

Professional competitiveness roadmap for the food technology profession in the Philippines calendar year 2023-2028

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Abstract

Several higher education institutions in the Philippines offer food science and technology courses with the goal of producing a critical mass of graduates who can serve in the food industry. However, there is a growing concern about whether these institutions are generating graduates with adequate skills and knowledge necessary to meet the demands of society, particularly given the rapidly evolving food systems and environment. An act regulating the practice of Food Technology (FT) in the Philippines was signed into law in 2018 and the first licensure examination was conducted in 2023. Hence, it is essential to gauge the career advancement of Professional Food Technologists as Licensure Examination and Continuing Professional Development programs are implemented. This paper outlines the Professional Competitiveness Roadmap for the FT Profession in the Philippines. The proposed plan period is 2023-2028, aligned with the Medium-Term Philippine Development Plan (MTPDP) of the current administration. The MTPDP will provide the platform and mechanisms for the generation of resources that will support the implementation of the roadmap. This paper details the objectives, key results, actions to be undertaken, responsible entities and timelines, and the indicators to assess performance in the process of enhancing the competitiveness of FT professionals.

1. Introduction

UNESCO prescribes 380 researchers, scientists, and engineers per million population to support the socio-economic development of a country. For the Philippines, with a population of 110 million in 2020, this translates to a necessity of 41,800 professionals. Targeting 10% of this figure for food scientists and technologists (FSTs), given that the food and beverage processing industry contributes 43% to the country's total manufacturing output (Philippine Statistics Authority, 2019), yields an estimate of 4,000 FSTs. With a 110M population, the Philippines requires 4,400 FSTs.

Several higher education institutions (HEIs) in the Philippines offer bachelor's degrees in Food Technology (BSFT). However, there is a growing concern about whether these institutions are adequately preparing graduates to meet societal demands. Licensing is a significant concern for food technologists, as it restricts their ability to sign important technical documents and limits access to valuable job assignments. Recognizing

the need for professionalizing the field, the Philippine Food Technology Act (RA No. 11052) was enacted in 2018, regulating the FT practice and establishing the Board of FT (PRBFT).

The Acting Chairperson of the Professional Regulation Commission (PRC) emphasized the need to develop and implement Professional Competitiveness Roadmaps as a crucial tool for development. This paper presents the goals, strategies, and timelines to enhance the competitiveness of FT professionals. It aligns with the Medium-Term Philippine Development Plan (MTPDP) of the new administration, which supports resource generation for the roadmap's implementation. It is important to gauge the career advancement of Professional Food Technologists as Licensure Examination and Continuing Professional Development (CPD) programs are implemented.

Following the Strategic Planning Framework and Process developed by the Department of Science and

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Technology Region XI (DOST XI, 2022), this study developed the Professional Competitiveness Roadmap for the FT Profession in the Philippines through a Situational Analysis utilizing SWOT and DEEP LIST Analysis tools. Based on the analysis of results, the roadmap was constructed, defining the goal and major steps to achieve it.

2. Materials and methods

This study employed a mixed-methods approach: data collection and analysis. The data utilized in this study was obtained through inspections and monitoring performed by PRBFT as of February 2023.

2.1 Situational analysis

The Philippines' food and beverage (F&B) processing industry has surged, quadrupling to \$27.1 billion from 2009 to 2013, and contributing 50% to the country's manufacturing output. The sector consists of various segments including beverages, coffee, condiments, dairy, fats, bakery, fruits, meats, seafood, snacks, and sugar products. Notably, both micro and medium-sized businesses, as well as large corporations, operate within the approximately 500 F&B processors registered under the Philippine Food and Drug Administration (PSA, 2019).

2.2 Undergraduate education

There are 57 HEIs offering BSFT, consisting of 48 state universities and colleges (SUCs) and 9 private HEIs. Each HEI produces 10 graduates on average, resulting in approximately 500 BSFT graduates annually nationwide. Among these inspected HEIs, only 11 are fully compliant with the policies, standards, and guidelines (PSGs) for the BSFT as promulgated in CHED Memorandum Order No. 07 series of 2019. Less than half of the HEIs have the required physico-chemical, microbiological, sensory, and processing laboratory facilities.

