



CONFERENCE PROCEEDING

**Workshop on “*Statistical Training in Universities:
National and International Experiences and the Way Forward*”
Ha Noi, 13-14 November 2013**

FOREWORD

Viet Nam is in the process of promoting its industrialization, modernization and international integration. Human resource development is one of the three breakthroughs for the country's development stipulated in the socio-economic development plan (SEDP). In this context, the development of high quality human resources on statistics becomes more urgent than ever. This mission is determined as one of the top priorities in the Viet Nam Statistics Development Strategy (VSDS) for period 2011-2020 and vision 2030. Improving the quality of staff working on statistics will play a major role in improving the quality of statistical data in all areas, aiming to provide reliable evidence for development, monitoring and evaluation of the implementation of Viet Nam's development policies.

In order to carry out the above mentioned task, one of the important and immediate solutions is to strengthen and maintain the exchange and cooperation between training facilities, agencies and organizations which utilize statistics human resources. In the meantime, through the international cooperation, Viet Nam will be able to learn from and share experience with other countries, which have advanced training programmes and levels on statistics, with an aim to help Viet Nam to improve statistical training programmes in universities as well as the quality of statistics human resources for the society in general and for statistics sector in particular.

Within the framework of the support project by UNFPA for the GSO, MPI titled: "Support for the implementation of the Viet Nam Statistics Development Strategy for the period 2011-2020 and utilization of population statistical data in planning and development plans", GSO in close cooperation with UNFPA organized a *"Workshop on statistical training in universities: sharing international and national experience and the way forward"* from 13 to 14 November 2013. This was one of many activities organized by the project in order to implement the action plan in improving the quality of statistical human resources, contributing to successful implementation of the VSDS period 2011-2020.

The objectives of the workshop were to: (1) share international and national information and experience on: training in statistics in universities, design and implementation of statistical training programmes and lessons learnt; (2) discuss and propose recommendations to improve the quality of training and education on statistics in Viet Nam in response to the needs in the middle-income country context.

Participants in the workshop included managers in training and education sector, representatives from universities, which provide statistics subjects, statistical training institutes in Viet Nam and Statistical Institute for Asia and the Pacific (SIAP), government agencies, ministries, UN agencies, international organizations, experts in statistical teaching in Viet Nam's universities and that of America, Australia, France, Japan, South Korea and the Philippines.

The workshop was very successful and achieved set forth objectives. To recognize the meaningful contributions of international and national experts as well as to meet the desires of most of workshop participants to keep track of sources of workshop materials

and information which were presented at the workshop, the organization board of the workshop has developed this Conference Proceedings.

We would like to express our sincere appreciation to all participants for sharing and contributing their experiences and valuable lessons learnt for improving the quality of trainings and development of statistical human resources in Viet Nam.

On this occasion, we are pleased to introduce the “*Conference Proceedings on Statistical Training Workshop in Universities: International and National Experience and the Way Forward*” to all the universities, which are teaching statistics subject, and to all agencies utilizing statistical human resources. We hope that this report will be a valuable contribution to the field of statistical training.

General Statistics Office

United Nations Population Fund

TABLE OF CONTENTS

I. OPENING SPEECHES AND PRESS RELEASE	6
1. Opening speech by Nguyen Van Trung, Vice Minister of Planning and Investment.....	6
2. Opening Speech by Mr. Arthur Erken, UNFPA Representative in Viet Nam	8
3. Press Release	11
II. FINDINGS AND PRELIMINARY RECOMMENDATIONS FOR VIET NAM.....	13
III. PRESENTATIONS	24
SECTION 2: ROLES OF STATISTICS TRAINING FOR THE NATIONAL DEVELOPMENT AND THE NEEDS OF SOCIETY ON HUMAN RESOURCE FOR STATISTICS.....	25
1. Human resource needs for development of the statistics industry, <i>Mr. Nguyen Tri Duy, Deputy Head, Personnel Department, GSO</i>	27
2. Roles of statistics training in the provision of statistical human resources for the society, <i>Hiroyuki Kitada, Deputy Director, Statistical Institute for Asia and the Pacific SIAP</i>	38
3. Statistical work in the management and operation of businesses: roles and skill requirements. <i>Lê Văn Công, Viet Nam National Coal – Mineral Industries Corporation (VINACOMIN)</i>	51
4. Roles of statistics training in universities, <i>Prof. Phan Công Nghĩa, National Economics University (NEU)</i>	57
SECTION 3. CURRENT SITUATION AND CHALLENGES IN STATISTICS TRAINING IN VIET NAM AND OTHER COUNTRIES	68
1. Statistics Training in Universities with Statistics Major: Reality and Challenges, <i>Assoc. Prof. Bùi Đức Triệu, NEU</i>	
Error! Bookmark not defined.	
2. Current situation of Statistics Training in Universities without Statistics major, <i>Trần Thị Bích, National Economics University, Nguyễn Lê Anh, University of Labor & Social Sciences, Nguyễn Thị Tuyết Nhung, Foreign Trade University, Phạm Thị Liên, Viet Nam Trade Union University, Đặng Văn Lương, Viet Nam University of Commerce</i>	90
3. Current situation of employment of bachelors in statistics through the survey "Following the footsteps of statistics graduates", <i>Đỗ Văn Huân, Faculty of Statistics, NEU</i>	100
Abstract	100

4. Current Situation & Challenges in Statistics Training in the Philippines, <i>Dr. Jose Ramon Gatmaitan Albert, Secretary General, National Statistical Coordination Board, Philippines</i>	108
5. Current status of statistical training in France, <i>Prof. Michel Grun-Rehomme, National School of Statistics and Economic Administration, France</i>	123
6. Current status of statistical training in the United States, <i>Prof. Dominique Haughton, Bentley University, USA</i>	143
7. Current status of statistical training in Australia, <i>Assoc. Prof. Alice Richardson, Faculty of Education, Science, Technology & Mathematics, University of Canberra, Australia</i>	165
SECTION 4. NATIONAL AND INTERNATIONAL EXPERIENCE IN STATISTICS TRAINING	178
1. Experience in training statistics major at NEU: lessons learnt and challenges, <i>Assoc. Prof. Trần Thị Kim Thu, Faculty of Statistics, NEU</i>	180
2. Experience in statistics training by the College of Economics, Hue University, <i>Trần Phước Hà, MA, Economics University, Hue University</i>	190
3. Experience in statistics training by the University of Economics Ho Chi Minh City, <i>Dr. Hà Văn Sơn, University of Economics Ho Chi Minh City</i>	205
4. SIAP's experience in capacity building for statisticians in the region, <i>Hiroyuki Kitada, Deputy Director, Statistical Institute for Asia and the Pacific SIAP</i>	223
6. Experience of Statistical Training in PH: Lessons learnt and challenges, <i>Dr. Jose Ramon Gatmaitan Albert, Secretary General, National Statistical Coordination Board, Philippines</i>	251
7. Experience and contents of training on statistics in Australia, <i>Assoc. Prof. Alice Richardson, Faculty of Education, Science, Technology & Mathematics, University of Canberra, Australia</i>	262
8. Experience and content of statistical training in America, <i>Prof. Dominique Haughton, Bentley University, USA</i>	271
9. Experience and contents of training on statistics in Korea, <i>Jongho Lee, Director, Training Management Division, Statistical Training Institute, Statistics Korea</i>	295
IV. ANNEXES	313
1.Workshop Agenda	314
2. Summary of Biography of Speakers and Presenters	318
3.Video Link on Current Status of Statistics Training in Universities in Viet Nam	322
4.Photos.....	323

I. OPENING SPEECHES AND PRESS RELEASE

1. Opening speech by Nguyen Van Trung, Vice Minister of Planning and Investment

OPENING SPEECH

AT WORKSHOP ON SHARING INTERNATIONAL AND NATIONAL EXPERIENCE

IN TRAINING STATISTICS IN UNIVERSITIES:

Lessons Learnt and the Way forward

Nguyen Van Trung,

Vice Minister of Planning and Investment

Mr. Arthur Erken, Representative of UNFPA in Viet Nam,

Ladies and gentlemen,

On behalf of the leaders of Ministry of Planning and Investment, I would like first to warmly welcome you to the “Workshop on sharing international and national experience in training statistics in universities: Lessons Learnt and the way forward”. Wish you good health, and wish a big success to the workshop.

Ladies and gentlemen,

Having achieved significant results in the process of developing the country, like many other low-average income countries, Vietnam is facing with huge challenges in ensuring the sustainable development and in reaching the Millennium Goals to which Vietnam has committed. One of the important solutions is to formulate plans and strategies based on evidence. This means the statistics industry has an urgent duty of ensuring objective and reliable statistic information to support the management of the national economy. The statistic industry, therefore, is said to be facing ever significant opportunities and challenges. The role of statistic work and awareness of the importance of statistic data are absorbed by industries at all levels and by the whole society. The supports by the Government, Ministry of Planning and Investment and other ministries, industries and localities towards statistic work are increasing more than ever. Statistic industry is taking better position now.

However, these opportunities at the same time set out challenges to the industry in meeting better the ever increasing needs for information in the country.

In this context, improving capacity and qualification of statistic professionals is identified one of the top priorities to accomplish the Development Strategy for Vietnam's Statistic Industry in the period 2011 – 2020 and vision to 2030. Improving quality of statistics education in universities and connecting statistics training institutions and employers are considered as key solutions.

In this light the MPI has assigned the General Statistics Office to coordinate with the UNFPA office in organizing the “Workshop on sharing international and national experience in training statistics in universities: Lessons Learnt and the way forward”. The workshop is expected to become a forum to share international and national experience in statistics education in universities, and to discuss and make recommendations on improving quality of statistics education in Viet Nam to meet the needs for development of a middle income country like Viet Nam.

On behalf of the leaders at MPI, I would like to extend our sincere thanks to the leaders and managers from various ministries and industries, professors and scholars, experts and lecturers in statistics in Vietnam and other countries, who share their precious time to attend this workshop. I wish you good health, and success. I do believe this workshop is the start and the basis for the future cooperation and development.

May I now announce the opening of the workshop and expect for its great success.

Thank you.

2. Opening Speech by Mr. Arthur Erken, UNFPA Representative in Viet Nam

OPENING SPEECH

AT WORKSHOP ON SHARING INTERNATIONAL AND NATIONAL EXPERIENCE

IN TRAINING STATISTICS IN UNIVERSITIES:

Lessons Learnt and the Way forward

Arthur Erken,

UNFPA Representative in Viet Nam

Mr. **Nguyen Van Trung**, Vice Minister, Ministry of Planning and Investment;

Mr. **Nguyen Bich Lam**, Director of General Statistics Office;

International experts from the United States, France, Australia, South Korea, the Philippines and the Statistical Institute for Asia and the Pacific (SIAP);

Representatives of the Ministry of Education and Training, National Economics University, Ho Chi Minh Economics University, Hue University and other Universities

Representatives of the Ministry of Planning and Investment, General Statistics Office, Government Agencies, research institutions, national and international NGOs.

Fellow UN colleagues and the media;

Ladies and gentlemen,

It is my great pleasure to be here today to attend this important workshop, which focuses on national and international experiences sharing on statistics training in universities. On behalf of the United Nations Population Fund (UNFPA) in Viet Nam, allow me to thank the General Statistics Office (GSO) for their excellent initiative and for collaborating with universities to organize this very important workshop. Taking this opportunity, I would also like to express my gratitude to the professors and international experts from the United States, Australia, France, South Korea, the Philippines and the Statistical Institute for Asia and the Pacific. My appreciation is also extended to

the national experts from various universities in Viet Nam, who have exerted their expertise to support organizing this workshop.

The presence of university professors, representatives from line ministries, agencies, enterprises, research institutes, UN agencies, and national and international development partners in this workshop will create a great opportunity for Viet Nam to better understand the statistics training delivered at universities. The workshop will help Viet Nam to identify opportunities and challenges in this area and to better respond to the needs of development and international integration. It is hoped that the experiences shared in this workshop by countries in and out of the region, will help Viet Nam make the necessary recommendations to further strengthen its human resource capacity in this important area.

Statistics itself is a scientific subject. On the other hand, it is the foundation for other scientific subjects. Improving statistics capacity in Viet Nam is important not only when it comes to planning, monitoring and evaluation of our development policies and programmes, but it is also important for the improvement of the quality of statistical data in general. This workshop is a unique opportunity for Viet Nam to understand where the country is now and what needs to be done to catch up with other countries in the area of statistics. This workshop also creates an opportunity for us to have a sound understanding on how important statistics and statistical training can be for the process of development.

Ladies and gentlemen,

The need to use reliable statistical data as evidence in planning, monitoring and evaluation of development policies at both micro and macro levels is on the rise. This need can be found at Government agencies and other agencies at both central and local levels. Statistical data are being used by enterprises on a daily basis in their operations. Enterprises need data to develop their strategies and business plans. Without timely and reliable statistical data, it would be impossible for researchers and policy makers to analyze, evaluate, and forecast the socio-economic development in Viet Nam. The need for qualified statistics staff exists in not only statistics offices but in many other agencies as well. In order to produce reliable and good quality data that are comparable, it is important to strengthen the statistical capacity and to ensure that statistical staff has the adequate knowledge and skills to perform their statistics tasks. Therefore, statistics training plays a very important role in providing the essential knowledge and skills for the entire statistics workforce.

This workshop is organized in the context where human resource development is identified as one of the top three steps forward by the Government of Viet Nam. The dialogue between agencies employing statistics staff and the training institutions that offer statistics training, can be

considered as a typical example of effective collaboration between these concerned bodies. This collaboration will certainly promote good quality training that will eventually benefit the whole country. This type of dialogue will enable students to gain the necessary knowledge and skills that can meet the practical needs of employers. Good collaboration also thus benefits students who, when better qualified, will be able to get employed quicker with higher income. This is the direction the Government of Viet Nam is pursuing, in order to take advantage of the demographic bonus. It is recognized that one of the urgent priorities is to improve the quality of training and to expand employment opportunities for the youth in order to promote the country's development and improve livelihoods for the population as a whole.

Ladies and gentlemen,

The Viet Nam Statistics Development Strategy 2011-2020 and Vision to 2030 reflects the commitment made by the Government of Viet Nam in reforming the statistics system to better facilitate evidence-based policy development, monitoring and evaluation. Strengthening the statistical capacity in terms of essential knowledge and skills in this context is very important, and it has been identified as a priority in the Vietnamese Statistics Development Strategy.

It is my hope that today's workshop will create many opportunities to promote cooperation between the local and international universities, and between the GSO and other agencies, with the aim to improve the quality of training and to strengthen the statistical capacity in Viet Nam. The experiences and lessons-learned shared in this workshop, will be studied by lecturers at universities during the process of updating the contents, curriculum and training methodologies when delivering future statistics training in Viet Nam.

UNFPA in Viet Nam very much appreciates the Government leadership and the support from donors in strengthening the quality of Vietnamese human resources. We stand fully committed to cooperate with the Government, the development partners and the civil society in strengthening the capacity of the GSO and stakeholders in collecting, analyzing, and disseminating reliable information/data.

Distinguished guests,

I thank you for your attention and participation, and I look forward to a productive workshop. I wish you all good health, happiness and success.

3. Press Release



PRESS RELEASE



Workshop to share international and national experiences on statistical training in universities: great opportunity for Viet Nam to strengthen the country's statistical capacity and human resource

HA NOI, 13 November 2013 – A workshop on “**Statistical Training in Universities: National and International Experiences and the Way Forward**” was organized today in Ha Noi by the General Statistics Office (GSO) - Ministry of Planning and Investment (MPI) in collaboration with the United Nations Population Fund (UNFPA), with 150 participants from line ministries, universities, international development community and from some cities and provinces throughout the country. The two-day workshop will create substantial opportunities to facilitate more effective cooperation between international and national universities, and between the universities with the GSO and other statistics-related agencies to strengthen the quality of statistical capacity and human resource in Viet Nam.

Over the past years, Viet Nam's statistics has been improved to ensure providing statistics data and information to the Government, ministries and data users. In the context that Viet Nam is integrating into the changing and dynamic world, the need to use reliable statistical data as evidence in planning, monitoring and evaluation of development policies at both micro and macro levels is on the rise. Statistical data are being used by enterprises on a daily basis in their operations. Enterprises need data to develop their strategies and business plans. Without timely and reliable statistical data, it would be impossible for researchers and policy makers to analyze, evaluate, and forecast the socio-economic development in Viet Nam. The need for qualified statistics staff exists in not only statistics offices but in many other agencies as well. In order to produce reliable and good quality data that are comparable, it is important to strengthen the statistical capacity and to ensure that statistical staff has the adequate knowledge and skills to perform their statistics tasks.

Addressing the workshop, Mr. Nguyen Van Trung, Vice Minister of Planning and Investment emphasized: “*Strengthening statistical capacity is one of the top priorities to be achieved to ensure the successful implementation of the Viet Nam Statistics Development Strategy, 2011-2020 and Vision to 2030. One of the key measures in strengthening statistical capacity is to improve the*

quality of statistics training at universities and the partnership between the universities and statistics institutions”

While statistics enjoys a higher profile than ever before, the important role of statistical data and information is still not realized and there are still many gaps in the quality of statistical capacity and human resource in many developing countries.

Although the statistics is being taught at many universities in Viet Nam, there are only five institutions offering statistics training in Viet Nam. The National Economics University (NEU) is renowned as the country’s top statistics training institution in terms of the total number of graduates and diversified levels of training including graduate and post-graduate statistics training. NEU’s Faculty of Statistics has provided statistics training to 5,500 graduates over the past 55 years. Each year, approximately 120 students enroll in statistics courses, with 100 graduating and a proportion switching to other courses. This indicates that statistics might not be the most attractive subject to students.

GSO is the leading state statistics agency in Viet Nam. During the last eleven years, the GSO’s staff has increased to 1,200 people. However, the proportion of staff specializing in statistics has reduced from 47 to 37 per cent. This reflects the shortage of statistical staff in the statistics offices and also shows that statistics jobs are not attractive enough to statistics graduates.

Experiences shared by international experts from the United States, France, Australia, South Korea and the Philippines during the two-day workshop, and inputs from the national experts from various universities in Viet Nam will create a unique opportunity for Viet Nam to review the current status of statistics training in its universities, identify opportunities and challenges as well as provide recommendations to further strengthen the country's human resource in this important field.

“Improving statistics capacity in Viet Nam is important not only when it comes to planning, monitoring and evaluation of our development policies and programmes, but it is also important for the improvement of the quality of statistical data in general. This workshop is a unique opportunity for Viet Nam to understand where the country is now and what needs to be done to catch up with other countries in the area of statistics,” said Mr. Arthur Erken, UNFPA Representative in Viet Nam.

On this occasion, GSO and UNFPA call for concerted efforts and effective partnership between the line ministries and agencies in raising awareness on the importance of statistical capacity in Viet Nam now and in the future. GSO appreciates the collaboration and participation from the Ministry of Education and Training, and particularly the universities in Viet Nam for a better quality of statistical capacity of the country.

For more information, please contact:

Ms. Nguyen Thi Thanh Hương
GSO
Tel: (84-4)
Mob: 0983017174
Email: ntthuong@gso.gov.vn

Ms. Nguyen Thi Hong Thanh
UN Communication Team
Tel: (84-4) 3822 4383 – Ext: 117
Mob: 0913 093363
Email: tnguyen@unfpa.org

II. FINDINGS AND PRELIMINARY RECOMMENDATIONS FOR VIET NAM

Summary: The synthesis and recommendations in this report arise from the work conducted by Dominique Haughton and the conference team. The team read all presentations submitted to the conference and extracted key ideas and recommendations, and added further points identified in the group discussions conducted at the conference on November 14th. Three main directions have emerged: advocacy, gap between statistical academic practice in Viet Nam and the rest of the world, and needed evolution of statistical training programs under existing constraints. The figures illustrate how some of the recommendations might be implemented concretely.

Synthesis and Preliminary Recommendations: key issues

The team identified the following key issues:

- Key issue 1: Confirmation of the importance of statistics in Viet Nam and elsewhere and need for stronger advocacy on the importance of statistical work in society
- Key issue 2: Gap between statistical academic practice in Viet Nam and other countries
- Key issue 3: Statistics training programs in Viet Nam: what is currently done and what SHOULD be done and how to go about it, given existing institutional constraints

The report will now discuss each of the three issues.

Key issue 1: Confirmation of the importance of statistics in Viet Nam and elsewhere and need for stronger advocacy on the importance of statistical work in society

It was felt throughout all presentations that the role of statistics is very wide and notably that:

- Statistics provides scientific evidence for decision making at the national and sub-national levels
- Statistics is linked with all types of activities in society

- Statistics is linked not only with official statistics, but with all areas of business
- The “Big data” discussions are very prominent and are fueled in part by the advent of social media

Recommendations on this issue include:

- Strengthening advocacy for Party leaders, parliamentarians, policy makers, education and line ministry leaders, and society on the important role of statistics for development, monitoring and evaluation policies, strategies, programs and plans at different levels
- Promoting a correct understanding of statistics and statistics work via social media, marketing campaigns, and other social activities such as contests using basic data related to daily life of people, etc
- Making profiles of successful careers in the statistics field very public so that they can be used for advocacy
- MOET to consider strengthening the integration of statistics at different levels for schools (refer to Korea’s work on reaching young children) to raise awareness of statistics.

Recommendations to the General Statistics Office (GSO) include:

- As a key institution working in statistics area, the GSO could take a leading role in advocacy on the importance of statistics
- Considering adding this advocacy role, the integration of statistics training in schools and the strengthening of statistics training at secondary and tertiary level into the revision of the statistics law

Figure 1 displays a possible approach to promoting excellent careers for statistics students, by showcasing achievement by past students:

Figure 1: Examples of past analytics graduate student profiles at Bentley University

<p>Joe Dery Graduate Certificate Business Analytics Master of Science Marketing Analytics Data Scientist at: </p>	<p>Guangying Hua PhD in Business, Specialization in Business Analytics Statistician at: </p>	<p>I Chen Wu Candidate MBA : Concentrations in Business Analytics/IT Data Analytics Associate at: (from 2012) </p>
  <p>In April 2011, Joseph became a Business Analyst for New Hampshire-based data analytics firm Calexus Solutions. There, Joseph brought his passions to life by invoking his advanced business analytic skill-set in a bustling environment that requires quick, strategic thinking and effective written communication with top executives of multi-million and multi-billion dollar companies. Joseph's responsibilities at Calexus extended to databases in excess of 20 terabytes. He has now joined the EMC corporation as a data scientist.</p> <p>In December 2012, Joseph completed his graduate studies with a part-time evening schedule focusing on SQL training, methods of database maintenance, and time series analysis with R. It is his hope to attend Bentley University's PhD program—focusing in Business Analytics—in the fall of 2013.</p>	 <p>Guangying received her PhD degree in Business Analytics from Bentley this May. She holds a B.S. and M.S. in Management Information Systems from Tianjin University, China. At present, she is a Statistician in the Analytic Consulting Group at Epsilon. Her responsibilities include building predictive models and providing marketing insights for clients across different industries.</p> <p>Prior to joining Epsilon, Guangying worked as a Software Engineer and Data Analyst for the China Aviation Accounting Center, providing business intelligence and data analysis for all airline companies in China. While studying at Bentley, she worked as a Research Assistant for Bentley's Center for Quantitative Analysis, responsible for data extraction and data analysis for internal and external clients.</p>	 <p>I Chen is an MBA candidate at Bentley with concentrations in both Business Analytics and Information Systems & Technology. She will begin to hold her position at Deloitte in 2012.</p> <p>Before coming to Bentley, I Chen was a product manager in the telecommunication industry and beauty industry. She likes dealing with numbers and data and enjoys the process of analyzing underlying data patterns to provide business solutions for her company. Every industry has data that needs analysis, resulting in a high level of mobility and demand for graduates. While working toward her MBA, I Chen has also enjoyed the opportunities to travel and take in theater performances on Broadway.</p>

Key issue 2: Gap between statistical academic practice in Viet Nam and other countries

Team discussions revealed that while gaps do exist between Viet Nam and other countries in academic statistical practice, a number of problems faced by Viet Nam are also faced by other countries, as will be discussed further in Key Issue 3. The following points emerged:

- This gap can be in favor of Viet Nam (where average math levels at secondary school are higher than in the US for example)
- However, an unreasonably low proportion of knowledge is reserved for mathematics and statistics in Viet Nam (46% as compared to 70% in other countries)
- Overall, the focus on data analysis is less pronounced in Viet Nam

Keeping in mind that the global situation regarding the position of statistics and data analysis is complicated, the following recommendation was felt to be key and facilitated by the internet and Information and Communication Technologies (ICTs) in general:

- Global collaboration, between private and public employers, universities and training structures

Figures 2, 3 and 4 display concrete examples of how one might go about putting in place an employer-university collaboration. Figures 2 and 3 display examples of joint corporate-academia events, a symposium and a career panel.

Figure 2: Virtual analytics symposium presented and attended by practitioners as well as academics:

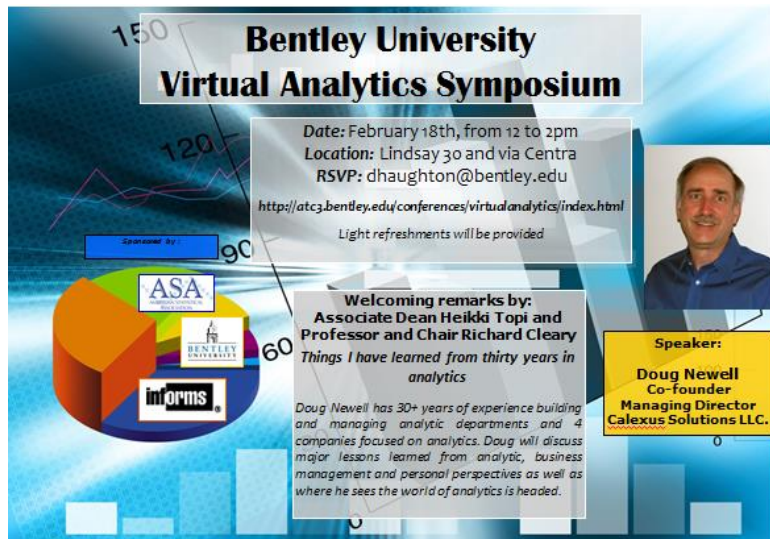


Figure 3: Analytics career panel presented by corporate panelists:

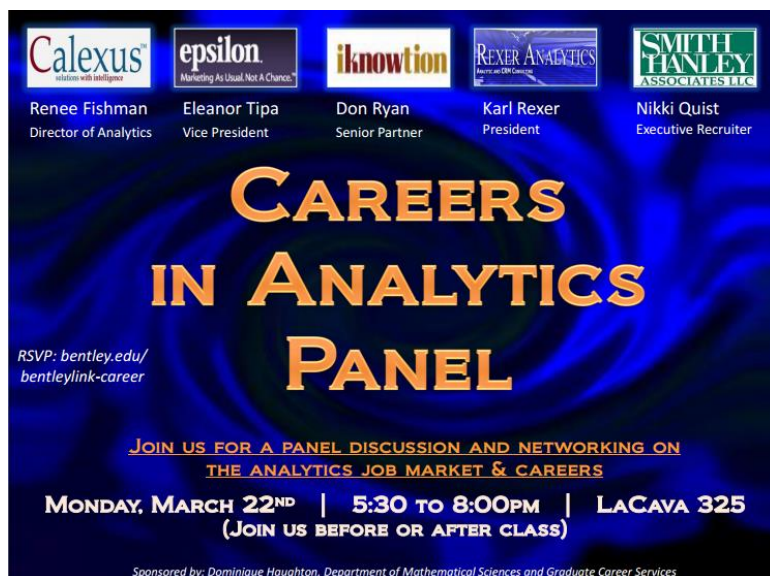
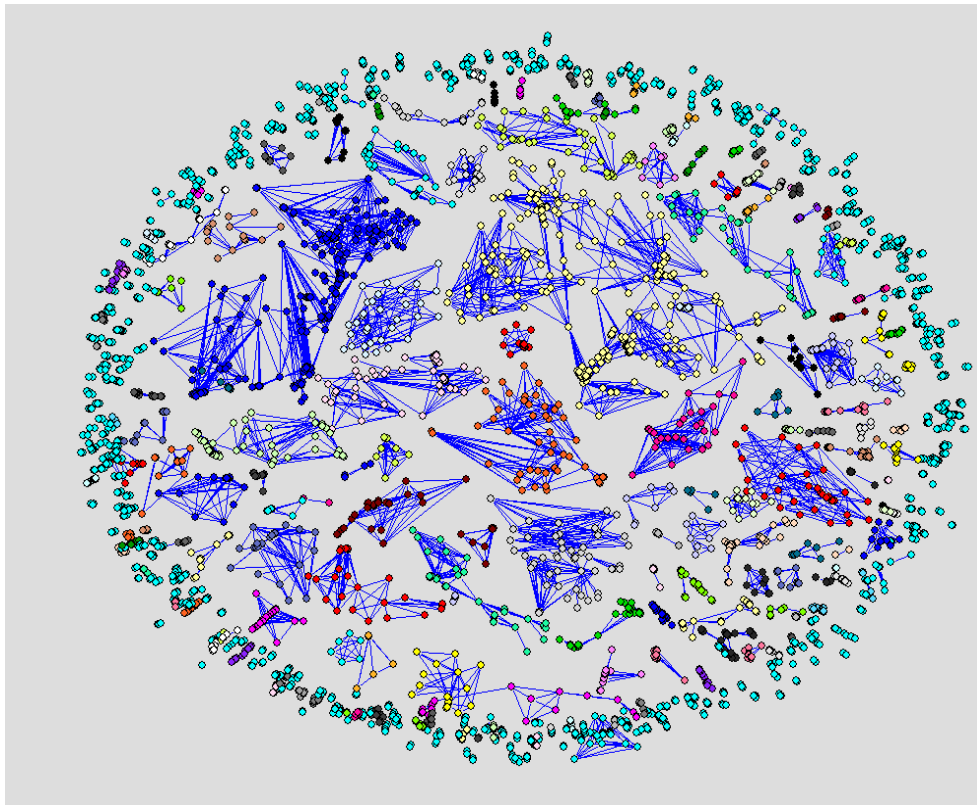


Figure 4 displays the co-publication network of physicians on a corporate database, as an example of research output by a corporate-academia collaborative effort.

Figure 4: Co-publication network of physicians and pharmaceutical marketing:



Key issue 3: Statistics training programs in Viet Nam: what is currently done and what SHOULD be done and how to go about it, given existing institutional constraints: seven related themes along four main directions (curriculum, faculty, students and structural constraints)

Key issue 3 encompasses a number of themes, which can be described in four main directions of altogether seven related themes.

1. Curriculum issues

- It is unanimously felt to be imperative and urgent to update curricula and achieve a proper balance between theory and applied statistics
- Many identified a disconnect between skills required for the job market and university curricula
- It was felt that teaching methods need to evolve in order to make statistics courses more attractive

2. Faculty issues

Two main issues arose:

- Shortage of faculty to teach future statistics professionals
- How to approach the challenge of continuing education for statistics faculty

3. Student recruiting issues

4. Structural constraints

The report now discusses the seven themes in more detail:

Imperative and urgent need to update curricula and achieve a proper balance between theory and applied statistics

- This issue was mentioned by essentially all presenters
- It is felt to be a difficult problem, where collaboration, between employers and universities, between countries, between disciplines is KEY

Recommendations emerged as follows:

- Conduct a needs assessment on using statistics at various organizations, both public and private for a better understanding of requirements for statistics training in Universities as well as at other training institutions

For universities:

- Reduce the number of courses with overlapping, unnecessary and incomplete content
- Reduce class time devoted to theory, give more guidance for self-study, increase the amount of practice and internship at statistics offices and enterprises
- Encourage and facilitate student participation in faculty research
- Increase the proportion of statistics knowledge in the curriculum to at least 60% and allocate more time to compulsory basic statistics courses
- Emerging issues such as big data analysis, topics such as statistical software, sample design and sampling methods should be considered as additions to the curriculum
- Invite businesses and statistical agencies to talk to students about the actual use of statistics
- At the same time, design a professional higher education program in statistics at the undergraduate level

Disconnect between skills required for the job market and university curricula

- Practically every presentation mentioned the exaggerated emphasis on theory in curricula
- This is in part due to a strong emphasis on theory in the faculty's training, but it a serious global problem
- A lack of knowledge about statistical practice by faculty was also noted

Recommendations were given as follows:

- Develop a network of universities and employers
- Universities: Connect up with employers (private or government including enterprises), and work WITH THEM on updating and transforming curricula; especially obtain information on skills that employers need from employees
- GSO: Development of collaboration between universities with statistics programs and the GSO:
 - Organizing regular meetings between universities and the GSO
 - Encouraging statistics faculty to work with GSO statistics consultants on different subject areas

Teaching methods: how to make statistics courses more attractive

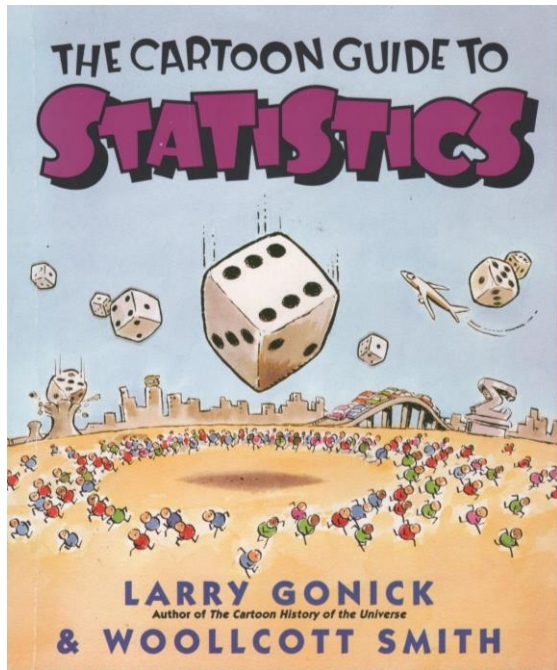
It was noted that many top decision-makers have less than positive memories of their statistics classes and that it is up to statisticians to modify this image!

Recommendations include:

- More lively teaching; it can be effective
- More interactivity and active learning
- Organize regular students conference/dialogues

Figure 5 displays an example of an enjoyable and at the same time very good statistics teaching resource.

Figure 5: Cartoon Guide to Statistics



Shortage of faculty to teach future statistics professionals

This was noted as a very important global problem. Recommendations emerged as follows:

- Internationally, recruit students globally among very large populations and train at the master's and PhD level
- Viet Nam:
 - We can do a lot by joining forces internationally, supported in part by internet technology (and by UN and other development partners, thank you!); this conference is the starting point!
 - An important resource: retirees from the statistical system, some of whom are very strong and up-to-date in modern statistics. They devoted their career to statistics and are quite possibly willing to devote the rest of their lives to raising future statisticians.

How to approach the challenge of continuing education for statistics faculty

A number of recommendations arose:

- This is where we have a chance to join forces and help each other internationally; faculty can be invited to attend graduate lectures remotely; the technology exists to do this and is cheap in some cases!
- Co-supervision of PhD students by both an international and Vietnamese advisor

- Virtual global academic communities such as VALSAC (see Figure 6), etc.
- Strengthen North-South and South-South cooperation via conferences, training etc.
- None of which is of course meant to replace the extraordinary continuing education work done for instance in Korea, the Philippines or SIAP
- Promote continuing education courses in virtual or e-learning format
- Training courses for enhancing knowledge and capacity of statistic faculty at universities, for example on new issues in statistics and data analysis, on new statistics pedagogy
- **However!** When international “consultants” come and provide training, the model recommended by most presenters which consists in “training the trainers” is likely to be the most effective:
 - Consultant works with future instructors of the course to prepare materials
 - Instructors then teach the course in the presence of consultant at least part of the time and with translation
 - One should not forget that language problems are critical in statistical training, and that very few can translate even basic statistics effectively

Figure 6 gives an example of an international virtual academic community, which involves global communication and collaboration.

Student recruiting issues

It was felt in general that this problem has to do in part with the image of statistics, and is essentially a marketing problem, related to advocacy. The following recommendations are felt to be pertinent:

- Promotion campaigns displaying roles and success of statistics graduates in “cool” jobs with high salaries
- Case Study: Departments at the GSO with a strong positive image; a marketing campaign could showcase the profiles of those working there
- Work on removing institutional barriers in Viet Nam to the recruitment of statistics students
- MOET and Universities work together to develop a strategy for recruiting undergraduate students and train at the master’s and PhD levels

Figure 6: Example of a virtual global academic community (VALSAC)



Virtual Academic Living Standards Analytics Community (VALSAC): Inaugural Symposium

March 28th 9 am Boston time, reception to follow

Welcoming remarks by Dean Ahmadou Aly Mbaye, *Université Cheikh Anta Diop, Dakar, Senegal*

Inaugural speaker: Phong Nguyen, *Living Standards Analytics: The Viet Nam Experience*

Retired from General Statistics Office, Hà Nội, Việt Nam

T&C Consulting, Hà Nội, Việt Nam

Discussants: Valerie Kozel, *The World Bank*, Lo Thi Duc, *General Statistics Office, Hà Nội, Việt Nam* and Nguyen Bui

Linh, *United Nations Development Program, Hà Nội, Việt Nam*

Smith 122 at Bentley University or virtually at

<https://online.bentley.edu:443/GA/main/000000cbb423000013d0e7addd485c3>

March 28, 6:30 pm, Wilder Pavilion: International Film Series: Don't Burn

2009, Vietnam, 100 min, by Dang Nhat Minh,

Special guest Phong Nguyen of T&C Consulting, Hanoi will introduce the film.

In the spring of 2005, an old mother living in Hanoi receives a diary. The diary carries the notes of a young woman doctor who worked at a national liberation front hospital for two years starting in 1968 until her death. The diary was first discovered by a U.S. military officer, who kept it for 35 years. The diary was then published in Vietnam and caused a sensation. The long moving journey linking Vietnam with the U.S. is depicted through a true story adapted by one of Vietnam's top film directors.

2009 Audience Award

Fukuoka International Film Festival

2010 Golden Kite Award (Hanoi)

Best Feature, Best Director, Audience Award

Sponsored by the Valente Center for Arts and Sciences and the departments of Mathematical Sciences and Global Studies



Structural constraints

They are many, for example:

- Who “owns” statistics training in universities?
 - On that matter, the team and presenters raised the issue of statistics taught by mathematicians, economists etc.
 - Statistics training in different universities have a different major code
- However: In all these issues, very strong market forces are in favor of statistics, which helps statisticians to innovate within existing structures even in difficult or hostile environments

Several recommendations emerged for Viet Nam:

- MOET to consolidate a major code and curriculum framework for all universities with a statistics major
- Improve the admission policy for both undergraduate and graduate levels
- Universities to assign responsibility for statistical training to a particular faculty

Four actions points for each of us to act on individually and immediately

The team agreed on the following call to action, at the individual level.

- Better advocacy, don't wait for someone else to do it
- Better recruiting and training of the next generation of statistics professionals
- Keep innovating even under structural constraints

- Keep our knowledge up-to-date at global standards

WE AS STATISTICIANS ARE ALL RESPONSIBLE FOR THIS!

A closing note

- Challenges are many but one needs to keep in mind that very powerful global market forces are on the side of statistics
- Joining forces will lead to success; collaboration is key

III. PRESENTATIONS

SECTION 2: ROLES OF STATISTICS TRAINING FOR THE NATIONAL DEVELOPMENT AND THE NEEDS OF SOCIETY ON HUMAN RESOURCE FOR STATISTICS

Introduction: Statistics training plays an important role, for it has a special function in supplying evidence for formulating strategic plans at both macro and micro levels. Curriculum for statistics training is considered effective only when it meets the needs of the society. In this section we will listen to presentations by GSO and business representatives about the society's needs in statistic human resources and required statistic skills in practical activities in various fields. We also listen to the viewpoints of training institutions as from supply side on the role of statistics education in Vietnamese universities and that of continuous training for statistic professionals in other countries. The presentations will lead to the following discussion on a possible meeting or coincidence between supply and demand of statistics training for social development, on the current situation of statistic training to meet the needs of development.

