

Administration Plan for 2024 Financial Year National Science and Technology Museum

I Introduction

The National Science and Technology Museum (NSTM) is a diversified science museum with the functions of collection, research, exhibition, education, and leisure, etc. Through the collection and research of science and technology artifacts, the exhibition of science and technology-related themes, and the introduction of important scientific and technological developments and their impact on human life. NSTM has the mission of “cultivating everyone as a scientist,” the spirit of lifelong learning, and integrating the “participation, cooperation, accessibility, and equal rights.” NSTM’s development goals, SWOT analysis, and Administration Plan in the 2023 Financial Year and Specific Execution Measures are as follows.

II Development Goals

- I Raise the public’s scientific and technological knowledge, and increase the public’s scientific and technological interest in research and literacy.
- II Promote social education and popular science education, establish high-quality spaces for lifelong learning, and promote diversified learning for all age groups.
- III Better professional influence through exchanges and cooperation with domestic and foreign museums in terms of collection, research, exhibition, education, and cultural and creative development.
- IV Develop strategies for participation, collaboration, access, and equality, in order for the museum to demonstrate diversity, sustainability, accessibility, and inclusion.
- V Create a friendly, safe, comfortable and smart environment, provide fine, unique, enjoyable and innovative services, and become one of the top applied science museums in the world.

III SWOT Analysis

To develop features for curatorial affairs, NSTM has conducted a comprehensive analysis on its strengths and weaknesses, as well as its current threats and opportunities. The details of NSTM’s SWOT analysis is as follows.

Strength	Weakness
<ol style="list-style-type: none"> 1. Taiwan’s only applied science museum that connects with the industry. 2. Convenient transportation as it is located in the Kaohsiung metropolitan area. 3. With a large construction base and building for exhibition and education, NSTM has become a comprehensive science and technology museum. 4. The employees have excellent educational background and professionalism, with effective team brainstorming techniques. 5. The exhibition plan focuses on connecting people’s life experiences and social interaction, and offer visiting experience in education through entertainment. 6. Established a brand image by science education activities in Southern Taiwan. 	<ol style="list-style-type: none"> 1. Large exhibition venue and parking lot, indicating high operating costs. 2. NSTM lacks researchers that have the ability to conduct research on basic science and history of science and technology. 3. Gradually aging workforce and increasing labor costs. 4. Higher average age of service volunteers. 5. Has not yet implemented policies related to collection and storage, which lead to research limitations in domestic industries. 6. NSMT currently has no other large-scale cultural, educational, or leisure facilities in surrounding areas, indicating that there may be difficulties in alliances and cooperation between different industries.

Opportunity	Threat
<ol style="list-style-type: none"> 1. Development of the science and technology industry in Taiwan. 2. Families, schools and society attach great importance to science education. 3. The demand recovery in domestic leisure and traveling. 4. The 2019 curriculum focuses on the cultivation of scientific literacy and lifelong learning. 5. The establishment of Southern Taiwan science parks (Tainan Science Park, Luzhu Science Park, and Kaohsiung Science Park) supported academia–government relations. 6. Companies are attaching great importance to ESG (environmental, social and corporate governance). 	<ol style="list-style-type: none"> 1. NSTM is owned by Kaohsiung City Government, with right of access yet no ownership right. 2. The visitors have higher standards for service quality. 3. NSTM’s main customer group was affected by changes in population structure, declining birth rates, and the aging population. 4. The government’s budget decreased year by year along with fiscal tightening. 5. NSTM’s available funds continue to decline, and is currently last among the five major science museums under the Ministry of Education. 6. Lack of connectivity with other tourist attractions and leisure activities in Kaohsiung.

IV Administration Plan in the 2024 Financial Year and Specific Execution Measures

On August 24, 2022, the International Council of Museums defined NSTM as “a nonprofit-making, permanent institution, in the service of society and its development, and open to the public, which involves the acquisition, conservation, research, communication and exhibition of tangible and intangible assets. The museum is open to the public, and possesses features including accessibility and inclusivity, promoting diversity and sustainable development. NSTM’s operations and communication is based on ethics, professionalism, and social engagement, and provides diversified experiences related to education, joy, introspection, and knowledge sharing. The above definition indicates that NSTM is a nonprofit organization that serves the public and society. Its operations adhere to the spirit of accessibility and inclusivity, promoting a diversified society and sustainable development by use of professional expertise. NSTM encourages public participation, dedicating efforts for the public to experience enjoyable learning and self-development. Keeping in line with the global development trends of museums for sustainability and growth, NSTM’s three aspects for operational development include: Creating a Friendly Environment, Strengthening Professional Quality, and Accumulation of Sustainable Capital, so as to respond to future challenges and work towards sustainable development. The details of specific execution measures are as follows:

I. Creating a friendly environment

(I) Replacement and update of operating systems for active implementation of energy-saving and carbon reduction measures:

1. Execute National Social Education Institutions – Environment and Services Optimization Plan: A special subsidy plan of the Ministry of Education, focusing on the comprehensive construction project to optimize the museum’s environment during this fiscal year.
2. Improve water leakage for the North and South buildings: Previously, the Waterproof Technical Association was commissioned to report on the Assessment of Museum Waterproofing Improvement Feasibility. We continue to perform daily maintenance and repair, depending on the urgency of each location. In addition, NSTM has developed detailed design and construction in cooperation with the Kaohsiung Senior Health Promotion Lifestyle – Green Energy Science Park Project, and seeks support on long-term funding.
3. Improved Energy Consumption in Mechanical and Air Conditioning Facilities: Specialized technicians were commissioned to assess the replacement of air conditioning and electrical substations. We continue to perform daily maintenance and repair, depending on the urgency of each location. Continuous efforts are made to obtain the ISO 50001:2018 Energy Management Certification and for better energy efficiency of the institution. We are actively seeking approval for the Ministry of Education’s Net Zero Project to upgrade air conditioning and high-voltage equipment systems in electrical substations. If the plan is approved by the Executive Yuan, it is expected to be implemented starting from 2024.

(II) Optimize the service quality for visitors to strengthen the core functions of the museum:

1. Execute “Smart Service People Learn Happily – National Social Education Institutions’ Innovative Science and Technology Service Plan”:

This plan is a special subsidy plan from the Ministry of Education. In the current fiscal year, it covers three application systems, including the Smart Collection and Application Platform, Science and Technology APP, and Update of Smart Inspection System.

2. Expand online learning and virtual museum resource:

- (1) Online collection website: We continuously update museum resources on the online collection website, which reached one million views this year.
- (2) Exhibition hall online learning worksheets: Review learning worksheets for various exhibition halls, providing contents to be downloaded by visitors for external learning before and after their visits. In addition, the resources can be used as teaching resources for schoolteachers. There was a total of 20 cases throughout the year.
- (3) Promote cloud technology educational resources: Promote digital resources for various learning activities in all school grades. There were 200 activities held throughout the year, which served 5,000 visitors.
- (4) Produce and broadcast Podcasts: NSTM utilizes digital media for popular science knowledge dissemination, produced and broadcasted 26 episodes throughout the year, with an average of 1,300 viewers per episode.

- 3. Reconstruction of the overall environment, workflow adjustment, and resetting of visual and indicator systems:** To strengthen NSTM's brand image and attractiveness to visitors, increase social participation and nighttime operations, NSTM formulated an integrated cross-domain collaboration project, the Kaohsiung Senior Health Promotion Lifestyle – Green Energy Science Park Project, seeking support from Kaohsiung City Government and Ministry of Education. Meanwhile, the professional design plan is expected to be completed in the current fiscal year.
- 4. Promote the digitalization of affairs, improve the management efficiency and service quality:** Established the Decision-Making Information section.

II. Strengthening professional quality

(I) Promote academic and research capacity by use of the museum's collections:

- 1. Collect science and technology artifacts systematically to deepen the study of relics:**
 - (1) Study of relics: 20 artifacts.
 - (2) Integrating collections into exhibitions: A total of one themed collection exhibition throughout the year.
 - (3) Digitalization of relics: 6,000 artifacts.
 - (4) Permanent collection: 20 artifacts.
- 2. Review the collection and storage space, strengthen the link between the purpose of collection and NSTM's mission:**

Amendment of NSTM's collection policy, and the cancellation or reporting of artifacts in accordance with relevant regulations.

3. Conduct inter-museum collaboration to build international image:

Organized theme forums or seminars, attracting 200 participants in each event; organized the 2024 National Popular Science Forum, with 200 participants.

4. Promote capacity in R&D and innovation to establish the museum's professional brand:

- (1) Published professional academic papers: Over 52 papers throughout the year.
- (2) Publication: Journals including Technology Museum Review, Taiwanese Journal for Studies of Science, Technology and Medicine, and digital editions of NSTM's Annual Report.
- (3) Develop teaching materials, teaching tools and programs: Develop 20 educational resources for exhibition halls, which served 400 visitors; developed 3 exhibits; organized 50 themed science education activities and teaching materials, which served 1,000 visitors.
- (4) Develop new interactive themes: Attracted a total of 150,000 people throughout the year.
- (5) Continue to introduce the "ISO 27001:2013 Information Security Management System" and obtain the "BS 10012:2017 Data Protection – Specifications for a personal management information system."

5. Strengthen professional skills and implement professional

assessments of professional personnel: Complete the professional personnel work plan for the coming year in October 2023, which shall be submitted to the professional personnel review committee and performance assessment committee for review.

(II) Expand exhibition and learning resources; all aged education service:

1. Multiple exhibitions: NSTM conducted 32 exhibitions this year, including high-quality curated exhibitions, tour exhibitions and external exhibitions co-organized with external organizations, with a total of 64,000 visitors.

2. Promotion of aged education:

- (1) Launched theme exhibitions: 275 sessions throughout the year, which served 5,500 visitors.
- (2) Multiple student workshops: 750 sessions throughout the year, which served 95,000 visitors.
- (3) Family activities: 50 sessions throughout the year. Served 2,000 visitors.
- (4) Public activities: Organized a series of workshops throughout the year, including Creative Arts School, Science Popular Storytelling, Maker Space, and others, with a total of 50 sessions. Served 3,000 visitors.
- (5) Organized the “2023 Taiwan Science Festival”: Over 200 sessions throughout the year, which served 150,000 visitors.

3. Establishment of independent Maker Space to expand maker capacity: NSTM’s Maker Space will be relocated to Green Energy Life Exploration Hall, creating an independent space for makers.

4. Participation in equal access rights, and sponsor science learning programs for minority groups:

- (1) Update barrier free exhibitions; select Exhibition Hall 1 to update relevant barrier free exhibitions.
- (2) Organize external educational activities, with a total of 90 sessions throughout the year. Served 3,450 visitors.
- (3) Seek fund sponsorship from various sectors and support activities, with annual sponsorship rate reaching above 90%.

III. Accumulation of sustainable capital

(I) Establishing measures to increase revenue and reduce costs and improve fund efficiency:

- 1. Annual Finance Plan:** The finance plan for the next fiscal year has been completed in October 2023, with the goal to achieve surplus ratio (adding depreciation and deducting fund capital expenditures), with annual growth of 2% compared to the previous year.
- 2. Activate the use of exhibition spaces to achieve stable and sufficient revenue:** This year, NSTM conducted long-term leasing and rental for a minimum of 6 venues, which generated at least NT\$21.5 million of annual income. The rental income from the North and South buildings is estimated to be at least NT\$7.02 million throughout the year.
- 3. Promote inspections on the green exhibition for effective cost control and energy-saving:** For the exhibition planning, the newly developed exhibits, environmentally friendly materials, energy-saving lighting, and use of resources have achieved cost reduction of at least NT\$500,000 throughout the year.
- 4. Establish a reference list of small-scale vendors for effective procurement and cost reduction:** Negotiate on small-scale procurement cases to save NT\$500,000 per year, and continuously search for new vendors. There were an addition of 10 new vendors throughout the year.

(II) Integrate internal resources plus cross-domain collaboration for innovation:

- 1. Establishment of a membership management system:** Completed the expansion of ticketing and membership systems. Planning of membership activities: 25,000 people per year.
- 2. Establish a research and analysis system for customers:** Conduct customer satisfaction surveys, with average satisfaction score of 4 points or above. In addition, the customer behavior analysis system is set up on the Science and Technology APP.
- 3. Set up an exhibition hall convener system:** Exhibition hall conveners have led various collaborative departments with their respective professions to obtain external resources and investment funding for the exhibition hall, with the target of achieving total funding of NT\$3 million throughout the year.
- 4. Strengthen collaboration with domestic and international museums, exploring overseas markets:** Actively seek cooperation for relocating exhibitions to overseas countries, and negotiated on one collaboration project of relocating the exhibition to the overseas market throughout the year.
- 5. Detailed volunteer system reform plan:** In response to NSTM's gradual development towards digitalization, we conducted review on the optimal number of volunteers. NSTM is expected to complete the current analysis, demand survey, and suggestions for improvement on the Human Resource Management with Volunteer Workforce by the end of May 2024, which will become the basis for subsequent promotion and enhancement on volunteer services.

V Expected benefits

I. Better functional area in the museum to create a safe and high-quality environment.

II. Strengthen education in the collection and exhibition display of the collection to enable visitors to learn by experience.

III. Improve the public's scientific literacy to create a lifelong learning environment.