

## Current challenges of the dental radiology diagnostic equipment manufacturing industry in Taiwan

Feng-Chou Cheng

Ling-Hsia Wang

Yu-Yen Chung

Chun-Pin Chiang

Follow this and additional works at: <https://jds.ads.org.tw/journal>

---

### Recommended Citation

Cheng, Feng-Chou; Wang, Ling-Hsia; Chung, Yu-Yen; and Chiang, Chun-Pin () "Current challenges of the dental radiology diagnostic equipment manufacturing industry in Taiwan," *Journal of Dental Sciences*: Vol. 21: Iss. 2, Article 93.

Available at: <https://jds.ads.org.tw/journal/vol21/iss2/93>

This Correspondence is brought to you for free and open access by Journal of Dental Sciences. It has been accepted for inclusion in Journal of Dental Sciences by an authorized editor of Journal of Dental Sciences. For more information, please contact [cpchiang@ntu.edu.tw](mailto:cpchiang@ntu.edu.tw).



Available online at <https://jds.ads.org.tw/journal/>

Digital Commons

journal homepage: <https://jds.ads.org.tw/journal/>



Correspondence

# Current challenges of the dental radiology diagnostic equipment manufacturing industry in Taiwan

## KEYWORDS

Dental radiology  
diagnostic  
equipment;  
Dental imaging  
equipment;  
Dental X-ray machines;  
Local manufacturers

In late 1895, the German physicist Wilhelm Conrad Röntgen discovered X-rays. Two weeks after Röntgen's discovery was published in 1896, the German dentist Otto Walkhoff, with the assistance of Fritz Giesel, took an X-ray radiograph of his own teeth. This was the first human dental X-ray radiograph in the world. Since then, the application of X-ray in medical photography has rapidly expanded worldwide. Subsequently, the first dental X-ray machine was manufactured in Germany in 1905 by a company now known as Siemens.<sup>1</sup> Soon, in 1913, the Journal of the Formosan Medical Association published an article entitled "the value of X-ray in the diagnosis of dental diseases (with photo-book)" from the Taiwan Government Taipei Hospital, proving that dental X-ray machines had been used in clinical dental practice in Taiwan since at least the 1910s.<sup>2,3</sup> In Taiwan, the field of dental radiology has existed for more than a century, while the professionalism of the dental radiology diagnostic equipment service industry has also developed simultaneously.

According to our survey in 2023, there were 17 companies involving in the dental radiology diagnostic equipment service industry in Taiwan. Among them, however, there was only one manufacturer.<sup>4</sup> In this article, we used publicly available online information to search for the current status of the dental radiology diagnostic equipment

manufacturing industry in Taiwan. As of the end of 2025, there is still only one dental radiology diagnostic equipment manufacturer in Taiwan. Po Ye X-Ray Mfg. Corp., founded in 1978, has its X-ray machine manufacturing history as shown in Table 1. Initially, the company mainly sold mobile surgical X-ray machines. Then, in 1980, it entered the dental X-ray machine manufacturing business from its initial single model of the dental periapical X-ray machines (with 60 kVp and 10 mA). Through continuous research and development, it began to manufacture and sell the panoramic X-ray machines and the panoramic/cephalometric X-ray machines in 1994, and the digital panoramic X-ray machines in 2006. It successfully developed and produced the dental cone-beam computed tomography (CBCT) X-ray machines in 2015. The company has 45 years of experience in the dental X-ray machine manufacturing. However, currently available information shows that the company's capital is only 20 million NT dollars, and it has only 20 employees. Currently, the company operates under a family-run management model and is not publicly listed or traded. Therefore, it is difficult to expand its trade scale.

As of the end of 2024, in Taiwan, there were 16,690 practicing dentists working in 7309 dental institutions (including the 212 hospital dental departments and 7097 dental clinics). In addition, there were 15,312 dental X-ray

<https://doi.org/10.1016/j.jds.2025.11.014>

1991-7902/© 2026 Association for Dental Sciences of the Republic of China. Publishing services by Digital Commons. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

**Table 1** The manufacturing history of Po Ye X-Ray Mfg. Corp.

Time	Key developments
1978	Po Ye Co., Ltd. was established, with sales and repair of portable X-ray machines as its main business.
1980	The company began to manufacture and sell the portable medical X-ray machines and the mobile dental periapical X-ray machines.
1984	The company began to manufacture and sell the chair-mounted dental periapical X-ray machines and the wall-mounted dental periapical X-ray machines.
1987	The company began to market its products in the international market under its own brand.
1992	The products of the dental periapical X-ray machine series were upgraded.
1994	The company began to manufacture and sell the panoramic X-ray machines and the panoramic/cephalometric X-ray machines.
2006	The company began to manufacture and sell the digital panoramic X-ray machines.
2009	The product of the digital panoramic X-ray machines was upgraded.
2012	The company began to manufacture and sell the digital panoramic/cephalometric X-ray machines.
2015	The company began to manufacture and sell the dental cone-beam computed tomography (CBCT) X-ray machines.
2018	The company began to manufacture and sell the portable dental X-ray machines.
2020	The company began to manufacture and sell the veterinary X-ray machine.

machines locating in these dental institutions, with 900 in the hospital dental departments and 14,412 in the dental clinics.<sup>5</sup> This demonstrates a high demand for dental radiology diagnostic equipment services from dentists and dental institutions. Based on the above findings, the current challenges of the dental radiology diagnostic equipment manufacturing industry in Taiwan include the following aspects.