(Mr. Nguyen Van Lieu, Chairman, Deputy Director, GSO)

Contents

1. **Human resource needs for development of the statistics industry,**
Mr. Nguyen Tri Duy, Deputy Head, Personnel Department, GSO

2. **Roles of statistics training in the provision of statistical human resources for the society,**
Hiroyuki Kitada, Deputy Director, Statistical Institute for Asia and the Pacific SIAP

3. **Statistical work in the management and operation of businesses: roles and skill requirements**
Lê Văn Công, Viet Nam National Coal – Mineral Industries Corporation (VINACOMIN)

4. **Roles of statistics training in universities**
Prof. Phan Công Nghĩa, National Economics University (NEU)

1. Human resource needs for development of the statistics industry

Mr. Nguyen Tri Duy, Deputy Head, Personnel Department, GSO

Abstract

The article “**Human resource needs for development of the statistics sector**” raises the necessity of developing statistic human resources in order to carry out the strategic development of Vietnam’s statistic industry in the period 2012-2020 with vision to 2030. The article consists 3 parts:

Part 1 evaluates the current situation of statistic human resources in quantity, analyses its structure and quality through qualification, analyses the shortage of statistic human resources at different administrative levels namely GSO office and local statistic departments. These analyses point out strengths, weaknesses and limitations of the human resources, which can be used as bases for improving quality of human resources, evaluating professional competence, working capacity and the importance of various working skills;

Part 2, basing on the reality of quantity and quality of the statistic human resources mentioned in Part 1, proposes some viewpoints on developing the statistic human resources. Some specific objectives are presented in this part, including improvement of education system, formulation of work positions, improvement of human resources’ quality, expansion of staffing, enhancement of non-professional statistic human resources. 10 groups of solutions are made out in hope to achieve these objectives in developing the statistic human resources. They are improvement of awareness and better practice of human resources management, renovation of human resource development mechanism and policy, enhancement of education system, development of trainers and lecturers, perfection of curricula and teaching materials, expansion of staffing, capacity improvement, improvement of recruitment quality, securement of sufficient budget for human resource development, fostering international cooperation in human resource development so as to attract aids and supports in capital, equipment, and statistic knowledge and technology transfer.

Part 3 raises some recommendations to the related ministries and industries to secure joint efforts of all relevant local and international organizations. The recommendations concentrate on the ministries and industries’ paying adequate attention to facilitate the GSO’s accomplishment of the above-mentioned objectives. There are also recommendations on the educational institutions’ improving training quality and increasing training in statistic practical skills, encouraging students to do internship in the official statistic systems, cooperating to develop statistics materials and textbooks. Finally, the recommendations approach international organizations for sharing experience in various aspects of statistics industry’s operation.



HUMAN RESOURCE NEEDS FOR DEVELOPMENT OF STATISTICS SECTOR

Presenter: Nguyễn Trí Duy
Deputy Head
Personnel Department, GSO

1

HUMAN RESOURCE NEEDS FOR DEVELOPMENT OF STATISTICS SECTOR



Part 1. Assessment of statistic human resources

Part 2. Objectives and solutions for human resource development to
2020 and vision to 2030

Part 3. Recommendations

2

HUMAN RESOURCE NEEDS FOR DEVELOPMENT OF STATISTICS SECTOR

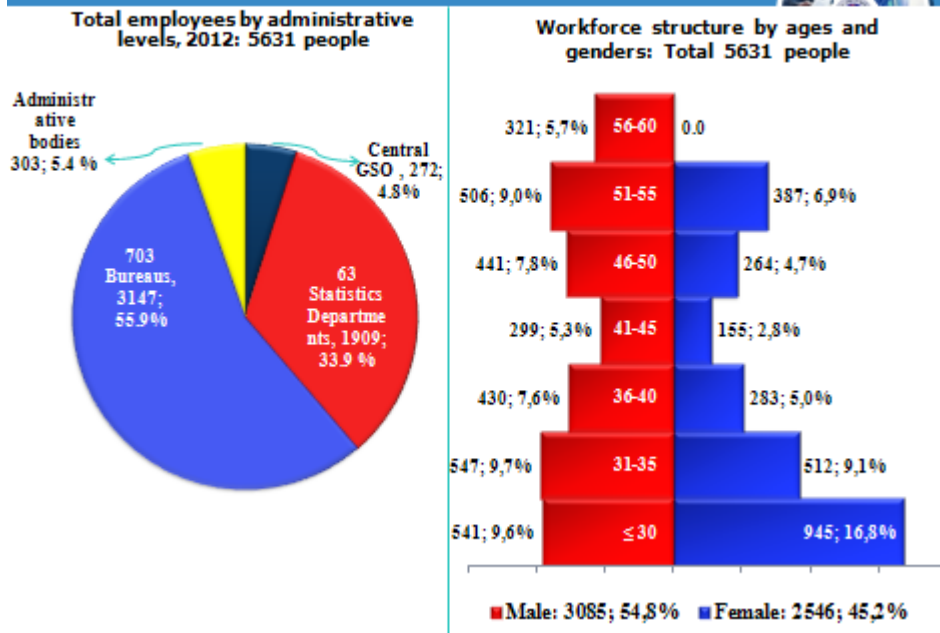
Part 1. Assessment of statistic human resources



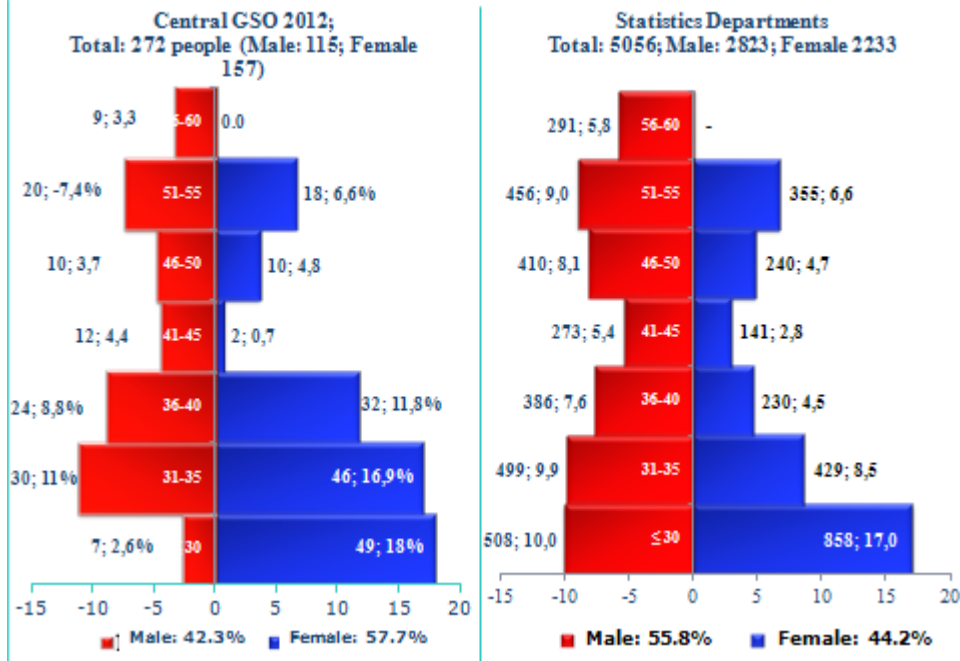
- Number of employees
- Workforce structure by ages and genders
- Workforce quality through qualifications
- Workforce quality through professional competence
- Workforce quality through working capacity
- The importance of various working skills

1

Assessment of statistic human resources

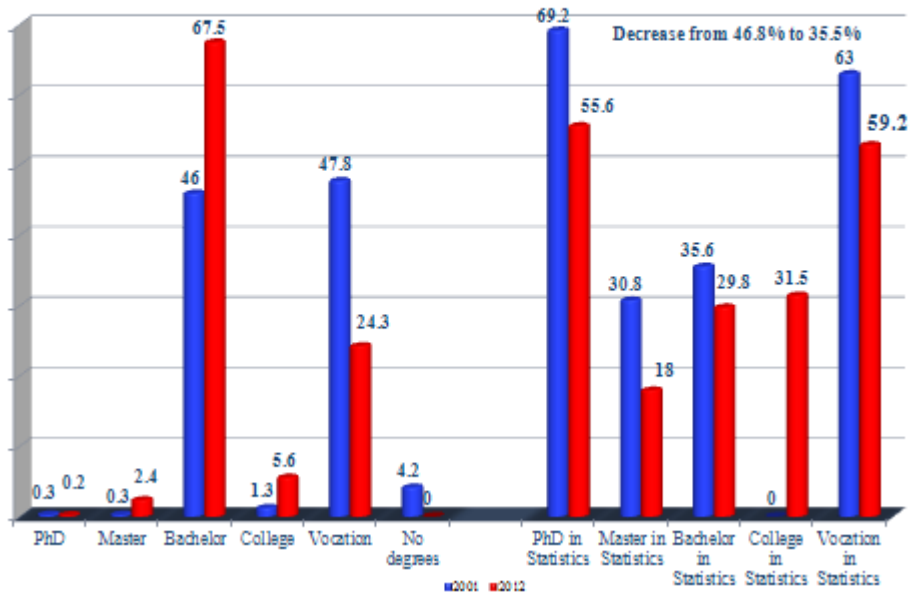


Workforce Pyramid



Workforce quality through qualifications

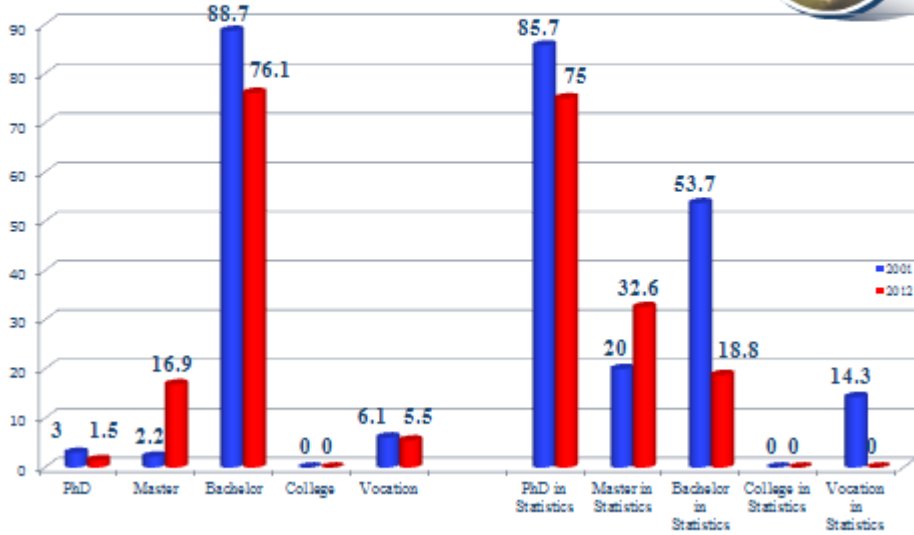
STATISTICS WORKFORCE BY QUALIFICATIONS, 2001, 2012



Workforce quality through qualifications

SHIFT IN QUALIFICATION STRUCTURE

CENTRAL GSO'S WORKFORCE STRUCTURE BY QUALIFICATIONS, 2001, 2011

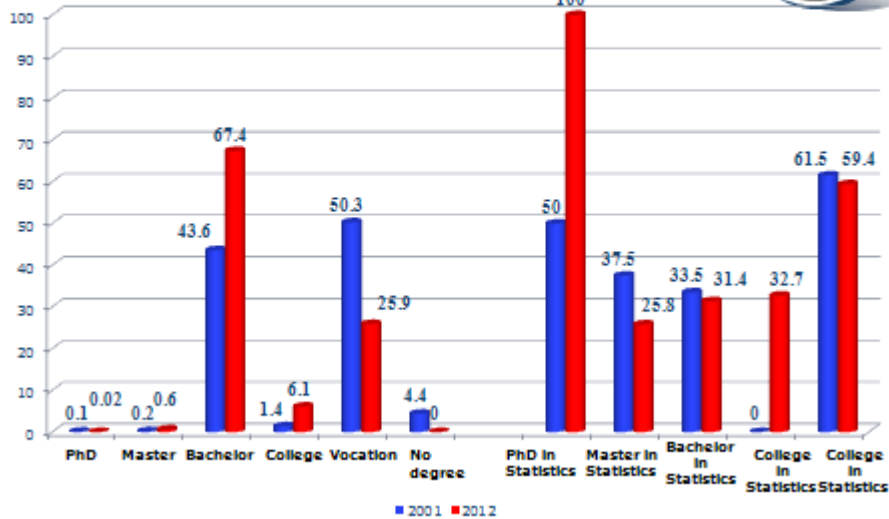


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Workforce quality through qualifications

SHIFT IN QUALIFICATION STRUCTURE

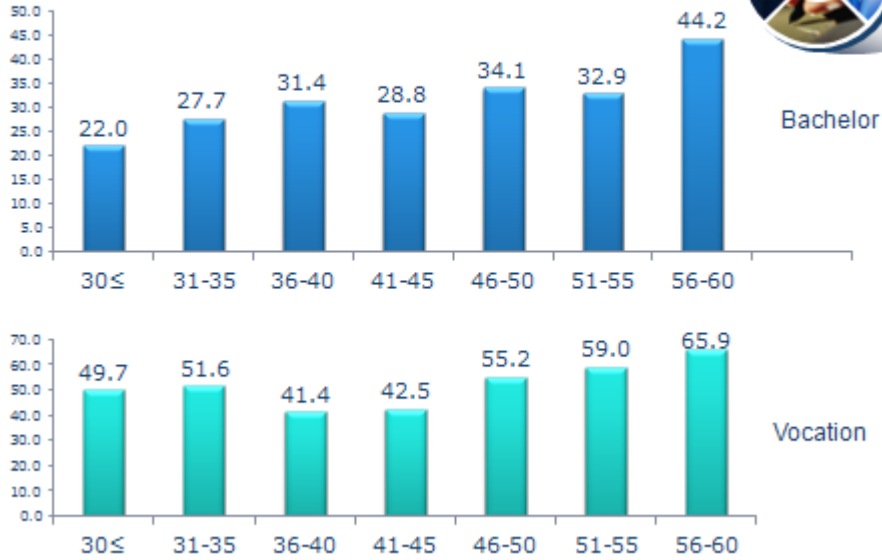
STATISTICS DEPARTMENTS' WORKFORCE STRUCTURE BY QUALIFICATIONS, 2001, 2011



8

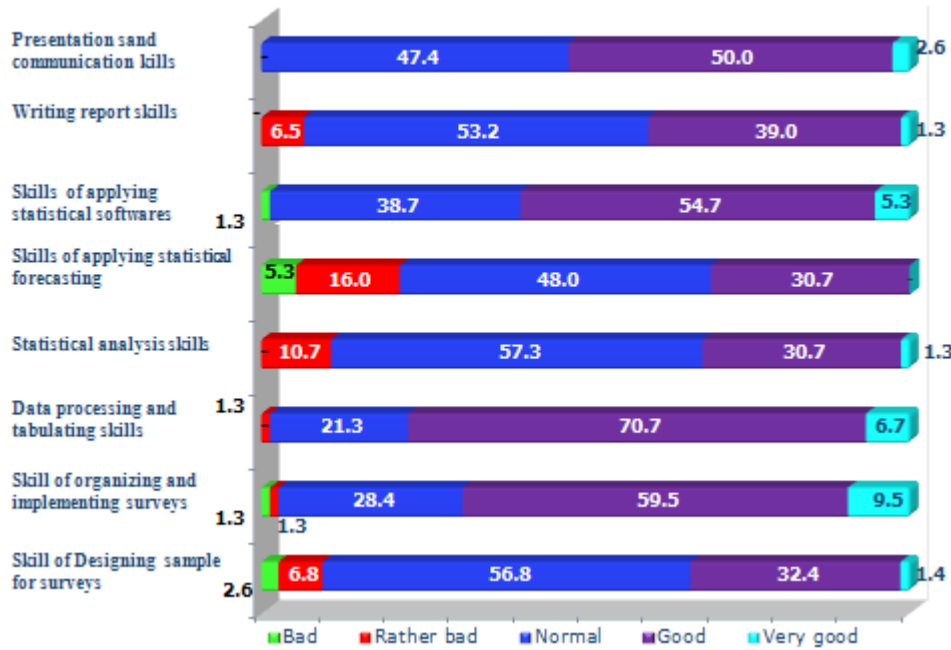
Workforce quality through qualifications

Proportion of Statistics Majored employees by ages and qualifications

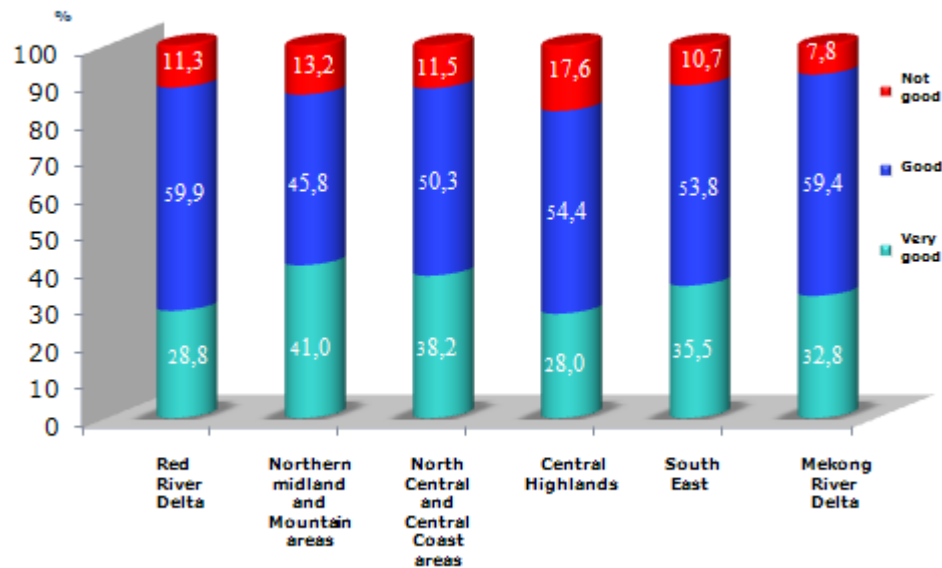


9

Leaders' evaluation on employees' professional competence



Leaders' evaluation on employees' working capacity



Leaders' evaluation on employees' working skills to be improved by their importance

No.	Skills/Knowledge	Total	Importance					
			Most important	Second	Third	Fourth	Fifth onward	Not important
A	B	(1)	(2)	(3)	(4)	(5)	(6)	(7)
1	Work management and organization	100,0	45,6	10,3	8,8	11,8	23,5	0,0
2	Survey design and implementation	100,0	19,4	28,4	7,5	10,4	31,3	3
3	Data synthesization	100,0	19,7	19,7	33,3	12,1	13,6	1,5
4	Analysis and forecast	100,0	22,4	23,9	11,9	13,4	26,9	1,5
5	Use of statistic softwares	100,0	4,5	6,1	9,1	4,5	72,7	3,0
6	Use of foreign languages at work	100,0	3,3	0,0	1,6	0,0	78,7	16,4
7	Statistics report writing	100,0	13,2	5,9	16,2	19,1	44,1	1,5
8	Communication and presentation	100,0	4,5	3	7,5	11,9	71,6	1,5
9	Field supervision	100,0	6,2	3,1	3,1	6,2	76,9	4,6
10	Sample design and estimation	100,0	4,8	3,2	0	1,6	82,5	7,9
11	Others	100,0	3,8	0	0	0	23,1	73,1

Part 2. Objectives and solutions for human resource development to 2020 and vision to 2030



I. Communist Party's viewpoints on human resource development

II. Government's policy on statistic human resource development

III. Objectives and solutions for human resource development to 2020 and vision to 2030

A. Objectives of statistic human resource development

1. Development perspective
2. Some specific objectives for statistic human resource development to 2020

13

2. Some specific objectives for statistic human resource development to 2020



1) To enhance education system for statistics industry

- Establish 01 institution (Institute for Statistics Education) with functions of education and training for statistic human resource;
- Upgrade the Statistics College to Statistics University
- Upgrade the Statistics Vocational School to Statistics College

2) To formulate a rational system of work position and employment ladder

- 0.5% (about 35 people) are qualified as Senior Statistician and equivalent;
- 25% as Chief Statistician and equivalent;
- 55% as Statistician and equivalent;
- 15 % as Junior Statistician and equivalent

14

2. Some specific objectives for statistic human resource development to 2020



3) To improve quality of human resources

- 5% (2.6%) with graduate and higher qualifications, of which 30% majored in statistics;
- 70% (67.5%) with bachelor degree, of which 50% majored in statistics;
- 10% (5.6%) with college degree, of which 80% majored in statistics;
- 15% (24.3%) with vocational qualifications, of which 80% majored in statistics;
- 100% employees of various qualifications but not majored in statistics are retrained;
- 60% enroll in statistics major at universities;
- 80% enroll in statistics major at colleges and vocational schools;
- 50% are trained at advanced level in the field of their management;
- 50% employees at GSO are fluent in English;

15

2. Some specific objectives for statistic human resource development to 2020



4) To expand staffing target for statistics industry

- 6 people/1 office at Statistics Departments.
- 7.5 people/ 1 Statistics Bureau;

5) To enhance quality of non-specialized statistic workers

- 100% statistic workers at villages and industries are sent for professional training;
- 100% statistic workers at industries benefit from statistic professional allowances

16

III. Objectives and solutions for human resource development to 2020 and vision to 2030



B. Key solutions to statistic human resource development

1. Change awareness on human resource development, management and deployment
2. Renovate mechanism and policy for human resource development and management
3. Enhance the industry's internal education system
4. Develop the industry's teaching and training team
5. Perfect curricula, teaching materials for education and training
6. Expand staffing target
7. Improve capacity of employees
8. Improve quality of recruitment for statistics industry
9. Secure sufficient budget and facilities for education and training
10. Expand international cooperation in statistics education and

17

Part 3. Recommendations



- To Ministry of Home Affairs: to increase staffing target and budget for education and training, to delegate GSO to recruit bachelors of statistics with distinction
- To relating ministries: to approve projects of upgrading 2 training institutions under GSO;
- To MPI and MoF: to allocate sufficient funds for investment in facilities for the 2 training institutions under GSO so as they are qualified for upgrading
- To MOET: To improve quality of undergraduate education, include subject of practical statistics as a compulsory subject, enhance skills of statistic practice.
- To Institutions with statistics major: to enhance relationship with GSO in statistics education, namely curriculum development, textbook compilation, internship opportunity offering at statistics offices...
- To international organizations and developed countries: to continue technical supports, especially in education and training for GSO, to share new curricula, materials and knowledge;
- To organize international conferences to share experience in organization models, methods of data collection and processing, application of IT, education and training with international statistics offices

18



Thank you!

2. Roles of statistics training in the provision of statistical human resources for the society

*Hiroyuki Kitada, Deputy Director, Statistical Institute for Asia and the Pacific
SIAP*

Abstract

1. Current status of needs for statistical training of the countries in the region

According to the recent result of a survey by SIAP among NSOs, there is strong interest in improving analytical skills and knowledge, and for staff to be able to improve their capacity to analyse statistical data. The development of improved national Accounts is also of a high priority with improved skills in integrated economic statistics.

2. Producing official statistics relating to MDGs indicators

Since the adoption of the United Nations millennium Declaration and related indicators, many national statistical offices in the region have been facing the significant challenge of developing an appropriate information system for the monitoring and evaluation of progress towards achieving the Goals.

3. Strategic plan of SIAP for AY 2010-2014 and recent activities by SIAP

Main output of the Strategic plan is improved knowledge and skills of Government officials and statisticians in regard to producing, managing and using data supported by appropriate information and communication technology. In the last few years, SIAP is focusing on training activities to enhance the quality of statisticians and government officials in these statistical areas, such as:

- Improving capability in producing official statistics relating to MDGs indicators,
- Regional training programme on the System of National Accounts 2008,
- Information measurement and ICT.

4. Recommendations for improving statistical training programme

To aim at enhancing the quality of statistical human resources for countries, statistical training programmes including using statistics as evidence for identifying problems and finding solutions as well as mastering basic statistical knowledge and skills will be recommended.

Role of Statistical Training in the Provision of Statistical Human Resources for Society

Hiroyuki Kitada

Statistical Institute for Asia and the Pacific (SIAP)

**Conference on Statistics Training in Universities:
National and International Experiences, and the Way Forward.**
Ha Noi, Viet Nam, 13-14 November 2013

1

Contents

- Introduction
- Current Status of Needs for Statistical Training of the Countries in the Region
- Production of Official Statistics relating to MDGs indicators
- Strategic plan of SIAP and Recent Activities
- Recommendations for Improving Statistical Training Programme

2

Introduction



Statistical Institute for Asia and the Pacific

3

Brief introduction of SIAP

SIAP History

1977: 20 member Countries, UN and UNDP inaugurate the Asia Statistical Institute (ASI) by initiative of Government of Japan

1977: ASI is named Statistical Institute for Asia and the Pacific (SIAP)

1995: SIAP is accorded the legal status of subsidiary body of ESCAP

1999: SIAP moves from Tokyo to Makuhari, Chiba City

4

Brief Introduction of SIAP



5

Brief Introduction of SIAP

Objectives of SIAP

- To strengthen – through practically oriented training of official statisticians,
- the capacity to collect, analysis and disseminate statistics as well as to produce timely and hi-quality statistics that can be utilized for economic and social development planning
- to assist in establishing or strengthening their statistical training capacity and other related activities

6

Current Status of Needs for Statistical Training of the Countries in the Region

7

2009 SIAP Training needs Survey -Priority training needs for skills-

Skill type	All (41)	Least Developed Countries (11)	Landlocked Developing Countries (11)	Small Islands Countries (9)	Other member States (18)
Analytical skills and knowledge	29	9	8	7	12
Analysis phase of the statistical process	26	8	6	6	13
MDGs and sustainable development	17	5	6	3	6
Integrated economic statistics	30	8	7	8	12
Implementation of 2008 SNA	32	6	9	6	15
Information management and related ICT	25	7	8	5	10

8

2009 SIAP Training needs Survey

-Priority training needs in subject area-

Subject area	All (41)	Least Developed Countries (11)	Landlocked Developing Countries (11)	Small Islands Countries (9)	Other member States (18)
Analysis and Interpretation of statistics	27	9	8	6	10
Analysis of survey data	25	8	7	5	10
Household income and expenditure statistics	24	9	5	8	9
Labor statistics	21	6	7	7	6
MDG related indicators	21	8	8	4	6
National Accounts Statistics	34	8	7	9	15
Sample design and survey organization	20	9	7	4	6
Statistics on the informal sector	22	5	8	4	9
Seasonal adjustment	13	1	3	0	10
Service statistics	18	3	4	2	12

Main findings of the survey

- Strong interest in improving analytical skills and knowledge, and for staff to be able to improve their capability to analyse statistical data
- The development of improved National Accounts is also of a high priority with improved skills in integrated economic statistics
- The priorities given by different groupings of countries showed only small differences between the groups

10

Production of Official Statistics relating to MDGs indicators

11

The needs to create strong statistical capacity relating MDGs indicators

- The adoption of the UN Millennium Declaration and related indicators (2000)
- Many national statistical offices in the region face the significance challenge
 - Developing an appropriate information system for the monitoring and evaluation of progress towards achieving the MDGs
- SIAP has focused on training statisticians to produce data for development indicators

12

1. MDG related statistics

- Supporting monitoring and evaluation of national development strategies with respect to Millennium Development Goals and sustainable development in the region

Only technical skills of collection, processing and compilation of Goal-related indicators



Creating knowledge and skills to support monitoring and evaluation of national development strategies with respect to MDGs and sustainable development

13

MDG related statistics (cont.)

- Social statistics, especially those needed to achieve and analyse the Goals
- Measures of disparity, social inclusion/exclusion and social protection
- Methods for providing small-area and disaggregated socio-economic statistics for policy analysis
- Gender related issues

14

Strategic plan of SIAP and Recent Activities

15

Strategic plan of SIAP for 2010 - 2014

Main output

Improved knowledge and skills of Government officials and statisticians in regard to

- Producing
- Managing and
- Using data
- Supported by appropriate information and communication technology

16

Points of SIAP Strategy 2010-2014

- Three priority area
 1. MDG related statistics
 2. SNA and related statistics
 3. Information management and ICT

17

Recent SIAP-JICA TMA-based courses

- 4-month course on MDGs
 - 2010 – 2012, 2013 – New course
 - “Improving Capability in Producing Official Statistics Relating MDGs Indicators”
- Analysis, Interpretation & Use of Official Statistics
 - 2010 – 2012, 2014 – New course
- Application of information Management and Related ICT for official Statistics
 - 2010 - 2012

18

Points of SIAP Strategy 2010-2014

- Three strategic approaches
 1. Strengthening **partnership** with other organizations
 2. Diversifying training **modalities** by using advanced ICT
 3. Shifting to “**Training Trainers**” scheme

19

Recent activities by SIAP

- Organizing joint training activities, including workshops, seminars
 - Regional, Sub-regional and Country courses
- Initiation and expansion of Internet-based e-learning courses
 - SNA course (basic and intermediate level), blended course with face-to-face phase
- Multiplying the impact of SIAP training
 - Requirement of having a knowledge-sharing plan on return to office (Action Plan)

20

Recent activities by SIAP

- Inclusion of government officials engaged in policy planning in central or local government to SIAP training courses for increasing of use of statistics for evidence-based decision making

e.g. Regional Training on Using Population Census Data for Planning and Decision making: Thematic Analysis on Youth (September 2013)



21

Recommendations for Improving Statistical Training Programme

22

Recommendations

- To aim at enhancing the quality of statistical human resources for countries:
 - For improving statistical training programme in universities and refresh/updated training programme
- Statistical training programmes including using statistics as evidence for identifying problems and finding solutions
- Mastering basic statistical knowledge and skills

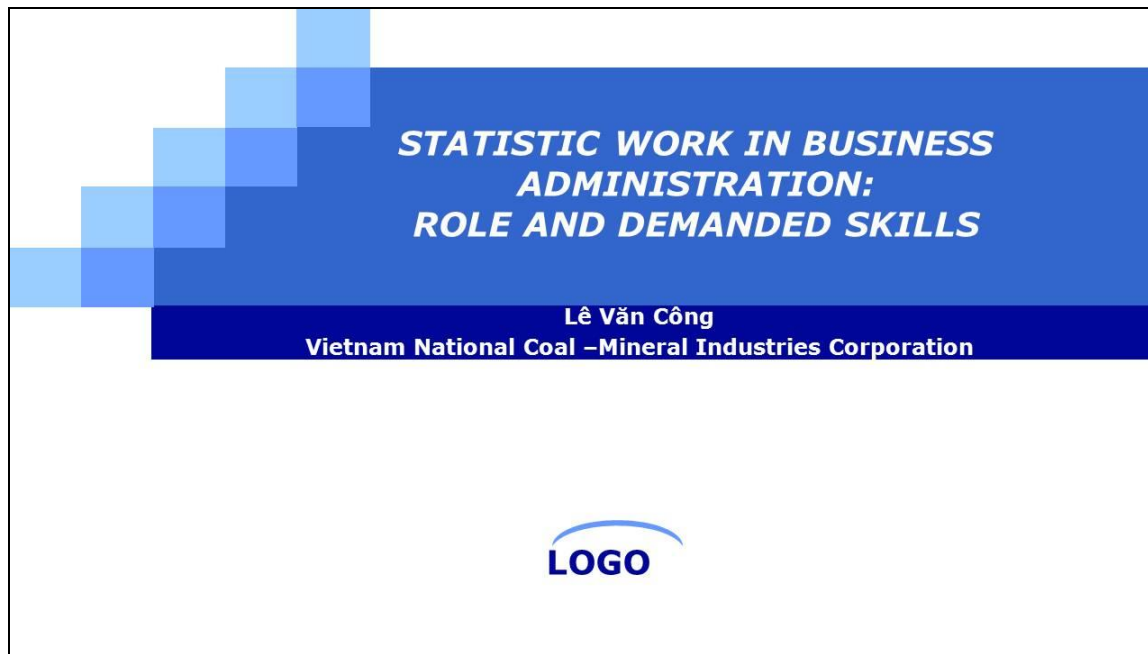
23

Thank you

24

3. Statistical work in the management and operation of businesses: roles and skill requirements.

Lê Văn Công, Viet Nam National Coal – Mineral Industries Corporation (VINACOMIN)



CONTENTS

- 1. Role of statistics**
- 2. Statistics activities in a business**
- 3. Current situation of statistics work at VINACOMIN**
- 4. Recommendations to business and training institutions**

2

1. ROLE OF STATISTICS

- ❖ **Service planning, formulating development strategy for business**
- ❖ **Evaluate business results**

3

2. STATISTICS ACTIVITIES IN A BUSINESS

- ❖ *Statistics of business results*
- ❖ *Statistics of product quality*
- ❖ *Statistics of human resources*
- ❖ *Statistics of fixed assets*
- ❖ *Statistics of costs*
- ❖ *Statistics of business efficiency*

4

DEMANDED SKILLS

Statistic workers should

- ❖ Have enough general knowledge of social economics to understand such concepts as assembly line, quality standards, needs and tastes of consumers, etc.
- ❖ Have skills of collecting data on business and production processes, market information, customer preference, etc.
- ❖ Understand and apply methods of statistic analysis when running analysis of each of the business's activities and typical features of a phenomenon, analysis and appraisal of plan implementation, analysis of trends, analysis of impacts, and forecast future development
- ❖ Have general computer skills and specific skills applied in statistics

5

3. CURRENT SITUATION OF STATISTIC WORK

1. Organizational structure and personnel: review all levels from bases to corporation, focus on stabilizing and refining professional quality of statistic human resources
2. Establish statistics reporting system:
VINACOMIN's statistics reporting system was approved by the Resolution of Corporation Members' Board on 6 January 2012, verified by the Ministry of Trade and Industry on 14 March 2012 and by the Ministry of Planning and Investment on 5 April 2012
3. Implementation:
 - Training on statistics reporting system for statistics workers at all levels
 - Implement fast weekly report, periodic monthly, quarterly and annual reports; submission via fax, email and dispatch service.
 - Control and urge deadlines, quality of periodic reports
 - Step by step computerize statistics work
 - Open regular training courses in cooperation with organizations to improve professional quality for statistic workers

6

3. CURRENT SITUATION OF STATISTIC WORK

PROBLEMS

- ❖ There are over 1,400 statistic workers in the whole corporation, not many of them are trained properly in statistics from colleges and universities
- ❖ Large area of operation with 98 business units and subsidiaries operating in 44 provinces and cities, most of which are remote and isolated area, thus it's difficult to implement new regulations and directions, as well as computerize statistic work in business
- ❖ Statistics analysis and forecast are still limited

7

3. CURRENT SITUATION OF STATISTIC WORK

Suggestions for improvement

- ❖ Formulate specialized human resources to be in charge of statistics at all levels in the business to meet practical demands
- ❖ Coordinate with informatics center and E-commerce Department to deploy the software of statistics report, automatic report submission via the Internet
- ❖ IT and communication: modernize statistic work, computerize all units and subsidiaries
- ❖ Implement tasks listed in the Action Plan of the Ministry of Trade and Industry at Corporation head quarter

8

4. RECOMMENDATIONS

ON BUSINESS:

- ❖ Improve methods of collecting, processing, synthesizing, storing and disseminating statistics information
- ❖ Organize well statistics analysis of business results.
- ❖ Create a legal environment for statistics work in the business by studying and formulating a system of statistic indicators for report to be applied in the whole organization.
- ❖ Invest on information technology and extensively apply it in statistic work
- ❖ Strengthen and improve statistics system, with suitable compensation
- ❖ Recruit statistic workers with proper major training from colleges and universities

9

4. RECOMMENDATIONS

ON TRAINING(1)

- ❖ *First*, institutions enhance skills of survey, data collection, synthesis, analysis, market forecast; skills of strategy formulation to help businesses analyze and forecast on market changes, improve competitiveness for sustainable development
- ❖ *Second*, facilitate students approaching real practice, e.g. using a statistics report or annual financial report of a business as an example in lecture
- ❖ *Third*, supply general knowledge of production technology, production line product quality, market research, consumers' preference, psychology and customs, etc.
- ❖ *Fourth*, institutions introduce regulatory documents on statistic work into lecture so as for students understand more about real practice

10

4. RECOMMENDATIONS

ON TRAINING (2)

- ❖ *Fifth*, equip statistics students with some related knowledge e.g. accounting, finance, analysis of economic activities of business, etc.
- ❖ *Sixth*, coordinate with GSO, Statistics office of Planning Department of Ministry of Trade and Industry to organize training courses to enhance professional quality for statistics workers of the Corporation
- ❖ *Finally*, business unit make annual plan on sending employees for graduate training e.g. master or doctorate

11

THANK YOU!

12

4. Roles of statistics training in universities

Prof. Phan Công Nghĩa, National Economics University (NEU)

Abstract

The article reflects the importance of statistics training in economics universities in Viet Nam, analyzes the real situation and proposes some orientational suggestions in response to the requirements of social development.

Statistics is one of the most powerful, important tools of perception and management. The role of statistics is shown in its two training objectives in universities: first, provide statistics training for other majors and participate in the training process of these majors; second, train high-level statistics officials for the economy.

To confirm its role as well as to realize the above-mentioned objectives, universities have designed and taught almost all statistics subjects from basic to application levels (specialized), which well satisfies the need of equipping students of all majors with statistical knowledge, so that they have a powerful tool for their future use. These subjects can be divided into two groups: basic statistics subjects and socio-economic statistics subjects. The former group includes traditional statistics subjects (Mathematic Statistics, Statistics Theories) and socio-economic statistics subjects (Economic Statistics, Population Statistics, Labor Statistics, etc.). The latter group includes Econometrics, Time Series Analysis, Multivariate Statistics, System of National Accounts, Financial Statistics, Tourism Statistics, etc.

The teaching of statistics varies in different universities in order to meet the training needs of different majors. In most universities without specialized statistics training, only one or two basic and application statistics subjects are provided. The reduction, even absolute elimination, of statistics teaching in the curriculum results in serious "gaps" in the knowledge of economic graduates. In universities with specialized statistics training (4 universities), the monitoring and development of this major has not yet received satisfactory attention. The number of students in this major has decreased sharply; only two undergraduate majors are available now (Socio-economic Statistics and Business Statistics), while the graduate program is flickering. Only the Department of Statistics at NEU keeps running statistics training at all levels and forms with its full spectrum of subjects. However, the teaching staff as well as the materials has not yet met the development requirements.

From this analysis, the article proposes the following orientational suggestions for statistics training in universities to meet development requirements:

For non-statistics majors, there should be a harmonized combination between teaching basic statistics and their specialized subjects. It means statistics lecturers teach only basic statistics

subjects, and general, interdisciplinary subjects, or choose some main subjects suitable with the specializations of the university. In universities with specialized statistics training (4 universities), statistics lecturers should teach the full range of statistics subjects for both statistics and non-statistics majors. The reason is that lecturers in these universities have in-depth specialized knowledge to instruct students. Regarding the curriculum of statistics specialization, we should maintain the Economics Statistics major with 2 specializations and create a profession-oriented higher education (POHE) in statistics. As regards to the staff development, there should be recruitment criteria and planning to develop the statistics faculty; the expanded recruitment, however, should go along with measures to increase the living standards and incomes of these teachers. In terms of teaching and learning materials, the system of statistics materials should be revised, classified, and designed more to meet the requirements of study and of innovative teaching methods. Particularly, there should be a close cooperation with the statistics industry (firstly the General Statistics Office) in training and other professional development activities.

THE ROLE OF STATISTICS TRAINING AT UNIVERSITIES

Prof. Dr. Phan Cong Nghia
THE NATIONAL ECONOMICS UNIVERSITY

1

THE ROLE OF STATISTICS TRAINING AT UNIVERSITIES

1. TRAINING OBJECTIVES
2. CURRICULUM AND IMPLEMENTATION
3. CHALLENGES FOR STATISTICS TRAINING
4. RECOMMENDATIONS

2

1. OBJECTIVES OF STATISTICS TRAINING AT UNIVERSITIES

- To provide basic knowledge of statistics for bachelors in other majors (economics, business administration, accounting, finance and banking...) by teaching statistics subjects from elementary level to appropriate statistical application in their majors.
- To train advanced statisticians. In particular: Training statisticians at undergraduate level and postgraduate level (Master and Doctorate) working in state statistics bodies, ministries, agencies, enterprises and other economic social organizations .

3

2. TRAINING PROGRAMME AND IMPLEMENTATION

- Training structure
- Training Implementation

4

TRAINING STRUCTURE

The statistics subjects are divided into two categories:

❖ **Traditional statistics :**

- Basic statistics subjects: Theory of probability and mathematic statistics, principles of economic statistics (theory of statistics).
- Statistic majored subjects: economic statistics, social statistics, labour statistics, population statistics...
- *Training content provides the background on mathematics, probability, fundamental statistical techniques and professional knowledge following the statistical indicator system for economic industries.*
- => *To well match training statisticians for statistical agencies in the planning mechanism.*

5

TRAINING STRUCTURE

The statistics subjects are divided into two categories:

❖ **Modern statistics after “Doi moi” (renovation) process**

- Data collection and analysis: social survey, econometrics, time series, multivariate statistics.
- Statistic majored subjects: tourism statistics, quality statistics, economic statistics, national account system, financial statistics, corporate statistics, business statistics...
- *To focus more intensively on data collection and analysis*

6

TRAINING IMPLEMENTATION

a. For other majors:

- **Mathematics Department/Faculty in charge of:** theory of probability and mathematical statistics, econometrics.
=> To focus on mathematics.
- **Statistics Department/Faculty in charge of:** principles of economic statistics, corporate statistics or business statistics and one statistic majored subject.
=> To provide basic knowledge on statistics but lack of the practical content on data collection and analysis. The Statistics Department often teaches one or two subjects for the other majors.

7

TRAINING IMPLEMENTATION

a. For other majors

- The role of statistics training is not regarded as important as required for a statistics course. Particularly:
 - *The other majors propose to exclude the subject of principles of economic statistics from their curriculum or switch it to an optional subject.*
 - *Time allocated for the statistic subjects is limited (2-3 credits)*
 - *Training is deployed only for colleges or university levels.*

8

TRAINING IMPLEMENTATION

a. For other majors

Causes

- The awareness of the other majors.
- It is likely that the statistics subject does not provide enough specific knowledge that is needed by the other majors; for instance, the information on statistical software application and practical data analysis is not available.
- Commercial factors.

9

TRAINING IMPLEMENTATION

b. For statistics major training

Training institutions

- The National Economics University (NEU): Faculty of Statistics and Faculty of Economic Mathematics.
- University of Economics Ho Chi Minh City (UEH): Faculty of Mathematics – Statistics.
- Hue College of Economics – Hue University: Statistics Department under Faculty of Information System.
- College of Economics – Da Nang University: Statistics Department under Faculty of Statistics – Informatics.

10

TRAINING IMPLEMENTATION

b. For statistics major training

Training organization:

- **Mathematics Faculty in charge of:** theory of probability and mathematical statistics, econometrics, multivariate statistics, time series => focus on maths.
- **Statistics Faculty in charge of:** statistics theory, statistics informatics, social survey, corporate statistics or business statistics and other statistics majored subjects.

11

TRAINING IMPLEMENTATION

b. For statistics major training

The role of the subjects undertaken by Faculty of Statistics

- Social survey: providing knowledge and skills in designing questionnaires and survey techniques.
- Statistic theory in combination with statistic informatics: providing intensive knowledge and the application of statistical software. However, it is still only a subject, which just is general without any emphasizing on data analysis.
- The other statistical majored subjects provide information on data collection and synthesis according to statistical indicator system and some basic tools for data analysis such as indexes.
- Basically, they still follow the statistic training programmes for statistic agencies to collect and synthesize data in statistical indicator system.

12

TRAINING IMPLEMENTATION

Limitations of current training organization

- The subjects delivered by Mathematics Department/Faculty mainly focus too much on mathematic theory.
- The subjects delivered by Statistics Department/Faculty contain fundamental knowledge but too general and show emphasis on collecting and gathering data according to the indicator system for economic industries.
- The above training programmes lead to the limitations in awareness of statistics lecturers at Statistics Department/Faculty about the importance of improving knowledge on mathematics and probability which lay the foundation for learning new data analysis methods.

13

3. CHALLENGES FOR TRAINING STATISTICIANS

- The training scale reduces due to the lack of appealing working environment in statistic agencies
- The limitation in competence of trained statistic staff who are not able to meet the requirements of practical jobs.
- The lecturers at universities lack of professional experience as well as the practice of statistical technical skills. Moreover, there are few opportunities for them to exchange and discuss with international experienced statisticians about modern statistical methods.
- The training programmes do not meet the requirement of enterprises who need excellent data analysts.

14

4. RECOMMENDATIONS

In training statistics for other majors

- To enhance skills and practicality in the subjects like adding statistic software lessons in the syllabus.....
- To increase the amount of time for statistic subjects.
- To organize the training courses for enhancing capacity of statistic faculty at universities.

15

4. RECOMMENDATIONS

In training statisticians for the economy

- To organize intensive training course in statistics and data analysis at the Statistics Faculty (or at least for their major) => the lecturers of Statistics Faculty are pushed to improve their knowledge on mathematics and data analysis.
- To organize the training courses for enhancing capacity of statistic faculty at universities
- To strengthen the cooperation between training institutions and employment agencies to get more information on the skills that enterprises need in order to increase practical experience for lecturers.
- To establish professional oriented higher education programmes in statistics.

16

**THANK YOU
FOR YOUR ATTENTION!**

17

SECTION 3. CURRENT SITUATION AND CHALLENGES IN STATISTICS TRAINING IN VIET NAM AND OTHER COUNTRIES

Introduction:

In the previous section we worked on the topic “The role of statistics training in development and the needs of society”. To fulfil its role of supplying high quality human resource, statistic training must be renovated from policy environment, curriculum to connection between the training institutions and organizations in reality.

This section will focus on exchanging information on the current situation and challenges in training organization, recruitment and enrollment, faculty development, and teaching methodology in Vietnamese universities. This section will also mention the reality of statistics training in universities in the USA, France, Australia, Phillipines South Korea and Japan. The discussion, therefore, will let us know where Vietnam is standing and what it should do to catch up with other countries in the region in this field to meet the needs for development of Vietnam.

(Prof. Dr. Truong Cong Nghia)

Contents

1. **Statistics Training in universities with statistics major: Reality and Challenges**
Assoc. Prof. Bùi Đức Triệu, NEU
2. **Current situation of Statistics Training in Universities without Statistics major.**
Dr. Trần Thị Bích, Research team leader
3. **Current situation of employment of bachelors in statistics through the survey "Following the footstep of statistics graduates"**
Đỗ Văn Huân, Faculty of Statistics, NEU
4. **Current Situation & Challenges in Statistics Training in the Philippines**
Dr. Jose Ramon Gatmaitan Albert, Secretary General, National Statistical Coordination Board, Philippines
5. **Current status of statistical training in France**
Prof. Michel Grun-Rehomme, National School of Statistics and Economic Administration, France
6. **Current status of statistical training in the United States**
Prof. Dominique Haughton, Bentley University, USA
7. **Current status of statistical training in Australia**
Assoc. Prof. Alice Richardson, Faculty of Education, Science, Technology & Mathematics, University of Canberra, Australia

Abstract

The article reflects the main features, problems and an overall picture of the status in terms of policies, training organization, training levels and forms, teaching staff and the quality of statistics students of Viet Nam's universities which provide statistics major. Based on the analysis, some recommendations will be proposed to overcome the challenges emerging from these problems.

In Viet Nam, 4 universities provide statistics major, namely National Economics University, University of Economics Ho Chi Minh City, Economics University - University of Da Nang, and Economics University - University of Hue; among which National Economics University was the first centre for statistics training, whose activities have been sustained up to now with all statistics training levels and forms. Recently statistics curriculum have been revised and improved continually to meet the requirements of innovations and international integration. Although many contents still need updating, the contents of traditional statistics subjects (except for Statistics Theories) have been changed fundamentally from MPS system into SNA, and some new subjects have been introduced. Apart from the traditional Socio-economic statistics specialization, the universities have a new specialization namely Business Statistics; in particular, the National Economics University has recently succeeded in establishing statistics training as an independent major of Economic Statistics.

The main difficulty of statistics training in universities now lies in the low number and low quality of enrollment, and a relative regression of the statistics teaching staff. Each year, most of these universities cannot attract enough students as per enrollment targets, or have to set the admission scores for statistics students the same or lower than the university's admission level. The training organization and enrollment policy also have negative impacts on the training of statistics. That some universities combine statistics major with highly demanded majors leads to the fact that students, after entering university, refuse to enroll in statistics major. Another fact that many companies recruit non-statistics graduates (e.g. in GSO) to do statistical work also discourages students from following statistics major. For various reasons, the statistics teaching staff have not responded well to the requirements of inheritance, innovation and development of the industry; more seriously, there is possibility that they cannot meet the demands nor catch up with other majors.

Based on the straightforward and detailed analysis in the article, the author raises some suggestions to overcome the obstacles above. Admission policies should be flexible with a combination of major entrance level and the university's admission level; the curriculum of Economic Statistics Major designed by NEU should be popularized in other universities; there should be research to design a new curriculum in Professional oriented higher education (POHE) direction to meet society's demand. statistics graduates should get priority when applying for vacancies suitable with their major, particularly in GSO. In order to attract students to statistics major and improve their quality, there should be investment and improvement in the materials and manuals, as well as enhancement of promotion (PR) for statistics major and statistics as a job. A sound strategy on developing the statistics teaching staff, which satisfies the requirements of inheritance, innovations and development, is also needed; particularly, the recruitment of

statistics lecturers should be expanded, and priority should be given to candidates graduating from overseas.

**Statistics training in universities with
statistics major**
Current status and challenges

Assoc., Prof, Dr. BÙI ĐỨC TRIỆU
NATIONAL ECONOMICS UNIVERSITY

1

CONTENT

1. Current situation of training statistics major
in universities in Viet Nam
2. Challenges in training statistics workers
3. Recommendations

2

Vietnamese universities with statistics major

1. National Economics University
2. University of Economics Ho Chi Minh City
3. University of Economics – Da Nang University
4. University of Economics – Hue University

3

1. CURRENT SITUATION

- 1.1. Policy environment
- 1.2. Training organization and levels
- 1.3. Lecturers
- 1.4. Students

4

1.1. Policy Environment (1)

Before the Reform (1986) admission and recruitment policy fit to the planned mechanism, whereby students were assigned to different majors and, after graduation, appointed to positions in organizations by the government. At this state, statistics major set rather high admission scores, and graduating students were mostly appointed to work in the statistics industry (GSO)

5

1.1. Policy Environment (2)

After Reform(1986) admission and recruitment became more flexible. Students could decide on their major and universities tried to meet their expectation in line with the university's planned targets. Students had to find their job after graduation as organizations could recruit their employees without following government's plan

6

Admission Policy

Admission policy in the 4 universities with statistics major:

- Admission benchmark score of the whole university
- Admission score of the major
- Combination between university's benchmark score and major score

7

Admission Policy

University's admission benchmark score

- Universities follow: University of Economics Hochiminh City; College of Economics – Danang University and National Economics University (before 2011)
- Advantage: students have similar quality, meeting minimum requirement.
- Disadvantage: Statistics was not a “hot” major, thus attracting few students. If assigned to study statistics, students felt discouraged, having low academic results.

8

Admission Policy

Major's admission score

- Universities follow: National Economics University (from 2011) and College of Economics – Hue University.
- Advantage: ensured meeting admission target, students made their choice, thus having good attitude and academic results.
- Disadvantage: major's admission score were often lower than the university's benchmark score and than that of some other majors

9

Admission Policy

Major's admission score

- Universities follow: National Economics University (from 2011) and College of Economics – Hue University.
- Advantage: ensured meeting admission target, students made their choice, thus having good attitude and academic results.
- Disadvantage: major's admission score were often lower than the university's benchmark score and than that of some other majors

9

Admission Policy

Combination between university's and major's admission scores

- Universities follow: National Economics University (from 2012 to date)
- Advantage: meeting minimum admission requirement, meeting and exceeding admission targets, students made decision on major to pursuit, ensure competition.
- Disadvantage: not yet.

10

Recruitment Policy

by organizations, businesses and GSO

- Organization haven't got a clear recruitment policy to recruit well-trained employees with the relevant majors
- GSO has no priority in recruitment and promotion regarding relevant majors.

11

1.2. Training organization and levels

- Organizational structure
- Curriculum
- Training mode
- Levels of qualification

12

Organizational structure

- Independent Faculty of Statistics with 2 Departments at NEU
- Department of Statistics in Faculty of various majors in the rest 3 universities: UEH, College of Economics in Hue and Danang Universities

13

Training Program

- Statistics major consists of 2 specializations: Socio-economic statistics and Business statistics being assigned to 3 different disciplines: Economics, Business Administration and Economic Information System
- From 2012 NEU set curriculum of Economics Statistics with 2 specializations: Socio-economic statistics and Business statistics

14

Training modes

Currently all 3 universities apply credit system for full-time undergraduate program and academic year system for in-service program. Some universities apply double major system

15

Levels of qualification

- Bachelor (full-time, in-service, second degree, ...) : in all 4 universities.
- Master and Doctor: previously 2 universities (NEU & UEH), now only NEU.

16

1.3. Lecturers

by October 2013

University	Number of Lecturers	Lecturers with Doctor title	
		Number (lecturers)	Proportion (%)
NEU	18	8	44.4
UEH	11	5	45.5
University of Economics – Danang University	10	2	20.0
University of Economics – Hue University	11	1	9.1
Total	50	16	32.0

17

1.4. Students quality

Measured by admission score and academic results at graduation.

Admission score applied for Statistics major 2013

University	Score
NEU	21.5
UEH	20.0
College of Economics – Da Nang University	19.5
College of Economics – Hue University	13.0

18

Academic results of statistics majored students– NEU 2009-2013

Year of graduation	Number of graduating students (SV)	Rate by graduation ranking (%)		
		Excellent	Good	Above average & Pass
2009	79	10.1	74.7	15.2
2010	51	21.6	66.7	11.8
2011	61	31.1	60.7	8.2
2012	32	28.1	62.5	9.4
2013	35	40.0	60.0	0.0
Total	258	23.6	66.3	10.1

19

2. CHALLENGES

2.1. in policy

2.2. in training organization

2.3. in lecturers

2.4. in students' quality

20

2.1 Challenges in admission policy

- Cannot attract students (not meeting admission target).
- Low admission score means low quality of students and low reputation of major.
- Difficult to recruit graduate students, too few students currently enrolling.

21

2.1 Challenges in admission policy

- GSO has no priority for recruitment of students with relevant major degree, leading to low motivation among students. Rate of employees with relevant statistics major is low within the industry, which is one of the causes to low quality of statistics product recently
- Organization and businesses do not spend adequate respect to statistics, leading to careless recruitment and assignment of statistics positions

22

2.2. Challenges in training organization

- Except for NEU having independent statistics major code, the rest 3 universities have statistics major dependent on other majors. This is one of the disadvantage for statistics training. Statistics should be made into an independent major thanks to its characteristics of high integration.
- Curricula are boring, with too much focus on theories rather than on practice
- No attention to short-term training programs in statistics.

23

2.3. Challenges in lecturers

- Insufficient number of lecturers, not very high quality, lagging behind, not meeting requirements of renovation and development.
- Difficult to recruit young talented lecturers
- Inadequate attention paid on professional development for lecturers.
- Weak in academic integration and cooperation between universities and with business community, especially with GSO

24

2.4. Challenges in student quality

- Admission score is lower than benchmark and that of some other majors.
- Low motivation to study due to being forced in taking the major and unpromising employment future.
- Limited adaptation to the real practice (know more of theories than skills)

25

3. RECOMMENDATIONS

3.1. On policy

3.2. On training organization

3.3. On lecturers

3.4. On students' quality

26

3.1. Recommendations on policy

- Apply a flexible admission policy as in NEU, i.e. combine major admission score and benchmark score of university, for both undergraduate and graduate levels
- Improve admission policy and initiate part-time training the demand.
- Organizations and businesses, especially GSO should reserve priority in recruitment and promotion for those employees with relevant statistics degree, especially at the positions in need of statistics knowledge

27

3.2. Recommendation on training organization (1)

- Apply the curriculum following the major of Economic Statistics currently run at NEU.
- Improve curricula of the 2 specializations in direction of increasing practical knowledge.
- Study to design a new curriculum in direction of profession orientation higher education (POHE)

28

3.2. . Recommendation on training organization (2)

- UEH to continue admitting graduate students of master and doctorate in statistics
- Coordinate with local communities, organizations and businesses to provide training
- Start short-term training courses to meet society's demand.

29

3.3. Recommendation on lecturers

- Need to formulate lecturer resource development strategy to meet criteria of heritage, renovation and development.
- Expand recruitment categories with priority for candidates graduating from abroad.
- Focus on training lecturers
- Enhance academic cooperation among lecturers of different universities and with businesses.

30

3.4. Recommendations on students' quality

- Enhance investment on renovation of teaching materials
- Enhance communication and promotion for statistics major and employment.

31

Thank you!

32

2. Current situation of Statistics Training in Universities without Statistics major, *Trần Thị Bích, National Economics University, Nguyễn Lê Anh, University of Labor & Social sciences, Nguyễn Thị Tuyết Nhung, Foreign Trade University, Phạm Thị Liên, Viet Nam Trade Union University, Đặng Văn Lương, Viet Nam University of Commerce*

Abstract

This article describes the current situation of statistics training in universities without statistics major in two areas of economics and social sciences. The representatives of the universities in economics are Foreign Trade University (FTU) and Viet Nam University of Commerce (VUC) those of the social sciences are University of Labor and Social sciences (ULSA) and Viet Nam Trade Union University (VTUU).

In the above mentioned universities, the unit in charge of teaching statistics subjects is normally a department belonging to a faculty, except that in ULSA which is a university's department. The statistics courses are taught upon the order of major faculties to the department of statistics. Basing on the proposals of major faculties and the guidance of the curriculum by the MOET or the universities, the department of statistics designs the course syllabus. Since 2012, when the MOET allowed majors to build specialized curriculum, a number of economics majors have proposed to eliminate statistics from their curriculum. This caused difficulties for students attending graduate programs in applying statistics knowledge in a number of courses. In general, the number of statistics subjects is 2 or 3 in the economics universities and approximately 6 in universities of social sciences.

The Departments of Statistics themselves compile course books for teaching students in college and bachelor programs. Those course books are similar to those of Faculty of Statistics in NEU. Statistics is not taught in graduate programs. The statistics teaching heavily focuses on theory rather than practical applications. It has not updated to catch up with international programs. Because of uncontrolled sequence of courses, students who have not completed the prerequisite subjects of statistics still can register for statistics courses, causing some difficulties in the teaching process. Some of the lecturers in these universities were not trained in statistics as specialization, and they lack of practical experience and skills.

From the mentioned situation, the article provides some recommendations to improve quality and effectiveness in teaching statistics. First of all, the MOET needs clearly defined compulsory knowledge of statistics for other majors. Secondly, it is necessary to redesign the curriculum and textbooks according to international standards, aiming at high applicability. Thirdly, scientific research in statistics should be promoted among students. Fourthly, there should be training courses of applied statistics practices for the lecturers of statistics in universities.

Current situation of statistics training in Universities without statistics major

Hanoi, Nov 2013

Outline

- Policy Environment
- Curriculum
- Training organization
- Training implementation
- Lecturers

1

Overview

- Most universities of sociology and economics include at least one statistics course with an average duration of about 3 credits (45 periods).
- The universities have different curricula and training implementation.
- However, the content of statistics subjects are similar

2

Representatives

- **Universities of economics:**
 - Foreign Trade University
 - Vietnam University of Commerce
- **Universities of sociology:**
 - University of Labour & Social Affairs
 - Vietnam Trade Union University

3

Training majors

- Economics majors: Economics, Management, Banking and Finance
- Sociology majors: Sociology majors besides Economics, Management, Banking and Finance

4

Policy environment (1)

- Organization:
 - ❖ Economics majors: Statistics department is under a faculty in charge of a major
 - ❖ Sociology majors: Statistics department is under the university
 - ULSA: Statistics department is under the university
 - VTUU: Statistics department is under Economics department

5

Policy environment (2)

- Training contents:
 - The faculties of various majors develop a curriculum which will be approved by the university's academic board
 - The Faculties order the Department of Statistics, which develops the course syllabus
 - If the statistics subjects are included in the framework of the MOET, the departments of statistics will base on the guidance to develop specific content.
 - If not, the statistics department bases on the guidelines of the university for building course content.

6

Policy environment (3)

- Training content:
 - Since 2012, MOET allowed faculties of majors to build curriculum, a number of faculties in universities of economics eliminated statistics subject or turned it into elective one.
 - Meanwhile, the new regulations of the MOET do not affect the statistics teaching in the universities of sociology.

7

Training content (1)

- **Economics Majors: concentrating on 2-3 subjects**
 - Principles of economic statistics
 - Business statistics
 - Corporate statistics
- **Sociology Majors: 6 subjects**
 - Principles of economic statistics
 - Corporate statistics
 - Labor statistics
 - Social statistics
 - 2 other subjects

8

Training content: Curriculum (2)

- Previously, statistics departments of different universities used the textbooks of the Faculty of Statistics, National Economics University. Currently, they have been compiling their textbooks whose content are rather similar to that of the Faculty of Statistics, NEU
- Especially, Department of Statistics in VTUU uses most of course books of NEU

9

Training content – Difficulties (3)

- Content of the statistics subjects is still theoretical, which tends to focus on manual calculation of statistics parameters and equations
- No change towards updating the development of statistics softwares
- The practical statistics applications and statistics software practice have not been included in the curriculum.
- Not very good understanding and applicability of statistics subjects

10

Training organization (1)

- Training levels:
 - Statistics subjects are taught in undergraduate and college levels, not in graduate level
 - If any subject in the graduate program requires statistics-related knowledge, the lecturers have to teach it for students

11

Training organization (2)

- **Allocation of statistics subjects:**

- ❖ Economics majors: Each faculty of major select one statistics subject
- ❖ Sociology majors:
 - ❖ VTUU:
 - Economics majors: 2 subjects based on that of NEU;
 - Sociology majors: 1 subject (Social Statistics – Mathematics of D block) based on that of VNU
 - ❖ ULSA: all majors study 2 subjects including Principles of Economic Statistics to provide foundation knowledge of statistics and one that is suitable to their majors

12

Training implementation

- The statistics subjects take about 2-3 credits(45 periods)
- Limited time is the reason that lecturers think it is not suitable to add statistics software applications
- In some universities (VUC, ULSA) undergraduate who haven't completed the prerequisite subjects are still allowed to study statistics subjects => Causing difficulties for teaching statistics.

13

Qualification of lecturers

- Except FTU which has half of the statistics lecturers who were not majored in statistics, most lecturers in other universities are majored in statistics.
- The lecturers lack of practical experience and knowledge of applied statistics.
- The statistics departments rarely hold scientific activities to improve their knowledge or capacity.

14

Qualification of lecturers

Qualification	Major	Non-major
FTU	3	3
- PhD	2	
- Master	1	
- Bachelor		3
VTUU	3	
- PhD	1	
- Master	2	
VUC	2	3
- PhD	1	
- Master		3
- Bachelor	1	
ULSA	6	3
- PhD	1	
- Master	4	3
- Bachelor		

15

Recommendations (1)

- Policy environment:
 - The departments should be more proactive in designing curriculum
 - The MOET should have clearly defined compulsory knowledge of statistics applied for most majors => avoid elimination of statistics subjects by faculties of majors
 - The universities should review closely the sequence of subjects
 - Establish university level department: more proactive in proposing curriculum and syllabi

16

Recommendations (2)

- Training content and lecturers:
 - Redesign the course books and curriculum to catch up with the international standards and to be more applicable
 - Promote scientific research to students, but that requires the corporation between Department of Statistics, faculties of majors, and the university.
 - Organize short-term training courses to update knowledge of statistics and enhance application skills for the statistics lecturers, especially for those who are not majored in statistics.

17

3. Current situation of employment of bachelors in statistics through the survey "Following the footstep of statistics graduates"

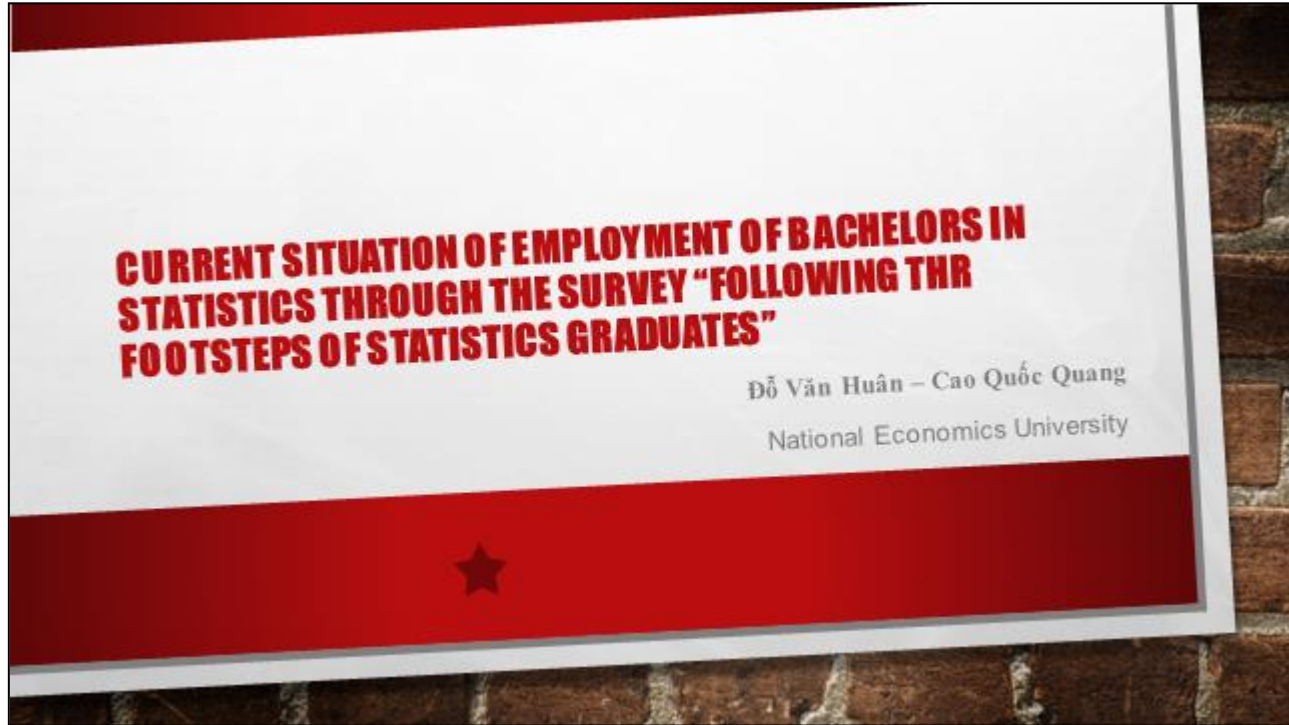
Đỗ Văn Huân, Faculty of Statistics, NEU

Abstract

This paper describes general contents of the survey on bachelors of statistics studies and their employment situation in recent years. The survey was conducted on more than 30 percent of those graduating in the past 12 years (from 2001 to 2012), who are now working in organizations and business enterprises. The main purpose of the survey is to evaluate graduates' chance of getting a job, their ability to meet job requirements and to adapt to the jobs.

Based on the data collected, the paper provides descriptive statistical analyses and remarks on different issues such as features of the survey subjects, their employment situation, particularly their opportunities of being recruited, chances of getting appropriate jobs, their current profession, their ability to meet job requirements. In addition, the current paper evaluates how well the graduates apply their acquired knowledge into practice and give out some of their expectations and recommendations.

Given the findings of the survey, the paper puts forward a number of suggestions which are believed to help improve the quality and effectiveness of statistics teaching and training. *Firstly*, besides the professional knowledge and skills in statistics, it is prerequisite that undergraduate students majoring in statistics be well-equipped with foreign languages, computer skills and soft skills so that they can perform well at work in the future. *Secondly*, undergraduates should be provided with more chance to practice, to visit or attend internships offered by organizations being in charge of statistic work. *Thirdly*, state-owned statistics organizations are advised to introduce appropriate recruitment and promotion policies so that graduates of this major, who love the job, are happy to work dedicatedly and become highly committed to their position. *Finally*, data and information about the graduates of this major, their feedback on the training program and their recommendations must be collected into a database, which must be updated annually. This database is expected to guide necessary changes of the training program to meet "the society's needs".



Outline

- ❖ General information about the research
- ❖ Major findings
- ❖ Recommendations

GENERAL INFORMATION ABOUT THE RESEARCH

❖ **Research purposes:**

- to provide a general view on the employment situation of bachelors majoring in statistics in recent years
- to analyze and evaluate their job performance
- to reconsider the level of appropriateness between undergraduate education and social requirements.

❖ **Research subjects:** Graduates of Intake 39-50 (those graduating from the year 2001 to 2012)

❖ **Methodology:** E-mail (Google docs)

MAJOR FINDINGS

- ❖ General information about the research subjects
- ❖ Employment situation of the bachelors in statistics

GENERAL INFORMATION ABOUT THE RESEARCH SUBJECTS

Number	Intake	Number of Students	Number of collected questionnaires	Ratio (%)
1	39	82	21	25,61
2	40	99	29	29,29
3	41	70	16	22,86
4	42	45	16	35,56
5	43	124	33	26,61
6	44	138	41	29,71
7	45	45	18	40,00
8	46	74	32	43,24
9	47	79	32	40,51
10	48	51	36	70,59
11	49	61	20	32,79
12	50	32	13	40,63
Total		900	307	34,11

GENERAL INFORMATION ABOUT THE RESEARCH SUBJECTS

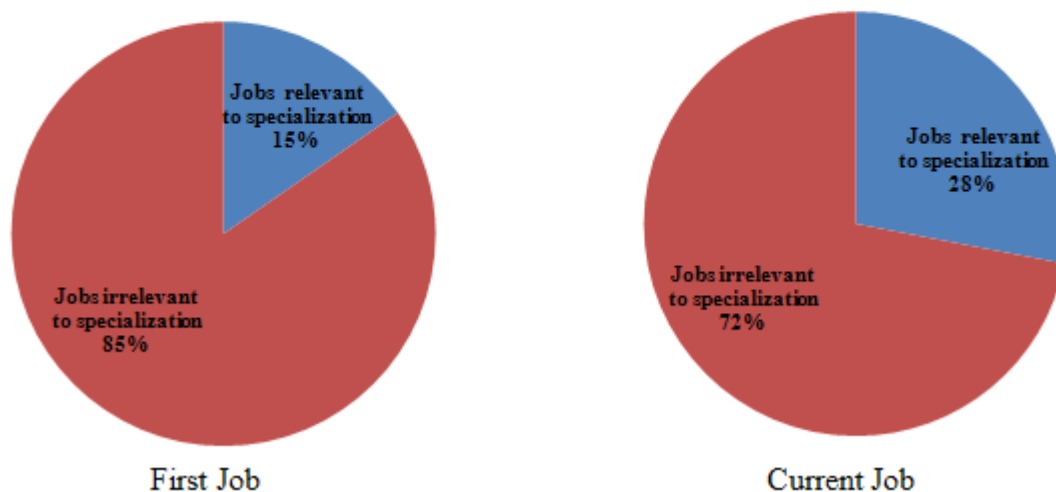
	Degree grading				Total
	Excellent	Good	Average	Pass	
Male	3	35	68	13	119
Female	36	128	23	1	188
Total	39	163	91	14	307

Bachelors of statistics and their job opportunities

Time (spent on getting a job)	Proportion (%)	Cumulative Proportion (%)
Employed immediately	51,50	51,50
From 1 to 3 months	27,57	79,07
From 3 to 6 months	8,64	87,71
More than 6 months	12,29	100,00
Total	100,00	

REAL SITUATION OF EMPLOYMENT

Graduates' undertaking jobs by speciality



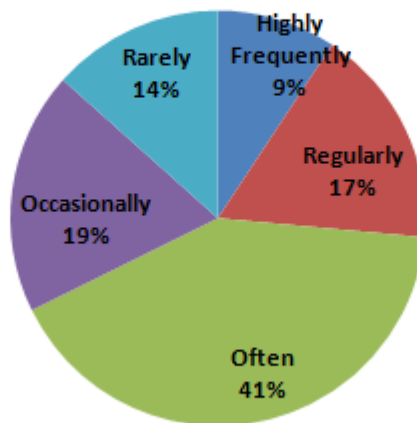
REAL SITUATION OF EMPLOYMENT

Reasons why a large number of statistics bachelors failed to get a job relevant to their major:

- The number of jobs relating to statistics as a major remains rather limited. (53% hold this view).
- Statistics bureaus have failed to introduce recruitment and promotion policies which help to attract graduates of good expertise (even though there are students who get jobs relevant to their major, 48.3% of them quit the job after one year and 24.1% quit after two years)
- Jobs offered by state-owned organizations in general and in statistics bureaus in particular are not well-paid ones, which fails to attract laborers. (30.4% agreed that jobs relevant to specialization are low-paid)

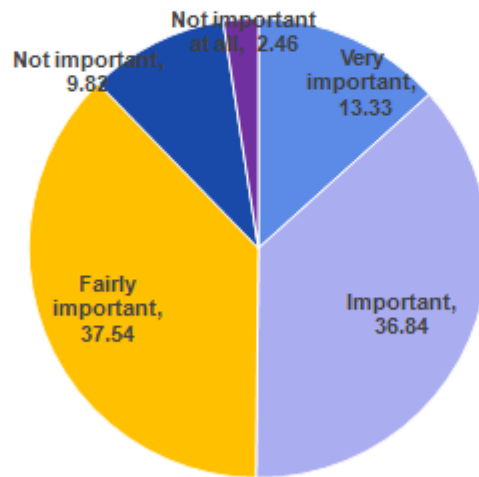
REAL SITUATION OF EMPLOYMENT

Statistics knowledge applied to solve problems at work by frequency



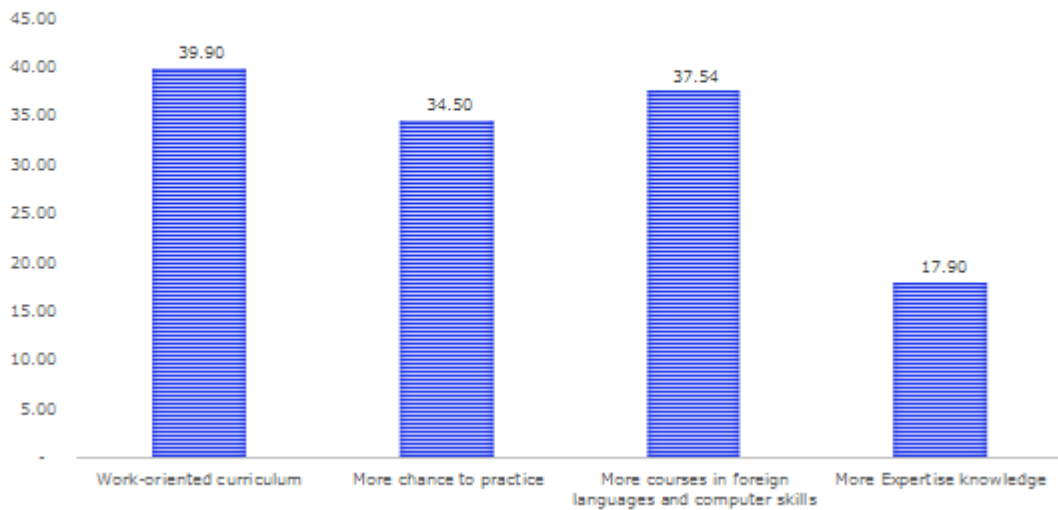
REAL SITUATION OF EMPLOYMENT

Evaluation of the importance of statistics at work



REAL SITUATION OF EMPLOYMENT

Graduates' recommendations



RECOMMENDATIONS

First, In addition to knowledge on Statistics as an expertise, students need to have skills on using foreign languages, using data-processing softwares such as SPSS, STATA, SAS, R, CPRO, or using office programs such as Word, Excel, Power-point. In addition, team-work skills and presentation skills are also of equal importance.

Secondly, undergraduates should be provided with more chance to practice, to visit enterprises or attend internships offered by organizations being in charge of statistic work.

Thirdly, State-owned statistics organizations are advised to introduce appropriate recruitment and promotion policies so that graduates of this major, who love the job, are happy to work dedicatedly and become highly committed to their position.

Finally, information about the graduates of this major, their feedback on the training program must be collected and stored in a database, which must be updated annually.



THANK YOU!

4. Current Situation & Challenges in Statistics Training in the Philippines

Dr. Jose Ramon Gatmaitan Albert, Secretary General, National Statistical Coordination Board, Philippines

Abstract


In the Philippines (PH), there is a growing demand for Statistics and Professional Statisticians, especially in the advent of more data being collected either as per design (in surveys and censuses), or as a by-product of operations and data exhaust (administrative reporting systems, internet and other electronic transactions, web search, social media, and search). Heads of Statistical Offices / Agencies comprising the PH Statistical System (PSS) recognize that people are our most important resource. It is therefore necessary to continually build the capacity of the statistical workforce and institutions in order to sustain effective and efficient response to ever growing demand for statistics by decision makers and service providers in all sectors of society. Statistical concepts are being discussed even in basic education, particularly in high school either as an elective (in private schools), or as part of integrated mathematics. A number of higher education institutions (HEIs) in the PH offer undergraduate and graduate programs (both masteral and doctoral) in Statistics. The development community also plays a significant role in supporting the graduate education of statistics personnel in various internationally-recognized academic institutions. Aside from formal education, there are also informal education programs in statistics. Major statistical agencies (MSAs) of the PSS conduct their own statistics training for their staff, or send their staff overseas or to local training programs for staff development. The Statistical Research and Training Center (SRTC), the research and training arm of the PSS, has been conducting a number of statistical training programs (as well as research undertakings), and their training beneficiaries have been increasing across the years, but more still needs to be done. Being an intervention to improve statistical capacities of individuals and institutions, a statistical training program needs to meet expectations, and yield a desired impact. It is important that the right people are being trained, the right training activities are being given, and the right effects of training are being obtained. Dissemination and delivery modes of training programs also need to be constantly improved. Experiences in the PH, especially in the conduct of statistical training programs at SRTC, are discussed, including south-to-south capacity building. Ways forward are also examined in the light of growing data demands, and the current efforts to reorganize the PSS arising from the recently signed PH Statistics Act of 2013 that strengthens SRTC into the PH Statistical Research and Training Institute, as well as integrates four MSAs into the PH Statistics Authority.





Current Situation & Challenges in Statistical Training in PH *

Jose Ramon G. Albert, Ph.D.
Secretary General, PH National Statistical Coordination Board
Governing Board Chair, Statistical Research & Training Center
Professorial Lecturer, De La Salle University

1
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Outline of the Presentation

- I. Introduction: The Growing Demand for Statistics and Professional Statisticians**
- II. Statistical Education**
- III. Nonformal Statistical Education**
- IV. Ways Forward**

2
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I. Introduction



Top 10 High Paying Jobs in PH

Job	Median Monthly Salary
1. Art Director	69,286
2. Geologist	64,889
3. Aircraft Pilot, Navigator and Flight Engineer	57,789
4. Mining Engineer and Metallurgical Engineer	55,638
5. Computer Programmer	43,573
6. Systems Analyst and Designer	42,112
7. Production Supervisor & General Foreman	36,133
8. Actuary	35,480
9. Call Center Rep/ Customer Service Associate	35,424
10. Statistician	35,010

Source: December 2012 "Labor Market Trends", Bureau of Local Employment, PH Department of Labor & Employment

3

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I. Introduction



It's More Fun to be a Statistician!

"During the twentieth century, statistical thinking and methodology have become the scientific framework for literally dozens of fields including education, agriculture, economics, biology and medicine, and with increasing influence recently on the hard sciences such as astronomy, geology and physics. In other words, we have grown from a small obscure field into a big obscure field." – **Bradley Efron, 1998**

4

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It's More Fun to be a Statistician!

- **“The sexy job in the next 10 years will be statisticians, and I’m not kidding” - Hal Varian, chief economist at Google (NY times article)**
- **What’s ubiquitous and cheap?’ Varian asks. ‘Data.’ And what is scarce? The analytic ability to utilize that data.**
 - “Data, data, data... I can't make bricks without clay”- Sherlock Holmes
- **But Nicolas Taleb reminds us of limitations of statistical science in “The Black Swan”**
 - Outliers can defy patterns

5

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Statistical Human Resource Dev't

- **Heads of Statistical Offices / Agencies comprising current PH Statistical System recognize that people are our most important resource.**
- **Currently in operation four major statistical agencies (MSAs) engaged in statistics production : NSCB, National Statistics Office, Bureau of Labor & Employment Statistics, Bureau of Agricultural Statistics**
 - Each MSA has its own human resource unit
 - In the next few months, these 4 offices to be merged into PH Statistics Authority because of PH Statistics Act of 2013

6

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I. Introduction



Statistical Human Resource Dev't

- **Statistics Education: Academe offering undergraduate (BS), and graduate (MS, MOS, MAS, PhD) programs**
- **Non-formal Statistical Education: Each major statistical agency conducts its own training programs; PSS wide training conducted/coordinated by Statistical Research and Training Center**

7

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I. Introduction



Official Statistics

- Importance for **managing economies** more **effectively**
 - Inputs to monitor national development plans on “inclusive growth”, roadmaps, targets, international commitments (MDGs, post MDG agenda)
- **Credibility** : integrity, independence and professionalism
 - UN Fundamental Principles on Official Statistics
 - **Need for statistical capacity building**
- Critics find official statistics not sufficient: call for “**data revolution**”

8

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II. Statistical Education



- **Statistics being taught as Elective in High Schools, but in the private sector.**
- **In public high schools, currently Statistics is taught as part of Integrated Math (especially in Fourth Year).**
 - Typically statistical concepts are taught at the end (if taught at all!)
 - Changes in high school curriculum underway brought about by shift of Basic Education to the K to 12 program, which is a vehicle for curriculum changes.

9

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II. Statistical Education



- **Seed of higher education in Statistics in PH planted in 1952 when the first board of directors of the PH Statistical Association, Inc. discussed possibility of establishing an international statistical (training) center in Manila at University of PH under sponsorship of PH government and United Nations (Lorenzo, 1953)**
 - UP Stat Center (now UP School of Stat) started training official statisticians (including those from other countries)
 - The Institute of Statistics' programs at UP Los Banos were developed from the Statistics Laboratory of the College of Agriculture of UPLB.
 - The program of UP Visayas was developed by its College of Arts and Sciences and that at MSU-IIT were developed by its College of Science

10

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II. Statistical Education



- **There are currently 25 higher education institutions (HEIs) that offer undergraduate and graduate programs in Statistics.**
 - HEIs concentrated mostly in Luzon (48%).
 - Eight HEIs (32%) offer statistics programs in Visayas, while the remaining 20% are in Mindanao.
 - All of the HEIs offering graduate programs in Statistics are in Luzon

Note: List of 25 HEIs does not include those that offer other related programs (e.g. Applied Mathematics)
- **The Bachelor of Science in Statistics program provides knowledge and skills in theoretical and applied statistics. Program takes 4 years to complete.**

11

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II. Statistical Education



• **Typical Subjects in BS Stat Program**

- Math Courses (Algebra, Trigonometry, Mathematical Analysis, Theory of Interest, Set Theory, Matrix Algebra)
- General Education Courses (Literature, Psychology, Economics, Accounting, Philosophy, Logic, Natural Sci)
- Introduction to Probability and Statistics
- Statistical Theory (Estimation and Hypothesis Testing)
- Multivariate Analysis
- Linear Models / Regression
- Experimental Design
- Survey Operations and Sampling Theory
- Time Series and Forecasting
- Statistical Quality Control
- Statistical Packages

12

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II. Statistical Education



- **Some HEIs offer 2 year MS in Statistics (which is sometimes a preliminary program for a PhD). Some HEIs offering “applied” track for Masters program: UP School of Statistics has Masters of Statistics (MOS) program; Polytechnic U of PH offers Masters in Applied Statistics (MAS)**
- **PhD in Statistics**
 - Few enrollees, and few graduates though
- **Assistance for Studies**
 - The development community plays a significant role as well through scholarship and fellowship grants in various internationally-recognized academic institutions.
 - Some staff within PSS take graduate education overseas or locally on own account (but with discounts from UP)

13

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II. Statistical Education



- Profiling faculty of schools that offer academic programs in statistics yields the conclusion that there is still a dearth in the teaching workforce.
- In 1999, the CHED reported that all schools they surveyed that offer academic programs in statistics had, on the average, thirteen (13) full-time faculty and three(3) part-time faculty. Furthermore, the faculty of then eleven (11) schools that offer statistics programs had a workforce of twenty one (21) faculty with Ph.D. in Statistics, forty five(45) with Masteral degrees in Statistics, and twenty nine(29) with Bachelor's degrees in Statistics

14

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II. Statistical Education



- Regular Faculty of Selected HEIs Offering Statistics Programs By Highest Degree Earned, 2004

Highest Degree Earned	UPD	UPLB	UPV*	MSU-IIT**	PUP***
Ph.D. Math/Stat	6	4	1	5	0
Ph.D. Other Specialization	0	1	0	0	2
MS Stat/Math	12	7	7****	8	2
BS Stat/Math	7	14	4	4	1
TOTAL	25	26	12	17	5

*includes only faculty teaching in the Stat program Statistics, Ph.D. Math

**includes faculty teaching in B.S. Statistics, Master of Applied specializing in Mathematical Statistics

***two(2) are full-time and three(3) are part-time, 2003 data; All of the 16 faculty of PUP in its Master of Applied Statistics program in 2004 are part-time.; Majority of these professors are from the National Statistics Office

****2 are on study leave

15

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II. Statistical Education



- **A study done by Nebres (1998) noted the lack of sufficient numbers of talented undergraduate students in the mathematical sciences. This lack in the undergraduate level will, consequently, translate to a lack of students in the graduate level.**
- **Another study by CHED**
 - Took note of declining enrolment in undergraduate programs in statistics from 1996 to 1999.
 - In 2001, estimated enrolment statistics show a lower level of enrolment in statistics at all levels compared with that in mathematics.
 - Graduate school (i.e. masters degrees) enrolment trends in statistics better than undergraduate.

16

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II. Statistical Education



- **A closer look at the profile of graduate students of the School of Statistics in UPD, reveals that majority of enrolled students are working students from the private sector.**
 - The School now schedules graduate classes after 6 p.m. on weekdays as well as during Saturdays. This is one factor attributed to the increase in enrolment.
 - Furthermore, there is growing interest in statistics across business and industry, especially for analytics/data mining. This also contributes to increase in enrolment.
 - Another important factor in the increased enrolment is the availability of scholarships
- **These studies needed in the light of growing interests in statistics, spurred especially now by “big data” and business analytics.**

17

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III. Nonformal Statistical Education



- **Design and implementation of Statistical Human Resource Dev't for the PSS is primarily lodged with the Statistical Research and Training Center (SRTC).**
 - SRTC develops & conducts statistical training courses in collaboration with the academe. Training on various aspects of statistical work, e.g., survey design, data collection and processing, database management, data analysis, presentation and dissemination.
 - SRTC training programs accredited by PH Civil Service Commission and PH Commission on Higher Education
 - SRTC to be strengthened in PH Statistical Research & Training Institute because of PH Statistical Act of 2013.

18

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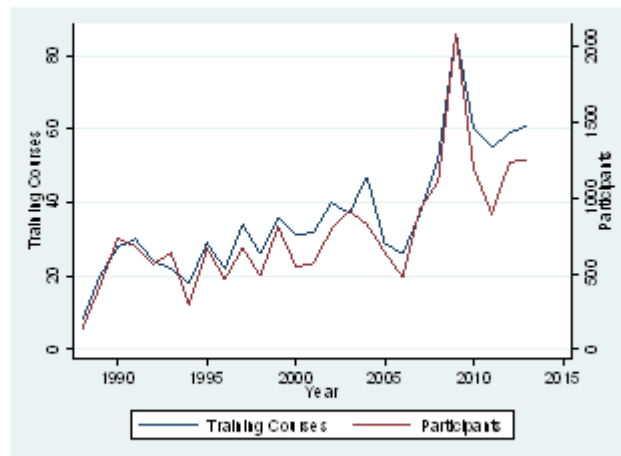
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III. Nonformal Statistical Education



- **SRTC training programs/courses & beneficiaries increasing, especially in recent times.**



Note: 2013 data only for 1st semester.

19

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III. Nonformal Statistical Education



- **Academe also plays an important role in human resource development of the PSS.**
 - Two HEIs given Center of Excellence, and Center of Development Status by our CHED, viz., UPSS and UP-INSTAT, also offer statistical training programs albeit on less frequent basis and these training programs are geared more towards interests of the private sector.
- **PH Statistics Association, Inc. (PSAI) also offers statistics training largely for interests of individual and institutional members**
- **MSAs of PSS also conduct their own statistics training for their staff, or send their staff overseas or to local training programs for staff development.**

20

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III. Nonformal Statistical Education



- **Wider reach of SRTC training in regions through regional affiliates**
 - Limited SRTC staff (and training course lecturers, often “borrowed” from academe and government statistics offices)
 - Regional affiliates are established public and private academic institutions, in partnership with the Philippine Association of State Colleges and Universities (PASCU) and the Coordinating Council of Private Educational Associations (COCOPEA).
 - After undergoing a training of trainers course, the regional training affiliates started implementing training courses under SRTC guidance
- **International training programs implemented by SRTC and other MSAs, in cooperation with UN SIAP, and other devt partners**

21

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III. Nonformal Statistical Education



- **PSS beneficiary of technical assistance on statistical capacity building from multilateral institutions for master sample development (ADB); national accounts (WB); environmental accounts (UN, WB)**
- **PSS also engaged in South-to-South statistical capacity building (training programs, study visits)**
 - National accounts / Environmental accounts and statistics: Bhutan, Myanmar, North Korea
 - Agricultural statistics: Bhutan, Malaysia
 - Survey sampling: Bhutan
 - Child Poverty and related: Afghanistan

22

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III. Nonformal Statistical Education



- **PSS promotes professional development in statistics through the continued organization of the triennial National Statistics Convention (NCS), hosting of and participation in international statistical conferences, training, workshops, and expert group initiatives.**
 - 12th NCS (Oct 1-2 2013) discussed measuring inclusive growth, big data, and managing risks with information
 - Faculty-Student Conference in Statistics held jointly with NCS

23

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IV. Lessons Learnt



- **Further improvements in statistics programs**
 - Needs of business and industry (and even in official statistics) still not met by undergraduate and graduate academic programs in statistics.
 - Statistical software used in academe largely SAS (in UPD/UPLB), but growing interest in other commercial software (Stata) and freeware (R)
 - Statistics advocacy on basic education
 - Study why previous scholarship programs to support postgraduate studies in statistics were unsuccessful. Note also that while the Dept of Science and Technology has included and promoted statistics in its existing scholarship program, the response is lackluster.

24

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IV. Lessons Learnt



- **More statistical advocacy and linkages**
 - Advocacy with CHED to give more importance to statistics
 - Student conferences (held with the National Convention on Statistics)
 - Strengthened Linkages by academe with PH Statistical Association and SRTC
- **Improvements in Planning and Programming of Statistical Training to Ensure Sustainability of Capacity Building**
 - Growing demand, especially in the light of need of industry for business analytics/examination of big data
 - Plans for posting of PH Statistics Authority of staff to National Government Agencies (NGAs) to improve statistics generation, and ensure quality management
 - Continuous development of statistics methodology; PSS staff, in particular, need constant re-tooling

25


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Salamat po! (Thank you)


 /NSCBPhilippines

 @NSCBPhilippines

 /NSCBInfo

 <http://www.nscb.gov.ph>

 info@nscb.gov.ph

 NSCBinfo@gmail.com

26

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5. Current status of statistical training in France

Prof. Michel Grun-Rehomme, National School of Statistics and Economic Administration, France

Abstract

France's official statistical system possesses five characteristics that strongly shape its organization and operation: a single legal and institutional framework, a widespread presence throughout central-government administrative bodies, strong coordination, combining research/analysis and statistical production, a clear-cut international involvement.

In this presentation, we first would like to discuss the training organization in France, because the French education system differs from that of other European countries. We have two post-secondary institutions (higher education): the universities and the “grandes écoles”.

The *grandes écoles* (literally in French "higher schools") of France are higher education establishments which stand apart from the main framework of the French university system. The *grandes écoles*, created in the eighteenth century, select students for admission based chiefly on national ranking in competitive written and oral exams. In contrast, French public universities have a legal obligation to accept all candidates of the region who hold a baccalaureate (national diploma sat at the end of secondary school). Usually candidates for national competitive exams into the *grandes écoles* have to complete two years of dedicated preparatory classes, although this is not always the case. Historically, the *grandes écoles* traditionally produced many if not most of France's high-ranking civil servants, politicians and executives, as well as many scientists, writers and philosophers.

We then present the specific situation for statistical training, and especially in the GENES (Group of National Economic and Statistical Schools). The GENES is the Higher Education and Research Directorate under the INSEE (French GSO). This is a legal unit with its own budget. There are few full-time faculty members, but GENES draws on the expertise of many individuals—including INSEE managerial staff, academics, and government employees—who combine teaching with another occupation.

GENES includes the following units:

- The National School of Statistics and Economic Administration (ENSAE), which trains INSEE *administrators* and economist-statisticians for the private sector;
- The National School of Statistics and Information Analysis (ENSAI), which trains INSEE *attachés* and management-level personnel in the fields of statistical engineering, information processing, and general economics for the private sector;
- The Center for the Study of Economic Programs (CEPE), a training center for the public and private sectors
- The Center of Research in Economics and Statistics (CREST), INSEE's research center.

For the different training organizations mentioned above (universities and grandes écoles), we present the content structure of the training, necessary skills to be achieved and the recruitment possibilities for the students. We discuss both advantages and disadvantages of the system.

For example the top skills taught in the ENSAE are: Statistics - Microeconomics - Industrial Economics - Finance and Insurance - Macroeconomics - Quantitative Sociology - Statistics and Survey Methodology - Statistics and Modeling.

Also, we present briefly the EMOS (European Master in Official Statistics) current project and explain how this new master's degree will fit into the existing French structure.

Current status of statistical training in France

Michel Grun-Réhomme

Prof. ENSAE (GENES) and University Paris-Panthéon

E-Mail grun@ensae.fr

Plan

1. **Context**
2. **Statisticians community**
3. **Genes**
4. **Comparisons between Universities and statistical schools**
5. **European Master**



1. Context (1)

Two training Systems :

University	« Grande Ecole » (higher school)
Very old	Created in the middle of XVIII century
Before 1968, 5 faculties: - Sciences, medicine, literature, law and	At the beginning 8 “grandes écoles” in technical disciplines (industry, construction, central administration,..) and military.
Now more disciplines Under the Ministry of National Education and Research	Now more disciplines as management, economic, agronomy, training, communication...
Usually public In Paris region , there are 13 Universities	Under different ministries Public and private Group of higher schools



Context (2)

Two training Systems :

University	« Grande Ecole » (higher school)
Students - No selection for the first year - Minimum fees	Students - Selection - Minimum fees in public, but higher fees in private
Professors - Training (128 h/yr) - Research - Administrative and pedagogic meetings	Professors - Various rules - More work - more salary

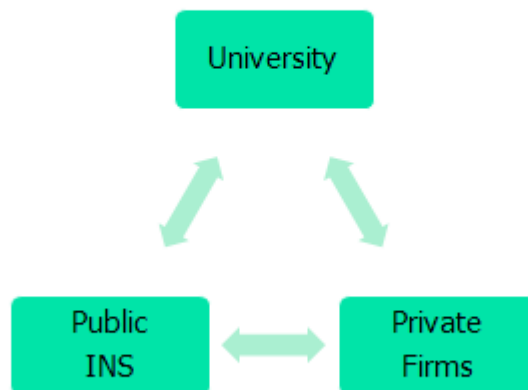



Context (3)

Baccalauréat	
University	« Grande Ecole »
Licence 1	Preparatory school 1
Licence 2	Preparatory school 2
Licence 3	⇓
⇓	First Year
Master 1	Year 2
Master 2	Year 3
Doctortat or Labor market	



2. Statisticians community (1)






Statisticians community (2)

University

- **Research**
- **More mathematical**

Public

- **INSEE (French NSI or OGS)**
- **Ministry**
- **Regional institute**
- **International Organization**



Statisticians community (3)

Private Firms

- **Banks**
- **Insurance**
- **Audit, consulting**
- **Enterprises groups**
- **Laboratory, biostatistics**
-



Plan

1. **Context**
2. **Statisticians community**
3. **Genes**
4. **Comparisons between Universities and statistical schools**
5. **European Master**



Plan

1. **Context**
2. **Statisticians community**
3. **Genes**
4. **Comparisons between Universities and statistical schools**
5. **European Master**



3. GENES (1)

The Group of National Economical and Statistical Schools

- The GENES constitutes INSEE's Higher Education and Research Directorate.
- It is a center of responsibility with its own budget.
- There are few full-time faculty members, but GENES draws on the expertise of many individuals—including INSEE managerial staff, academics, and government employees—who combine teaching with another occupation.



GENES (2)

5 Departments

- The National School of Statistics and Economic Administration (École Nationale de la Statistique et de l'Administration Économique: ENSAE), which trains INSEE *administrateurs* and economist-statisticians for the private sector.
- The National School of Statistics and Information Analysis (École Nationale de la Statistique et de l'Analyse de l'Information: ENSAI), which trains INSEE *attachés* and management-level personnel in the fields of statistical engineering, information processing, and general economics for the private sector



GENES (3)

- Most official statisticians are trained at ENSAE and ENSAI.
- The Center for the Study of Economic Programs (**Centre d'Études des Programmes Économiques: CEPE**), a training center for the public and private sectors.
- The **Center for Research in Economics and Statistics** (Centre de Recherche en Économie et Statistique: CREST), INSEE's research center.
- **SADC** (Security Center for access to Insee's data)



GENES (4)

INSEE, three categories of employees (~5200)

- **Category A (senior administrative and "design" staff):** ENSAE + ENSAI + Others (28%)
- **Category B (intermediate-level management):** recruited by competitive examination at the baccalauréat level (high-school leavers) or selected from employees in category C; trained at CEFIL (44%)
- **Category C: mostly "administrative assistants" ,** including secretaries (28%)



GENES (5)

- **International : EU + USA + Canada**
(Research and training, students and professors))
- **Cooperation : Others Countries**
(only training)
 - African Statistics schools (Senegal, Cost Ivory, Cameroon) : Selection (20 countries), Training and Grant.
 - Morocco : diploma
 - Algeria : Master in official statistics
 - Tunisia : diploma
 - And European projects as EMOS



4. Comparisons (1)

University	« Grande Ecole »
Licence 3	First Year
Master 1	Year 2
Master 2	Year 3



Comparisons (2)

University (Economy)	ENSAE
L3	First Year
Beginning of the training <i>End of September</i>	Beginning of the training <i>First Monday of September</i>
End of the training <i>Middle of May</i>	End of the training <i>End of June</i>
Total training hours by year <i>~500</i>	Total training hours by year <i>~700</i>



Comparisons (3)

Year 1 (87 students): The harmonization of knowledge

1. First Semestre

- Mathematics

Analysis, Linear Algebra, Integration and Differentiation, Probabilities¹

- Statistics (basic)

- Economy and social sciences

2. Second Semestre

Optimization, Probability², Data Analysis, micro economy, macro economy, Econometric (introduction), programmation, numerical analysis

3. Internship (between 4 week and 2 months)



Comparisons (4)

Year 2 (~ 144 students) : Fundamental

1. First Semestre

- Statistics
- Econometrics
- Micro economy
- Macro economy
- Enterprise Account
- Sampling
- Games theory
- Financial strategy (enterprises)
- Financial tools
- Processus
- Sociology



Comparisons (5)

Year 2 (~ 144 students) : Fundamental

1. Second Semestre

- Applied Statistics
- Econometrics2
- Micro economy2 (industrial)
- Macro economy2 (fluctuation, open)
- Time Series
- Statistics2 (models)
- International Trade and Globalization
- Finance (math., micro economy)
- Dynamic optimization
- Sociology2 (organization, management and labour)
- Risk Theory



Comparisons (6)

Year 3 (~ 141 students)

7 ways :

Forecasting and Economic Policy

Actuarial Science

Market Analysis and Corporate Finance

Quantitative Finance

Quantitative Methods and Social Sciences

Statistics

Risk Management



Comparisons (7)

Year 3 : Statistics

- Sampling techniques
 - Duration Models
 - Bayesian Data Analysis
 - Extreme value Theory
 - Garch models
 - Structural econometrics
 - Robust statistics, non parametric estimation
 - Copulas
 - Spatial econometric
 - Scoring, applications in marketing
 - Data analysis (2), Computational statistics, Big Data....
- Internship (two Days/week) or Research Memory



5. EMOS (1)

European Master in Official Statistics

- The general idea of an European Master in Official Statistics (EMOS) has been presented for the first time at the FOURTH MEETING OF THE TASK FORCE EUROPEAN STATISTICAL TRAINING PROGRAMME (ESTP) HELD IN Madrid, 24-25 April 2008.
- In April 2012 Eurostat propose an invitation to tender for the supply of a feasibility study related to the setup of a European Master Programme in Official Statistics



EMOS (2)

Why?

- Answer to professional needs of different statistical authorities,
- Reinforce the network of professional statisticians at international level and establish /reinforce cooperation between the academia and the ESS;
- A shared vision in methodology, organization, management and assessment of the production of European statistics
- A repository of young statisticians and training facilities in the Member States.



EMOS (2b)

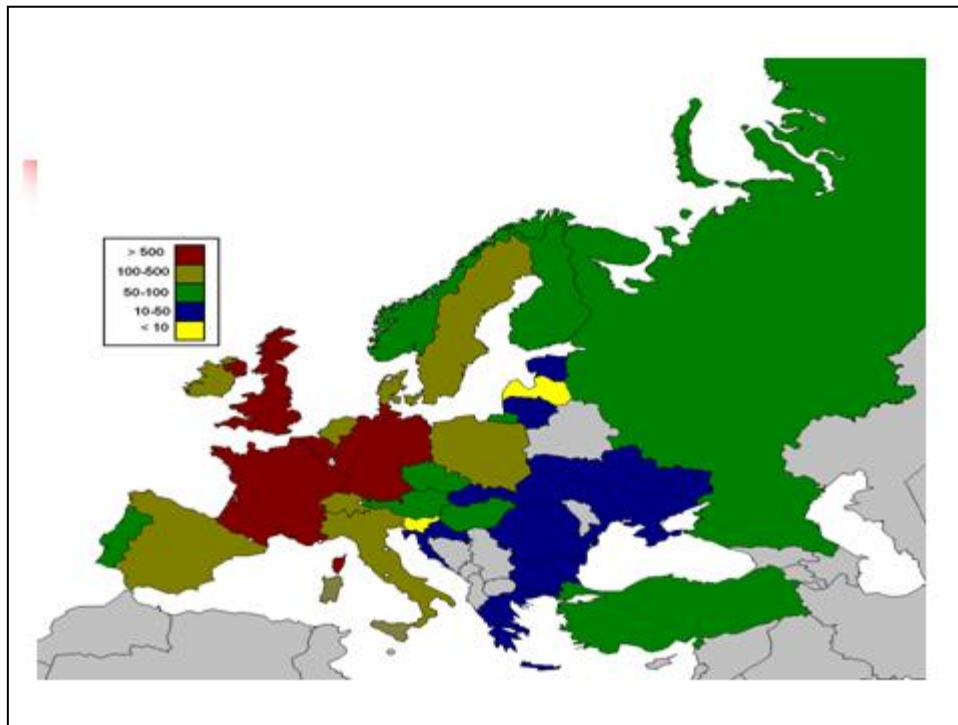
- Having a common EMOS programme in various universities would contribute to increase the quality of European data and of statistical knowledge and would promote the mobility of students across Europe. More specifically it would enable to:
 - Establish a network of EMOS course providers;
 - Diffuse European culture and knowledge in official statistics;
 - Create a repository of young statisticians having a sound knowledge in statistics but also in other fields related to official statistics (e.g. IT, social sciences, economics);
 - Improve cooperation between universities and NSI;
 - Create a platform for NSI staff members training in Universities and students in NSI.



EMOS (3)

Objectives of the study (2013)

- To provide an inventory of the Master programmes in statistics and their providers in the countries selected for analysis
- To analyze the existing and potential Master programmes in official statistics, and identify whether they are suitable for joining a future European network of Masters in official statistics



EMOS (4)

Objectives of the study (2013)

- To assess the interest of the providers and their capacity to join the EMOS Network, including their vision for the future network and the administrative and technical barriers; on the basis of a questionnaire agreed by Eurostat;
- To assess the interest of the NSIs to participate in and to support the development of a European network of the Master programmes in Official Statistics;



EMOS (5)

Objectives of the study (2013)

- To analyse the advantages/disadvantages, the cost-benefits and technicalities of having labelling mechanisms and the role and implication of this on the NSIs and Eurostat
- To propose a road map for the EMOS project



EMOS (6)

What topics in EMOS?

1. Statistical techniques

- *Survey sampling techniques* and field considerations (it is necessary to go beyond the only theory: one should approach the complete process of survey, thus including the sampling frames, the questionnaire design, the data collection, the role of the field workers, the "quality control" at a micro level and at a macro level, etc.);



EMOS (7)

What topics in EMOS?

1. Statistical techniques

- *Time series* statistics and the processing of panel data;
- *Techniques of modeling* (linear models, generalized linear models) and econometrics;
- *Located Statistics* (essentially small area estimation, but also spatial stochastic modeling,



EMOS (8)

What topics in EMOS?

1. Statistical techniques

- *Indexes*
- *Techniques of classification*
- *Techniques of matching and confidentiality* (to preserve records anonymity).



EMOS (9)

What topics in EMOS?

2. The economic and social environment

- Descriptive economy
- Demography (persons and firms);
- National accounting.

the institutional and legal environment



EMOS (10)

3. The institutional and legal environment

- Knowledge of the European institutions, the European information system, the missions and the organization of Eurostat;
- Legal environment (National, European), regulations concerning the data confidentiality.

Beginning : September 2014?

Budget?



Thank you for your attention

6. Current status of statistical training in the United States

Prof. Dominique Haughton, Bentley University, USA

Abstract

This talk will first discuss the structure of statistical training in the United States at each of the levels: primary and secondary school, undergraduate and graduate (master's and PhD levels).

The presentation will then give an overview of the following approaches to statistics instruction in United States universities:

- Statistics taught by statistics departments
- Statistics taught within mathematical sciences departments
- Statistics taught by other academic departments (economics, psychology etc.)

The talk will then turn a discussion of the recent very fast increase in the importance of Analytics (a term coined by corporations which means applied statistics in the business sector); terms such as Data Scientist, Data Miner will be defined. The impact on statistics instruction, notably at the graduate level, of the very strong demand for Analytics professionals by the corporate sector will be described. Training in statistics applied to other areas such as social science, health, environmental issues etc. will also be mentioned.

The presentation will outline the role of professional societies: American Statistical Association (ASA), the Institute for Operations Research and Management Science (INFORMS), the Decision Science Institute (DSI), and the Institute for Mathematical Statistics (IMS). For example the role of the ASA Educational Ambassadors will be mentioned.

Recent trends in the development and use of certification programs, notably as launched by the ASA and INFORMS, will be discussed.

The talk will also touch upon the role of short term training courses, as offered by corporations such as SAS and other private providers (such as for example statistics.com)

The recent advent of the popularity of MOOCs (Massive Open Online Courses) and its impact on statistical education will be discussed.

The talk will end with a brief presentation of journals with a focus on statistics education, such as for example the journal of statistics education, Case Studies in Business, Industry and Government Statistics (CSBIGS) etc.

Current status of statistical training in the United States

Dominique Haughton

Bentley University, Université Paris I
Panthéon-Sorbonne (SAMM) & Université
Toulouse I



Current status of statistical training in the United States: Agenda 1

- Structure of statistical training in the United States at each of the levels: primary and secondary school, undergraduate and graduate (master's and PhD levels).
- Overview of the following approaches to statistics instruction in United States universities:
 - Statistics taught by statistics departments
 - Statistics taught within mathematical sciences departments
 - Statistics taught by other academic departments (economics, psychology etc.)

Current status of statistical training in the United States: Agenda 2

- Discussion of the recent very fast increase in the importance of Analytics
 - a term coined by corporations which means applied statistics in the business sector)
 - Data Scientist, Data Miner, Big Data
 - Impact on statistics instruction, notably at the graduate level, of the very strong demand for Analytics professionals by the corporate sector
- Training in statistics applied to other areas such as social science, health, environmental issues etc.

Current status of statistical training in the United States: primary and secondary school (including High School)

- Advanced placement in statistics in secondary school
- AP® Statistics: syllabus
 - The course teaches students how to use graphing calculators and demonstrates the use of computers and/or computer output to enhance the development of statistical understanding through exploring and analyzing data, assessing models, and performing simulations.
 - All students have a TI-83/TI-83+/TI-84 graphing calculator for use in class, at home, and on the AP Exam. Students will use their graphing calculator extensively throughout the course.
 - All students have a copy of JMP-Intro statistical software for use at home and for demonstrations in class. Students will have occasional assignments that must be completed using JMP-Intro.
 - After the AP exam, students will use JMP-Intro daily when we learn multiple regression and ANOVA.
 - Various applets on the Internet

Current status of statistical training in the United States: primary and secondary school (including High School)

- Advanced placement in statistics in secondary school
- Course Outline: typical of introductory university courses too
 - Chapter 1: An Introduction to Statistics
 - Chapter 2: Collecting Data
 - Chapter 3: Displaying univariate Data
 - Chapter 4: Describing univariate Data
 - Chapter 5: Describing bivariate data
 - Chapter 6: Probability
 - Chapter 7: Random Variables
 - Chapter 8: Sampling Distributions
 - Chapter 9: Confidence Intervals
 - Chapter 10: Hypothesis Tests
 - Chapter 11: Two-sample procedures
 - Chapter 12: Chi-square tests
 - Chapter 13: Inference for slope
 - Chapter 14: Multiple regression
 - Chapter 15: ANOVA
 - http://apcentral.collegeboard.com/apc/public/repository/ap06_stat_syllabus2.pdf

Current status of statistical training in the United States: primary and secondary school (including High School)

- Advanced placement in statistics in secondary school
- Advanced placement: example of an AP exam question

A coin is tossed three times. What is the probability that it lands on heads exactly one time?

- (A) 0.125
- (B) 0.250
- (C) 0.333
- (D) 0.375
- (E) 0.500

Solution

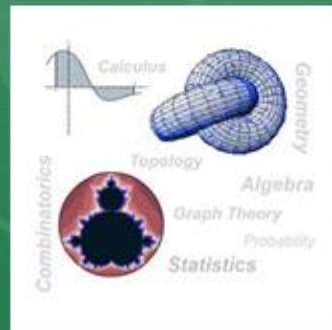
The correct answer is (D). If you toss a coin three times, there are a total of eight possible outcomes. They are: HHH, HHT, HTH, THH, HTT, THT, TTH, and TTT. Of the eight possible outcomes, three have exactly one head. They are: HTT, THT, and TTH. Therefore, the probability that three flips of a coin will produce exactly one head is $\frac{3}{8}$ or 0.375.

Current status of statistical training in the United States: universities

- Universities: undergraduate and graduate (master's and PhD levels).
- Statistics taught by statistics departments
- Example: Statistics major at UC Berkeley:
4 lower division math courses (calculus, calculus II, multivariable calculus, linear algebra and differential equations) plus 9 upper division courses (3 core courses, 3 statistics electives, and 3 applied cluster courses in an area which uses statistics, such as for example economics or demography)

Current status of statistical training in the United States: universities

- Statistics taught within mathematical sciences departments; example: Swarthmore college point of view



Current status of statistical training in the United States: universities

- Typical statistics masters' program curriculum; example: Temple University
 - The Master of Science degree requires completion of minimum ten graduate-level courses amounting to 30 semester hours of credits in theory and methods of statistics. Included in the 10 courses, are 4 core courses, which may be met in one of the following two ways.
 - Stat 8001 (theory) and Stat 8003 (methods) in fall and Stat 8002 (theory) and Stat 8004 (methods) in spring. Or,
 - Stat 8112 (statistics theory) and Stat 8003 in fall and Stat 8101 (probability and stochastic processes) and Stat 8004 in spring.
 - Note: Option 2 is for the MS degree students only who are likely to benefit more from a statistics theory course taught at a lower mathematical level than that of sequence Stat 8001-8002 which is oriented towards the Ph.D. program. Should students following Option 2 eventually decide to pursue the Ph.D. program, they will then be asked to enroll in Stat 8001-8002 sequence to meet the Ph.D. program requirements. MS degree student who choose Option 1, have the responsibility to learn the statistical theory sequence Stat 8001-8002 at a level it is taught.

<https://www.temple.edu/temple/department/statistics/program/master-of-science/#desc>

- Note interesting issues around Temple's effort to introduce an undergraduate minor in business statistics
- <https://www.temple.edu/temple/department/statistics/program/master-of-science/#desc>

Current status of statistical training in the United States: universities

■ Typical statistics PhD program curriculum; example: Stanford University

- Students are required to master the material in the prerequisite courses; pass the first-year core program; pass two of three parts of the qualifying examinations (end of first year); comply with the breadth requirement (second or third year); successfully complete the thesis proposal meeting (before end of third year) and pass the university oral examination (fourth year); and submit a dissertation (fourth year).
- The Ph.D. requires a minimum of 135 units. Students are required to take 9 units of advanced topics courses offered by the department and 3 units of statistical consulting. All students who have passed the qualifying exams but have not yet passed the University oral examination must take 319 (literature course) at least once per year. Students in their second year are strongly encouraged to take 319 with at least one faculty member.
- **Core Courses:**
 - Statistics 300 systematically surveys the ideas of estimation and of hypothesis testing for parametric and nonparametric models involving small and large samples.
 - Statistics 305 is concerned with linear regression and the analysis of variance.
 - Statistics 306 surveys a large number of modeling techniques, related to but going well beyond the linear models of 305.
 - Statistics 310 is a measure-theoretic course in probability theory, beginning with basic concepts of the law of large numbers, and martingale theory.

Current status of statistical training in the United States: universities

■ Typical statistics PhD program curriculum; example: Stanford University

- **Advanced Courses**
 - Asymptotics (Stats 332)
 - Bootstrapping (Stats 354)
 - Classification and Pattern Recognition (Stats 329A and Stats 329B)
 - Decision Theory
 - Experimental Design (Stats 340)
 - Multivariate Analysis (Stats 324)
 - Nonparametrics (Stats 372)
 - Sequential Analysis (Stats 326)
 - Spatial Statistics (Stats 352)
 - Survival Analysis (Stats 338)
 - Time Series (Stats 343)

Current status of statistical training in the United States: universities

- Statistics taught by other academic departments (economics, psychology, etc.)
 - Often because teaching of statistics by a math department is felt to be too theoretical
 - Or because departments feel that statistics should be taught with applications in their discipline (for example nursing)
 - Example: statistics versus econometrics
 - Can be very good, can be limited

Current status of statistical training in the United States: Analytics, Data Scientists, Big Data

- Analytics: a term coined by corporations which means applied statistics in the business sector
 - What is a Data Scientist?
 - What is data mining?
 - Impact on statistics instruction, notably at the graduate level, of the very strong demand for Analytics professionals by the corporate sector:
 - Many universities are trying to rapidly establish analytics graduate programs
 - But the problem is that often faculty are not close to corporate activity and programs remain theoretical (statistics or operations research programs renamed as analytics)
 - The Bentley experience

Current status of statistical training in the United States: Analytics, Data Scientists, Big Data

- Analytics can only be taught with close partnerships with corporations
 - Corporate partners help inform what skills should be covered
 - And help hire graduates
- Example: the emc partnership
- <http://www.emc.com/index.htm>
- http://www.youtube.com/watch?feature=player_embedded&v=z2YTjm1MHe4
- Next 14 slides: authored by emc

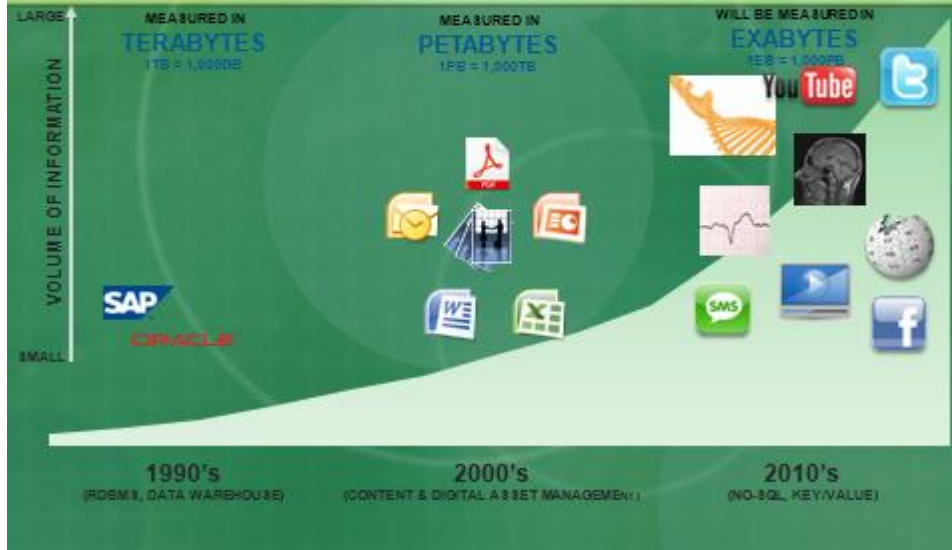


From the dawn of civilization until 2003
humankind generated
FIVE exabytes of data

Today
we produce five exabytes
every **TWO DAYS**



Exploding Data Volumes Require a New Approach to Analytics & Collaboration

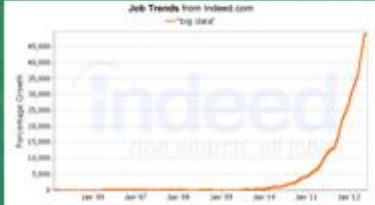


"The ability to take data – to be able to understand it, to process it, to extract value from it, to visualize it, to communicate it – that's going to be a hugely important skill in the next decades."

Hal Varian, Chief Economist, Google

Growth of Data Scientist Opportunities

Job Trends from Indeed.com



Average "big data" salaries for job postings nationwide are 43% higher than average salaries for all job postings nationwide.

- "A significant constraint on realizing value from big data will be a **shortage of talent, particularly of people with deep expertise in statistics and machine learning**, and the managers and analysts who know how to operate companies by using insights from big data."
- By 2018...the United States alone faces a **shortage of 140,000 to 190,000 people with analytical expertise and 1.5 million managers and analysts** with the skills to understand and make decisions based on the analysis of big data.

Source: McKinsey Global Institute
Big data: The next frontier for innovation, competition and productivity
May 2011

Source: McKinsey Global Institute; Big data: The next frontier for innovation, competition and productivity, May 2011

Big Data



Key Characteristics

- Large Volumes
- New Sources
- Low Latencies



Implications for the Enterprise

- New Platforms
- New Roles
- New Techniques

Industries Are Broadly Embracing Data Science

 <p>Retail</p> <ul style="list-style-type: none"> • CRM – Customer Scoring • Store Siting and Layout • Fraud Detection / Prevention • Supply Chain Optimization 	 <p>Advertising & Public Relations</p> <ul style="list-style-type: none"> • Demand Signaling • Ad Targeting • Sentiment Analysis • Customer Acquisition
 <p>Financial Services</p> <ul style="list-style-type: none"> • Algorithmic Trading • Risk Analysis • Fraud Detection • Portfolio Analysis 	 <p>Media & Telecommunications</p> <ul style="list-style-type: none"> • Network Optimization • Customer Scoring • Churn Prevention • Fraud Prevention
 <p>Manufacturing</p> <ul style="list-style-type: none"> • Product Research • Engineering Analytics • Process & Quality Analytics • Distribution Optimization 	 <p>Energy</p> <ul style="list-style-type: none"> • Smart Grid • Exploration
 <p>Government</p> <ul style="list-style-type: none"> • Market Governance • Counter-Terrorism • Economics • Health Informatics 	 <p>Healthcare & Life Sciences</p> <ul style="list-style-type: none"> • Pharma-Genomics • Bio-Informatics • Pharmaceutical Research • Clinical Outcome Research

Data Paradigms, An Analyst Perspective

Data Islands "Spreadsheets"	Data Warehouses	Analytic Sandbox
<i>Isolated data warehouses</i>	<i>Centralized data warehouses in a purpose-built space</i>	<i>Data assets gathered from multiple sources and technologies for analysis</i>
		
<ul style="list-style-type: none"> ▪ Spreadsheets and low-volume DB's for recordkeeping ▪ Analyst dependent on data extracts 	<ul style="list-style-type: none"> • Supports BI and reporting, but restricts robust analyses • Analyst dependent on IT & DBAs for data access and schema changes • Analysts must spend significant time to get extracts from multiple sources 	<ul style="list-style-type: none"> • Enables high performance analytics using in-db processing • Reduces costs associated with data replication into "shadow" file systems • "Analyst-owned" rather than "DBA owned"



People & Skills

Three Key Roles of the New Data Ecosystem



Profile of a Data Scientist





Data Science and Big Data Analytics Training and EMCD SA Certification



- Provides a practical foundation for Data Science and Big Data Analytics
- Enables immediate and effective participation on big data and other analytics projects
- Assist reframing a business challenge as an analytics challenge
- Deploy a structured lifecycle approach to data analytics problems
- Apply appropriate analytic techniques and tools to analyze big data
- Tell a compelling story with the data to drive business action

Audience:

- Business and data analysts looking to add big data analytics skills
- Managers of business intelligence, analytics, or big data groups
- Database professionals looking to enrich their analytic skills
- College graduates considering data science as a career

Recommended Prereqs:

- Basic understanding of SQL
- Basic understanding of statistics
- Basic understanding of scripting language, such as PERL, Python, Java, or R



Data Science and Big Data Analytics Hands-on practitioner's approach to analyzing Big Data

	Big Data Overview	State of the practice in analytics	The role of the Data Scientist	Big Data Analytics in industry verticals			
Introduction to Big Data Analytics							
	Key roles for a successful analytic project	Main phases of the lifecycle	Developing core deliverables for stakeholders				
End-to-end data analytics lifecycle							
	Introduction to R	Analyzing and exploring data with R	Statistics for model building and evaluation				
Using R to execute basic analysis methods							
	K-Means Clustering	Association Rules	Linear and Logistic Regression	Naive Bayesian Classifier	Decision Trees	Time Series Analysis	Text Analysis
Advanced analytics and statistical modeling for Big Data – Theory and Methods							
	Using MapReduce/Hadoop for analyzing unstructured data	Hadoop ecosystem of tools	In-database Analytics	HADOOP and Advanced SQL Techniques			
Advanced analytics and statistical modeling for Big Data – Technology and Tools							
	How to operationalize an analytics project	Creating the Final Deliverables	Data Visualization Techniques	Hands-on Application of Analytics Lifecycle to a Big Data Analytics Problem			
Endgame, or Putting it all together							

EMC – Place to work for Recent Graduates

What we value...

- Curiosity and Intellect
- Thinking and Innovation
- Integrity and Professionalism
- Continuous Learning



Graduate Programs...

- Sales Associate Programs
- Global Services Associate Programs
 - Presales, Consultants, Delivery and Support engineers
- Leadership Development Programs
 - IT, Engineering, Business Operations, Marketing, Human Resources, Finance and Global Services Organizations
- Internships

University Programs

- Global Academic Alliances

Current status of statistical training in the United States: statistics training for social sciences, health, environment etc

- Statistics in health sciences, such as biostatistics, very often taught in schools of public health by biostatisticians
- Departments of biostatistics are often separate from statistics departments, and tend to be close to teaching hospitals (example: Harvard School of Public Health)
- Special master's programs exist (for example the Tulane University MS in Environmental Statistics; <http://www.tulane.edu/~envstats/es/envstat.html>) and often involve more than one department
- Masters in public policy vary a lot in how strong they are in statistics and quantitative methods

Current status of statistical training in the United States: statistics and analytics certification programs

Certified Analytics Professional

[certification.com/asa/asaonline](#)



Members and others interested in securing a Certified Analytics Professional (CAP)® make plans now to take the profession's first general analytics certification exam. Next exams will be offered in October in Boston or the 2nd and 3rd are in Indianapolis or the 3rd. See CAP® Exam Schedule below for more dates and for other exam opportunities.

Cost of Certification

- \$300 – Individual ANP/CPA® members (over the 2017); additional \$100 application fee waived for members.
- \$350 – Individual non-members (company of 2000) and for plus \$100 application fee.
- Student rates with ANP/CPA® meetings are also available. [Contact ANP/CPA®](#) for more information.

Benefits of Certification

- Accelerates your career potential by setting you apart from the competition.
- Gives external validation of accomplishing a life career milestone.
- Helps improve your overall job performance by increasing continuing professional development.
- Recognizes that you have reached an important career milestone in securing this rigorous credential.
- Shows your skills and abilities to being viewed as an expert-level analytics professional.
- Shows competence in the processes and practices of analytics.
- Demonstrates commitment to the field.
- Proves to employers that your organization knows industry-validated analytics practice.

Read "Certified Analytics Professional (CAP)® prepares to launch first-of-its-kind program" in the Sept/Oct 2017 issue of Analytics Magazine.


Read "The Shape of Analytics Certification" in the February 2017 issue of CRIMM Today.

Eligibility

- BA/BS or M.A./M.S. degree.
- At least five years of practice work-related experience for BA/BS holder in a related area, or
- At least three years of practice work-related experience for M.A./M.S. holder in a related area, or
- At least seven years of practice work-related experience for BA/BS (or higher) holder in an unrelated area.
- Verification of self-education of business value to employer.

Current status of statistical training in the United States: statistics and analytics certification programs

Accreditation



View the Guidelines for Accreditation

Applying Online for Accreditation

ASA's Ethical Guidelines for Statistical Practice

Read *Amstat News* articles about accreditation

Extra Benefits

Accredited Members List

Accreditation Committee

Authorized use of PSTAT® mark

Accreditation Home

Welcome to the ASA accreditation web page.

If you are considering applying for accreditation, please read the information below. Then log in to ASA members only, and click on the PStat button to begin the process. In order to do this, you must be an ASA member. However, if you are not a member, and just wish to see the elements of and the instructions for an application form, [click here](#).

Accreditation brings value both to members of the profession and to those who benefit from the work of professional statisticians.

Viewed from the profession, accreditation testifies that there is a body of knowledge known as Statistics, that accredited practitioners of Statistics must be well versed in that knowledge at an advanced level, and must have applied it competently and ethically through practice for several years. And as rapidly as the theory and practice of Statistics evolves, so must professional statisticians continually stay abreast of new developments in their areas of expertise.


One does not have to be accredited to have these qualities, of course, but accreditation is one witness to the wider world that statisticians are professionals, akin to architects, doctors, engineers and lawyers.

Why is this important?

Many issues that have an impact on our daily lives, such as our health and safety, our work, our standard of living, and the policies of our governments are crucially influenced by Statistics - the collection, analysis, presentation and interpretation of quantitative data in the presence of uncertainty. Sound statistical practice informs sound decisions, leading to better policy and better outcomes. Incorrect or unethical use of Statistics can produce misleading results, poor advice and worse choices.

That is, the practice of Statistics is a job for skilled professionals. Accredited statisticians have been recognized by their peers as combining education, experience, competence, and commitment to ethics at a level that labels them as professionals. Accreditation provides a measure of assurance to employers, contractors and collaborators of statisticians, and a mark of accomplishment to society at large.

What are the ASA's Accredited Professional Statisticians™ saying?



Current status of statistical training in the United States: statistics and analytics certification programs

ASA accreditation is a voluntary credential offered to ASA members that provides peer recognition for all of the following:

- Having advanced statistical training and knowledge
- Having experience in applying statistical expertise competently
- Maintaining appropriate professional development
- Agreeing to abide by **ethical standards of practice**
- Being able to communicate effectively

The ASA's accreditation program is modeled after programs in Australia, Canada, and the United Kingdom. Accreditation is a portfolio-based rather than an examination-based credential, and is renewable every five years. Accreditation is also voluntary; applicants seek accreditation because they believe the credential is worthwhile to them, but it is not a requirement for practice.

Accreditation applicants will submit materials to be reviewed by members of the ASA Accreditation Committee, peers who will evaluate submissions based on the **ASA's Guidelines for Accreditation**. Those who meet these guidelines will be awarded the designation "accredited professional statistician."

There is a **fee** to apply for and an annual fee to maintain accreditation.

Current status of statistical training in the United States: short term courses offered by corporations and other private providers

Example: SAS e-learning courses

Foundation
<input type="checkbox"/> Programming
<input type="checkbox"/> SAS Enterprise Guide
Advanced Analytics
<input type="checkbox"/> Statistical Analysis
<input type="checkbox"/> Business Statistics
<input type="checkbox"/> Data Mining
<input type="checkbox"/> JMP Statistical Analysis
Business Intelligence
<input type="checkbox"/> SAS Visual Analytics
<input type="checkbox"/> SAS Enterprise Business Intelligence
Data Management
<input type="checkbox"/> Data Integration
Administration
<input type="checkbox"/> SAS Platform
<input type="checkbox"/> Application/Technology Area
Health and Life Science
<input type="checkbox"/> Life Sciences

Current status of statistical training in the United States: short term courses offered by corporations and other private providers

Example: statistics.com courses

The screenshot shows the statistics.com website. At the top, there is a navigation menu with links for CERTIFICATE PROGRAMS, COURSE CATALOG, COURSE CALENDAR, FAQ, and FACILITY. Below the menu is a world map with numerous colored pins indicating course locations across North America, Europe, and Asia. To the right of the map is a blue banner with the text "2013: Your Year Of Statistical Learning!" and "See Our Student Profiles Here...". Below the map, there are several sections: "Data Analytics" with a description and a "More" link; "Earn a Certificate" with a list of subjects (Data Analytics, Biostatistics, Social Science, Using R); "Afraid of Statistics? Need Intro Stats for Credit?" with a description; and "Upcoming Courses" with a list of course titles and dates, including "Introduction to Quantitative Risk Analysis (Sep 20)", "Survival Analysis (Sep 20)", "Introduction to Bayesian Computing and Techniques (Sep 20)", "Bootstrap Methods (Sep 20)", "Social Network Analysis Using Python (Sep 20)", "Advanced Optimization (Sep 27)", "Categorical Data Analysis (Sep 27)", "Strangling and Hungry Data with RQ and R - An Introduction (Sep 27)", "Hadoop in R (Sep 27)", "Introduction to R - Statistical Analysis (Oct 04)", and "Regression Analysis (Oct 04)".

Current status of statistical training in the United States: MOOCs – Massive Open Online Courses

List of Mathematics and Statistics free online courses/MOOCs

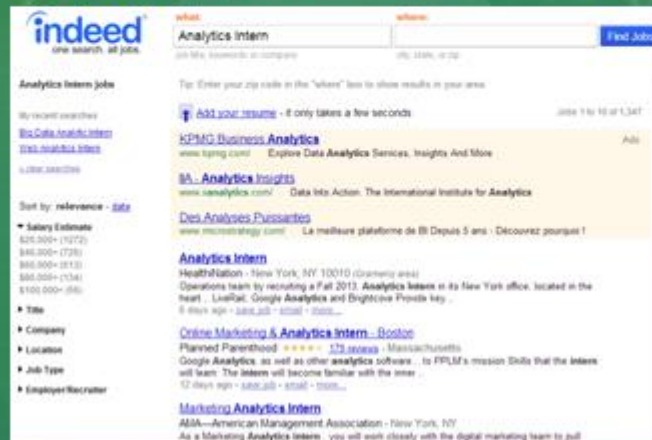
Recently started or starting soon (7)

Intro	Course Name	Instructor(s)	Start Date	Length	Initiative
	Statistics One Princeton University	Andrew Conway	22nd Sep. 2013	12 weeks	Coursera
	Computing for Data Analysis Johns Hopkins University	Roger D. Peng	23rd Sep. 2013	4 weeks	Coursera
	Scientific Computing University of Washington		25th Sep. 2013	10 weeks	Coursera
	Pre-Calculus University of California, Irvine, Universitat Autònoma de Barcelona (Autonomous University of Barcelona)	Juan Jesús Donaire	16th Sep. 2013	8 weeks	Coursera
	Mathematical Methods for Quantitative Finance University of Washington	Kjell Kordt	25th Sep. 2013	8 weeks	Coursera

[tip us, suggestions or corrections](#)

Current status of statistical training in the United States: analytics and statistics internships

Many analytics internships are available:



But they are often arranged via contacts of faculty members.

Current status of statistical training in the United States: analytics and statistics internships

The American statistical association maintains a list of statistics internships:



Current status of statistical training in the United States: journals with a focus on statistics education

- For example:
 - Journal of Statistics Education
 - Case Studies in Business, Industry and Government Statistics (CSBIGS)
 - and others

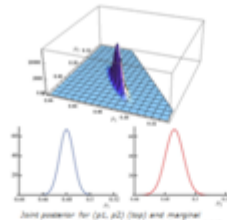
Current status of statistical training in the United States: journals with a focus on statistics education

The screenshot shows the homepage of the Journal of Statistics Education. The header includes the journal's title and subtitle: "An International Journal on the Teaching and Learning of Statistics" and "Journal of Statistics Education". The main content area is divided into several sections:

- Current Issue:** Announces the July 2013 (Volume 21, Number 2) issue, noting that the table of contents can be accessed at [Table of Contents](#). It lists a special "Tutorial" from the previous editors, regular articles, and a Data Sets and Stories section.
- Feedback:** Invites readers to provide feedback on the journal.
- Celebrating the 20th Anniversary of JSE:** Celebrates the journal's 20th anniversary, mentioning its founding in July 1993 and its 20th issue.
- Statistics Education News:** Announces a special issue on Project SET, a NSF-funded project to develop innovative materials for high-school teachers.
- Project SET:** Details the project's goals and the role of the journal in disseminating research.
- Electronic Conference on Teaching Statistics (ECTS):** Announces the 2014 conference, which will be held from July 19-21, 2014.
- International Conference on Teaching Statistics (ICTS):** Announces the 2014 conference, which will be held from July 13-16, 2014.
- Other Statistics Education Journals:** Lists other journals in the field, such as the *Statistics Education Research Journal* and the *International Journal of Statistics Education Research*.

CS-BIGS

Case Studies in
Business, Industry and
Government Statistics



Joint posterior for (μ, σ^2) (top) and marginal posterior for μ (bottom left) and σ^2 (bottom right) from Figure 1, an analysis of Data Predictions for the 2008 United States Presidential Election, by Steven Ripstein, Steven Seavey, Shantanu Joshiwar, Henry Cho and Christopher Ripstein.

Volume 4, Number 1, November 2010

Editor's Foreword	Dominique Haughton	pdf
1	An Analysis of Chain Predictions for the 2008 United States Presidential Election Steven Ripstein, Edward Seavey, Shantanu Joshiwar, Henry Cho and Christopher Ripstein	pdf data
9	Dynamic Data Visualization Chunmei Wang and Michèle Meiner	pdf data
23	Using Partial Trend Analysis for Depicting the Temporal Evolution of Spatial Structures: Assessing Hierarchical Structure and Succession in a Water Resource Frédéric Barraud and Myriam Naouy	pdf data
44	On the LMER Function for Nested Annual Breeding Data Nelson Ojeda	pdf data
59	Forecasting with ARMA Models Serge Jagu	pdf data
66	A Statistical Analysis of Popular Lottery "Whoring" Strategies Albert Chen, Haili Yang and Fred Chan	pdf data

Dominique Haughton, editor-in-chief, Bentley University
Christine Thomas-Agnes, co-editor, Europe, Université Toulouse I
John Bacon-Shone, co-editor, Asia, University of Hong Kong
R.W. Ng, methodology editor, University of Hong Kong

- Editorial team encompasses five continents
- Journal appears electronically twice a year
- The raw data are provided with each case

CSBIGS: Case Studies in Business, Industry and Government Statistics

www.bentley.edu/csbiggs

- Dominique Haughton, Bentley University Editor-in-chief
- Christine Thomas, Toulouse School of Economics, Europe co-editor
- John Bacon-Shone, University of Hong Kong, Asia co-editor
- International team of Associate Editors, from Business and Government as well as Academia

- At least 4 constituencies:
 - instructors who need good case studies ready with data to use in class,
 - case writers who need a reputable refereed outlet for their work, and
 - publishers who are eager to stay abreast of current developments in statistical applications, as well as
 - students and practitioners

- CSBIGS is to the data analysis and decision sciences community what the Case Research Journal is to other business areas
- Case writers often prefer to write for a refereed publication rather than for case books
- CSBIGS provides a natural medium for interdisciplinary work

Current status of statistical training in the United States

THANK YOU!!!

www.dominiquehaughton.com

7. Current status of statistical training in Australia

Assoc. Prof. Alice Richardson, Faculty of Education, Science, Technology & Mathematics, University of Canberra, Australia

Abstract

“Statistical thinking will one day be as necessary for efficient citizenship as the ability to read and write.” Versions of this quotation (inspired by British science fiction writer H.G. Wells) have been used as evidence of the importance of statistical training for over 50 years.

“I keep saying the sexy job in the next ten years will be statisticians.” Hal Varian, chief economist at Google, made this prediction in January 2009. His decade is now four years old (counting 2010) and there is not much time left to train the statisticians required for this decade of activity!

In this talk I will discuss the current status of statistical training in Australian universities. The policy environment is complex and changing rapidly, and I will highlight the main directions that have emerged. I will also discuss the structure of the university system as it particularly pertains to statistics training, and I will highlight some of the impact that structure has had on statistics training.

Current status of statistical training in Australia



Dr Alice Richardson
Assistant Professor in Statistics
University of Canberra
Australia

Outline

- Australian university system
- Policy environment
 - Threshold learning outcomes
 - Decadal plan
 - Maths, engineering and science in the national interest
 - Review of Statistics in Australian universities
 - SSAI accreditation
- Training systems
 - Departments
 - Cooperation
 - Internships
- Training levels
 - Systemwide
 - Statistics
- Training modes
- Summary

Australian university system

- 38 universities
- All funded by Government, student contributions and research grants
- Except for 1 private university, Bond University, funded by its creator and by student fees

Australian Universities' Ranking in the World

The Academic Ranking of World Universities (ARWU) 2010		Times Higher Education World University Rankings 2010-2011	
University	World Ranking	University	World Ranking
University of Melbourne	37	University of Melbourne	28
Australian National University	44	Australian National University	21
University of Queensland	46	University of Sydney	32
University of Sydney	48	University of Queensland	48
University of Western Australia	48	University of New South Wales	48
Monash University	111-120	Monash University	44
University of New South Wales	121-130	University of Adelaide	179
Queensland University	131-140	University of Western Australia	180
University of Adelaide	151-160	Queensland University	211-219
Deakin University	241-250	University of Technology	211-219
Sydney University	261-270	University of Newcastle	179-180
James Cook University	301-310	Macquarie University	301-300
Deakin University of Technology	311-320	University of South Australia	301-300
University of Newcastle	321-330	University of Wollongong	301-300
University of Tasmania	321-330	Charles Darwin University	321-400
University of Wollongong	321-400	Stellenbosch University	321-400
Curtin University of Technology	411-420	Flinders University	321-400
La Trobe University	411-420	University of Technology, Sydney	321-400
University of Technology, Sydney	411-420	University of Tasmania	321-400

1 The Academic Ranking of World Universities (ARWU) uses a 1000-university list where the top 100 are also included in the Academic Ranking of World Universities. The Academic Ranking of World Universities (ARWU) uses a 1000-university list where the top 100 are also included in the Academic Ranking of World Universities. The Academic Ranking of World Universities (ARWU) uses a 1000-university list where the top 100 are also included in the Academic Ranking of World Universities. The Academic Ranking of World Universities (ARWU) uses a 1000-university list where the top 100 are also included in the Academic Ranking of World Universities.

Policy environment

- “I keep saying the sexy job in the next ten years will be statisticians. People think I'm joking, but who would've guessed that computer engineers would've been the sexy job of the 1990s?”
 - Hal Varian, [The McKinsey Quarterly](#), January 2009
- Jobs in Government, pharmaceutical companies, scientific research such as biotechnology and climate change
- Attitude towards statistics varies across government, society and academia
- Statistical Society of Australia Inc. (SSAI) in the best position to emphasise to these groups the importance of statistics to good decision-making

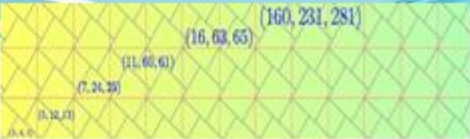
Threshold learning outcomes

- Written by National Mathematical Sciences Committee
- Draft form
- Universities still to work out how to meet them in specific courses


Understanding	1.1	Ability to construct logical arguments incorporating deductive reasoning
	1.2	Understanding of the breadth of mathematical sciences, their role in other fields, and the way other fields contribute to mathematical sciences
Knowledge	2.1	Knowledge of the concepts of a broad range of areas in the mathematical sciences
	2.2	Well-developed knowledge in at least one sub-discipline of the mathematical sciences

Enquiry and problem solving	3.1	Ability to formulate problems in statistical terms using a variety of methods
	3.2	Ability to apply statistical techniques to solve problems and interpret results critically
Communication	4.1	Appropriate interpretation of information communicated in statistical form
	4.2	Appropriate presentation of information
Responsibility	5.1	Ability to self direct learning
	5.2	Ability to work effectively in an individual or team context
	5.3	Ethical application of approaches to solving problems

Decadal Plan




- For the mathematical sciences
- <http://www.mathscidecadalplan.org.au/>
- Three broad components:
 - An assessment of the current state of the mathematical sciences in Australia
 - A description and prioritisation of opportunities for the future (2015-2025), and
 - An outline of strategies to achieve these priorities.
 - Committee of respected professors chosen by the Academy



Maths, engineering & science: in the national interest

- Chief Scientist, a former university vice-chancellor, very active in the media
- Most recommendations to do with school teachers
- Recommendations impact upon universities in terms of training of school teachers
- Government not obliged to implement any or all of the recommendations



Review of Stats in Aus unis I

- Identify and disseminate **good practice** in statistical education
- debate about statistical education for the **citizen** versus statistical education for students with a strong **mathematical interest**
- Improve the **transition** from school to university.
- Ensure a supply of appropriately trained and supported **school teachers** to teach statistics

Review of Stats in Aus unis II

- Recognise the importance of statistics as a **discipline in its own right**, as well as a supporter of other disciplines.
- Best **position** statistics within each university, for administration and collaboration.
- Establish **statistical consulting centres** in universities
- Seek arrangements across universities to sustain **critical mass** in statistics

Review of Stats in Aus unis III

- Closer **links** between universities and employers
- **Publicise** existing good practice
- **Involve** employers in the education process via advisory boards
- Set up **mentoring** schemes for recent graduates
- Develop **Young Statistician** networks
- Change the **perception** of statistics in schools; and in universities among second and third year students



SSAI accreditation

- Individual accreditation
 - especially useful for self-employed consultants
- Graduate accreditation
 - Must meet criteria for degree accreditation
- Degree accreditation must meet the following criteria
 - Minimum of 25% Statistics at second year level,
 - Minimum of 50% Statistics at third year level.
 - Required: inference, data analysis and the use of a statistical package.
 - Select from: probability and distribution theory, linear models, design of experiments, sampling methods, multivariate analysis, biostatistics, time series, statistical consulting, communication skills, databases.

SSAI accreditation: outcomes

- Mixed success
- Mostly consultants take up individual accreditation
- Many graduates achieve graduate accreditation
- Australian National University, University of Newcastle, University of Melbourne, University of Wollongong among the only universities to have degree accreditation

Training systems: departments

- No consistency in location of statistics departments in Australian universities
- Some on their own
- Some with Mathematics
- Some with Business, Economics, Finance, or Actuarial Studies
- Some with Science
- Some with Psychology
- No united view on whether statistics is a service discipline or an area of study in its own right

Statistics training: departments

- In Mathematics, teaching focuses on using mathematical techniques
- In Business, teaching focuses on using statistical methods, including regression, time series, and econometrics
- In Science, teaching focuses on using statistical methods, including experimental design and data analysis
- In Psychology, teaching focuses on meeting accreditation requirements, using special statistical language developed within psychology

Training systems: departments

- No consistency in location of statistics departments in Australian universities
- Some on their own
- Some with Mathematics
- Some with Business, Economics, Finance, or Actuarial Studies
- Some with Science
- Some with Psychology
- No united view on whether statistics is a service discipline or an area of study in its own right

Requirements for statistical methods courses vary significantly between departments, reflecting differences in the methods of teaching and the focus of the courses.

Training systems: cooperation

- postgraduate and professional education courses including for ABS staff
- Research in statistical design, complexity of data and computational methods
- industry collaborations
- outcomes so far: optimism



Training systems: internships



Australian Statistician's Fellowship Program

- Fellowships (used to be called cadetships): university study funded in return for part-time work during study, or full-time work afterwards
- Professors partly or fully funded at four universities
- But any government job can only be offered to Australian citizens

Training systems: internships

- Work experience
- PhD scholarships
- Vacation scholarships: a student spends six weeks with a researcher in the summer break between university years
- Advertised around universities, but personal contacts by academics often more effective



Training systems: workplaces

- As the need arises
- Content totally tailored to workplace needs
- Supplied to Government departments
 - Defence Science & Technology Organisation
 - Therapeutic Goods Administration
 - Department of Agriculture, Forestry & Fisheries
- Also supplied by software companies e.g. SAS, and not-for-profit organisations e.g. The Australian Consortium for Social and Political Research Incorporated (ACSPRI)

Training levels: systemwide

- Australian Qualifications Framework (AQF) established by Government
- Used very generally to state the level of achievement expected for each of 10 levels of qualification
- Universities, and statistics departments within universities, have to work out how to meet the standards
- Standards to be enforced by the Tertiary Education Quality and Standards Office (TEQSA)

Australian Qualifications Framework (AQF)

HIGH SCHOOL	HEALTH	UNIVERSITY	AQF Level
		Doctoral Degree	Level 10
		Master's Degree	Level 9
	Graduate Diploma Graduate Certificate Bachelor Honours Degree		Level 8
	Bachelor Degree		Level 7
	Associate Degree Advanced Diploma		Level 6
	Diploma		Level 5
	Certificate IV Certificate III		Level 4
	Certificate II		Level 3
	Certificate I		Level 2
	Senior Secondary Certificates of Education (HSC in NSW)		Level 1



Australian Government
Tertiary Education Quality and Standards Agency

Training levels: statistics

- Undergraduate – majors available at most universities
- Bachelors degrees at some
- Graduate – diplomas available at some universities
- Post-graduate – coursework masters and research masters available at some universities
- PhD – available most universities
- No standardised content for any of the degrees

Training modes

- Full time, part time
- Face-to-face, blended, fully online



- “Statistical thinking will one day be as necessary for efficient citizenship as the ability to read and write.”

- HG Wells (1951) *Mankind in the Making*

Summary

- Cautious optimism
- Importance of statistics training as different to mathematics training is recognised
- Many demands being made of the statistics training system
- Small yet varied system
- Need to commit to continued work on threshold learning outcomes, accreditation and other recommendations

Section 4. National and International Experience in Statistics Training

Introduction:

One of the most important factor influencing the training quality and the human resource quality is the curriculum and training contents, the link between theory and practice in each course. Curriculum design and knowledge structure should be started after having identified the training objectives and the required skills at each training level. In fact, each position in an organization requires different statistic skills suitable for specific duties of that organization. Therefore, the training product should be flexible and adaptalbe to various postions of statistic work. Besides, the courses' contents should ensure the features like basic, modern, balanced between theory and practice, relevant to the reality and up-dated to the international development.

In this section we will share experience in training at some Vietnamese universities with statistics major, as well as the experience of universities in some developed countries, where education is well developed, and the experience of other training organizations in the field of statistics. Sharing experience like this will help us see better a gap between Vietnam and other countries in teaching contents and curriculum. At the same time, it opens a forum for the next discussion on a direction for perfecting curricula and for effective cooperation between Vietnamese and international universities, between universities and organizations to improve training quality and quality of statistic human resource for Vietnam.

(Mr. Arthur Erken, UNFPA Representative in Viet Nam)

Contents

1. Experience in training statistics major at NEU: lessons learnt and challenges
Assoc. Prof. Trần Thị Kim Thu, Faculty of Statistics, NEU
2. Experience in statistics training by the College of Economics, Hue University
Trần Phước Hà, MA, Economics University, Hue University
3. Experience in statistics training by the University of Economics Ho Chi Minh City
Dr. Hà Văn Sơn, University of Economics Ho Chi Minh City
4. SIAP's experience in capacity building for statisticians in the region
Hiroyuki Kitada, Deputy Director, Statistical Institute for Asia and the Pacific SIAP
5. Experiences in statistical training in mid income countries
Prof. Michel Grun-Rehomme, National School of Statistics and Economic Administration, France
6. Experience of Statistical Training in PH: Lessons learnt and challenges
Dr. Jose Ramon Gatmaitan Albert, Secretary General, National Statistical Coordination Board, Philippines
7. Experience and contents of training on statistics in Australia
Assoc. Prof. Alice Richardson, Faculty of Education, Science, Technology & Mathematics, University of Canberra, Australia
8. Experience and content of statistical training in America
Prof. Dominique Haughton, Bentley University, USA
9. Experience and contents of training on statistics in Korea
Jongho Lee, Director, Training Management Division, Statistical Training Institute, Statistics Korea

1. Experience in training statistics major at NEU: lessons learnt and challenges

Assoc. Prof. Trần Thị Kim Thu, Faculty of Statistics, NEU

Abstract

The National Economics University (NEU) in Hanoi is the earliest institution to provide education in economics. It also leads in quantity of students, variety of levels and forms of training in Vietnam. Over the long history of training, NEU has achieved significant results, at the same time it has been facing difficulties and challenges, especially when Vietnam is integrating to the world. This article is addressing the following issues:

First, a brief overview of the history of training statistics major at NEU. Faculty of Statistics was among the first faculties at the establishment of NEU. Over the 55 years the Faculty has graduated 5,500 bachelors, over 80 masters and 70 doctors of statistics. The Faculty is currently training about 20 graduate and doctorate students. Most of the Faculty's lecturers are qualified with statistics background from undergraduate to doctorate levels.

Second, current situation of training statistics major. This article addresses objectives, professional skills to be obtained, working positions after graduation. Specifically, there is a detailed presentation of curriculum structure in comparison with those of some international university to point out limitations of the current curriculum of NEU.

Third, challenges to the current education of statistics major. They include issues of admission, curriculum, lecturers' qualification, teaching methodology, link with real practice and income of jobs in statistics.

Finally, the article raises a series of recommendations regarding policy environment, perfection of curriculum in the direction of integration and meeting requirements of real practice, capacity improvement for lecturers, improvement of teaching methodology, improvement of research by lecturers and students, enhancement of cooperation with statistic agencies in doing research, training and retraining statistic workers.

Conference on Statistics Training in Universities:
National and International Experiences, and the Way Forward

EXPERIENCE IN TRAINING STATISTICS MAJOR AT NEU

LESSONS LEARNT AND CHALLENGES

*Assoc.Prof. Trần Thị Kim Thu
Dean, Faculty of Statistics*

AGENDA

1

Brief on the process of training the
statistics major at NEU

2

The situation of training statistics at
NEU

3

Challenges

4

Recommendation

1. BRIEF ON THE PROCESS OF TRAINING STATISTICS MAJOR AT NEU

- From the establishment of the university to 1984: 4 statistics specializations; graduate training started in 1972 first doctor graduated in 1976
- From 1985 to 2003 : Training on general statistics with socio-economic statistics specialization
- From 2004 to 2011: 2 specializations: Business Statistics under the major of Business Administration and Socio-economic Statistics under the major of Economics
- From 2012: major of Economic Statistics with 2 specializations - Socio-economic Statistics and Business Statistics

1. BRIEF ON THE PROCESS OF TRAINING STATISTICS MAJOR AT NEU

Results:

- + over 5,000 bachelors in statistics, more than 80 masters, 70 doctors and about 20 graduate and PhD students taking statistics major currently
- + 25 course books compiled and published 76 times
- + hundreds of research projects at all levels: department, university, ministry and state

1. BRIEF ON THE PROCESS OF TRAINING STATISTICS MAJOR AT NEU

Lecturers:

Currently 18, including:

- 6 doctors (1 graduated in Russia, 1 in France, 1 in Australia, 3 in Vietnam, among them 4 Associate Professors.
- 7 pursuing PhD education in Vietnam and abroad
- 3 masters in statistics, 2 lecturers on probation pursuing graduate education.

a team of high-quality visiting lecturers, including 5 Professors, Associate Professors and Doctors from NEU.

2. CURRENT SITUATION OF TRAINING STATISTICS MAJOR

Objectives:

Training bachelors of Economics Statistics with

- good qualities of politics and morality, good health, high responsibility for society;
- with a basic knowledge of economy and society, management and business administration;
- with in-depth knowledge of statistics and data analysis;
- with capacity of thinking independently and of self-obtaining knowledge due to job requirements

2. CURRENT SITUATION OF TRAINING STATISTICS MAJOR

Professional skills to be obtained:

- Design research, plan survey options, and collect data
- Synthesize, describe and analyze data
- Set and analyze national accounts
- Process data using statistics softwares
- Data mine to serve managing and planning socio-economic policies and carrying out management functions at different levels
- Write statistics analysis reports
- Identify and solve problems with quantitative analysis

2. CURRENT SITUATION OF TRAINING STATISTICS MAJOR

Working positions after graduation:

- Statistics workers at
 - Offices of the statistics system of the state, ministries, departments, and socio-economic organizations;
 - Departments of researching and analyzing data in enterprises of all forms;
 - Local and international organizations of consultancy, research, and data analysis.
 - Local and international NGO projects and organizations;
- Researchers in organizations of consultancy and market research.
- Researchers in institutes and research centers
- Lecturers at universities and colleges
- Independent founders of organizations of consultancy, data analysis and processing

2. CURRENT SITUATION OF TRAINING STATISTICS MAJOR

Knowledge structure of the economic statistics (Excluded intern before graduation)

Content	Credit	Credit of Mathematics and Statistics	Proportion (%)
1. Knowledge of general education	44	8	18.18
1.1. Compulsory knowledge	32	8	
1.2. Selective knowledge by the university	12	0	
2. Knowledge of in-depth education	73	46	63.01
2.1. Compulsory knowledge by the university	9	0	
2.2. Common knowledge of the major	27	21	
2.3. Selective knowledge of the major	12	0	
2.4. Specialized knowledge	25	25	
Total	117	54	46.15

2. CURRENT SITUATION OF TRAINING STATISTICS MAJOR

Compulsory courses related to statistics:

- Advanced Mathematics (part 1 and 2) 5 credits
- Theory of Probability 3 credits
- Mathematic statistics 3 credits
- Theory of statistics (part 1 and 2) 6 credits
- Econometrics 1 3 credits
- Economic statistics 3 credits
- System of National Accounts (SNA) 3 credits
- Informatics application in statistics 3 credits
- Social survey 3 credits
- Statistics in market research 3 credits
- Financial statistics 3 credits
- Population statistics 3 credits
- Social statistics..... 3 credits

2. CURRENT SITUATION OF TRAINING STATISTICS MAJOR

Elective courses related to statistics:

- Analysis of Multivariate Statistics 2 credits
 - Time series analysis 2 credits
 - Econometrics 2 2 credits
 - Data analysis 2 credits
 - Quality statistics 2 credits
 - Basics of Data Mining 2 credits
 - System of National Accounts (SNA) 2 credits
 - Socio-economic statistics 2 credits
 - Social statistics 2 credits
 - some courses of in-depth statistics for specialization 2 credits
 -
- 


2. CURRENT SITUATION OF TRAINING STATISTICS MAJOR

General comments on the knowledge structure:

- total 127 credits for 41 courses and 1 internship is not reasonable (too much), i.e. little for 1 course.

Example: At Australia National University (ANU), 144 credits for 24 modules.

At University of Minnesota (USA) 120 credits for 30 - 32 courses of choice.

- Only 46,15% of knowledge is reserved for mathematics and statistics in VN, while this number is nearly 70% in international universities (USA, Australia, Singapore...)
- 

3. CHALLENGES

- Curriculum is not modern, does not fully internationally integrate, thus cannot create differentiation and excellence of training products compared with those in the past
- Admission does not come from the society's demand and lack of encouragement to learners.
- A number of lecturers do not have in-depth and extensive theoretical knowledge as well as practical experience
- Teaching methodology is not effective, with emphasis on theories rather than on real practice, lacking training on problem solving skill .
- Lack coordination between teaching and practicum at statistics offices and businesses
- Statistics is considered as one of the top ten well-paid jobs in the world, whilst one of the "modest"-paid jobs in VN

4. RECOMMENDATIONS

Policy environment:

- Ministry of Education and Training consolidates a major code and curriculum framework for all universities providing statistics major
- Graduate training in statistics should have the same major code as that of undergraduate level
- Apply complete change in admission policy for both undergraduate and graduate levels, specifically:
 - *First, set annual target for statistics major in consideration of society's demand (for both statistics industry and businesses...);*
 - *Second, set admission score for statistics major, not depending on that of other majors*

4. RECOMMENDATIONS

Curriculum:

- Add courses of highly applicable skills such as:
 - Sample design and sampling methods
 - Programming for statisticians
 - Graphic data analysis
 - Analysis of categorizing variables
 - Statistics models
- Reduce number of courses with overlapping, unnecessary and insufficient contents
- increase proportion of statistics knowledge in the curriculum to at least 60% and allocate more time on compulsory basic courses of statistics
- At the same time, design a profession oriented higher education program in statistics for undergraduate level

4. RECOMMENDATIONS

Teaching methodology:

- Reduce lecturing on theories in class time, give more guidance for self-study, increase practice
- Encourage students to participate in doing research with teachers, facilitate students approaching real practice through surveys....

Lecturers:

- Each lecturer must have a plan for self-development in their specialization
- Invite qualified statistic officials from GSO to be visiting lecturers.

Coordinate with organizations in scientific research, training and retraining statistic workers



2. Experience in statistics training by the College of Economics, Hue University

Trần Phước Hà, MA, Economics University, Hue University

Abstract

This article describes the current status of statistics teaching to major and non-major students at College of Economics - Hue University and raises a number of challenges and difficulties in training, from which suggests some recommendations to improve the quality and effectiveness of statistics instruction.

In College of Economics - Hue University, Department of Statistics, which is under the Faculty of Economic Information System, is in charge of teaching statistics courses for both statistics majored and non-statistics majored students. There is an obvious difference in teaching curricula applied for these 2 categories of students. Non-major students take 2-3 statistics courses, which is enough to meet the requirements on statistics knowledge in their major. Statistics-majored students must take 3 mandatory courses of statistics before registering for other specialized statistics courses. However, the titles of some courses do not show the continuity and integration among the courses, which causes some difficulties for training at the advanced level while causing boredom among learners due to repetition. In addition, the admission level of statistics students equals to the minimum level regulated by the MOET, which causes common obstacles imparting in-depth knowledge, and consequently results in low learning outcomes of statistics students. These factors contribute to the low motivation among students of this major. Furthermore, environmental problems and facilities also affect the quality of student learning and the effectiveness of the training.

The content of the statistics courses taught in College of Economics - Hue University is mainly based on curriculum and textbooks of the Faculty of Statistics, National Economics University, which means some passiveness in instruction. Majority of lecturers in the Department of Statistics graduated from other majors and have not been trained professionally in statistics.

From the above situation, the article provided some recommendations to improve quality and effectiveness of statistics teaching. First, the university should revise the curriculum of all majors; reduce duplication of contents among courses as well as the course titles to increase the training continuity and integration. Second, to improve reference materials related to statistics for students and lecturers. Third, the university should improve intensive data processing capacity for statistics lecturers through workshops. The lecturers should be more positive and active in doing scientific research, designing teaching materials and expanding relationships with businesses to have more real-life cases for teaching.

HUE UNIVERSITY
COLLEGE OF ECONOMICS

STATISTICS TRAINING IN COLLEGE OF ECONOMICS

HUE UNIVERSITY

By: MSc. Trần Thị Phước Hà
Vice Dean, Department of Statistics - Hue College of
Economics

Content

1. Current situation of statistics training at Hue College of Economics

2. Achievements and challenges in the training process

3. Recommendations for quality and results improvement

1. Situation of statistics training at Hue College of Economics

Non-statistics major group (*full-time, in-service, college top-up, vocational top-up forms*)

02 compulsory modules: *Theory of probability and statistical mathematics; Principles of economic statistics*, which are prerequisite for in-depth statistics modules: *Business Statistics, Trade Statistics, Economic Statistics, Agricultural Statistics*

Curriculum for non-major group

❖ ***Module of Theory of Probability and Statistical Mathematics***

- Length: 3 credits (45 periods)
- Allocation: 2nd and 3th semesters
- Content: 5 chapters, including *Random variables and probability, Random variables and probability distribution law; Theory of sampling; Estimating parameters of random variables; Statistics hypothesis testing.*

Curriculum for non-major group

❖ *Module of Principles of Economic Statistics*

- Length: 3 credits (45 class periods)
- Allocation: 3rd and 4th semesters
- Content: 8 chapters, including: Subjects of statistics science; Statistics research process, statistics clustering; Levels of socio-economic phenomena; Regression and correlation; Time series, Indicator; Sample survey.

1. Situation of statistics training at Hue College of Economics

Major of Business Statistics (full-time)

- *Structure of knowledge*
- *Curriculum*

Structure of training knowledge

	Compulsory	Optional	Minimum accumulation
General knowledge	29	12	37/41
Specialized knowledge	57	56	72/113
Internship	4		4/4
Dissertation	7		7/7
Sum of credits	97	68	120/165

Curriculum of Business Statistics

Modules	Number of credits
Basic knowledge	
Theory of Statistics 1	3
Theory of Statistics 2	2
Economic Statistics 1	3
Economic Statistics 2 (System of National Accounts)	2
Business Statistics 1	3
Business Statistics 2	2
Socio-economic Statistics, data analysis	(2)

Curriculum of Business Statistics	
Modules	Number of credits
Specialized and supplementary knowledge	
Statistics in commodities and services markets	(2)
Human Resources Statistics	(2)
Agricultural Statistics	(2)
Tourism Statistics	(2)
Financial Statistics	(2)
Statistics in Market Research	2
Environment Statistics	(2)
Investment and construction Statistics	(2)
Insurance Statistics	(2)
Quality Statistics	(2)
Population Statistics	(2)

Curriculum of Business Statistics	
Modules	Number of credits
Internship	4
Graduation thesis	7
Alternative to graduation thesis	7
Overall project	2
Internship on project	5

Statistics training for major group

Thus, specialized statistics group must complete three compulsory modules: *Probability theory and statistics mathematics, Theory of statistics 1 and 2* before registering other specialized modules

Curriculum of Statistics Major

❖ *Module of theory of probability and mathematic statistics*

- Length: 3 credits (45 periods)
- Allocation: 2nd and 3th semesters
- Content: 5 chapters, including *Random variables and probability, Random variables and probability distribution law; Theory of sampling; Estimating parameters of random variables; Statistics hypothesis testing.*

Curriculum of Statistics Major

❖ *Module of Theory of Statistics 1*

- Length: 3 credits (45 periods)
- Allocation: 3rd semester
- Content: 6 chapters including: An overview of statistics, statistics survey, Synthesis statistics, Levels of socio-economic phenomena; Survey sampling, Statistics hypothesis test.

Curriculum of Statistics Major Students

❖ *Module of Theory of Statistics 2*

- Length: 2 credits (30 periods)
- Allocation: 4th semester
- Content: 4 chapters including Regression and Correlation; Time series and forecast; Indicator; Decision Theory .

2. Statistics training results

Hue College of economics has been training full-time students majored in Business Statistics under the branch of Business Administration since 2007 and under the branch of Economic Information System since 2009. Training results are shown in the following table:

Class	No of Students	Training period
K40	49	2007-2010
K41	47	2008-2011
K42	47	2009-2012
K43	43	2010-2013
K44	63	2011-2014
K45	62	2012-2015
K46	65	2013-2016

Difficulties and challenges in the training process

- 1. The challenges related to training content**
- 2. The challenges of the environment and facilities**

The challenges related to training content (1)

- The subjects of *Microeconomics I* and *Macroeconomics I* which are the theoretical base for *Theory of Statistics 1* and *2*, *Principles of economic statistics*, are sometimes arranged to study in the same semester, making it difficult for students to acquire knowledge.
- Knowledge content of the two modules of *Theory of Statistics 1 and 2* is significant, whereas the total amount for both modules is 5 credits.

The challenges related to training content (2)

- Some modules are overlapped, causing boredom for students (e.g., *Human Resources Statistics and Population Statistics*, *Economic Statistics and Agricultural Statistics*).
- The module titles does not ensure continuity between majors such as *Principles of Economic Statistics*, *Business Statistics*, *Statistics of commodity markets and services*

Challenges of the environment and facilities (1)

- **Lecturers: Quality and Quantity of Department of Statistics**

Qualification	Quantity	Majors
Bachelor	3	Business Administration, Agricultural Economics,
	7	Business Statistics
Master	1	Statistics (4), Agricultural Economics (2); Business
		Administration (1)
PhD		Agricultural Economics
Total	11	-

Challenges of the environment and facilities (2)

- **Computer labs are too small for big-sized class**
- **Crowded class (60-100 students) causes difficulty in group discussions or case studies.**
- **Other facilities e.g. library, textbooks and reference materials, newspapers, magazines, Internet, etc. are also very needy.**

Challenges of the environment and facilities (3)

- **entry level of Statistics students often equals to the pass benchmark level of the MOET**
- **Enrollment is difficult for the major belong to the branch of Economics Information System**
- **Students have to study many courses in a semester, they do not have the time needed for self-study and preparation before coming to class.**

The challenges of the environment and facilities (4)

- **Lack of cooperation with businesses and society for developing case studies.**
- **Textbooks and lectures depend on that of Faculty of Statistics – National Economics University**

3. Recommendations

❖ For the university and the faculty

- Review the curriculum of all majors to remove unnecessary and too heavy for specialized statistics (Discrete Mathematics, Algorithms of Data Structures, Networks and communications, Programming)
- Reduce the overlap between the specialized subjects

Recommendations

- The university should open the branch of Business Statistics to be more active in the annual enrollment
- Adjust Theory of statistics 1 and 2 to 3 credits each module
- The module of *socio-economic data analysis statistics* should be turned into compulsory
- The classes should be arranged with no more than 50 students

Recommendations

- Rename the two subjects of *Principles of economic statistics* into *Theory of statistics 1* and *Business Statistics* into *Business Statistics 1* (applied for both major and non-major students) to increase the training continuity
- Improve reference materials on statistics for students and lecturers and enhance lecturers' ability to process intensive data

Recommendations

❖ *For the lecturers*

- Be more active in the scientific research, compiling textbooks and lectures, expand relationships with businesses to get practical case study.
- Innovate teaching methods to increase autonomy and activeness in students and make statistics more interesting.

Recommendations

❖ *For the lecturers*

- lecturers should take part in workshops, seminars and conferences in Vietnam and abroad to share their training experience

HUE UNIVERSITY
COLLEGE OF ECONOMICS

THANK YOU



3. Experience in statistics training by the University of Economics Ho Chi Minh City, *Dr. Hà Văn Sơn, University of Economics Ho Chi Minh City*

Abstract

The article presents experience in statistics training at University of Economics Ho Chi Minh City (UEH). The university was founded on 27 October 1976. The university is assigned to carry out educational programs in statistics at all levels, namely bachelor, master and doctorate, with Mathematics - Statistics Faculty being in charge of program management.

The article analyses the socio-economic situation with its impacts on the instruction of statistics. During the economic planning period, the simple demands of statistics application in management produced little pressure on modifying statistics instruction. However, since Viet Nam started renovation policies, demands for inferential statistics have increased quickly, which creates pressure to make changes in statistics teaching at economics universities.

Presently, non-statistics major departments in UEH take only Principles of Economic Statistics for statistics knowledge. The entire curriculum of statistics major requires the accomplishment of 135 credits, in which statistics credits account for about 20% of the total knowledge. The general objective of Statistics major is to produce economic bachelors with good health, moral and political qualities, profound basic knowledge of economics and sociology, in-depth knowledge of statistics techniques and skills of data analysis, together with other professional skills, thinking skills and teamwork skills.

The instruction of statistics at UEH has had some limitations in the recent years. The curricula of statistics-related courses still have overlap as in the cases of Statistical Probability, Principles of Economic Statistics and Econometrics courses. Advanced and elective courses are absent from the curriculum. The teaching and assessment focus too much on formula-based calculating skills. The knowledge level of new students is still low. The teaching staff have been recruited from various sources. In the past few years, the teaching of statistics has had some changes. Some new courses such as Multivariate data analysis, Data mining in business, Stochastic Process, ... have been introduced. Statistics course books have been re-compiled with more real examples. Students are provided with popular statistics softwares.

The article also proposes recommendations to overcome the shortcomings such as to cut down on the overlapped contents of different courses; promote the launch of a new major of Economic Statistics. During recruitments of new lecturers for Statistics department, candidates trained in Applied Statistics, Quantitative Analysis from developed countries should receive priority. It is essential to apply innovative teaching methods. Lecturers have to be capable of using statistics softwares in teaching. Statistics department should organize regular seminars so that lecturers can exchange knowledge and learn from each other. Statistics Bureau of provinces and cities should have their own market research statistics office.



EXPERIENCE IN STATISTICS TRAINING AT UNIVERSITY OF ECONOMICS HOCHIMINH CITY

HÀ VĂN SƠN, PhD
HOÀNG TRỌNG, M.A.
MATHEMATICS – STATISTICS FACULTY,
UNIVERSITY OF ECONOMICS, HCMC

Outline



Background

**The real situation of statistics training at
University of Economics Ho Chi Minh
City (UEH)**

Limitations and achievements

Recommendations

2



1. Background

1.1 Some information about the foundation of UEH and the history of statistics major training.

2



- **University of Economics Ho Chi Minh City was founded on 27 October 1976 based on the former Sai Gon Laws School and other economics universities in the South.**

4



- **The university assigns Mathematics - Statistics Faculty to be in charge of statistics training at all levels: bachelor, master, and doctorate.**

5



- **From intake 1 (1975-1979) to intake 12 (1986-1990), the university provided specialized training such as in Industrial Statistics, Agricultural Statistics, Statistics
(1987-1991), the university has provided general statistics training: General Statistics.**

6



- **1.2. The impacts of socio-economic situation on the teaching of statistics**

7



- **During the period of planned economy, statistical work was mainly collecting and synthesizing data gained from surveys. Statistical analysis was mainly based on descriptive, comparing and contrastive statistics, not on inferential statistics.**

8



- **The simple needs of statistics application in management produced little pressure on modifying statistics teaching in economics universities.**

9



- **Since Viet Nam began renovation policies, allowing the development of private sector and the construction of socialism-oriented market economy, the need for inferential statistics to do business statistics in companies has remarkably increased. This fact has caused pressure on innovating statistics teaching methods.**

10



- **2. The situation of statistics training at UEH**

11

**Faculty of Mathematics-Statistics
has 4 departments**



Department of Basic Mathematics
Department of Economic Mathematics
Department of Financial Mathematics
**Department of Statistics – Data
Analysis**

12



Majors:

Business Statistics

Socio-economic Statistics

Economic Mathematics

Financial Mathematics

12



- **Presently, non-statistics major departments in UEH learn only Principles of Economic Statistics (Statistics applied in business and economics)**

14



- **As statistics major belongs to economic information system, it share all courses of foundation education, major basics and major general knowledge.**

13



- **The entire curriculum of statistics major requires the accomplishment of 135 credits As majors are allowed to decide on 20 credits of specialized major knowledge, statistics major assign about 20% of total curriculum to statistics subjects.**

14

Objectives of statistics major



- **The overall objective of Statistics is to train economic bachelor with political qualities, moral and good health, who master the basic knowledge of economics, sociology, business and marketing, and in-depth knowledge of information systems, market research, statistics techniques and data analysis skills, professional skills, thinking skills and teamwork skills.**

17

Teaching materials



- **A number of materials used are taken from National Economics University, for example materials for Economic Statistics, Business Statistics... Other materials are compiled by Mathematics-Statistics Faculty, including Principles of Economic Statistics, Data Analysis, Multivariate Analysis, Quantitative Analysis, Data Mining.**

18



- **3. Limitations and achievements in the training of statistics at University of Economics HCMC**

19

The training of statistics major at UEH in the past years has the following limitations:



There is overlap in the syllabi of Statistical Probability, Principles of Economic Statistics, Econometrics.

There is a lack of advanced courses and elective courses.

20



The teaching contents are often restricted to basic knowledge, lack real examples and cases for study, so students cannot visualize the specific and lively application of statistics in management.

21



- The teaching and assessment still focus too much on formula-based calculating skills. Small projects or group assignment can hardly be carried out due to large-sized classes.**

22



- **Few students like statistics major. The knowledge level at entrance of students is still low. Most students take statistics major after their failure to apply for other majors.**

22



- **The teaching staff have been trained in various sources. Lecturers are different in their efforts to update and apply knowledge.**

24



- **As statistics major belongs to branch of _____, its curriculum includes courses unsuitable with statistics major .**

23



There have been changes to the teaching of statistics in the last few years.

- **Some new courses such as Multivariate data analysis, Data mining in business, Stochastic Process, ... have been introduced.**
- **Statistics course books have been re-compiled with better explanation and more real examples.**

24



- **Students are provided with popular statistics softwares, which lightens the boring manual calculation.**
- **Statistics students have chances to work on real, diversified data sets brought in from actual projects by lecturers.**

27



- **Assessment of students' study has been based on different criteria, not only on tests.**
- **A number of course books and reference books used have been translated from English into Vietnamese.**

28



-Speakers from offices and enterprises are invited to deliver talks on important topics with real, lively examples included.

- Students have chances to visit market research companies.

29

4. Recommendations



-Non-statistics major students should take courses in Applied Statistics in Economics and Business (Principles of Economic Statistics), instead of Statistical Probability. Probability knowledge will be provided in Applied Statistics course.

- Chapters in Applied Statistics will be moved to Econometrics course.

20



-Should create the major of Statistics, so that more suitable curricula could be designed for statistics specializations.

- A better mechanism is necessary for recruiting statistics lecturers. Candidates trained in Applied Statistics, Quantitative Analysis in developed countries should receive priority.

21



- There should be innovations in statistics teaching methods. Lecturers have to be capable of using statistics softwares. Statistics departments should organize regular seminars so that lecturers can exchange knowledge and learn from each other.

22



Thank you

4. SIAP's experience in capacity building for statisticians in the region

Hiroyuki Kitada, Deputy Director, Statistical Institute for Asia and the Pacific SIAP

Abstract

1. Status of statistical training through the development process

a) Objectives

SIAP's goal is to increase the use of statistics for evidence-based decision making and foster the development and dissemination of key demographic, social, economic and environmental statistics in the ESCAP region. SIAP is developing and revising training courses from this view point.

b) Training programme

SIAP is focusing on the new important topics emerging in this region such as statistical quality framework, vital statistics, agricultural and rural statistics, register-based statistics and environment statistics.

SIAP is expanding e-learning courses to provide opportunities to reach a broader target group provide continuous and sustainable training: increase of e-learning courses on 2008 SNA, initiation of blended training courses of e-learning phase and face-to-face phase, e.g. UNFPA courses and a preparatory course for the TMA-based group training course for junior statisticians

c) Contents structure of the training

SIAP restructured the contents structure of TMA-based group training course for junior statisticians this year – from mosaic-like three module structure to more effective streamlined two stage structure.

SIAP is increasing inclusion of government officials engaged in policy planning in central or local government to SIAP training courses for increasing of use of statistics for evidence-based decision making

2. Lessons learnt from the statistical training programme provided by SIAP and recommendations for the future training programme on statistics

- Diversifying training needs and limited resources. Developing new training modality - e-learning, blended training courses.
- Expanding range of collaboration with NSOs including training institute in the countries and international institutions in the region.

SIAP's Experiences in Capacity Building for Statisticians in the Region

Hiroyuki Kitada

Statistical Institute for Asia and the Pacific
(SIAP)

Contents

- Introduction
- Status of Statistical Training through the Development Process
 - Training objectives
 - Training Programme
 - Content Structure of the Training
 - Increasing use of statistics for evidence-based decision making
- Lessons learnt and Recommendations

Introduction



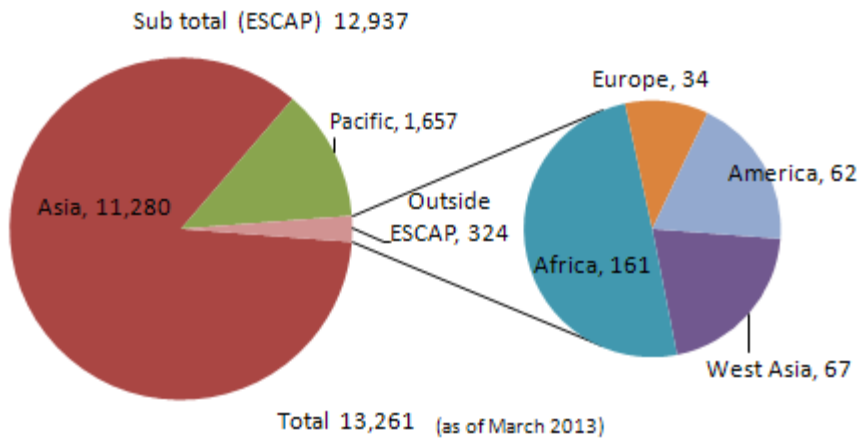
Brief introduction of SIAP training courses

- | | |
|---|--|
| <p>I. <u>TMA-based programme</u></p> <ul style="list-style-type: none"> ▪ SIAP – JICA TMA-based courses ▪ Short-term TMA-based courses <p>II. <u>Outreach Programme</u></p> <ul style="list-style-type: none"> ▪ Regional, sub-regional courses/workshops/seminars ▪ Country courses <p>III. <u>Programme for managers of NSOs</u></p> <ul style="list-style-type: none"> ▪ Management seminar for heads of NSOs ▪ Workshop on Statistical Quality Management and Fundamental Principles of Official Statistics | <p>IV. <u>Research based training programme</u></p> <p>V. <u>Distance training and e-learning</u></p> <ul style="list-style-type: none"> ▪ SIAP-Tokushima Univ. e-learning training ▪ E-training training resources <p>VI. <u>Improved coordination of statistical training in the region</u></p> <ul style="list-style-type: none"> ▪ A Forging partnerships seminar /workshop |
|---|--|

SIAP-JICA TMA-based Courses

Junior Level Statisticians	Middle Level Statisticians	Computer personnel	Area Focused Courses
2-month Courses			
10-month General Course 1970 - 1975		Automatic Data Processing 1981 - 1995	Courses on Country Specific Issues 1996 - 2001
6-month Practical Course 1976 - 1998	Analysis & Interpretation of OS 1991 - 2004	Automatic Data Processing for Trainers 1996 - 1998	Area Focused Course for Central Asian & Caucasus Countries 2001 - 2008
6-month Module Course 1999 - 2009	Analysis, Interpretation & Dissemination OS 2005 - 2009	Statistical Computing for Trainers 1999 - 2003	Area Focused Course for Central Asian Countries 2009 - 2011
4-month course on MDGs 2010 - 2012	Analysis, Interpretation & Use of OS 2010-2012	Application of ICT to Production & Dissemination for OS 2004 - 2009	
4-month course on MDGs (New) 2013 -	New analysis course 2014-	Application of Information Management and Related ICT for OS 2010 - 2012	

Number of participants by region



Status of Statistical Training through the Development Process

SIAP Goal

- To increase the use of statistics for **evidence-based decision-making** and foster the development and dissemination of key demographic, social, economic and environmental statistics in the ESCAP region

Outcome

- Strengthened statistical capability of developing countries in Asia and the Pacific **to meet statistical requirements** in support of economic prosperity, social progress and environmental sustainability

8

Training courses meeting to new issues

- Statistical Quality Management – National Quality Assurance Framework
- Production and Use of Vital Statistics
- Building Training Resources for Improving Agricultural and Rural Statistics
- Producing Register-based population Statistics

Training courses meeting to new issues

- Statistical Quality Management – National Quality Assurance Framework
 - Focusing on implementation of national quality assurance frameworks
- Production and Use of Vital Statistics
 - Principles and recommendations for a vital statistics system, the key indicators derived from vital statistics and sources of vital statistics

Training courses meeting to new issues

- Building Training Resources for Improving Agricultural and Rural Statistics
 - To assist the countries in the process of identifying, prioritizing and producing a country-specific minimum set of core data items
- Producing Register-based population Statistics
 - To improve practical knowledge and skills of official statisticians in producing register-based population statistics

Expanding e-learning courses

- “In noting the strong demand for the current SIAP Internet-based e-learning on the System of national Accounts 2008, the Governing Council recommends that:
 - SIAP continue to expand delivery of Internet-based learning in terms of enlarging the scope of topics, increasing the number of course offerings and accepting more participants.”

[From the report of the Governing Council of SIAP on its 8th session (December 2012)]

Recently conducted e-learning courses

- Basic-level e-learning course on 2008 System of National Accounts (4 courses)
- Intermediate-level e-learning course on 2008 System of national accounts (2 courses)
- Preparatory e-learning course on Basic Statistics (e-learning phase of 1st Group Training Course in Improving Capability in producing Official Statistics Relating to MDGs indicators (ongoing SIAP-JICA course))

Recently conducted e-learning courses

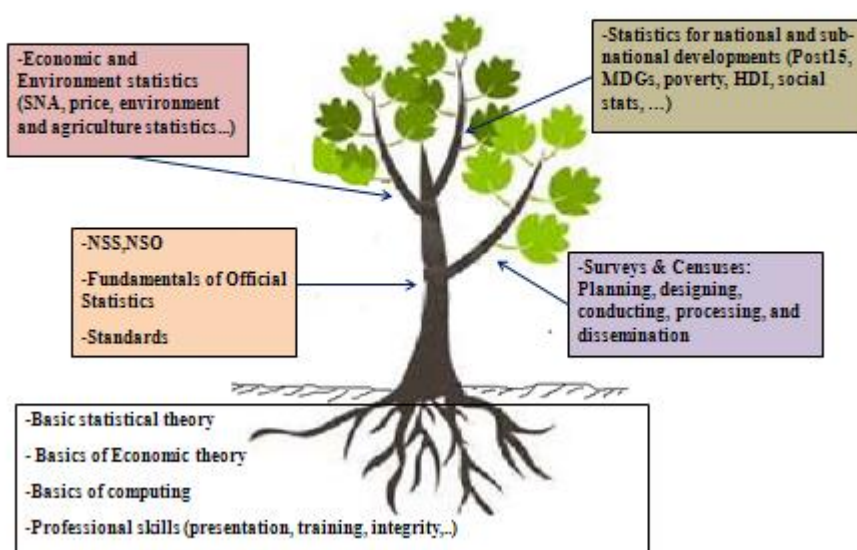
- Regional Training on using Population Census Data for Planning and Decision making: Thematic Analysis on Youth (e-learning phase of the blended course)
- Regional Training on Producing Register-based Population Statistics in Developing Countries (e-learning phase of the blended course)

Contents structure of the training

-Full revision of the MDG group training-

- This course is “First Group Training Course in Improving Capability in Producing Official Statistics Relating to MDGs Indicators”(ICPOS-1)
- Fully restructured from the previous 4-month group training course and newly designed.
 - From mosaic-like three module structure to more effective streamlined two stage structure
- Clear priorities from Basics to variety of MDG related official statistics

Raising Ever-Green Official Statisticians



Course Curriculum

422 S E S S I O N S	Part I Building Blocks of Official Statistics (149)
	Part II Production of MDG-related Official Statistics (117)
	Part III Official Statistics of Japan (53)
	Part IV Project work and Action Plan (69)
	Part V Other matters (34)

Increasing use of statistics for evidence-based decision making

- Inclusion of government officials engaged in policy planning in central or local government to SIAP training courses for increasing of use of statistics for evidence-based decision making

e.g. Regional Training on Using Population Census Data for Planning and Decision making: Thematic Analysis on Youth (September 2013)



18

Lessons learnt and Recommendations

Lesson learnt and recommendations

- Diversifying training needs and limited resources
- Developing new modality e-learning, blended training course
- Expanding range of collaboration with NSOs including training institutes in the countries and international institutions in the region

Thank you

5. Experiences in statistical training in mid income countries

Prof. Michel Grun-Rehomme, National School of Statistics and Economic Administration, France

Abstract

At the beginning of the 1990s, after the fall of the Berlin wall, many countries in Central and Eastern Europe wanted to cooperate with INSEE (French General Statistics Office). The European Union created a budget for this cooperation in official statistics.

What are the consequences when a country changes from a socialist economy to a market economy? New enterprises are created and new sectors of activities arise (especially in trade and services); private property becomes important.

Consequently, one observes many changes in Business statistics as well as in Household statistics. Also, such a country enters a new international environment with new standards.

How do all these changes influent the NSIs?

- First, all such countries must replace the old macroeconomics indicators with a System of National Accounts that must become the frameworks for whole set of national economic statistics.
- Second, it is not possible to continue the usual practice of censuses (exhaustive economic surveys). Thus, structural business statistics, as well as short term-statistics must be obtained by sampling. However, the sample design needs to create and construct a good quality frame that is an indispensable source of a sample base.
- Third, the newly created types of activities as well as sampling techniques need a system of economic classification which is harmonized with international ones.
- Fourth, sampling practice and non-obligatory response on statistical questionnaires lead to a high rate of non-responses. One therefore needs to develop and implement appropriately for each country and each survey technique a treatment of non-responses.
- Fifth, new economic and social conditions require new survey programs.
- Sixth, many such countries traditionally produce a large range of regional statistics. The challenge is of how to produce regional statistics with a sample.
- And last, the statistical budget is often too limited in these countries. So, the question is of how to combine under these conditions stakeholders' needs for satisfaction and budget constraints?

A training program must answer these questions.

Usually, statisticians have good knowledge obtained from university courses, but that knowledge is often too theoretical to answer these questions. The training program must correspond to statistical reality. Thus, we need to adapt international statistical standards to the economic, legal and political conditions of the country.

The issue is very large. So, in this presentation, we touch on the main points of this issue by a detailed discussion (regarding organization and skills) of the training experience using a case study in Business Statistics (data quality, sample design, treatment of partial non-response, total non-response and outliers, small area estimation, econometrics methods,...).

Lessons learned and recommendations will be outlined.



Experiences in statistical training in mid income countries

Michel Grun-Réhomme

Prof. ENSAE (GENES) and University Paris-Panthéon

E-Mail grun@ensae.fr



Plan

1. **Historical background**
2. **Consequences for NSI**
3. **Training challenges**
4. **INSEE Training programs' overview**
5. **Example: A case study in Business Statistics**
6. **Lessons learned and recommendations: Country Comparison**



1. Historical Background

At the beginning of the 1990s, after the fall of the Berlin wall, many countries in Central and Eastern Europe wanted to cooperate with INSEE (French General Statistics Office) in order to develop their statistical systems.



The European Union created a budget for this cooperation in official statistics.



2. Consequences for NSI (1/7)

■ Changes in Business Environment:

- New enterprises (especially SME) and individual economic entities are created
- New sectors of activities arise (especially in trade and services)
- Private property becomes important gradually replacing public one
- New legislative base to support private property rights and business is created



2. Consequences for NSI (2/7)

- Consequently, one observes many changes in Business statistics as well as in Household statistics that need to study new economic actors and all structural and short-term changes
- Also, such a country enters a new international environment with new economical and statistical standards



2. Consequences for NSI (3/7)

- All such countries must replace the old macroeconomics indicators with a System of National Accounts that must become the frameworks for whole set of national economic statistics.
- New economic actors need to be recorded and included in population of observation.
- Newly emerging economic activities need to be studied.



2. Consequences for NSI (4/7)

- In the same time, it is not possible to continue the usual practice of censuses (exhaustive economic surveys). Thus, structural business statistics, as well as short-term statistics must be obtained by sampling. However, the sample design needs to create and construct a good quality frame that is an indispensable source of a sample base.
- The newly created types of activities as well as sampling techniques need a system of economic classification which should be harmonized with international ones.



2. Consequences for NSI (5/7)

- Sampling practice and non-obligatory response on statistical questionnaires lead to a high rate of non-responses. One therefore needs to develop and implement appropriately for each country and each survey technique a treatment of non-responses.
- New economic and social conditions require new survey programs.

2. Consequences for NSI (6/7)

- Many such countries traditionally produce a large range of regional statistics. The challenge is of how to produce regional statistics with a sample.
- The statistical budget is often too limited in these countries. So, the question is of how to combine under these conditions stakeholders' needs for satisfaction and budget constraints?

$$\text{Max}_{c} Qlt$$

Sample Size

Too Big:

- Requires too much resources



Too Small:

- Won't do the job



2. Consequences for NSI (7/7)

- And last, the political leaders and top-managers in these countries are not always ready to accept new statistical ideas, approaches and methods. So, how to create statistical thinking of decision makers?

A training program must answer these questions.



3. Training challenges

- Usually, statisticians have good knowledge obtained from university courses, but that knowledge is often too theoretical to answer these questions.
- The training program must correspond to statistical reality.
- Thus, we need to adapt international statistical standards to the economic, legal and political conditions of the country.

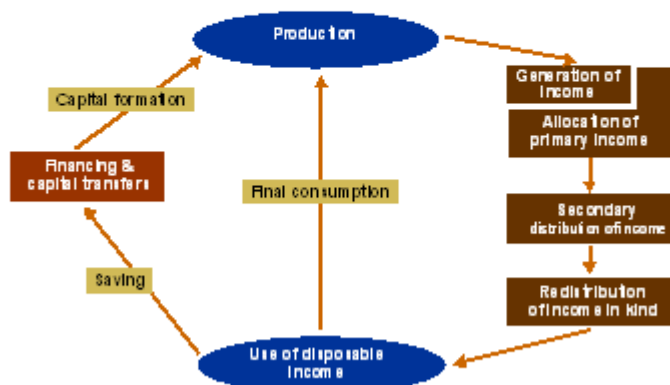
There is not any mechanical replication of international standards!

4. INSEE Training programs' overview (1/2)

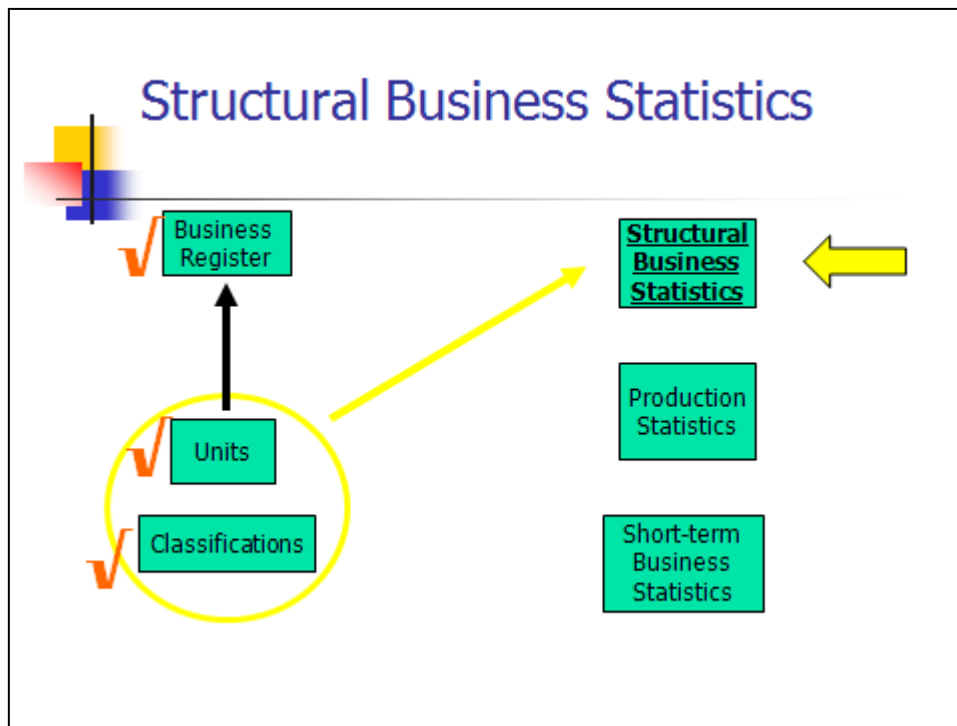
- National Accounts
 - Quarterly account
 - Links between SBS and NA
- Classifications
 - Implementation of new classifications
- Business Register
 - Creation and holding
 - Administrative data collection
- Structural Business Statistics
 - Implementation

Transaction flows in the economy

A National Accounts perspective



14



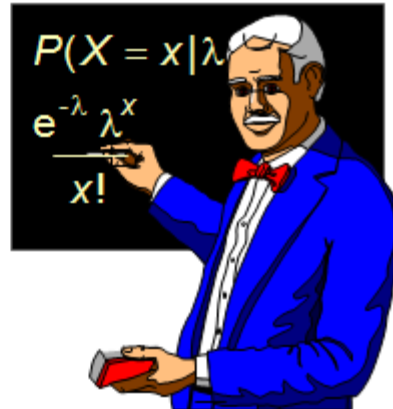
- ## 4. INSEE Training programs' overview (2/2)
- Sampling for SME
 - All types of activity
 - Short-Term Business Statistics:
 - production index
 - turnover index
 - new orders index in industry
 - construction
 - trade and services
 - PRODCOM survey
 - seasonal adjustment
 - Business Tendency Survey
 - Qualitative survey (from sampling to aggregation)
 - Fixed Capital Formation Survey
 - FDI
 - Metadata base and Statistics Coordination

5.Example: A case study in Business Statistics (1)

Two keys objectives:

Knowledge transmission

Practice with real data



5.Example: A case study in Business Statistics (2)

Knowledge transmission

First experience (3 steps)

- First, training of trainers in France
- Next, partial training in the country with the French teachers and partial training with the local teachers (50% x 50%) for selected group of students
- And finally, whole training in the country with the local teachers but under French supervision (assistance) for different groups of students (statisticians, stakeholders)

Second experience

- All courses with both international and local teachers



5.Example: A case study in Business Statistics (3)

Practice with real data : Case Study in SBS

We have two data files (.xls)

- Frame (50 766 enterprises)

Size Sector	1	2	3	4	5	6 and more	Total
Industry	3162	676	391	216	137	663	5244
Construction	572	234	124	92	92	485	1599
Trade	22997	3422	812	348	138	346	28083
Services	6404	1148	360	179	67	256	8414
Transport	6448	855	57	15	10	41	7426
Total	39383	6335	1744	850	464	1790	50766



5.Example: A case study in Business Statistics (4)

Stratified sample (5376)

Size Sector	1	2	3	4	5	6 and more	Total
Industry	204	40	23	13	137	442	1031
Construction	37	13	7	92	92	485	724
Trade	1584	232	54	24	10	344	2254
Services	313	54	17	10	47	254	719
Transport	414	37	37	15	10	41	594
Total	2558	388	140	154	314	1790	5374

Size Sector	1	2	3	4	5	6 and more	Total
Industry	1535	1490	1700	1442	1	1	4871
Construction	1544	1800	1771	1	1	1	2202
Trade	1450	1475	1450	1450	1580	1	12459
Services	2044	2050	2118	1790	1	1	11702
Transport	1550	1500	1	1	1	1	1240
Total	15474	15917	10900	5520	1448	1	9443



5.Example: A case study in Business Statistics (5)

We have the results of the SBS with the following variables :

Characteristics

Id, size, sector of activities, juridical form, active

Response

Number of employees, Turnover, Salary



5.Example: A case study in Business Statistics (6)

Six independent modules

- Data checks
- Frame's Quality
- Treatment of the total non response
- Sample Design
- Treatment of the partial non response
- Analysis and dissemination



5.Example: A case study in Business Statistics (7)

Methodology

- Objectives of the module
- Theoretical presentation
- Examination of the data files
- 2 persons, one computer
- Working on the computer step by step, interactive




6.Lessons learned and recommendations: Country Comparison (1/2)

- Training coordination within general Statistics coordination: NSI's Training Strategy
- General knowledge management: knowledge storage, sharing, exchange and transmission within NSI
- Training program targeting and continuity



6. Lessons learned and recommendations: Country Comparison (2/2)



- Cover by programs three categories: the statisticians, the trainers, as well as the stakeholders (statistical thinking formation)
- Ties with real statistical needs in the given country
- Avoid training programmes' useless and unproved overlapping (project repetitions)
- Training efficiency control: implementation into statistical practice (handbooks, publications, dictionary,...)



Thank you for your attention

6. Experience of Statistical Training in PH: Lessons learnt and challenges

Dr. Jose Ramon Gatmaitan Albert, Secretary General, National Statistical Coordination Board, Philippines




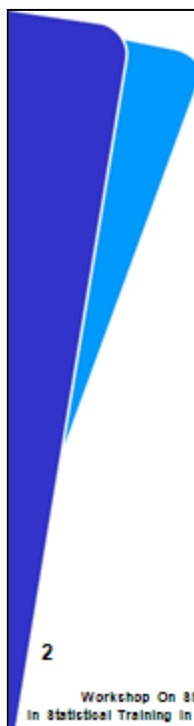

Experience of Statistical Training in PH: Lessons learnt and challenges

Jose Ramon G. Albert, Ph.D.
Secretary General, PH National Statistical Coordination Board
Governing Board Chair, Statistical Research & Training Center
Professorial Lecturer, De La Salle University

1

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Outline of the Presentation

- I. Introduction: Supply and Demand of Statistical Training, and Externalities**
- II. Statistical Education**
- III. Nonformal Statistical Education**
- IV. Ways Forward**

2

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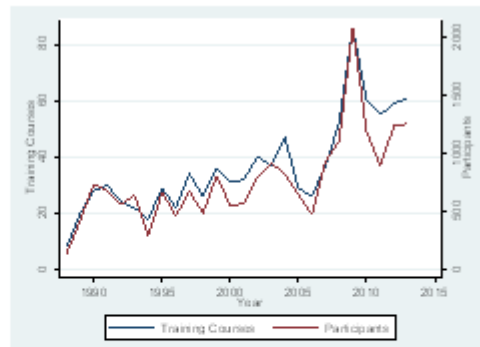
Statistical Human Resources

- **Current human resources in the PSS are inadequate to respond to expanded and still growing user needs.**
 - Since 2005, there has been a continuous decline in government statisticians especially among the MSAs. This is largely an attrition due to low salaries (compared to central bank, development orgs, such as ADB), coupled with a government "rationalization" plan that brought down number of statistics personnel.
 - Rationalization plans have excluded or downgraded existing statistical units and positions in other agencies.
 - Only a few LGUs have dedicated units for generating and compiling statistics for local development planning
 - Yet, increasing demand for more development indicators especially lower level of disaggregation, for more frequent updates, or for emerging concerns.

3



Recall



- **SRTC is research and training arm of the PSS**
- **Although, generally increasing trend in SRTC training courses (and training beneficiaries), there were fluctuations**
 - There are years when Regular Training Programs (RTPs) declined considerably

4





Issues in Stat Capacity Building

- **Despite the increase in training activities and beneficiaries, there are issues on conduct of statistical training.**
 - There are many statistical personnel/ practitioners in NGAs and LGUs that need enhanced statistical capability but are unable to avail of training due to lack of resources.
 - Are we training the right people? Are we giving people the right training? Are we getting the right impact?
- **Currently, there are no mechanisms for integrating human resource planning, management and development in the PSS.**
 - There is no integrated and comprehensive statistical human resource development pro-gram for the PSS.

5



Linkage Supply & Demand



- Training is an Intervention
- Need to facilitate an exchange of information about the Statistical Training Programs between SRTC and its clients, to uphold **Client Relationship Management (CRM)** and thus maintain close relationship with key clients

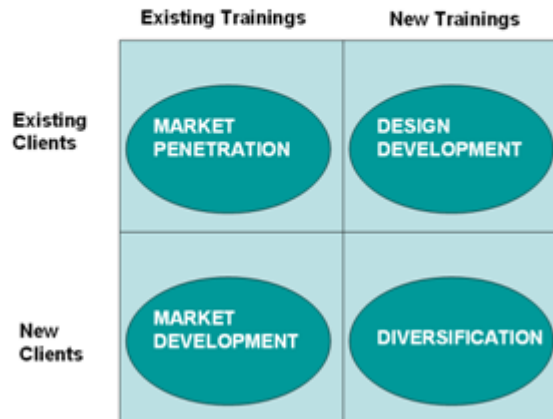
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Ansoff Growth Matrix on Training

- **Balancing Focus on Existing Training and New Training**



7



Designing Training

- Designing regular training programs and customized training programs assuming "training needs" identified
 - Some clients don't know what they want, e.g. Regional Unit requested SRTC for a "Small Area Estimation" Training Course
 - Training Needs Analysis important but difficult for RTP
- Client Feedback
 - Webhits
 - Client Surveys
 - Informal Feedback and "Crowdsourcing"

8



I. Introduction



Crowdsourcing Training

- In 2004, “webhits” analysis
 - Most Frequent Hits on Statistical Report Writing, Statistical Projection and Forecasting, Statistical Analysis with STATA, Statistics for Project Monitoring and Evaluation, Policy Analysis, Geographic Information Systems, and Presentation Skills.
- Need for Improved Dissemination
 - Regular Dissemination Strategies
 - Web Info / Social Media

9

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II. Training Course Objectives, etc



- **All statistical training programs offered by SRTC have their training course objectives identified. Those interested can check the SRTC website**

www.srtc.gov.ph

for schedule of “regular training programs” and specific info on the training

- **Typically, these info on training courses is developed by SRTC staff in coordination with the “seasoned” lecturers**

10

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II. Training Course Objectives, etc



- **Example, “Statistical Analysis with Stata”**

- **Course Description:** The training introduces the use of statistical software STATA for quantitative data analysis. Participants will understand both the principles of statistical methods and how to apply these with real data using said software. STATA is a comprehensive integrated package for data management, analysis and graphics. The course is a prelude to beginners doing survey research and an enrichment course for experienced researchers. Sample datasets will be provided during hands-on exercises and workshops. Participants will be grouped and made to work in generating outputs that will be presented on the last day of the training.

11

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II. Training Course Objectives, etc



- **“Statistical Analysis with Stata” (cont’d)**

- **What will participants gain?** By the end of the course, participants should be able to use STATA in the analysis of most common types of problem encountered in statistical research. They should be able to use STATA commands in basic and intermediate statistical computations and generating statistical graphs and charts.
- **Who can participate?** The course is recommended for researchers and statisticians who wish to learn STATA for data analysis work. Participants must have proficiency in the use of MS Excel and sufficient background in basic statistics.

12

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II. Training Course Objectives, etc



- **“Statistical Analysis with Stata” (cont’d)**
 - **Course Coverage**
Introduction; Overview of Statistical Computing Resources
Getting Started with STATA
Data Management
Summary Statistics and Table Generation
Introduction to STATA Graphs
Correlation and Regression
Introduction to Multiple Regression and Logistic Regression
 - **Course Duration: 5 days**
 - **Course Fee :**
Php7,200.00 (Govt)
Php9,600.00 (Private)
USD500 (International)

13

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III. Opportunities and Challenges



- **Most of statistical training programs developed at SRTC for the statistics producers**
 - Data users need training also
 - No statistical training and research yet to examine how official statistics can make use of alternative data sources, such as data exhaust (i.e. BIG DATA), big volume, velocity, variety by products from Electronic devices (mobile phones, smart phones, tablets, laptops), social media, “google”, sensors, tracking devices (GPS)
- **Resources are severely inadequate for human resource capacity development of the government statistical workforce.**
 - As of 2011, SRTC has only 5 technical staff attending to its statistical training services which translates to a 1:14 ratio of training staff to training programs.

14

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III. Opportunities and Challenges



- Even with the existing regional training affiliates, the current SRTC staff complement is extremely insufficient to serve the increasing training needs of the PSS at the national and local levels.
- The lack of statistical human resources has affected staff productivity and service quality levels due to work overload. It has also prevented the development of new courses and training materials and retooling of staff for better performance.
- With the current SRTC staff complement for training, it is clear that many statistical personnel of NGAs LGUs will have to wait years before they can avail of statistical training services through SRTC. Plans for strengthening SRTC to the PH Statistical Research and Training Institute will require employing research and training fellows and associates.

15

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III. Opportunities and Challenges



- **Success of statistical training “strategy” can be measured through several indicators. A few metrics include:**
 - Target-market objectives
 - **Clients**
 - total participants in trainings
 - number of new institutional clients participating in trainings
 - number/percentage of retained institutional clients
 - **Training Programs**
 - total number of trainings conducted (by customized and regular trainings; per region)
 - total training hours (by customized and regular trainings; per region)

16

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III. Opportunities and Challenges



- Promotional Objectives
 - **Traffic on website and social media**
 - number of hits on training-related webpages per month
 - number of tweets/fb posts on statistical training
 - number/percentage of retained institutional clients
 - **Training requests/inquiries**
 - number of emails/official letters disaggregated by how they came to know about SRTC trainings
 - number of customer walk-in visits and other crowd-sourcing info disaggregated by how they came to know about SRTC trainings
 - number of phone inquiries/requests disaggregated by how they came to know about SRTC trainings
 - number of prospective training participants (obtained from telemarketing and social media campaigns)

17

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III. Opportunities and Challenges



- Other Objectives
 - **Training design/course development**
 - number of new training designs
 - number of new training materials/manuals
 - number of revised training manuals
 - number of pre-tests and post-tests developed

18

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IV. Lessons Learnt



- **Statistical capacity building important, but need to be more systematic**
 - Are we hitting the right target markets? Are we addressing training needs, especially of priority institutions, viz., MSAs, NGAs, LGUs? Do we have enough institutional linkages?
 - Can we have alternative delivery modes?
- **Measuring success**
 - Need to monitor with quantitative indicators how well statistical training is being given to client
 - Need post-training impact assessments, including having pre-tests and post-tests to see “changes”
- **Improving partnerships**
 - Local institutions
 - Development institutions
 - NSS of other countries, especially in the region

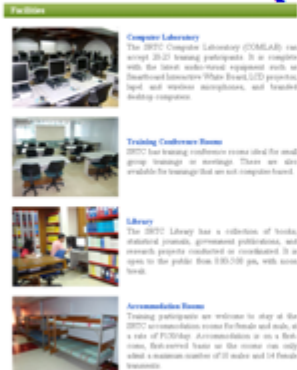
19

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Salamat po! (Thank you)



<http://www.srtc.gov.ph>



/NSCBPhilippines



@NSCBPhilippines



/NSCBInfo



info@nscb.gov.ph



NSCBinfo@gmail.com



<http://www.nscb.gov.ph>

20

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7. Experience and contents of training on statistics in Australia

Assoc. Prof. Alice Richardson, Faculty of Education, Science, Technology & Mathematics, University of Canberra, Australia

Abstract

There are many opportunities for success in statistics training in Australia presenting themselves at the moment, along with many challenges. After describing my own experience of the statistics training system in Australia, I will describe challenges and pose questions around the process and the outcomes of training.

The policy framework outlined in my first presentation also has an impact on the current experiences of statistics educators, and I will raise questions about how that framework can be used to advantage.

The statistics education community in Australia has clearly learnt much from its experiences in engaging with policy demands for quality processes and output. I will describe three main lessons that I think the community has learnt, and recommend how they could inform the development of statistical training in Vietnam.

Experience of statistical training in Australia



Dr Alice Richardson
Assistant Professor in Statistics
University of Canberra
Australia

Outline

- Statistics at University of Canberra
- Status of statistical training
- Australian challenges
- Lessons and recommendations

Statistics at University of Canberra

- Faculty of Education, Science, Technology & Mathematics
- Applied Statistics major
- Nonparametric, Regression, Surveys, Experiments, Multivariate
- Graduate Certificate
- Graduate Diploma
- Masters by research only
- PhD

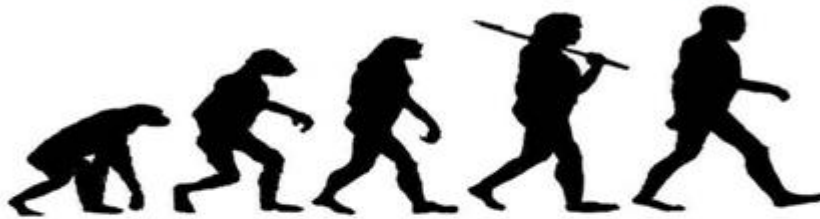


- Blended learning: a mixture of face-to-face class teaching and asynchronous online learning
- Example: Graduate Certificate in Statistics for Australian Bureau of Statistics managers

- Third party providers: organisations such as Holmesglen Institute of Technical & Further Education (TAFE) teach statistics courses at their organisation using University of Canberra materials and assessments



Status of statistical training



- My view on where Australia's programs are placed
- Objectives for students and staff
- Structure
- Content

Objectives for students

- Learn to be clever statistics researchers?
- Example: Wollongong and ANU have specialised degrees with many statistics courses required
- Learn to be clever users of statistical concepts?
- Example: University of Canberra, most other universities have students who do six to eight applied statistics courses in their degree



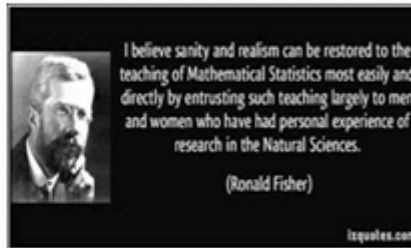
Objectives for staff

- Value research?
- But the Excellence in Research for Australia (assessment of the quality of research in Australia) sends mixed messages about value placed on statistics
- Value teaching?
- But few statisticians or statistics educators included in government-funded projects on improving maths/stats teaching



Objectives for staff

- Statistics staff should be statisticians
- Mathematicians are not necessarily skilled to teach statistics
- Maths and stats are not the same
- Sessional staff i.e. casual, occasional staff are not necessarily skilled to teach service courses



Structure

- Structure of statistics varies from university to university
- Even though the Australian university system is small
- Course structure is traditional rather than modern, based on small data rather than the big data and computationally intensive methods of recent years
- Universities use a structure that works for them so success is broadly achieved across the system

Content

- Have the statistics education reforms of the 1990s and 2000s penetrated right through the system?
- Yes, Australian universities generally teach first year courses using technology, real data problems and with a lower emphasis on mathematics
- Does the content meet employer expectations?
- Yes but Australian employers would still like more statistics graduates!
- Recall the University of Canberra major in Statistics, which is typical of many universities, consists of
 - Introduction to Statistics
 - Mathematical Methods
 - Nonparametric Statistics
 - Regression Analysis
 - Survey Design & Analysis
 - Experiment Design & Analysis
 - Multivariate Statistics
 - Elective chosen from Biometry, Database Design, Econometrics, Forensic Statistics

Australian challenges

- Increasing access to university and smaller departments
- Example: more students being admitted to University without the traditional level of mathematical understanding, and fewer statistics academics employed to cope with the large and needy classes
- Data deluge and software availability
- Example: many researchers produce vast amounts of data and have access to statistical software, but don't necessarily know what questions to ask or how to interpret the output of the software
- Financial models that encourage silos
- Example: funding is tied to the number of students in a course so everyone wants to offer their own statistics courses, because statistics is important in so many different disciplines



Lessons and recommendations

- Far be it from me to tell anyone else what to do!
- But my view is that a successful statistics training program would be both
- Top-down AND bottom-up
 - Some standards imposed from above, some inspired from below
- Feet on the ground AND aiming for the stars
 - Focused on broad statistical understanding for as many people as possible
- Asking what is the question AND what is the evidence
 - Treating curriculum reform as a serious research project

Top-down

- In my view Government and University do need to better recognise of the importance of statistics training
- Statistical Society does need to support statisticians to do this
- Content may need some standardisation

Bottom-up

- In my view personal contacts between statistics academics, government, workplaces will help this to happen
- Statisticians need to model good practice to encourage this recognition

Feet on the ground

- My view is that training many clever users of statistics increases broad statistical understanding in society, and leads to an increased pool of students who may go on to become clever statistics researchers

Aim for the stars

- “Statistical thinking will one day be as necessary for efficient citizenship as the ability to read and write.”

Question

- To bring statistics training into the 21st century in Australia is a big project
- In my view this project needs to be tackled like any big research project – defining the question, reading the relevant literature, implementing reforms and measuring the outcomes

Evidence

- *however exhausted I might be, the sight of long columns of numbers [is] perfectly reviving to me*



Acknowledgments

- Thankyou to Helen Macgillivray and Michael Martin for stimulating discussions
- Thankyou to UNFPA for the invitation!



8. Experience and content of statistical training in America

Prof. Dominique Haughton, Bentley University, USA

Abstract

This talk will first briefly outline the speaker's own training: a combination of French and United States approaches, and of theoretical and applied statistical work, and a migration from the theoretical to the applied via the corporate sector.

The presentation will then go on to discuss the following issues, highlighting as we go along the objectives of the various training programs discussed:

- Theoretical mathematical statistics work versus applied work
- The specificities of the United States higher education paradigm, and notably
 - US Business University pedagogy for basic statistics
 - US Business University pedagogy for more advanced courses
- The new importance of Analytics (also known as applied statistics in the corporate sector): construction of training programs; the Bentley experience at the master's and PhD levels; how to construct new training programs in existing academic structures.
- The role of statistical packages, SAS, R, SPSS, Stata, etc.
- The role of professional social media, such as LinkedIn
- Synchronous versus asynchronous distance education
- The ethics of statistics and analytics and training in these areas

The talk will then discuss international cooperation in the area of statistics education, notably as applied to living standards statistics, focusing on the following issues:

- The role of international organizations
- The role of national statistical professional societies
- The role of groups such as Statistics Without Borders
- The Bentley University Virtual Academic Living Standards Analytics Community (VALSAC)

The presentation will wrap up with a discussion of which aspects of US statistical training programs are particularly relevant to the evolution of statistical training in middle income countries such as Vietnam.

Statistical training in the United States: Lessons learned and challenges

Dominique Haughton

Bentley University, Université Paris I Panthéon-Sorbonne (SAMM) & Université Toulouse I



Statistical training in the United States: Lessons learned and challenges: Agenda 1

- My own background: a combination of French and United States approaches, and of theoretical and applied statistical work, and a migration from the theoretical to the applied via the corporate sector.
- Discussion of the following issues, highlighting as we go along the objectives of the various training programs discussed:
 - Theoretical mathematical statistics work versus applied work
 - Specificities of the United States higher education paradigm, and notably
 - US Business University pedagogy for basic statistics
 - US Business University pedagogy for more advanced courses
- The new importance of Analytics (also known as applied statistics in the corporate sector): construction of training programs; the Bentley experience at the master's and PhD levels; how to construct new training programs in existing academic structures.
- The role of statistical packages, SAS, R, SPSS, Stata, etc.
- The role of professional social media, such as LinkedIn
- Synchronous versus asynchronous distance education
- The ethics of statistics and analytics and training in these areas

Statistical training in the United States: Lessons learned and challenges: Agenda 2

- International cooperation in the area of statistics education, notably as applied to living standards statistics, focusing on the following issues:
 - The role of international organizations
 - The role of national statistical professional societies
 - The role of groups such as Statistics Without Borders
 - The Bentley University Virtual Academic Living Standards Analytics Community (VALSAC)
- Which aspects of US statistical training programs are particularly relevant to the evolution of statistical training in middle income countries such as Vietnam?

Statistical training in the United States: Lessons learned and challenges: personal background

- Secondary school education in France, science baccalaureate
- Preparatory school to enter the scientific Grandes Ecoles (3 years)
- Ecole Normale Supérieure (mathematics)
- PhD in mathematics MIT 1984 (with specialization in mathematical statistics)
- Assistant professor Swarthmore College, Temple University then University of Lowell
- Manager in analytics group at Epsilon, migrated to applied work
- Associate and then full professor at Bentley University, with affiliations with Paris I and Toulouse I universities

Statistical training in the United States: Lessons learned and challenges: theoretical versus applied

- **With a very strong theoretical background one can self train in many applied areas (while the reverse is not true) but the process can take a long time**
- **Example of an issue: is measure-theoretic probability theory appropriate for all PhDs in statistics?**
- **Most programs tend to be too theoretical, in large part because of the faculty's own training with a bias in favor of the theoretical**

Statistical training in the United States: Lessons learned and challenges: theoretical versus applied

- **If the objective is to produce graduates who will teach statistics at university, a substantial theoretical level is needed (this may be a bit different for future analytics instructors)**
- **If the objective is to train corporate statisticians and analytics professionals, some theory is needed, but significant involvement with the corporate sector right from the start is even more important**
- **What is in desperate shortage is faculty members with corporate experience**
- **This issue is less critical in biostatistics where faculty often have significant clinical trials experience**

Statistical training in the United States: Lessons learned and challenges: US Business University paradigm

- **In many US universities and in particular in business universities, the student is considered as a customer who must be satisfied with the instruction (“student evaluations”)**
- **One may agree or disagree with this paradigm, but it cannot be ignored in the US and is in some ways a logical consequence of the structure and average level of US secondary schools**
- **In essence, the US university system is inclusive rather than exclusive, as is the secondary school system**
- **This implies that universities must handle student levels which can be low, and the onus is on the university to make the student succeed**

Statistical training in the United States: Lessons learned and challenges: US Business University paradigm

- **This paradigm has strong implications on how statistics is taught:**
 - **Interactive class meetings which try to engage and motivate participants as much as possible**
 - **Often, graded class participation**
 - **Class sizes tend to be capped at say 35 students, which some exceptions where a very large (say 200) class is accompanied by “recitations” (small groups) often taught by PhD students**

Statistical training in the United States: Lessons learned and challenges: US Business University paradigm

- **This paradigm applies at both the undergraduate and graduate level, but impacts statistical training a bit differently at the graduate level**
- **At the graduate level, and particularly in a business university, analytics instruction is (or should be) combined with career and job market advice and preparation, which makes it much easier to motivate participants**
- **At the graduate level, in business universities, visits by corporate colleagues are very important for motivation and background**

Statistical training in the United States: Lessons learned and challenges : Analytics, Data Scientists, Big Data

- Recall: Analytics: a term coined by corporations which means applied statistics in the business sector
 - What is a Data Scientist?
 - What is data mining?
 - Impact on statistics instruction, notably at the graduate level, of the very strong demand for Analytics professionals by the corporate sector:
 - Many universities are trying to rapidly establish analytics graduate programs
 - But the problem is that often faculty are not close to corporate activity and programs remain theoretical (statistics or operations research programs renamed as analytics)
 - The Bentley experience

Business Analytics at Graduate Level at Bentley University

- **At Master's level**
 - **MBA concentration in Business Analytics, optimally paired with a concentration in IT**
 - **Graduate Certificate in Business Analytics, combined with a MS in IT or MS in Marketing (called MSMA at Bentley)**
- **PhD in Business with specialization in Business Analytics**
- **Superb placement of students with optimal suite of courses**

Business Analytics at Graduate Level at Bentley University

- **Optimal suite of five courses:**
 - **ST 625: Regression analysis**
 - **ST 635: Multivariate statistics**
 - **MA 611: Time series analysis with R**
 - **MA 710 Data Mining MS/PhD level**
 - **CS 605: Databases and SQL**
- **Optimal suite plus SAS Base Programmer certification: Superanalytics status**

Business Analytics at Graduate Level at Bentley University

- **Business Analytics community at Bentley**
 - Supportive graduate students community
 - A journal
 - A symposium
 - A consulting center
- **So ... what are the challenges?**

Business Analytics at Graduate Level at Bentley University Challenges

- **General trend everywhere: diminishing role of the faculty in university governance, see Ginsberg "The Fall of the Faculty"**
- **Which means that one needs to dodge bullets from potentially quant phobic -hostile to analytics - administrators**
 - **However ...**

Business Analytics at Graduate Level at Bentley University

- Very strong market forces are on our side
- Mc Kinsey report: upcoming shortage of 140,000 to 190,000 analytics professionals in the US alone, and shortage of 1.5 million managers who can understand data
- “Big Data” etc
- Bottom line: sit tight and ride the market

MBA CURRICULUM

Recommended Course Plan

Total of 12 courses (if foundation courses waived)

- 1) GS 601 Strategic Information Management
- 2) GS 602 Business Process Management
- 3) GS 603 Leadership, Ethics & Corporate Responsibility
- 4) GS 604 Global Strategy

- 5) ST 625 Regression and Time Series*
- 6) ST 635 Multivariate statistics (logistic regression, cluster analysis, factor analysis)*
- 7) MA 710 Data Mining (decision trees, genetic algorithms, MARS, web mining text mining, etc.)
- 8) MA 611 Time Series Analysis (including R)
- 9) CS 603 Object-Oriented application development
or
CS 610 Enterprise Architecture
- 10) CS 605 Data Management and Systems Modeling (including SQL)
- 11) CS 650 Data Management Architectures
- 12) Elective

Strongly recommended elective

- MK 711 Market Research
- MK 726 Customer Data Analysis and Relationship Marketing
- CS 612 Web-based Application Design
- HF 730 Visualizing Information

*Must be approved by concentration advisor for use in IT concentration

Employers concur in their belief that a good knowledge of general business areas coupled with strong exposure to analytic techniques and database management tools are key to success in rewarding analytics careers.

Typical employers include financial institutions such as Bank of America or Fidelity Investments, health-care organizations such as Partners Healthcare, database marketing and market research firms such as Digitas, Epilink, Criteo or Freddlytics, Trinity Partners, analytics groups in leading corporations such as Deloitte, consulting firms such as Chadwick, Martin and Bailey, retailers such as Staples or Grand Circle Travel.



For more information contact:
Dominique Haughton
 Professor, Mathematical Sciences
 Editor-in-Chief, Case Studies in Business, Industry and Government Statistics
 Associate Researcher, Université Paris 1 Panthéon-Sorbonne and Université Toulouse I

Email: dhaughton@bentley.edu
 Phone: 781-891-2822
 Web: www.dominiquehaughton.com

Analytics listserv: email dhaughton@bentley.edu or ml@bentley.edu to join the list



BENTLEY UNIVERSITY

BUSINESS ANALYTICS

- ◆ Graduate Certificate: Business Analytics
- ◆ MBA (Dual Concentration): Business Analytics & Information Technology
- ◆ PhD in Business: Business Analytics

Contact: Dominique Haughton
 Email: dhaughton@bentley.edu
 Phone: 781-891-2822

Benefits of a Specialty in Business Analytics

Gain hands-on expertise in applied analytic techniques such as

- Linear and Logistic Regression
- Decision trees
- Cluster Analysis
- Factor Analysis

Get experience in cutting edge data mining methods such as

- Web Analytics
- Genetic Algorithms
- Text Mining

- Work on real-life projects and learn how to present your results effectively
- Enhance your employability by preparing for SAS Base and Advanced programmer certification
- Develop proficiency in leading statistical packages throughout the program
- Enhance your knowledge of data management and SQL
- Learn how to develop a Data Warehouse
- Understand how Information Technology drives global strategy and business processes

GRADUATE CERTIFICATE PROGRAM

Recommended Course Plan

- **ST 625** Regression and Time Series (Required)
- **ST 635** Multivariate statistics (logistic regression, cluster analysis, factor analysis)
- **MA 710** Data Mining (decision trees, genetic algorithms, MARS, web mining, text mining, etc.)
- **MA 611** Time Series analysis (including R)
- **CS 605** Data Management and Systems Modeling (including SQL)

PHD IN BUSINESS: BUSINESS ANALYTICS


The PhD in Business with specialization in Business Analytics prepares candidates for academic or corporate careers in analytics. Research interests of current PhD students include:

- Data mining in finance
- Text mining and web analytics
- Social networks and virtual worlds
- Statistical analyses of the global digital divide
- International statistics

Testimonials

"Analytics careers place you at the forefront of business decisions, not in a backroom. As one of the very few people who understand the organization's data fully, you are an invaluable professional."

Allen Thompson,
Executive Vice President of Global Wealth and Investment Management
Bank of America and a former Business Data Analysis student



"The Bentley analytics program has been ideal for me since it has allowed me to bridge the gap between my theoretical quantitative background and business applications. I have been able to continue to do quantitative work while being exposed to other business areas such as IT, economics and organizational behavior, and have had a chance to teach and work on interesting consultancy projects."

Mayokun Soremekun,
PhD Candidate in Business Analytics

Joe Dery

Candidate
Graduate Certificate Business Analytics
Master of Science Marketing Analytics
Business Analyst at:





In April 2011, Joseph became a Business Analyst for New Hampshire-based data analytics firm Calexus Solutions. Here, Joseph brings his passions to life by invoking his advanced business analytic skill-set in a bustling environment that requires quick, strategic thinking and effective written communication with top executives of multi-million and multi-billion dollar companies. At this time, Joseph's daily responsibilities at Calexus extend to databases in excess of 20 terabytes.

This fall, Joseph will complete his graduate studies with a part-time evening schedule focusing on SQL training, methods of database maintenance, and time series analysis with R. It is his hope to attend Bentley University's PhD program—focusing in Business Analytics—in the fall of 2013.

Guangying Hua

PhD in Business,
Specialization in Business
Analytics Statistician at:





Guangying received her PhD degree in Business Analytics from Bentley this May. She holds a B.S. and M.S. in Management Information Systems from Tianjin University, China. At present, she is a Statistician in the Analytic Consulting Group at Epsilon. Her responsibilities include building predictive models and providing marketing insights for clients across different industries.

Prior to joining Epsilon, Guangying worked as a Software Engineer and Data Analyst for the China Aviation Accounting Center, providing business intelligence and data analysis for all airline companies in China. While studying at Bentley, she worked as a Research Assistant for Bentley's Center for Quantitative Analysis, responsible for data extraction and data analysis for internal and external clients.

I Chen Wu

Candidate
MBA : Concentrations in
Business Analytics/IT
Data Analytics Associate at:
(from 2012)





I Chen is an MBA candidate at Bentley with concentrations in both Business Analytics and Information Systems & Technology. She will begin to hold her position at Deloitte in 2012.

Before coming to Bentley, I Chen was a product manager in the telecommunication industry and beauty industry. She likes dealing with numbers and data and enjoys the process of analyzing underlying data patterns to provide business solutions for her company. Every industry has data that needs analysis, resulting in a high level of mobility and demand for graduates. While working toward her MBA, I Chen has also enjoyed the opportunities to travel and take in theater performances on Broadway.

<p>Jon Casclari Graduate Certificate Business Analytics Master of Science in Finance Vice President at:</p> 	<p>Olumayokun Soremekun Candidate PhD in Business; specialization in Business Analytics Statistician at:</p> 	<p>Cesar Hernandez Candidate MBA : Concentration in Business Analytics / MSIT Data Analytics Associate at:</p> 
 <p>Jon is a Vice President in the Analytic Consulting Group at Epsilon with over 20 years of experience in marketing analytics. His responsibilities include design and management of marketing analytics projects, measuring marketing efficiency, predictive modeling, segmentation, campaign test design and deployment of analytic data marts. Jon currently specializes in the financial services industry.</p> <p>Prior to joining Epsilon in June of 2006, Jon served as the Manager of Customer Analytics for Bose Corporation where he was responsible for optimizing direct marketing investments by overseeing the reporting, analysis and predictive modeling.</p> <p>Jon holds a B.A. in International Politics from The Pennsylvania State University, M.S. in Finance and a Certificate in Business Data Analysis.</p>	 <p>Mayo has held consulting positions at the World Bank, the United Nations and the Center for Quantitative Analysis at Bentley. While working on her PhD, she is employed as a statistician, building response models for Brookstone.</p> <p>She says "The Bentley analytics program has been ideal for me since it has allowed me to bridge the gap between my theoretical quantitative background and business applications. I have been able to continue to do quantitative work while being exposed to other business areas such as IT, economics and organizational behavior, and have had a chance to teach and work on interesting consultancy projects."</p>	 <p>Cesar was born and raised in Venezuela. He graduated in Mechanical Engineering in one of the top engineering schools in Venezuela. After working for 2 years in a family business, he decided to come to the US to gain more business knowledge.</p> <p>He joined Bentley University in Sept 2010 in the MBA program. Soon after coming to Bentley, he declared a Business Analytics concentration. However, after talking with many professors at Bentley and analyzing the current job trends in the US, he decided to pursue the dual degree MBA / MSIT + Business Analytics Graduate Certificate. Cesar will graduate from the MBA / MSIT + Business Analytics Certificate in May 2012 and will start working for Deloitte as a Data Analytics Associate in the Financial Advisory Services division.</p>

<p>Lessia Shajenko MBA: Concentration in Business Data Analysis Senior Quantitative Analyst at:</p> 	<p>Peter Dunbar MS Business Economics, series of Data Analytics courses Senior Data Analytics Manager at:</p> 	<p>Renee Fishman MBA : Concentration in Business Analytics Director of Analytics at:</p> 
 <p>Lessia is a Senior Quantitative Analyst on the Information Exchange team in Enterprise Information Management (Technology Division) at Bank of America.</p> <p>In 1999, Professor Dominique Haughton from Bentley University had a networking event for her Business Data Analysis graduate students, and there Lessia made contacts and later interviewed and was offered a position as a graduate summer intern at Fleet Bank, Customer and Data Management group. She remembers that her interviewers were very impressed with her knowledge of factor analysis and how to use the technique and run it in SAS (all learned at ST classes at Bentley).</p> <p>Lessia has been with the bank since then, with a brief stint at a Scottish marketing technology start-up, Quadstone, now Portrait Software.</p> <p>She enjoys working with customer and transactional data, searching for patterns and trends.</p>	 <p>Pete majored in Philosophy at Hobart College, became one of the last draftees of the Vietnam War, and fell in love with programming while working on an MBA at Arizona State. After a number of years developing and managing software systems Pete became fascinated by the power of statistics. This led to the MS Business Economics program at Bentley where he took as many statistics courses as possible.</p> <p>Pete is presently a Senior Data Analytics Manager in the Internal Audit department of Fidelity Investments where he has used and continues to look for opportunities to use the techniques that he learned in the Data Analytics program at Bentley.</p>	 <p>Renee is a strategic thinker and creative problem-solver. She is currently the Director of Analytics at Calexus Solutions, LLC where she enables clients to better understand their customers. Her insights are drawn from a broad range of industry experience including marketing, information services, software, aviation, publishing, insurance, and retail.</p> <p>She uses statistical techniques such as predictive modeling, customer segmentation and campaign response analysis to identify business opportunities and generate actionable results. She has an MBA from Bentley University with a concentration in Business Analytics and a BS from Tufts University.</p>

<p>Jessica Abril Candidate MBA: Concentration in Business Analytics Senior Analyst at:</p> 	<p>Maria Skaletsky Candidate PhD in Business; specialization in Business Analytics Research Consultant at:</p> 	<p>Anjali Zaveri Candidate MBA: Concentration in Business Analytics and IT / MSMA</p>
	 	
<p>Jessica is a Senior Analyst with the Global Services, Market Strategy group at EMC. In her current role she serves as an Engagement Manager for internal consulting projects and a Subject-Matter-Expert on analytics within the team. Recent projects have included working with Data Scientists from GreenPlum and leveraging analytics to better understand the effect of services on product sales and account performance. As part of a "shared-service" department within EMC, she has been able to work with a variety of business units including Residency, Consulting, and Customer Education.</p>	<p>Maria Skaletsky holds the position of Research Consultant at the Academic Technology Center at Bentley University. She is responsible for preparing and managing data and assisting faculty on research design, survey design, data gathering methodology, data input, and data analysis. She also supports faculty use of large research databases, such as CRSP, Compustat, and ExecuComp, as well as their use of SAS, SPSS, JMP and other statistical software.</p>	<p>Anjali has an undergraduate degree in Finance and Marketing from the University of Massachusetts, Lowell. Upon the completion of her undergraduate degree, Anjali worked for three years as a Portfolio Accountant at State Street.</p>
<p>Jessica holds a B.S. in Mathematics from Bentley University and a M.S. in Operations / Logistics from Worcester Polytechnic Institute. She expects to graduate from the Professional MBA program in 2013 with a concentration in Business Analytics.</p>	<p>Maria joined the ATC in April of 2008. Prior to that, she earned an MBA (concentration in Business Data Analysis) from Bentley University. Maria holds a BS in Business Management from St. Petersburg Academy of Business (Russia), and is fluent in Russian.</p>	<p>While she enjoyed working in Finance, she felt there was still more she wanted to learn so she decided to pursue a dual Masters (MBA with a concentration in Business Analytics and IT and a Masters in Marketing Analytics) at Bentley University. Through her time at Bentley she has had the opportunity to explore and fall in love with Analytics. She will graduate this December and looks forward to applying her education and skills to the real world.</p>

Business Analytics at Graduate Level at Bentley University: proposal to get a new MS degree approved

MS Business Analytics Proposal

Developed since 2008.
Faculty contributions from many departments

Business Analytics at Graduate Level at Bentley University: proposal to get a new MS degree approved

Program Mission

The Bentley University Master of Science in Business Analytics (MSBA) is intended to provide a strong hands-on exposure to key analytics methods via a six-course core component coupled with four electives that provide domain knowledge in an area of interest to each participant.

Business Analytics at Graduate Level at Bentley University: proposal to get a new MS degree approved

Current Graduate Analytics Portfolio at Bentley

- Have been providing analytics training since the mid-1990s
- MBA concentration Business Analytics
- Certificate Business Analytics
- PhD with Business Analytics Specialization (4 graduates, 4 current students)

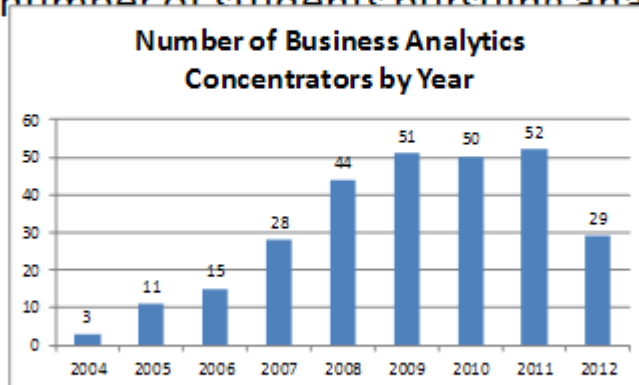
Business Analytics at Graduate Level at Bentley University: proposal to get a new MS degree approved

Why introduce an MS in Business Analytics, and why now?

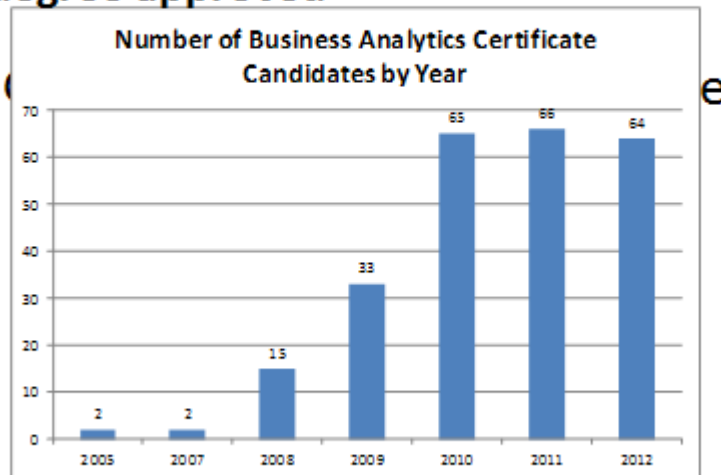
- Large amount of press about the need for analytics professionals
- Well established classes and programs for analytics training
- Great corporate connections and placements
- Center for Quantitative Analysis (CQA) can provide consulting opportunities
- Opportunities exist for attracting new population of students

Business Analytics at Graduate Level at Bentley University: proposal to get a new MS degree approved

The number of students pursuing analytics



Business Analytics at Graduate Level at Bentley University: proposal to get a new MS degree approved



Business Analytics at Graduate Level at Bentley University: proposal to get a new MS degree approved

Proposed Program

- MSBA proposed as addition to existing analytics portfolio
- Expands opportunities to include broader range of application areas
- Requires core analytics courses (6)
- Elective courses (4) can be chosen from suggested cluster to develop knowledge in particular area

Business Analytics at Graduate Level at Bentley University: proposal to get a new MS degree approved

Required Courses

- Regression and Introduction to Time Series (ST625)
- Logistic regression, Decision Trees, Factor and Cluster Analysis (ST635)
- Optimization and simulation for business decisions (MA610)
- Time Series with R (MA611)*
- Advanced Data Mining (MA710)
- Data Management and SQL (CS605)

* New proposal course

Business Analytics at Graduate Level at Bentley University: proposal to get a new MS degree approved

Elective Courses (4 electives)

- Suggested elective clusters develop skills in context area
- Clusters recommended but not required
- Cluster areas

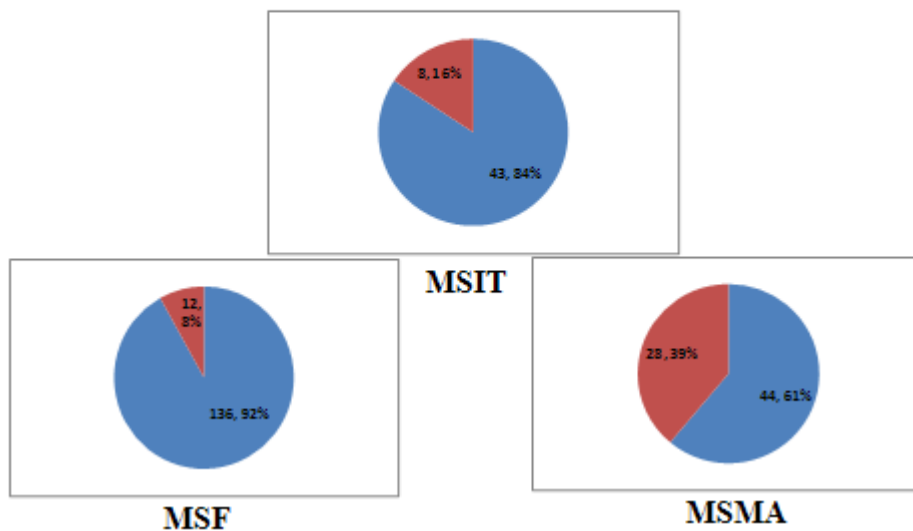
Data Science	Economics	Finance
IPM	Management	Marketing
	Customized	

Business Analytics at Graduate Level at Bentley University: proposal to get a new MS degree approved

Foundation Work

- Required to demonstrate adequate academic preparation in data analysis up to the level of “MBA statistics” or equivalent.
- Students may be required to complete additional an business fundamental course based on choice of elective cluster.

Certificate portion of MS programs

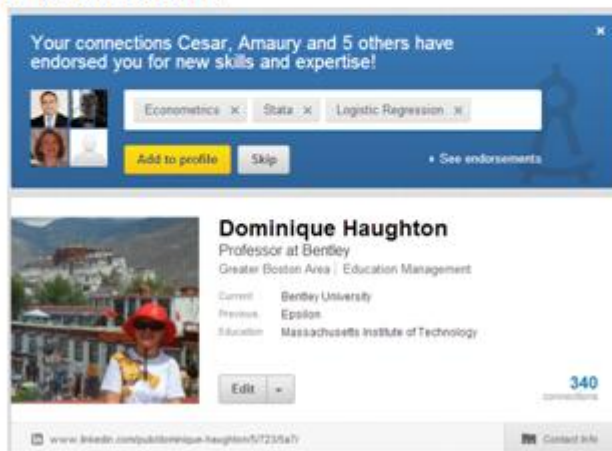


Statistical training in the United States: Lessons learned and challenges: the role of statistical packages SAS, R, SPSS, Stata etc.

- **SAS (Statistical Analysis System <http://www.sas.com/>) is a leader, notably in health applications and in most areas of business analytics**
- **It is often imperative (in terms of the job market) for students to develop suitable SAS proficiency, if possible sanctioned by SAS certification**
- **R is becoming more and more important**
- **SPSS is a leader in market research**
- **Stata is often preferred by economists, and by institutions such as the World Bank**

Statistical training in the United States: Lessons learned and challenges: the role of professional social media, such as LinkedIn

- **LinkedIn is the most widely used social media group for analytics professionals**



Statistical training in the United States: Lessons learned and challenges: synchronous and asynchronous distance education

- **Distance education is likely to be the way of the future, and this has an impact on statistics as well as on other areas**
- **Asynchronous distance education: there is no class meeting per se, and studying is done by students independently with materials posted on line; assignments are graded for course credit**
- **Synchronous distance education moves a traditional classroom to the virtual space and involves class meetings at a fixed time which can be attended from anywhere with an internet connection**

Statistical training in the United States: Lessons learned and challenges: synchronous distance education; the Bentley experience

Bentley Online Learning | OnLine + OnCampus Hybrid Classes [Log into Centra](#)

[Trouble logging in? Click here](#)

About Bentley's Online Learning Program

Bentley online courses allow students to choose how they attend class, either by physically coming to campus or by "virtually" attending from a remote location, using only their computer and an internet connection.

[Learn More](#)

- Course Availability
- Register for an Online Course
- Technology Orientation
- System Requirements

How-To's

- Communicate [chat, present]
- Break into groups
- Collaborate on a project
- Play back a class

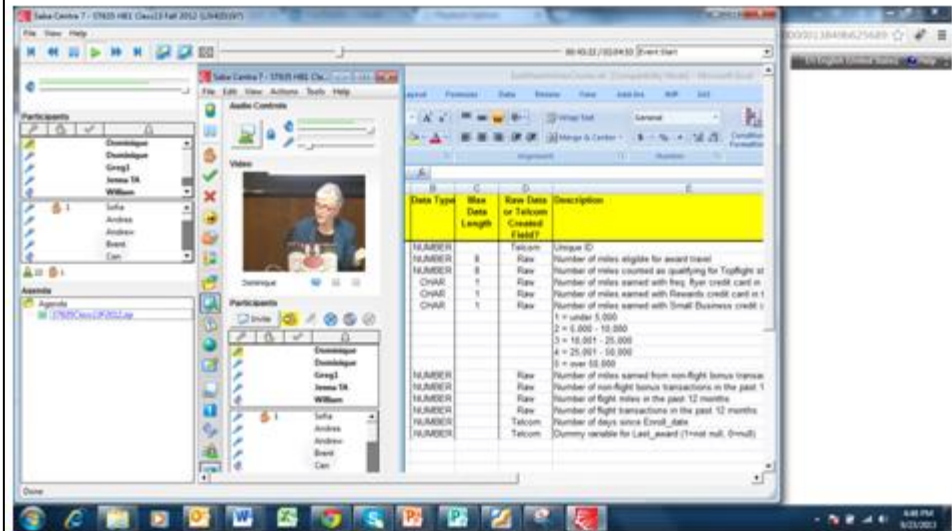
Instructor Resources

- Communicate with Hybrid Team
- Use of Videos in Class

HELP

- hybrid@bentley.edu
- 781.891.3487
- EACs

Statistical training in the United States: Lessons learned and challenges: synchronous distance education; the Bentley experience



Statistical training in the United States: Lessons learned and challenges: Ethics in statistics and analytics

- Numerous ethical issues in the practice of statistics, notably in biostatistics
- Privacy issues in analytics marketing projects
- Data integrity
- How to train in such ethics: related field of business ethics
- A possible starting point is ASA's ethical guidelines for statistical practice

Statistical training in the United States: Lessons learned and challenges: Ethics in statistics and analytics

A. Professionalism points out the need for competence, judgment, diligence, self-respect, and worthiness of the respect of other people.

B. Responsibilities to Funders, Clients, and Employers discusses the practitioner's responsibility for assuring that statistical work is suitable to the needs and resources of those who are paying for it; that funders understand the capabilities and limitations of statistics in addressing their problem, and that the funder's confidential information is protected.

C. Responsibilities in Publications and Testimony addresses the need to report sufficient information to give readers, including other practitioners, a clear understanding of the intent of the work, how and by whom it was performed, and any limitations on its validity.

D. Responsibilities to Research Subjects describes requirements for protecting the interests of human and animal subjects of research—not only during data collection but also in the analysis, interpretation, and publication of the resulting findings.

E. Responsibilities to Research Team Colleagues addresses the mutual responsibilities of professionals participating in multidisciplinary research teams.

F. Responsibilities to Other Statisticians or Statistical Practitioners notes the interdependence of professionals doing similar work, whether in the same or different organizations. Basically, they must contribute to the strength of their professions overall by sharing nonproprietary data and methods, participating in peer review, and respecting differing professional opinions.

G. Responsibilities Regarding Allegations of Misconduct addresses the sometimes painful process of investigating potential ethical violations and treating those involved with both justice and respect.

H. Responsibilities of Employers, Including Organizations, Individuals, Attorneys, or Other Clients Employing Statistical Practitioners encourages employers and clients to recognize the highly interdependent nature of statistical ethics and statistical validity. Employers and clients must not pressure practitioners to produce a particular "result," regardless of its statistical validity. They must avoid the potential social harm that can result from the dissemination of false or misleading statistical work.

Statistical training: international cooperation

- **International organizations (UN agencies, World Bank etc.) play a significant role in supporting international cooperation**
- **Cooperation can involve bringing students for example to the US for graduate (and sometimes undergraduate) study, or for instructors to come and deliver short courses**
- **"Training of trainers": we suggest that the most effective model is one where an international instructor comes and helps trainers prepare their course, and then attends the course delivered by local instructors**

Statistical training: international cooperation

- National professional societies also play an important role, as for example the ASA's statistical ambassadors program

Education > Educational Ambassador

12
Workshops for Teachers
Online Resources for Teachers
Publications in Statistics Education
Student Competitions
Useful Web Sites for Teachers
Census at School
Undergraduate
Graduate
Continuing Education
Careers of Academic Representatives
Educational Ambassador
Educational Issues

To welcome new international members to the American Statistical Association and create a trust for cooperation, the Educational Ambassador Program was launched by the **Committee on International Relations in Statistics** in 2003 to recruit a number of educational ambassadors from foreign countries. The program was developed to advance lasting collaboration between the ASA and other international statistical societies for permanent exchanges of knowledge.



Statistical training: international cooperation

- Volunteer groups such as Statistics without Borders can help provide training

The image shows the logo for Statistics without Borders, which features a globe, the text "Statistics without Borders", and the mathematical formula $\sum_{i=1}^n X_i$. Below the logo is a screenshot of the organization's Facebook page, which includes a "Like" button, a "Message" button, and a notification of 1,058 likes. The page also contains a description of the organization as a non-profit group of the American Statistical Association.

Statistical training: international cooperation; a new initiative: VALSAC at Bentley University

Virtual Academic Living Standards Analytics Community (VALSAC)

is sponsored by the Institute Center for the Study of Globalization & the World Economy



Mission

Current work on living standards involves researchers in many disciplines (economics, management, sociology, statistics, demography) and many types of institutions (universities, research institutes, statistical offices, non-Governmental Organizations, international organizations, etc.), scattered across scores of countries.

In some respects, researchers have easier access to information than ever, especially through a wealth of resources on the Web. But the deluge of information has costs too, including these:

1. Researchers on issues related to poverty and living standards do not communicate much across disciplines. In part this is because they are already busy keeping up with developments in their own disciplines, and in part because institutions such as universities tend to be organized along disciplinary lines.
2. It is easy for researchers, particularly those starting out, to be overwhelmed by the volume of information. They often need help with technical questions, and guidance in framing questions and keeping a sense of perspective. They also often need the ability to discern good quality research that may be of use for their needs and purposes given the multitude of research papers available and disseminated over the web.
3. Isolated researchers need encouragement and support. To some extent academic conferences fill the role, but the time and expense involved in gathering large numbers of scattered researchers together in one place are considerable.

SEARCH

Analytics @ Bentley

Business Analytics
Virtual Academic Living Standards
Center for Quantitative Methods
Bernardus Neuman

Statistical training in the United States: lessons for middle income countries?

- **Distance education is likely to play a key role, since technology makes it possible for example for students in Vietnam to attend a course in the US**
- **Analytics will be important as the corporate structure develops**
- **Modern applied statistics are likely to be very important**
- **MOOCs can be a very useful tool, but require motivation on the part of the learner**

Vietnam and international cooperation in statistics training

- **Funding for graduate statistical training in the US is often available at the university that a person applies to, rather than via countrywide sources, particularly at the doctorate level**
- **What is needed is a network of international statisticians willing to help Vietnam applicants find universities and funding**
- **It would be very good to facilitate co-supervision of PhD theses for PhD candidates studying in Vietnam**
- **MOOCS and virtual education tools have a role to play as well**

Statistical training in the United States: Lessons learned and challenges

THANK YOU!!!

www.dominiquehaughton.com

9. Experience and contents of training on statistics in Korea

Jongho Lee, Director, Training Management Division, Statistical Training Institute, Statistics Korea

Abstract

In Korea, a total of 387 agencies including public and private sector are producing 916 kinds of statistics.

People usually show a negative reaction to the statistics such as hard, difficult or not reliable. Many public servants think that only experts can do the production and application of national statistics. So it is nothing to do with them. It seems like this matter is caused by shortage of statistical education.

There is no person who does not need statistics in modern society. But so far, only a limited number of people can get the right understanding and application of statistics.

People can study statistics in university and Statistical Training Institute(STI). About 60 universities are opening the department of statistics. In recent years many universities have been changing the name of department of statistics. For example, data science, computer science & statistics, financial information and statistics, business information and statistics, etc. Also STI only works statistical training for staffs of statistical institutions including public and private sector.

STI believe that all people can use statistics, when it is necessary. For this reason, STI is planning the elaborated statistics education from children to adults within a limited budget.

In this presentation, we would like to introduce statistics education system in university and experience (material, lecturer, trainee) of STI.



Experience of statistical training in Korea

Jongho Lee
Director
Training Management Division
Statistical Training Institute
Statistics Korea



Statistical training in Korea



- ▶ In Korea, a total of 387 agencies including public and private sector are producing 916 kinds of statistics.
People usually show a negative reaction to the statistics such as hard, difficult or not reliable.
- ▶ Many public servants think that the production and application of national statistics is the job of only experts. So it is nothing to do with them. It seems like this matter is caused by shortage of statistical education.
- ▶ There is no person who does not need statistics in modern society. But so far, only a limited number of people can get the right understanding and application of statistics.
- ▶ Therefore, statistical training is not just to foster experts. We need to offer statistical training to make sure the general public understand and apply statistics in a right way. This presentation aims to raise the awareness of this challenge and to address it.

Statistical training of universities in Korea

- ▶ In Korea, we have two places to get statistical training. That is, universities and Statistical Training Institute. First, let me touch upon statistical training of universities.
- ▶ Currently, about 60 universities have the department of statistics nationwide. They select freshmen for admission on the basis of Korea's SAT score and high school grades. For sure, this way to select is applied to other departments.
- ▶ Curriculums of the department of statistics center on theories of traditional statistics. However, universities start to have more interests in cultivating experts required in every fields of society.

Statistical training of universities in Korea

- ▶ The following table shows curriculum subjects offered by 53 universities among about 60 universities, which was surveyed by the Korean Statistical Society.

The survey results show that the largest number of subjects offered shows Computing Statistics, Math-related subjects, Mathematical Statistics, Basic Statistics in order of frequency.

Subject	Frequency	Subject	Frequency
Computing Statistics	97	Time Series Data Analysis	45
Math-related subject	85	Survey Methods	41
Mathematical Statistics	84	Database	39
Basic Statistics	77	Nonparametric Statistics	33
Regression Analysis	66	Sample Survey theory	33

(continue)

Statistical training of universities in Korea

Subject	Frequency	Subject	Frequency
Experimental Design	64	Insurance Statistics	32
Data Mining	55	business economics Statistics	28
Multivariate Data Analysis	54	Categorical Data Analysis	28
Probability Theory	51	Applied Statistics	26
Statistical Quality Control	49	Statistics	25
Data Analysis Theory	48	Stochastic Processes	24
		:	:

Statistical training of universities in Korea

- The following table shows curriculum subjects of the Department of Statistics of Seoul National University.

Curriculum subject	Credit-Class-Practice
Probability Concept and Applications	3 - 3 - 0
Statistical Computing and Lab.	3 - 2 - 2
Sampling Design and Survey Practice	3 - 2 - 2
Mathematical Statistics 1	3 - 3 - 0
Mathematical Statistics 2	3 - 3 - 0
Regression Analysis and Lab.	3 - 2 - 2
Discrete Data Analysis and Lab.	3 - 2 - 2
Experimental Design and Lab.	3 - 2 - 2
Multivariate Data Analysis and Lab.	3 - 2 - 2
Bayesian Statistics and Lab.	3 - 2 - 2
Survival Data Analysis and Lab.	3 - 2 - 2
Data Mining Methods and Lab.	3 - 2 - 2
Nonparametric Statistics and Lab.	3 - 2 - 2
Time Series Analysis and Lab.	3 - 2 - 2
Statistical Quality Control and Lab.	3 - 2 - 2
Applications of Function Estimation and Lab.	3 - 2 - 2
Stochastic Processes 1	3 - 3 - 0
Stochastic Processes 2	3 - 3 - 0

Statistical training of universities in Korea

- The following table indicates curriculum subjects by each year of the department of Statistics.

	1 st semester	2 nd semester
Freshman	Calculus & Practice Statistics Statistics Experiment	Computer Concept & Applications Calculus & Practice 2
Sophomore	Probability Concept and Applications Introduction to Analysis 1 Linear Algebra 1 Computer Programming	Statistical Computing and Lab. Sampling Design and Survey Practice Introduction to Analysis 2 Linear Algebra 2
Junior	Mathematical Statistics 1 Regression Analysis and Lab. Experimental Design and Lab. Numerical Linear Algebra	Mathematical Statistics 2 Multivariate Data Analysis & Lab. Discrete Data Analysis & Lab. Introduction to Numerical Analysis
Senior	Bayesian Statistics and Lab. Data Mining Methods and Lab. Time Series Analysis and Lab. Stochastic Processes 1 Theory of Functions of Real Variable	Survival Data Analysis and Lab. Nonparametric Statistics and Lab. Statistical Quality Control and Lab Applications of Function Estimation and Lab. Stochastic Processes 2

Statistical training of universities in Korea

- The following table shows curriculum subjects offered by 47 Graduate Schools of Statistics, which was surveyed by the Korean Statistical Society. The results are almost identical to undergraduate curriculum subjects.
- Master degree of Statistics in most of universities, have 2-year courses and doctoral degree of Statistics have 2-year courses and a doctoral thesis period, which ranges to 2 to 4 years by individuals.

Subject	Frequency	Subject	Frequency
Mathematical Statistics	86	Nonparametric Statistics	57
Experimental Design	79	Regression Analysis	48
Probability Theory	77	Stochastic Processes Theory	47
Linear Model Theory	75	Bayesian Statistics	43
Multivariate Data Analysis	71	Theoretical Statistics	43
Statistical Computing	63	Data Mining	41
Sampling Survey Theory	59	Statistical Consulting	40
Time Series Data Analysis	58	:	:

Statistical training of universities in Korea

- ▶ The following indicates curriculums of the Graduate School of Statistics of Seoul National University. The courses consist of Probability Theory, Theory of Statistics, etc.

Curriculum Subjects	
Probability Theory 1	Advanced Nonparametric Statistics
Probability Theory 2	Advanced Time Series Analysis
Statistical Consulting and Practices	Advanced Experimental Design
Theory of Statistics 1	Advanced Probability Theory
Applied Statistics)	Topics in Regression Analysis
Advanced Statistical Methods	Topics in Time Series Analysis
Theory of Statistics 2	Topics in Experimental Design
Seminar in Recent Development of Statistical Theories	Topics in Probability Theory
Asymptotic Statistical Inference	Seminar in Statistics
Nonparametric Function Estimation	Generalized Linear Models
Seminar in Recent Development of Applied Statistics	Topics in Generalized Linear Models
Advanced Bayesian Statistics	Advanced Stochastic Processes
Advanced Survival Analysis	Topics in Stochastic Processes
Advanced Methods in Data Mining	Categorical Data Analysis
Advanced Biostatistics	Analysis of Repeated Measurements
Advanced Linear Models)	Topics in Nonparametric Function Estimation
Advanced Regression Analysis)	Topics in Bayesian Statistics
Topics in Semiparametric Inference	Statistical Computing
Reading and Research)	

Statistical training of universities in Korea

- ▶ Recently, the names of Department of Statistics have been subdivided in a various fashion. For example,
 - data science : It aims to foster experts in data analysis by combining statistical knowledge and business & computing knowledge.
 - computer science & statistics : It aims to cultivate experts in information communication technology and software development and management.
 - financial information and statistics : It aims to nurture corporate-customized talent by dividing into three curriculums: Probability Theory-based(finance Insurance field), Traditional Statistics-based(data analysis, research field), Statistical Computation-based(information technology field).

Statistical training of universities in Korea

- **business information and statistics** : It is targeted at developing business information statisticians equipped with objective collecting capability of business information, analysis capability and computer application ability.
- ⊗ As industries are developing by continuous convergence, the Department of Statistics is also trying to respond to the demand of society by converging with related studies in a fragmented and specialized way.



Career

- ▶ Recently, unemployment rate of young people shows almost 10%. However, employment rate of graduates of the department of statistics shows relatively high compared to other departments.
- ▶ Graduates of the department of statistics are finding jobs in the following areas;
 - **Public servants** : they should pass the civil service examination.
 - **Major companies** : they can enter Samsung, Hyundai, LG, etc.
 - **Finance Insurance companies** : graduates prefer most.
 - **Research companies** : they can do survey and analysis.
 - **Software companies** : they can do programming.

Statistical Training Institute (STI)

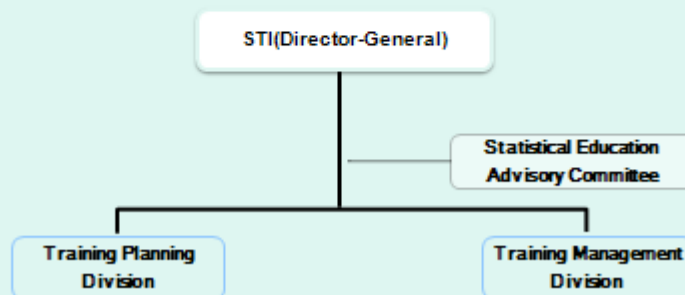
Now, let's move to Statistical Training Institute.

- ▶ STI was established in 1991, the training institute for statistical education under Statistics Korea.
- ▶ The mission is to foster experts in statistics and to raise the awareness of statistics.
- ▶ For reference, the government introduced the scientific policies which are based on data, so called 'Statistics based policy' in 2007.

That's the reason why STI takes a growing responsibility as a national statistical institute.

Statistical Training Institute (STI)

- ▶ STI has two divisions: Training Planning Division and Training Management Division. The number of employees hovers 40 people in total.
- ▶ In order to listen to the opinions of external experts on statistical training, STI holds Statistical Education Advisory Committee joined by university professors one or twice a year to make sure their opinions are reflected in the statistical training planning.



STI Training Activities

	2005	2006	2007	2008	2009	2010	2011	2012	2013*
# of courses	58	66	72	89	108	143	157	161	124
# of trainees	7,343	8,810	9,981	11,996	14,741	16,278	21,629	26,219	23,027

* Figures in the January-June quarter of 2013

- ▶ In STI, the number of courses and trainees is on the rise continuously. In 2005, STI trained 7,343 in 58 courses and, in 2012, trained 26,219 in 161 courses.
- ▶ For reference, employees in Statistics reach 4,737. Among them, few employees major in statistics. For this reason, STI puts importance on offering right courses for different level of employees.

Training Activities (2012)

unit : number of people

Division	Total	Statistics Korea			Central government	Local governments	Private agencies
		Subtotal	Headquarters	Regional offices			
Total	26,219	13,118	1,615	11,503	1,883	8,806	2,412
classroom learning	7,976	3,692	1,376	1,826	876	1,997	1,411
e-learning	18,243	9,426	239	9,187	1,007	6,809	1,001

- ▶ In the type of training, classroom learning accounts for 30% and e-learning 70%.
- ▶ e-learning refers to offering learning contents to make sure employees, who find difficult to join in classroom learning, can learn on PC.
- ▶ For reference, Korea has a regulation that it is mandatory for public servants to be trained for more than 100 hours in a year.

STI Training Activities > Curriculum in 2013

- ▶ STI has a manpower pool of 800 lecturers.
 - University professors and experts of Statistics Korea usually give lectures on statistics theory and practice.
 - External experts offer lectures on computer courses(Excel, SAS, SPSS, PowerPoint, etc).

- ▶ This year in 2013, STI has set up a plan to offer 124 courses.
The courses are offered for different levels of trainees.
For officials of KOSTAT, For officials of statistics-related organizations,
For the general public, etc.

1. Training courses for KOSTAT officials

- ▶ Providing the training courses by levels. Therefore, trainees can choose and take lectures which is suitable for their levels.
 - Basic courses include Basic Probability Theory, Basic Statistics Theory, Basic SAS Programming, etc.
 - Intermediate courses include Sampling Design, Statistics Development Planning, SAS Data Analysis, etc.
 - Advanced courses include Regression Analysis, Time Series Analysis, SAS Big Data Analysis, etc.
- STI has a 21-hour course(3 days) and 35-hour course(5 days).

- ▶ Operating the long-term courses(8) for professionals
 - Population Projection, Time series Analysis, Imputation, National Accounts, Index Theory, Sample Design, Data Masking, Survey Planning
- Those who want to take courses the above should be evaluated in the level test to see if they are right for the courses before they begins.
A course makes up of 48 to 92 hours(11 to 18 weeks) with a small group of trainees(5 to 10).

2. Training courses for statistics-related organizations

- ▶ Providing the training courses by levels
 - It is identical to the previous.
- ▶ Custom-tailored courses for external agencies
 - If specific courses, except for regular courses, are requested by external agencies, STI offers custom-tailored courses(1 to 3 day-course) for external agencies by receiving training fee including lecturers payment. For example,
 - Statistical data analysis, SPSS, use of statistics, etc.
 - external agencies : central and local governments, Army/air force Headquarters, National Health Insurance Corporation, National Pension Service, etc.
- ✕ The trainees' response to this custom-tailored is quite good, so every department of Statistics Korea is making a number of applications for this type of course.

3. Courses for the general public

- ▶ In order to promote awareness of statistics, STI has more interests in training for different levels on the recent years.
 - Statistical camp for children
 - Statistical academy for middle / high school students
 - Statistical workshop for university students
 - Statistical training for elementary school teachers
- ▶ The details are touched up later.

4. e-Learning service (35 courses)

- ▶ STI provides learning contents to make sure employees, who find difficult to join in classroom learning, can learn on PC. e-learning has 35 courses in total.
- For example, Statistical Thinking, Analysis and Practice of Time Series Data, Basic Survey Method, Basic Sampling Theory, etc. are included.
- ▶ To complete a course, trainees should pass the evaluation test.



5. U-Learning service(30 courses)

- ▶ As smart phones are commonly used, STI has started offering learning contents on the phones for the first time.
- STI offers 30 U-learning courses, including Understanding of Survey method, Basic statistics, Local policy and Statistics, etc.
- ▶ STI is going to do research to develop contents for smart phones.

We can Study at Any time, Any where



Field	Courses
Survey planning	Understanding of Survey method
	Local policy and Statistics
Theory	Basic statistics
Package	Data analysis using SPSS
Knowledge	Useful-tip for work-life
	Negotiation Skills
	Psychology for persuasion
	Readership development, etc

Challenges for the future

- ▶ Now, STI is considering how it provides statistical training to the general public except for experts in statistics.

(Challenges)

- Public recognition that statistics is hard, difficult and boring.
- Public have no idea about where they find right data, many statistical data around though.
- From time to time, distorted reports for some data by the media.
- ☛ The general public have a negative mindset for statistics.
- ☛ Their non-cooperative attitude is shown as non-response in a interview survey.

(Necessity to strengthen statistical training)

- Therefore, STI believes that the need for systematic statistical training, is required to make kids are close to statistics from the childhood.

Challenges for the future

- ▶ STI's strategies to strengthen systematic statistical training.

(For all levels of trainees)

- To offer courses for all levels of trainees, that is, expanding to elementary, middle, high schooler and the general public. Now, STI is providing courses by different levels, but is not giving enough courses, compared to training demand.

(Standard textbooks)

- It is urgent to make and distribute textbooks right for all levels of trainees. Now, lecturers are making their own textbooks, so the same title of courses provide different textbooks, which make trainees confused.
- To make up for it, STI will set up Statistical Education Council to make sure professors and school teachers join forces to develop standard textbooks.

Challenges for the future

(Strategy to expand)

- First of all, STI is to foster lecturers of statistics among teachers of elementary, middle and high schools. This program will be open at the time of summer and winter vacation.
- STI basically makes it a rule for teachers to voluntarily participate in the program. Therefore, STI puts it first to offer proper inducement plans and active promotion to make sure teachers join the program.
- STI finds it efficient that teachers who takes statistical courses second time, teach statistics to school students and the general public.

(Incremental approach)

- In order to expand statistical training, a budget should be secured to make sure the plan comes to reality. Fortunately, the budget is on the rise. STI is expecting it to grow incrementally.

Challenges for the future

(Statistical Education Council)

- STI has a plan to set up the Statistical Education Council in the near future.
- Statistical Education Council will have less than 100 members including people involved in statistical education such as members of the Korean Statistical Society, teachers of elementary, middle and high schools.
- Its major job is to make discussions on designing curriculums of statistical training for all targets and levels of trainees and developing standard textbooks
- Statistical Education Council will be test-operated in the second half of 2014.

Challenges for the future

(Designing curriculums:
students of elementary/middle/high schools and teachers)

- **STI will design curriculums over the entire life of people. It means to offer new courses and expand the number of existing training courses.**
- **The courses are primarily about damage cases for misusing and abusing statistics, preventing misunderstanding on statistical results, promoting understanding of national statistics and cooperation for surveys and ways to utilize national statistics necessary for routine life by all levels of trainees.**

Challenges for the future

- **STI is now offering courses to students of elementary, middle and high schools who want, once or twice a year, but the course demand is going up and STI will plan to expand the course.**
- **STI is now providing courses to elementary school teachers who want once a year (summer vacation).**
- **However, STI does not have courses for middle/high school teachers. We will open courses for them at next year.**

Challenges for the future

(Designing curriculums : undergraduates, graduate students)

- Currently, STI is offering statistics courses for undergraduates who major in statistics-related departments once or twice a year. The training is about the experiencing statistics practice and understanding and application of national statistics.
- In the near future, STI will offer courses for all students regardless of departments. The training is about understanding and application of national statistics.
- STI offered the course for writing papers on statistics to graduate students twice a year till last year. However, this year, the demand for the course is increasing, which led STI to offer the course three times. The course is about analyzing statistics and writing a paper.

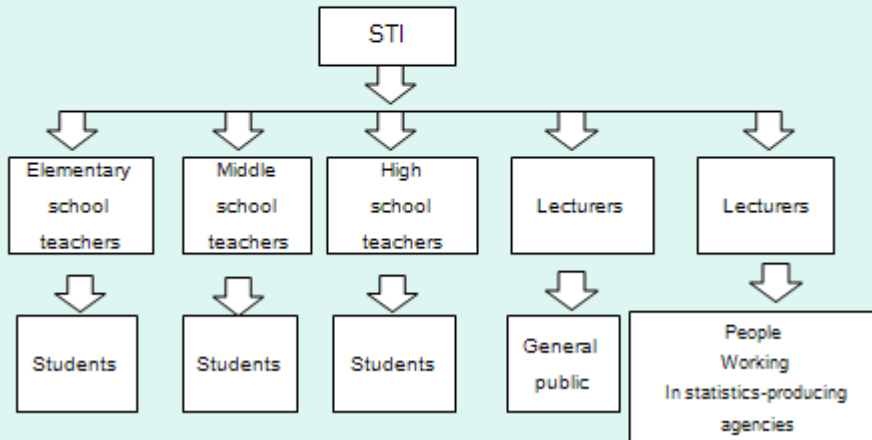
Challenges for the future

(Designing curriculums: statistics-producing agencies, general adults)

- STI will try hard to design more sub-divided curriculums by different levels for people working in statistics-producing agencies.
- STI is now offering long-term courses on statistics for general adults in the evening of the weekdays (3 hours a week, 15 weeks). It implies the strong will of STI toward life-long education.
- STI has a plan to provide 1 or 2 hour-long courses on understanding and application of national statistics for the members of civil groups.

Challenges for the future

- ▶ The following table shows the system of statistical training. On the first tier, STI offers courses to teachers of elementary, middle and high schools and lecturers. Then, the trainees who are already trained, will give lectures to students and the general public.



Challenges for the future

(Comment)

- **Statistics is no longer the property of a small group of experts. Now, many ordinary people are also utilizing statistics to do the decision-making in a daily routine.**
- **However, the general public have negative perspectives on statistics due to distorted reports and misunderstanding of the media for some parts of statistics.**
- **This perspective is exposed to non-cooperative attitude when surveyors visit each businesses and households to collect data. We see statistics results turn out poor due to non-responses or wrong responses of respondents all the time.**

Challenges for the future

(Comment)

- We should do our best to make sure the positive cycle where suppliers produce and provide quality statistics is established and consumers utilize statistics in a right way and cooperate with statistical surveys.
- These are the reasons why we need training to help people familiar with statistics from childhood from the long-term perspectives.



Thank You !

IV. ANNEXES

1. Workshop Agenda

Conference on Statistics Training in Universities:

National and International Experiences, and the Way Forward.

Ha Noi, Viet Nam, 13-14 November 2013

CONFERENCE AGENDA

Day 1: 13 November 2013 (Ballroom I, Melia Hotel)

8:30 - 9:00 **Registration**

Section 1: Opening

9:00 - 9:45 **Introduction of participants and objectives of the conference**
GSO

Opening speech

MPI (Nguyễn Văn Trung, Vice-Minister)
UNFPA Representative (Arthur Erken)

Section 2: Roles of statistics training for the national development and the needs of society on human resource for statistics

Chair-persons: GSO (Nguyễn Văn Liệu, Deputy Director), UNFPA (Arthur Erken, Representative), NEU (Prof. Phan Công Nghĩa, Vice Rector)

9:45 - 10:45 **Introduction**

Chair-man (Nguyễn Văn Liệu, Deputy Director, GSO)

Human resource needs for development of the statistics industry

Nguyen Tri Duy, Deputy Head, Personnel Department, GSO

Role of statistics training in the provision of statistical human resources for the society

Hiroyuki Kitada, Deputy Director, Statistical Institute for Asia and the Pacific **SIAP**

Q & A

10:45 - 11:00 **Tea-break**

10:45 - 11:30 **Media session (Function 1&2, Melia Hotel)**

Chair-persons: GSO (Nguyễn Bích Lâm, General Director), UNFPA (Arthur Erken, Representative), NEU (Prof. Phan Công Nghĩa, Vice Rector), and Bentley University

(Prof. Dominique Haughton)

Section 2 (Continued)

Roles of statistics training for the national development and the needs of society on human resource for statistics

11:00-12:00

Statistical work in the management and operation of businesses: roles and skill requirements.

Lê Văn Công, Viet Nam National Coal – Mineral Industries Corporation (VINACOMIN)

Roles of statistics training in universities

Prof. Phan Công Nghĩa, National Economics University (NEU)

Q & A

12:00 - 13:30

Lunch at the hotel

Section 3: Current situation and challenges in statistics training in Viet Nam and other countries

Chair-persons: GSO (Vũ Thanh Liêm, Deputy Director), NEU (Prof. Phan Công Nghĩa, Vice Rector) and UEH (University of Economics Ho Chi Minh City)(Prof. Nguyễn Đông Phong, Rector)

13:30 - 15:00

Introduction (*current situation of training forms, activities, degrees, trainers and quality of students, etc*)

Chair-man (Prof. Phan Công Nghĩa, Vice Rector, NEU)

Statistics Training in universities with statistics major: Reality and Challenges

Assoc. Prof. Bùi Đức Triệu, NEU

Current situation of Statistics Training in Universities without Statistics major.

Dr. Trần Thị Bích, Research team leader

Video clip on challenges of the statistics training in Viet Nam

UNFPA

Current situation of employment of bachelors in statistics through the survey "Following the footstep of statistics graduates"

Đỗ Văn Huân, Faculty of Statistics, NEU

Q & A

15:00 - 15:15

Tea-break

15:15 – 17:00

Current Situation & Challenges in Statistics Training in the Philippines

Dr. Jose Ramon Gatmaitan Albert, Secretary General, National Statistical Coordination Board, Philippines

Current status of statistical training in France

Prof. Michel Grun-Rehomme, National School of Statistics and Economic Administration, France

Current status of statistical training in the United States

Prof. Dominique Haughton, Bentley University, USA

Current status of statistical training in Australia

Assoc. Prof. Alice Richardson, Faculty of Education, Science, Technology & Mathematics, University of Canberra, Australia

Q & A

17:00 - 17:30

Remarks on the first day: reviewing the sections and briefing contents of the following day.

Chair-man (Nguyễn Bích Lâm, GSO)

Day 2: 14 November 2013 (Ballroom I, Melia Hotel)

Section 4: National and international experience in statistics training

Chair-persons: Hue University (Assoc., Prof. Trần Văn Hòa, Vice Rector), UNFPA (Arthur Erken, Representative), SIAP (Hiroyuki Kitada, Deputy Director)

8.30- 10:00 -

Introduction (*training objectives, curriculum, knowledge structure and necessary skills to be obtained*)

Chair-man (Arthur Erken, Representative, UNFPA)

Experience in training statistics major at NEU: lessons learnt and challenges

Assoc. Prof. Trần Thị Kim Thu, Faculty of Statistics, NEU

Experience in statistics training by the College of Economics, Hue University

Trần Phước Hà, MA, Economics University, Hue University

Experience in statistics training by the University of Economics Ho Chi Minh City

Dr. Hà Văn Sơn, University of Economics Ho Chi Minh City

SIAP's experience in capacity building for statisticians in the region

Hiroyuki Kitada, Deputy Director, Statistical Institute for Asia and the Pacific **SIAP**

Q & A

10:00 - 10:15

Tea-break

10:15 – 12:00

Experiences in statistical training in mid income countries

Prof. Michel Grun-Rehomme, National School of Statistics and Economic Administration, France

Experience of Statistical Training in PH: Lessons learnt and challenges

Dr. Jose Ramon Gatmaitan Albert, Secretary General, National Statistical Coordination Board, Philippines

Experience and contents of training on statistics in Australia

Assoc. Prof. Alice Richardson, Faculty of Education, Science, Technology & Mathematics, University of Canberra, Australia

Experience and content of statistical training in America

Prof. Dominique Haughton, Bentley University, USA

Experience and contents of training on statistics in Korea

Jongho Lee, Director, Training Management Division, Statistical Training Institute,
Statistics Korea

Q & A

12:00 - 13:30 **Lunch at the hotel**

Section 5: Recommendations for improvement of the quality of the statistics training in Viet Nam

Chair-persons: NEU (Prof. Phan Công Nghĩa, Vice Rector), GSO (Vũ Thanh Liêm, Deputy Director) and UNFPA (Arthur Erken, Representative)

13:30 - 13:40 **Instruction on group discussion**

Prof. Dominique Haughton, Bentley University, USA

13:40 - 14:45 **Group discussion (4 themes)**

14.45- 15.15 **Presentations of group discussions**

15:15 – 15:45 **Tea-break**

15:45 – 16:00 **Presentation of preliminary recommendations for training programmes on statistics in Viet Nam (based on presentations recommendations and group discussion**

Prof. Dominique Haughton, Bentley University, USA

16:00 **Closing remarks**

UNFPA Representative (Arthur Erken)

GSO Leader

Section 2

2.1. Master Nguyen Tri Duy, Deputy Head, Personnel Department, General Statistical Office. He took his Bachelor (2000) and Master (2010) in statistics major at NEU. Currently, he continues his study for Doctorate in statistics also at this university. He has been working at General Statistics Office for over 12 years. He is currently in charge of training civil servant and staff for statistics sector. He plays a consultative role for leaders of General Statistical Office in long term strategies and annual plans on human resource. Also he analyzes and proposes training contents and programs which help to improve the quality of statistics staff to meet the job requirements.

2.2. Mr. Hiroyuki Kitada is Deputy Director, Statistical Institute for Asia and the Pacific (SIAP). He completed the postgraduate programme of University of Tokyo in mathematical engineering including mathematical statistics and took a master's degree. He has been working for the SIAP as Deputy Director since August 2012.

Prior to joining SIAP, He has worked for various fields of official statistics in Japanese Government for more than 20 years. He was the Deputy Director of the National Statistics Center, which is responsible for compilation and provision of various fundamental statistics of the Government. He also served as Director for Statistical planning of the Ministry of Internal Affairs and Communications, responsible for the official statistical system of Japan.

2.3. Mr Le Van Cong is currently acting as Deputy Head of Accounting-Statistics Department, Vietnam National Coal - Mineral Industries Holding Corporation Ltd. Mr. Le is in charge of the Corporation's statistic work, coal-mining workload approval and account settlement for coal mining and trading section.

2.4. Prof. Dr. Phan Cong Nghia, Vice President, Chairman of the Scientific and Academic Council of the National Economics University (NEU). He has been a lecturer of Faculty of Statistics since his graduation with statistics major from NEU in 1976. He was awarded the national title of the Eminent Teacher. In 1988, he obtained his PhD in statistics at the Moscow State University of Statistics and Economics. With the wealth of teaching and research experience, he has carried out research on many statistics subjects and compiled many statistics course books. He served as the Dean of Faculty of Statistics for over 8 years and he has been acting as the Vice President of the NEU for more than 10 years, being in charge of science, training and financial management.

Section 3

3.1. Assoc. Prof. Dr. Bui Duc Trieu, Vice Dean of Faculty of Statistics, Head of Socio-economic Statistics Department of NEU. After graduating from the Moscow State University of Statistics and Economics with statistics major, he took his PhD at this university in 1995. He has been teaching at Faculty of Statistics - NEU since 1999. His projects and articles mainly focus on training and

renovation in statistics area. He has chiefly edited and co-edited many statistics textbooks following international integration trend. He delivers many statistics lectures. His specialization is economic statistics and national account system. Recently, he has been studying and teaching financial statistics, a growing area yet lack of research and training practice in Vietnam.

3.2. Dr. Tran Thi Bich, Lecturer, Deputy Head of Socio-economic Statistics Department - NEU, senior researcher in the field of socio-economic development in Vietnam. She received bachelor in statistics at NEU in 1994 and her doctorate in economics at the Australian National University (ANU) in 2008. During the past 5 years, she has been teaching statistics courses in domestic as well as international programs at all levels from undergraduate to graduate at NEU and Hanoi University of Technology. She is the author of numerous articles published in international prestigious journals as well as co-author of the books on statistics in Vietnam.

3.3. Master Do Van Huan, Deputy Head of Business Statistics Department, Faculty of Statistics - NEU. He graduated from the university with major in statistics in 2000, and completed Master degree in statistics in 2007. His research and training areas relate to statistics theory, research and survey design, application of softwares in processing statistics data and analyzing economic growth. He has joined many projects and published his research results in domestic magazines. Some best titles include “The quality of economic growth is still low”, “Vietnam’s economic structure viewed from 2007”, “On contribution target of productivity of comprehensive factors”, “Economics and Forecast”, “Domestic consumption as savior and motivator for growth”, etc.

3.4. Dr. Jose Ramon Alber is the Secretary General of the Philippine National Statistical Coordination Board (NSCB), the highest policy-making body on statistical matters. He is a statistician who has written on topics spanning poverty measurement and analysis, education statistics, agricultural statistics, climate change, survey design, data mining, and statistical analysis of missing data. He is a preferred Consultant of development agencies, including the United Nations Statistical Institute for Asia and the Pacific, the World Bank Group. etc. He has worked in 20 countries, largely lecturing on poverty analysis, and survey data analysis. Dr. Albert has also taught a number of higher educational institutions in the Philippines. Dr. Albert is a member of the Philippine Statistical Association, and member of the International Statistical Institute. He earned his Doctorate of Philosophy in Statistics (1993) and his Master of Science in Statistics (1989) from the State University of New York at Stony Brook. Dr. Albert is a Senior Research Fellow of the Philippine Institute for Development Studies on secondment to NSCB. He is also currently a Professorial Lecturer at De La Salle University.

3.5. Dr. Michel Grun-Rehomme is Professor of Univ. Paris 2 and ENSAE (mathematics, statistics and economy); PhD in Mathematics (Univ. Paris 6) and in Management (Univ. Paris 2). He is European expert in statistics and advisor of the Director General of GENES for the cooperation. His research topics include Time Series, Sample Survey, Business Statistics, Exploratory Data Analysis, Risk Management

3.6. Dr. Dominique Haughton (PhD MIT 1983) is Professor of Mathematical Sciences and Global Studies and Graduate Coordinator for Business Analytics at Bentley University in Waltham, Massachusetts, near Boston, and Affiliated Researcher at the Université Paris 1 (Pantheon-Sorbonne) and Université Toulouse 1, France. Major areas of interest are applied statistics, statistics and marketing, the analysis of living standards surveys, data mining, and model selection. Editor-in-chief of *Case Studies in Business, Industry and Government Statistics (CSBIGS)*. Over sixty articles have appeared in journals such as *The American Statistician*, *Computational Statistics and Data Analysis*, *Journal of Statistical Computation and Simulation*, *Communications in Statistics*, etc. She is fellow of the American Statistical Association.

3.7. Dr. Alice Richardson is Assistant Professor in the Mathematics and Statistics Academic Program of the Faculty of Education, Science, