



Faculty of  
Bioscience Engineering



# Communications in Agricultural and Applied Biological Sciences Ghent University



Vol: 75(1) 1-231 (2010)

# AN INTRODUCTION OF INTERNATIONALISATION IN FOOD SCIENCE DOCTORAL PROGRAM: A CASE STUDY OF BOGOR AGRICULTURAL UNIVERSITY, INDONESIA

D. HUNAEFI

Bogor Agricultural University, Faculty Agricultural Engineering and Technology  
Dept. of Food Science and Technology, IPB Darmaga Campus, 16680 Bogor, Indonesia  
Berlin University of Technology, Faculty of Process Engineering  
Dept. Method in Food Biotechnology, Koenigin-Luise-Strasse 22, D-14195 Berlin, Germany

## SUMMARY

The Department of Food Science and Technology- Bogor Agricultural University (DFST-IPB), Indonesia is one of the oldest Departments of its kind in Indonesia. The Department has been founded since 1964 under the Faculty of Agricultural Engineering and Technology. The Department has a core competence in the area of food science and technology, particularly in the development of food chemistry, food microbiology, food process engineering, food analysis, food quality and safety. The Department offers educational programs: Undergraduate Program in Food Technology and Master as well as Doctorate Program in Food Science. The Master and Doctorate Program are enrolled by 35 students annually.

Globalisation as a global phenomenon has been influencing DFST doctoral program as internationalization in response to globalization is a common feature in majority universities. Facing this challenge, DFST Doctorate Program's has made some efforts to provide students with international atmosphere, including having international guest lecturers, inviting prospective international students, and initiating join program with international universities. In addition, research focusing in tropical food and collaboration with international universities may need to be improved to widen the network, increase publication and place DFST doctorate program visible in the international forum.

This paper is intended to reveal the perceived challenges of globalization for food science doctoral program. (DFST-IPB) and to what extent and in what form internationalization has been achieved. However, it should be noted that this article is selective rather than comprehensive in reflecting on the internationalization process of food science doctoral program (DFST-IPB).



## INTRODUCTION

Over decades, Indonesia is well known as agricultural country. Bogor Agricultural University (IPB) is one of the center universities for agricultural education. The Institut Pertanian Bogor (IPB) or Bogor Agricultural University (IPB), since its initiation in 1940 and its founding in 1963, has been growing into a diverse and innovative institution for higher education in agriculture and related areas including food science. In 2005, IPB has a student population of almost 25,000 and faculty member of 1,327. It currently consists of 9 faculties, 36 departments and offers diploma, and undergraduate, master and doctoral study programs (13, 34, 47 and 26 respectively) (Chozin, 2005).

Ever since Graduate School of IPB was found in 1975, IPB has also been well-known as the pioneer of graduate program in Indonesia. With its wide range of contact and activities, supported by ample facilities and an excellent campus environment, IPB has become a leading player in nation building, especially in the area of agriculture of agriculture in a broad sense and rural development.

The Department of Food Science and Technology (DFST) - Bogor Agricultural University (IPB), Indonesia is one of the oldest Departments of its kind in Indonesia. The Department has been founded since 1964 under the Faculty of Agricultural Technology and Engineering. The Department has a core competence in the area of food science and technology, especially in the development of food chemistry, food microbiology, food process engineering, food analysis, food quality and safety. The Department of Food Science and Technology offers educational programs: Undergraduate Program in Food Technology, Master and Doctorate Program in Food Science. Currently, we have approximately 450 undergraduate students and a hundred Master and Doctoral program students studying in various areas of food science.

The doctorate program requires a master degree with a minimum GPA of 3.50. Master degree holders applying for the doctorate program with a GPA below 3.50 may be considered by submitting scientific publications written by the applicant. Student' progress will be monitored and evaluated each semester. However, student receiving a GPA below 3.25 will not be allowed to continue their studies. Doctoral candidates in Bogor Agriculture University are required to take 3 semesters of fulltime courses prior to taking the final exam. They are also required to take preliminary examination in order to ensure minimal learning comprehension prior to conducting their research.

The Department is supported by highly dedicated and experienced academic staff. We have 55 academic staff (11 professors and 26 PhD graduates) coming from diverse backgrounds and covering a wide range of specialties. The Department has experts in the areas of food chemistry, food microbiology, food processing, food engineering, food safety, food analysis, flavor chemistry, biotechnology and bio-processing, food biochemistry and nutrition, and nutritional toxicology. Our academic staffs involve actively in teaching and research programs covering a wide range of topics relevant to food science, technology and nutrition. Some of our academic staffs are acknowledged by national and international through their contribution in diverse areas, such as food processing, food security and safety, nutrition, food analysis and as well as food law.

Globalization as a global phenomenon has been influencing Indonesian doctora programs like other education systems in the world. Internationalization in response to globalization is a common feature in majority universities. It is also a feature of Indonesian doctoral programs, yet so far it seems that the way in which Indonesian doctoral education is responding to globalization with internationalization of its universities is not well reported. Facing this challenge Food Science Doctorate Program's organization is in need of revitalization. The approaches to be considered include changing the mindset of all faculties, staff and the doctorate student as well throughout FST Department, by altering research internationalization concepts and structure and by applying multiple strategies for undertaking tasks that in the near future can achieve world recognition as one of the world quality doctorate program in food science. Most important of all is the need to increase Food Science doctorate program's capacity for innovation and change.

This paper is intended to reveal the perceived challenges of globalization for food science doctoral program (DFST-IPB) and to what extent and in what form internationalization has been achieved. Particularly, it will analyze the relationship between policies and practices and identify barriers to internationalization that have been conducted. However, it should be noted that this article is selective rather than comprehensive in reflecting on the internationalization process of food science doctoral program (DFST-IPB)

## INTERNATIONALIZATION OF HIGHER EDUCATION

There are several meanings of internationalization. The term internationalization and globalization is sometime interchangeable, while in fact they have two different meanings. According to Albatch and Knight (2007), globalization is defined as 'the economic, political, and societal forces pushing 21st century higher education toward greater international involvement' while 'Internationalization involves many choices. There are various motivations for internationalization including commercial advantage, knowledge and language acquisition, enhancing the curriculum with international content and it is represented with specific initiatives such as branch campuses, cross-border collaboration, programs for international students (Albatch & Knight, 2007).

In terms of internationalization of higher education in practice, the Australian Vice Chancellors' Committee (AVCC) (2001) cited in Soejatminah (2009) described that internationalization of Australian universities includes a range of activities such as formal agreements with other countries, participation in international organizations, offshore activities, student exchange, international research collaboration, internationalization of staff, internationalization of curricula and recruitment of international students. Moreover, Van der Wende (2007) further stated that there are at least 4 scenarios of Organization for Economic Cooperation and Development (OECD) emphasized on their international aspects as follows: open networking, serving local communities, new public management and higher education inc. Moreover, Marginson (2007 cited in Soejatminah, 2009) explained further that globalization results in 'the interconnectedness of universities around the world, world-wide research, cross borders education and share of the



ideals of intellectual freedom and student security among academic around the world’.

**CONCEPTUAL OF INTERNATIONALIZATION PROCESS**

From our perspective point of view, internationalization is a process that has taken on a more systematic and strategic approach. The issue of internationalization may be seen a long and hard effort for FSDP, DFST. However, in a world becoming increasingly internationalized, there is an urgent need to foster human resources to meet challenges of the current transnational, multicultural and multilingual environments of business, government and civil society exchange. Rationale framework of our international process can be seen in Figure 1.

On condition that we are going to successfully cope with this long-term internationalization process successfully then we need to think very carefully about what internationalization means for our own institutions. We have to define the kind of doctoral program we want to be and define the kind of education we want to provide to doctoral students in order for them to achieve internationalization in our perspective.

For the purposes of this initial internationalization process, we view internationalization of a doctoral study program as “an intentional, systemic and strategic process to university internationalization designed to provide an international education to its stakeholders, particularly students.” Thus our initial conceptualization of the concept of internationalization includes many elements and initiatives as shown in Figure 2 below.

**Figure 1.** Rationale framework of internationalization (Adapted from Dawson, 1994 cited in IPPTN)

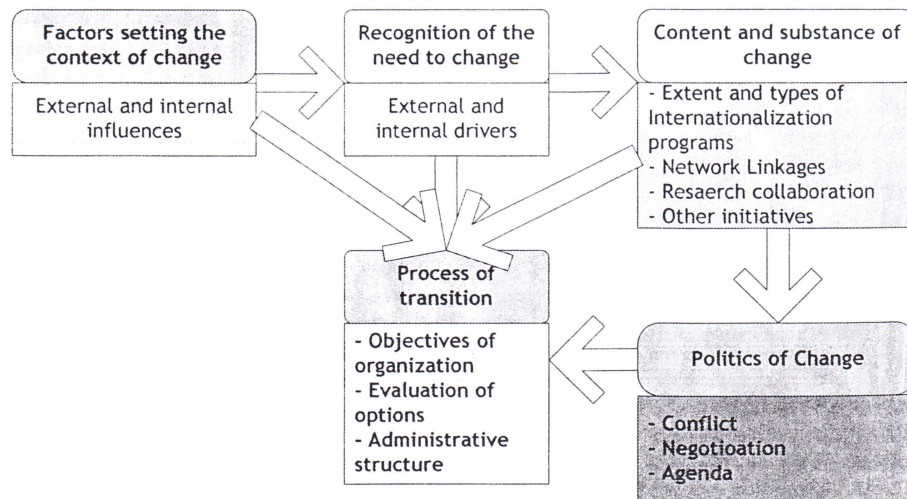
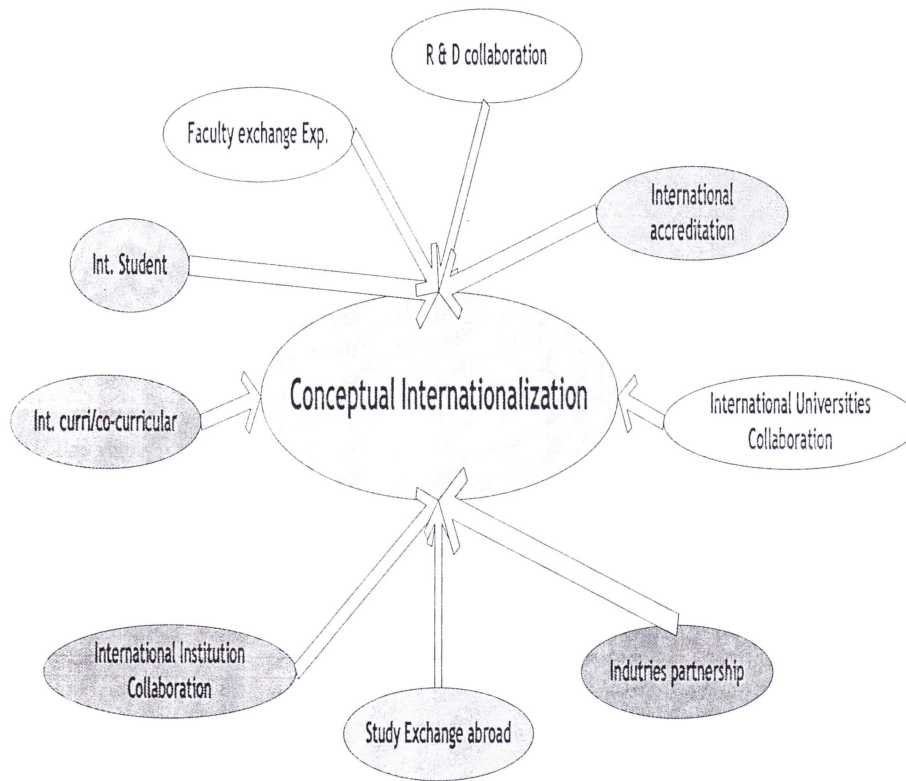


Figure 2. Conceptualization of Internationalization (Adapted from IPPTN)



The formula for determining food science doctorate program has been changed to include internationalization as part of our milestone. Consequently, FSDP has started to integrate internationalization into their agenda. This approach had been preceded by our department, which included internationalization issues in FSDP. Although at present, the level of internationalization process is still considered premature, however, a buildup of expertise on internationalization of FSDP is under way.

#### PROGRESS OF INTERNATIONALIZATION

Discussing the progress of internationalization of FSDP, DFST could not be separated from Internationalization process in Bogor Agricultural University Indonesia. Since the progress of internationalization in university contributes to the internationalization progress of study program. FSDP is one of the initiative and innovative doctoral programs to start international process in Bogor Agricultural University, Indonesia. And to date, the initial process of internationalization in DFST and Bogor Agricultural University, Indonesia is illustrated in Figure 3.



Figure 3. Progress of DFST Internationalization



One way of internationalizing the campus and achieving this is for the home country to establish collaborative partnerships with host institutions overseas which are mutually beneficial. These partnerships will, for most part include universities and academic institutions, but need not be restricted to them alone. What is more important is to work towards the creation of a diverse menu of program, which can be shared by a consortium of like-minded partners who subscribe to the ideals of international student mobility described above. This could lead to establishing an international consortium for fostering international student mobility.

Having realized the fact of internationalization, IPB's vision has been modified accordingly. IPB's vision now is "IPB as a leading higher institution of international quality in the development of science, technology, art, and human resources with tropical agriculture as its core competence". Although agriculture is still the core competence, with the new vision IPB has a more flexibility to develop its program based on present and future needs of society (Chozin, 2006).

In the level of department, DFST has also revised the vision, mission and objectives. The Department of Food Science and Technology has a vision to become a leading higher educational institution with international quality as well as a trendsetter in food science and technology. While the missions are as follows: 1). Performing effectively and efficiently a high quality and professional higher education to produce competent and international quality graduates in the field of food science and technology, 2). Conducting creative food-related researches which support the educational process and development of food science and technology, 3). Delivering outreach programs that contribute to the competitiveness and profitability of the food manufacturing industry and to the

well being of the public. To reach its vision and carry out the missions, DFST has the following objectives: 1). Producing competent graduates in the field of food science and technology who are competitive in global markets with good technical managerial, communication and entrepreneurial skills. 2). Developing innovative basic, applied and strategic researches to support educational processes and the development of food science and technology while coping with practical problem and challenges of the society, 3). Implementing research findings in food science and technology in the society whilst enriching the educational process.

In relation to the implementation of IPB's vision as a leading higher education of international quality in the development of science, technology, art and human resources with tropical agriculture as its core competence, IPB has established collaboration with foreign institutes of education, research as well as commerce. There are about 50 memorandums of Agreements spread in 15 countries in 5 continents (Asia, Africa, Europe, America and Australia). This is parallel with the concept that "knowledge knows No Frontiers", this means no boundaries between countries to improve, develop and transmit the knowledge, wisdom, and value (Chozin, 2006).

To accomplish its vision, IPB has set up in year 2007 as an embryo of Research University. International cooperation has been started since US government has provided assistance in implementing the concept of agriculture in the higher education. In the early 1970s, IPB was selected by South East Asia Minister of Education Organization (SEAMEO) as the location for the South East Regional Centre for Tropical Biology. Soon afterwards with the University of The Philippines Los Banos, University Putra Malaysia and Kasetsart University, Thailand founded SEARCA (South East Asia Research and Graduate Consortium on Agriculture) for the promotion of human resources and technology for agricultural development in the region. The SEARCA University consortium was developed in 1989 providing student and faculty exchange. The University of Queensland, Australia, The University of British Columbia, Canada and George August University of Göttingen, Germany joined as associate members. Other important cooperation includes JICA, JSPS and Japanese Universities such as Tokyo University of Agriculture, Kyoto University and Tokyo University of Fisheries, and the current collaboration with Mie University and Tohoku University.

At Bogor Agricultural University, nutrition and food research and educational programs have been developed for over 30 years. Previously, there were several Centers associated with nutrition and food science and technology. Since 1979 Food Technology Development Center (FTDC) was established at IPB. In 1985; International University Center for Food and Nutrition was established and further developed into Center for Food and Nutrition Studies (CFNS) in 1992. Other centers related to nutrition, food science and technologies were also established; namely Center for Food and Nutrition Policy Studies (CFNPS; since 1987) and Center for Assessment of Traditional Foods (CATF, 1997) (SEAFast, 2010).

Due to the reorganization and consolidation process at IPB; at 2004, the centers were consolidated and merged into one center named Southeast Asian Food and Agricultural Science and Technology (SEAFast) Center. The center is designed to develop a national and regional system of partnership in the area of food and agricultural science and technology development. In general, the SEAFast Center



designed to bring together the university, governmental, donor and business sectors to focus on the improvement of food science and technology issues for Indonesia and where appropriate, in other ASEAN nations. IPB has mandated the SEAFAST center to be a regional center focusing on improving food quality, nutrition and safety through science and technology (SEAFAST, 2010).

To achieve the target to be a regional center; SEAFAST center is actively seeking mutual partnerships and cooperation's with many national, regional and international institutions.

At national level, SEAFAST Center IPB (especially thru previous centers of CFNS, CFNPS; and CATF) has been actively involved in developing national policy, especially in food quality, safety, and nutrition aspect. Our national partner institutions include Ministry of Agriculture, Ministry of Industry, Ministry of Trade, Ministry of Health, Ministry of Research and Technology, and The National Food and Drug Control, and national food industries. Internationally, our Center also has strong association with top universities and other food related agencies in Asia, North America and Europe.

Since 2004, IPB through SEAFAST Center has developed cooperation with Texas A&M University., Texas A&M University (TAMU) was awarded a USDA-Foreign Agricultural Service 416(b) grant since January 2005. The grant will assist in the development of the Southeast Asian Food and Agriculture Science and Technology Center (SEAFAST) in Bogor, Indonesia.

Through the huge development of SEAFAST Center as one of the international center for food science and technology in South East Asia, many advantages such international research collaboration with Texas A&M and other international institution have numerously gained by food science doctoral students. Another important noted internationalization process of DFST is that our department is becoming a member of consortium partner of MoniQA (Monitoring and Quality Assurance in the Food Supply Chain) is an EU funded Network of Excellence aiming to make food safer by harmonizing worldwide food quality and safety monitoring and control strategies (MoniQA, 2010).

As explained earlier that Bogor Agricultural University has collaborated with many international universities, this situation allow doctoral candidates of FSDP to undertake sandwich program for conducting their research at overseas university. This experience would allow doctoral students of food science to have international experience and culture that will eventually influence the FSDP academic environment.

Another important indicator is web-site in English, since English is needed to engage globally, DFST has created user friendly English website (<http://itp.fateta.ipb.ac.id/>). Moreover, in move towards internationalization, DFST has created international program, a division specializing in the promotion of DFST for internationalization process. Also DFST mission is to carry out research and education of highest academic quality focusing on tropical food which is novel, challenging and relevant to users. Therefore, DFST has collaborated with food industries in doing the research for doctoral students.

Certainly, there are several barriers identified in the process of internationalization of FSDP. The important one is lack of support from

government, in particular, funding for the internationalization process. The only bottom-up initiatives no longer appear sufficient. Clear government policy is needed to stimulate activities directed to Internationalization of doctoral graduate program. Although government provides scholarships for doctoral students, for example, beasiswa dikti and beasiswa unggulan, for prospective academics to continue their study overseas, however, the government effort in facilitating internationalization such as more research funding for doctoral students through academic faculty and scholarship for foreign students in order to attract overseas student to come to Indonesia is apparently required. Lack of coherent national strategy of doctoral program is already suffering inconvenient outcomes of research grant for doctoral students as well as the research academic.

Another important obstacle is English as language medium for academic activities. Although most of the teaching materials and some of lectures deliver in English, a international students who want to study postgraduate in Indonesia are required to learn Indonesian as medium of instruction. At the same time, very limited promotion might need to be put in place to foster and internationalization of FSDP

Despite some difficulties, to sustain competitiveness in teaching, research and outreach program of international postgraduate food science and technology, IPB and, in particular DFST and SEAFAS Center, consistently seeks to improve and expand its international programs. The process of internationalization process of FSDP would allow the doctorate's student to have international competitiveness.

### **CONCLUSION REMARKS**

Internationalization is an on-going long-term project for the Food Science Doctorate Program, as it is for Bogor Agricultural University, Indonesia. Since the development and continuous improvement of doctoral education and research in food science and technology cannot be separated from the international linkage. To sustain competitiveness in teaching, research and outreach program of postgraduate food science and technology, IPB and, in particular DFST and SEAFAS Center, consistently seeks to improve and expand its international program. Considering the complexity of internationalization process as well as several limitations faced by FSDP, many efforts, international research and cooperative programs for doctoral in food science need to be established with various parties. DFST Doctorate Program's has made some efforts to provide students with international atmosphere, including having international guest lecturers, inviting prospective international students, and initiating joint program with international universities. In addition, research focusing in tropical food and collaboration with international universities may need to be improved to widen the network, increase publication and place DFST doctorate program visible in the international forum.

### **ACKNOWLEDGEMENT**

The author would like to thank Dr. Ir. Ratih Dewanti-Hariyadi, M.Sc and Dr. I. Dahruksyah for advice and suggestions.



## REFERENCES

- ALBATCH P.G. & KNIGHT, J. (2007). The internationalization of higher education: motivations and realities. *Journal of Studies in International Education* 11, 290 - 305.
- BOGOR AGRICULTURAL UNIVERSITY, INDONESIA. (n.d). [on line]. Available: <http://www.ipb.ac.id/eng/> (March 6, 2010).
- CHOZIN M.A. (2006). An Introduction to Bogor Agricultural University, *Bull.Facul.Agric.Niigata Univ.*, 58(2):155-159.
- DEPARTMENT OF FOOD SCIENCE AND TECHNOLOGY, BOGOR AGRICULTURE UNIVERSITY, INDONESIA (n.d). [on line]. <http://itp.fateta.ipb.ac.id/> (March 6, 2010).
- MONITORING AND QUALITY ASSURANCE IN THE FOOD SUPPLY CHAIN. (n.d). [on line]. Available: <http://www.moniqa.org/partnerlist> (March 6, 2010).
- NATIONAL HIGHER EDUCATION RESEARCH INSITITUTE (IPPTN). (n.d). [on line]. Available: <http://www.usm.my/ipptn/fileup/Internationalisation%20&%20International%20Linkages.pdf> (Februar 28, 2010).
- SOEJATMINAH S. (2009). Internationalisation of Indonesian Higher Education: A Study from the Periphery. *Asian Social Science* Vol. 5, No. 9.
- SOUTH EAST ASIAN FOOD AND AGRICULTURAL SCIENCE AND TECHNOLOGY (SEAFAST). (2006). [on line]. Available: <http://seafast.ipb.ac.id/intro.php> (March 6, 2010).
- VAN DER WENDE M. (2007). Internationalization of Higher Education in the OECD Countries: Challenges and Opportunities for the Coming Decade. *Journal of Studies in International Education*; 11; 274