In terms of the qualifications of Program Chair/Coordinator and Faculty, only 69% and 55%, respectively, are compliant with standards. Many of the Faculty members teaching professional courses do not have the required qualifications i.e., BSFT and Master of Science in FT/Food Science (FS) or an allied field. Only 75% of faculty teaching professional courses are BSFT graduates. Key informant interviews revealed challenges in attracting BSFT graduates to academia due to industry competition, limited supply of graduates, and gaps in the availability of BSFT programs in high-demand regions.

2.3 Postgraduate education

There are 7 HEIs offering advanced degrees in FT/FS. The number of MS/Ph.D. graduates from these HEIs is still very minimal. Data from the Science Education Institute (SEI) of the DOST indicate that only 3-5 scholars graduate in a year under the MS FS Programs of the University of the Philippines (UP) System. The specialization of most BSFT graduates pursuing post-baccalaureate degrees in local HEIs is in FS or Food Engineering.

2.4 Professional Regulation Commission licensed food technologists

To date, the PRBFT has approved 88 applications for registration without examination. Notably, 61% of these approvals are from the National Capital Region (NCR). Additionally, 37% of applications come from regions such as Davao, Northern Mindanao, Central Luzon, and Calabarzon. This trend is echoed in the distribution of members in the Philippine Association of Food Technologists (PAFT, Inc.), with concentrations in urban areas like NCR, Calabarzon, and Mindanao. Most of the approved applicants (81%) are employed in the industrial sector, while 8% work in government and 9% in academia.

The preference for the industrial sector among FT graduates is clear, but shifts might occur due to higher salaries in government and academia. Moreover, a significant 83% of approved registrants are female. A substantial 72% of applicants are from public higher education institutions. This may have been brought about by the fact that there is now a free tuition policy in all SUCs.

It can be observed that graduates of other fields (i.e., BS Chemistry, BS Nutrition, BS Chemical Engineering) are also interested in obtaining licenses to practice FT. This may be because these professionals are already occupying positions in food establishments and performing the tasks of food technologists, and therefore, would want to legitimize their positions. Professionally, many graduates engage in the food processing sector, handling tasks such as quality control, product innovation, and marketing. On advanced degrees, only 17% have pursued master's degrees, and few have Ph.D. qualifications, indicating the current post-baccalaureate landscape.

2.5 Assessment of competitiveness

In the industry sector, potential metrics for evaluating the competitiveness of FT graduates include recognition of technical expertise, educational attainment, and demonstrated leadership skills,

encompassing effective communication, teamwork, and result-driven approaches. Furthermore, transitioning from rank-and-file to supervisory or managerial roles is another notable marker. Data from PAFT, Inc. highlights that 29% of its members occupy such positions, with a correlation between years of experience and role progression. Perhaps it is safe to conclude that for highly competitive graduates, it takes about 5-10 years to transition from being a rank-and-file employee to the time that they assume a supervisory or managerial role. It was also observed that among those in supervisory/managerial roles, only 29% possess MS/Ph.D. degrees. The distribution of professionals with advanced degrees shows 69% in academia, while 19% and 12% are in industry and government respectively. Notably, 93% in academia have graduate degrees, compared to 47% in government and 15% in the industry.

Merely 20% of PAFT, Inc. members are in the top 20 food manufacturing companies in the Philippines. This suggests the competitiveness of BSFT graduates regardless of their originating institutions. Indicators such as membership in reputable national and international professional organizations, like the National Research Council of the Philippines, further contribute to assessing competitiveness. Involvement in international bodies as experts or consultants adds another layer of competitive evaluation.

As a further basis for the Professional Competitiveness Roadmap for FT professionals, the collected data were analyzed through a Situational Analysis utilizing SWOT and DEEP LIST Analysis tools. Quantitative data, such as the number of HEIs, graduates, and licensed food technologists, were analyzed using descriptive statistics to determine trends and patterns. Qualitative data, including information from interviews and open-ended survey questions, were thematically analyzed to identify key themes and insights.

3. Results and discussion

Taking cognizance of the vision of the PRC “to be the instrument of the Filipino people in securing a progressive system of determining the competence of professionals by credible and valid licensure examinations and standards of professional practice that are globally recognized”, and having undertaken the assessment of the planning environment, the vision for the FT profession can be expressed as follows: A critical mass of competent, virtuous, and productive FT professionals whose standards of practice and service are excellent, globally competitive, and attuned to the development imperatives of the country.

The vision is composed of two elements, one quantitative and the other qualitative. The former element speaks about “a critical mass” which is indicative of a specific quantity or number of professionals. The second element focuses on shaping FT professionals by 2028, aligned with the 6-year MTPDP. The aim is to develop “competent, virtuous, and productive FT professionals” in accordance with the law.

An implementation plan was developed to outline specific strategies, major initiatives, and activities aimed at realizing the vision. Complementing this, a risk management plan that highlights potential challenges in the implementation process and the corresponding strategies devised to effectively mitigate these risks was also developed. Aligning with Vision 2028, the roadmap (Table 1) was constructed and will serve as the checklist for determining gaps and action steps to be taken.

4. Conclusion

The roadmap sets forth a comprehensive strategy to enhance the competitiveness of professionals in the field of FT. It outlines a meticulously designed framework of goals, strategies, and timelines aimed at fostering the growth and proficiency of FT practitioners. By aligning with the aspirations of the MTPDP and Ambisyon Natin 2040, this Roadmap envisions a future where food technologists play a pivotal role in propelling the nation's progress. Drawing upon meticulous analysis and incorporating the expertise of stakeholders, this roadmap serves as a dynamic guide to elevate the capabilities and impact of FT professionals across the nation.

The roadmap should be monitored periodically i.e. at the end of each calendar year to keep track of progress and identify gaps in the implementation. An annual review of the action steps taken shall be carried out. Results and analysis should be indicative of the progress of the roadmap and the necessary implementation of interventions. Depending on the results of the yearend assessment, the roadmap may be recalibrated and reformulated to address new developments or changes in the planning environment. Impact analysis will be conducted at Midterm (after three years) to determine the outcomes of the implementation of the roadmap. Existing tools such as the UNESCO SETI Scorecard may be used to determine contributions of the roadmap to the attainment of the Sustainable Development Goals (SDG) and the MTPDP and Ambisyon Natin 2040.

Conflict of interest

The authors declare no conflict of interest.

Table 1. Professional competitiveness roadmap for the FT profession, roadmap and major milestones.

KRA/Indicators	Base Year, 2022	2023	2024	2025	2026	2027	2028
KRA 1: Licensure Examination							
Number of HEIs with Certificate of Compliance	10	25	50	57			
Number of industry partners in internship/immersion programs		285	285	285	285	285	285
Guidelines developed and deployed	Developed	Deployed	Deployed	Deployed	Deployed	Deployed	Deployed
Number of successful examinations conducted		1	1	2	2	2	2
Number of successful examinees/Professional Food Technologists (PFT)		250	300	350	400	450	500
Percentage passing rate		25%	30%	35%	40%	45%	50%
KRA 2: CPD/Career Progression and Specialization Program (CPSP)							
Number of accredited CPD/CPSP Providers		5	5	10	10	15	15
CPD/CPSP Programs		Developed/ deployed	Deployed	Deployed	Deployed	Deployed	Deployed
Number of PFTs serving as mentors/subject matter		10	20	30	40	50	60
KRA 3: Internationalization / Mutual Recognition Agreement (MRA)							
Number of MRAs developed and executed			1	2	3	4	5
Number of MRAs reviewed and enhanced				1	3	6	10
Number of partner countries with MRAs			1	2	3	4	5
PSG reviewed for compliance with MRAs				1	1	1	1
Number of HEIs compliant with MRAs				10	25	50	57
Number of foreign professionals issued special	As needed	As needed	As needed	As needed	As needed	As needed	As needed
KRA 4: Registration Without Examination							
Number of food technologists registered without	150	300	450				
Guidelines reviewed and enhanced		1	1				
KRA 5: Inspection and Monitoring							
Number of establishments inspected and monitored for compliance		10	10	10	10	10	10
Number of food technologists trained/oriented on quality management systems through CPD Programs		10	10	10	10	10	10
Number of trainings/seminars on quality management systems conducted in collaboration with CPD Providers		1	1	1	1	1	1
Directory/database of establishments employing food technologists		Developed	Deployed	Deployed	Deployed	Deployed	Deployed
KRA 6: Research and Development (R&D)							
No. of R&D Institute (RDI) with R&D, Innovation, and Extension agenda on food		10	20	30	40	50	60
No. of RDIs with a well-established ecosystem for R&D, Innovation, and Extension of food		1	2	3	4	5	6
No. of food technologies successfully transferred to the private sector and other technology users.			1	2	3	4	5
No. of food enterprises assisted in terms of knowledge/technology transfer services			1	2	3	4	5

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