- (1) High dependence on imports and scarcity of local manufacturers: Taiwan's dental imaging equipment market currently relies heavily on imports, particularly from South Korea, Japan, and Europe.<sup>4</sup> Despite huge domestic market demand, Taiwan currently has only one dental X-ray equipment manufacturer. This indicates that the local industry is relatively weak in research, development and manufacturing capabilities, making it difficult to meet the market demand.
- (2) High initial investment costs: The research and development costs for the advanced dental radiology equipment (especially 3D imaging systems and digital X-ray machines) are high. This is a major obstacle for equipment manufacturers without a certain scale, limiting the development and popularization of advanced local technologies for the advanced dental radiology equipment.

- (3) Strict regulatory restrictions and compliance challenges: The medical device industry is subject to strict regulatory oversight. From the product development and registration to the market access, compliance with complex domestic and international medical device regulations is required. This increases the compliance costs and time pressure for manufacturers.
- (4) Technological barriers and research and development challenges: The dental radiology diagnostic equipment involves the integration of multiple disciplines such as optics, image processing, and radiation physics, resulting in high technological barriers. Taiwan's local industry has relatively insufficient investment in the research and development of key technologies for the advanced dental radiology equipment.
- (5) Talent shortage and inadequate education and training: There is a relative shortage of professionals in the field of dental radiology (especially the equipment maintenance personnel). Currently, Taiwan lacks the targeted dental radiology training courses and related continuing education system, posing challenges to the correct use of equipment and after-sales service.
- (6) Intense market competition and pricing pressure: The global dental equipment market is highly competitive, dominated by the established brands from North America, Europe, and other Asian countries. Taiwan's manufacturers face significant pricing pressure and the challenge of building brand trust.
- (7) Supply chain disruption risk: Fluctuations in the global supply chain (such as tariffs or geopolitical factors) can make the procurement of raw materials and key components more difficult and expensive, affecting production costs and delivery times of local manufacturers.

Given these challenges, the development and global competitiveness of Taiwan's dental radiology diagnostic equipment manufacturing industry are significantly impacted. Governmental policy support and supply chain integration are considered to be the key factors driving the future development of this dental radiology diagnostic equipment manufacturing industry.

## Declaration of competing interest

The authors have no conflicts of interest relevant to this article.

## Acknowledgments

None.

## References

1. Ambika D, Narender S, Rishabh K, Rajan R. History of X-rays in dentistry. *Ann Dent Res* 2012;2:21–5.
2. Cheng FC, Wang LH, Ozawa N, Wang CY, Chang JYF, Chiang CP. Dental technology of Taiwan during the Japanese colonial period. *J Dent Sci* 2022;17:882–90.

3. Cheng FC, Chen MH, Chen MC, et al. An exploration of the connotation of clinical dental radiology education for medical radiation students in Taiwan in 2022. *J Dent Sci* 2023;18: 767–74.
4. Cheng FC, Wei YF, Chen MH, Chiang CP. Overview of dental imaging equipment industry in Taiwan. *J Dent Sci* 2023;18: 1906–8.
5. Cheng FC, Chen MH, Yu SJ, Chiang CP. Current challenges of safety management and supervision for the dental radiology diagnosis equipment in Taiwan. *J Dent Sci* 2025 (in press).

Feng-Chou Cheng<sup>††</sup>

*Chia-Te Dental Clinic, New Taipei City, Taiwan  
School of Life Science, College of Science, National Taiwan  
Normal University, Taipei, Taiwan*

Ling-Hsia Wang<sup>††</sup>

*Center for the Literature and Art, Hsin Sheng Junior  
College of Medical Care and Management, Taoyuan, Taiwan*

Yu-Yen Chung<sup>\*\*</sup>

*Department of Medical Imaging, National Taiwan  
University Hospital, College of Medicine, National Taiwan  
University, Taipei, Taiwan*

Chun-Pin Chiang<sup>\*</sup>

*Department of Dentistry, National Taiwan University  
Hospital, College of Medicine, National Taiwan University,  
Taipei, Taiwan*

*Graduate Institute of Oral Biology, School of Dentistry,  
National Taiwan University, Taipei, Taiwan  
Department of Dentistry, Hualien Tzu Chi Hospital,  
Buddhist Tzu Chi Medical Foundation, Hualien, Taiwan  
Institute of Oral Medicine and Materials, College of  
Medicine, Tzu Chi University, Hualien, Taiwan*

**\*\*** Corresponding author. Department of Medical Imaging,  
National Taiwan University Hospital, College of Medicine,  
National Taiwan University, No. 1, Chang-Te Street, Taipei,  
10048, Taiwan.

*E-mail address:* [sunnina1006@gmail.com](mailto:sunnina1006@gmail.com) (Y.-Y. Chung)

**\*** Corresponding author. Department of Dentistry, Hualien  
Tzu Chi Hospital, Buddhist Tzu Chi Medical Foundation, and  
Institute of Oral Medicine and Materials, College of Medi-  
cine, Tzu Chi University, No. 707, Section 3, Chung-Yang  
Road, Hualien 970, Taiwan.

*E-mail address:* [cpchiang@ntu.edu.tw](mailto:cpchiang@ntu.edu.tw) (C.-P. Chiang)

Received 12 November 2025  
Available online 1 April 2026

---

<sup>†</sup> These two authors contributed equally to this work.