-face alternatives and extreme competition with weightings of 0.2024 and 0.0539, respectively. Further, two attributes among the top five, plunge in demand and non-face-to-face alternatives, can be regarded as the most critical items to the industry. This is because they were not only ranked first and second in importance, but also had overwhelmingly higher global priorities compared to the other items. The other two items in the top five list included Korean quarantine with a value of 0.0733 from opportunities in third place, and dynamic pop culture with a value of 0.0523 from strengths in fifth place.

On the other hand, most items of weaknesses had low rankings, implying their low influence on the industry. In particular, a lack of openness (0.0103) and simple tourism products (0.0200) were placed last (16th) and next to last (15th), respectively. This implies that the two items can be regarded as attributes to be controlled after the pandemic in the current situation of absolute despair.

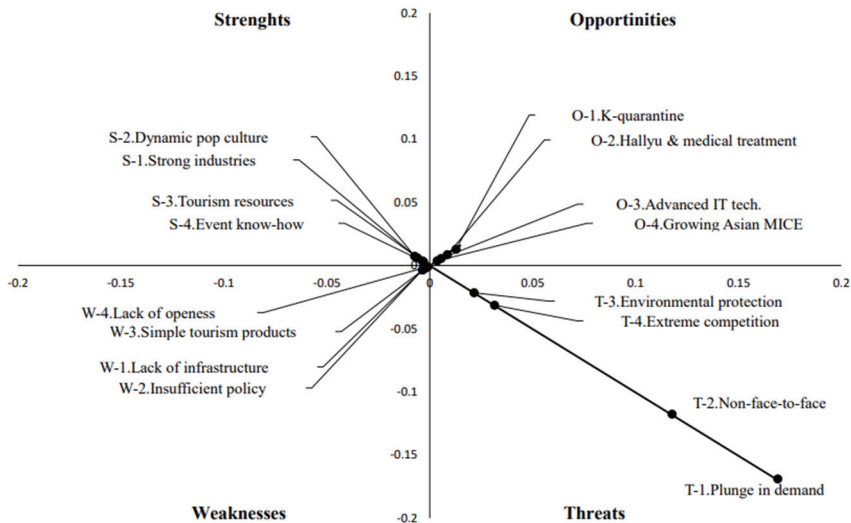
In the SWOT sub-factors, it was confirmed that most of the threat items had a great influence on the industry, whereas the weakness items do not. Consequently, the analysis results of the SWOT sub-factors (sub-criteria) suggest the same implications as the results of SWOT factors (criteria). The results of the SWOT-AHP analysis conducted in this part are described in Table 9.

Table 9. Results of SWOT-AHP Analysis

SWOT Factors (Criteria)		SWOT Sub-factors (Sub-criteria)			
Factors	Weightings	Attributes	Local	Global	Rank
Strengths	0.1413	S-1. Strong industries	0.3017	0.0426	7
		S-2. Dynamic pop culture	0.3698	0.0523	5
		S-3. Tourism resources	0.1805	0.0255	12
		S-4. Event know-how	0.1479	0.0209	14
<i>The weighting of strengths with CR 0.006</i>			1		
Weaknesses	0.1000	W-1. Lack of infrastructure	0.3421	0.0342	10
		W-2. Insufficient policy	0.3545	0.0355	9
		W-3. Simple tourism products	0.2004	0.0200	15
		W-4. Lack of openness	0.1029	0.0103	16
<i>The weighting of strengths with CR 0.001</i>			1		
Opportunities	0.1753	O-1. Korean quarantine	0.4182	0.0733	3
		O-2. Hallyu, med. treatments	0.2808	0.0492	6
		O-3. Advanced IT	0.1806	0.0316	11
		O-4. Glowing Asian MICE	0.1205	0.0211	13
<i>The weighting of strengths with CR 0.001</i>			1		
Threats	0.5834	T-1. Plunge in demand	0.4979	0.2905	1
		T-2. Non-face-to-face means	0.3470	0.2024	2
		T-3. Environment protection	0.0627	0.0366	8
		T-4. Extreme competition	0.0924	0.0539	4
<i>The weighting of strengths with CR 0.009</i>			1		

In order to identify the influence of the SWOT sub-factors intuitively, it can be displayed on a hybrid grid proposed by Kurttila et al. (2000), as presented in Fig. 2. Based on the distance of these attributes from the center, it is possible to see at a glance the degree of negative impact of threat items on the Korean MICE industry in the current pandemic situation.

Fig. 2. Degree of Influence of SWOT Sub-factors on Hybrid Grid



4.2.3. TOWS Analysis

By using the results of the SWOT-AHP analysis, a TOWS was conducted to produce strategic alternatives. Through this work, a list of combinations consisting of SO (strengths, opportunities), ST (strengths, threats), WO (weaknesses, opportunities), and WT (weaknesses, threats) alternatives was created.

In this list, the value of each alternative was calculated by multiplying the global priorities of two corresponding sub-factors. Consequently, it was possible to produce up to 64 alternatives, 16 for each of the SO, ST, WO, and WT groups. However, such a large number of alternatives cannot be used for decision-making, nor are they necessary. From this point of view, the top rankings were selected as strategies for this study, as shown in Table 10 (Shahabi et al., 2014; Tahernejad, Khalokakaie and Ataei, 2013).

Table 10. List of Top 10 Strategy Alternatives

Internal Factors	External Factors		Alternatives		
	Strength & Weakness	Global	Opportunity & Threat	Global	Value
(S-2) Dynamic culture	0.3698	(T-1) Plunge in demand	0.4979	0.1841	1
(W-2) Lack of policy	0.3545	(T-1) Plunge in demand	0.4979	0.1765	2
(W-1) Infrastructure	0.3421	(T-1) Plunge in demand	0.4979	0.1704	3
(S-2) Dynamic culture	0.3698	(O-1) K-quarantine	0.4182	0.1547	4
(S-1) Strong industries	0.3017	(T-1) Plunge in demand	0.4979	0.1502	5
(W-2) Lack of policy	0.3545	(O-1) K-quarantine	0.4182	0.1483	6
(W-1) Infrastructure	0.3421	(O-1) Plunge in demand	0.4182	0.1431	7
(S-2) Dynamic culture	0.3698	(T-2) Non-face-to-face	0.3470	0.1283	8
(S-1) Strong industries	0.3017	(O-1) K-quarantine	0.4182	0.1262	9
(W-2) Lack of policy	0.3545	(T-2) Non-face-to-face	0.3470	0.1230	10

After choosing ten alternatives, a TOWS matrix was completed, placing them in the four sector strategies in which the ten strategies contain three each for ST and WT, and two each for SO and WO as presented in Fig. 3. Looking at the number of strategies in each category, it is clear that threat management is more important than opportunity utilization. The top priority strategies by sector were derived in order of overall importance as described below.

First of all, “Maxi S-2, Mini T-1” of the ST with a value of 0.1841 was identified as the most important strategy in the four sector strategies. Basically, it proposes action to avoid the impact of the threats while taking advantage of the strengths.

In the WT, the “Mini W-2, Mini T-1” strategy was confirmed as the second priority with a value of 0.1765. This strategy is regarded as a defensive tactic and the toughest one to implement for the MICE industry. This is because the industry must avoid the aftermath of external threats while reducing the impact of internal weaknesses at the same time (Sevkli et al., 2012; Tahernejad, Khalokakaie and Atei, 2013).

The third strategic priority was “Maxi S-2, Maxi O-1” with a value of 0.1547 in the SO sector. Contrary to the defensive strategy WT, it requires a way to use the most favorable internal and external environments around the industry.

The last one is the “Mini W-2, Maxi O-1” strategy from WO with a value of 0.1483 that requires an active industrial revitalization policy to make the most of the K-quarantine opportunity.

This study suggested four top priority strategies for each field. However, it is up to industry and government to decide which of the four suggested strategies will be implemented while provisionally taking into account the available resources and the pandemic situation (Shahabi et al., 2014; Tahernejad, Khalokakaie and Ateai, 2013).

Fig. 3. TOWS Strategy Matrix for Crisis Management in the MICE industry

External factors Internal factors	Opportunities (O) (O-1) 0.4182, Korean quarantine	Threats (T) (T-1) 0.4979, Plunge in demand (T-2) 0.3470, Non-face-to-face means
Strengths (S) (S-2) 0.3698 Dynamic pop culture (S-1) 0.3017 Strong industries	SO. use strengths to take advantage of opportunities 4th [0.1547] (S-2) x (O-1) S-2. Dynamic pop culture O-1. K-quarantine 9 th [0.1262] (S-1) x (O-1) S-1. Strong industries O-1. K-quarantine	ST. use strength to avoid threats 1st [0.1841] (S-2) x (T-1) S-2. Dynamic pop culture T-1. Plunge in demand 5 th [0.1502] (S-1) x (T-1) S-1. Strong industries T-1. Plunge in demand 8 th [0.1283] (S-2) x (T-2) S-2. Dynamic pop culture T-2. Non-face-to-face means
Weaknesses (W) (W-2) 0.3545 Insufficient policy (W-1) 0.3421 Lack of infrastructure	WO. overcome weaknesses by taking advantage of opportunities 6th [0.1483] (W-2) x (O-1) W-2. Insufficient policy O-1. K-quarantine 7 th [0.1431] (W-1) x (O-1) W-1. Lack of infrastructure O-1. K-quarantine	WT. minimize weaknesses and avoid threats 2nd [0.1765] (W-2) x (T-1) W-2. Insufficient policy T-1. Plunge in demand 3 rd [0.1704] (W-1) x (T-1) W-1. Lack of infrastructure T-1. Plunge in demand 10 th [0.1230] (W-2) x (T-2) W-2. Insufficient policy T-2. Non-face-to-face means

Note: Sevkli et al. (2012) provide a detailed explanation of the strategies (SO, ST, WO, WT).

5. Conclusion

The findings of this study—based on a SWOT-AHP-TOWS analysis and an examination of earlier research—present some recommendations on the managerial implications of the Korean MICE industry, and methodology to researchers.

The industry must preemptively prepare its own management plan to reduce the business damage caused by the pandemic. Furthermore, the industry should focus on choosing and implementing optimal strategies that can help maximize on the given opportunities while reducing the impact of threats, after gauging the status of the pandemic and available resources. With respect to the research purpose of deriving the industry's countermeasures to overcome this crisis, this study recommends strategy implementation plans in four fields.

The first is the strategy implementation plan of the ST sector. The top priority of the industry needs to be the development of profitable business models using dynamic pop culture (S-2) to reduce business loss due to the plunge in demand (T-1). Thus, the industry should pay considerable attention to this strategy. To implement this, dynamic pop cultural performances can be conducted online for a fee to utilize the advantage of non-face-to-face communication channels that do not require contact with the audience. If the performance is successful, the income from such an event can be of help in solving the business difficulties of participating companies, such as event planning, entertainment, and stage equipment firms.

The second is the WT strategy, which is the most difficult to implement. Since this strategy combines insufficient policy(W-2) and the plunge in MICE demand (T-1), a joint response from the government and the industry is essential for success. The first thing to consider is that the industry needs to create and implement cost-cutting measures during this period of sharply declining demand. More importantly, the government must provide an active protection policy for the survival of the industry, free from insufficient policies. Industrial protection policies are described in the role of government below.

The third is the SO sector strategy, which can be carried out in the most favorable environment for the industry. It considers the use of dynamic pop culture (S-2) to take advantage of the positive image of Korea's successful quarantine practices (O-1). For example, it would be an effective way to present a dynamic pop culture performance while observing the quarantine rules in a large event hall where social distancing is possible. This strategy is similar to that of the ST sector. The difference is that the event can be performed in physically constructed facilities. However, this type of event can provide benefits not only to the companies mentioned above, but also to venues such as stadiums, exhibition centers. Therefore, the event planner's judgment pertaining to performance methods determines what forms of the event will be used, such as on- or, off-line methods, or a combination of the two.

As an example, Korea Trade & Investment Promotion Agency (KOTRA) held the Korea Auto Industry Show (KOAA Show) in cooperation with the exhibition organizer Ainglobal in November 2020 in accordance with the quarantine guidelines. At the same time, KOTRA provided an online B2B meeting platform for foreign companies that were unable to attend the show in person due to the pandemic.

The fourth is the implementation of the WO strategy, which combines the insufficient policy (W-2) with the excellent K-quarantine (O-1). To have an economic ripple effect on various sectors, a government-led international seminar on quarantine for Korea's strong industries is necessary by leveraging the positive image of the country where quarantine protocols are safe. For the MICE event to be successful, not only not only must government make efforts to attract delegates from foreign countries, but also the industry's absolute quarantine cooperation is necessary.

It is necessary for the government to play an active role in protecting the MICE industry from the threat of the pandemic, while addressing the current policy insufficiencies. This is because the overall crisis caused by the pandemic cannot be overcome by the MICE industry alone. In particular, facilities such as convention centers and unique venues are national assets that were built at a high cost over a long period of time. However, once these valuable facilities are damaged or when skilled workers leave the industry, it is difficult to restore them to their original state. This is why the MICE industry, which can generate high value-added income, should be protected during the pandemic.

Against this background, defensive and offensive policies could be considered simultaneously for industrial protection and future activation, respectively. Given the industry's policy demands as highlighted by the survey, in the short term, a defensive policy should include urgent relief funding to protect facilities and jobs. In addition, providing bailout support such as bank loans as well as tax relief, during the pandemic can help the industry stall while carrying out restructuring.

The offensive policy is different as it not only allows the industry to generate profits in the short term but also supports the industry's vitalization in the long run. For example, the industry could benefit from government-led events, such as quarantine seminars combined with pop performances, by exploiting Korea's image as a country that has been successful with quarantine management, thereby creating ripple effects on the national economy. In addition, policy measures should be considered to create MICE development funds for industrial revitalization from a long-term perspective, in preparation for the post-COVID-19 scenario.

As for methodology, this is the first study to use SWOT-AHP-TOWS analysis for the MICE industry. The analysis tool used in this study worked well in diagnosing the current situation as well as effortlessly deriving managerial implications on crisis management. The success in deriving strategies using this hybrid framework suggests its applicability to the MICE industry in future research. Applying this to the MICE sub-sectors, such as meetings, incentives, conventions, and exhibitions can support the development of a plan to overcome the crisis depending on their characteristics of each field. Further, if this framework is applied to other countries, it would be possible to derive suitable country-specific measures.

Meanwhile, researchers can minimize input time to derive study results in an urgent situation. This is the reason AHP, which can help analyze the study objective, is recommended when alternatives are to be selected using multi-criterion decision-making (MCDM). However, researchers should consider respondents' convenience when conducting a fairly complex pairwise comparison survey; one way to do this would be to restrict the number of comparison items.

Finally, this study is clearly different from previous studies in deriving managerial implications. There were studies on the MICE industry before and after the outbreak of COVID-19; however, research in this field is neither practical and sufficient, nor are the research methodologies comprehensive. This is because most of them only presented the direction of industrial development or crisis management through subjective analysis, and did not suggest a detailed action plan. On the contrary, the study is believed to have contributed to presenting practical strategy implementation plans using the empirical findings of the analysis together with the industry's facilities and functions.

There might be drawbacks in the reliability of the samples used in this study. For example, due to the influence of social desirability bias on a self-reported questionnaire, respondents may evaluate the difference in comparison items as being too high or too low. There is also a possibility of content overlap between the measurement items of SWOT attributes. Therefore, fuzzy theory can be used to minimize the ambiguity of human judgment.

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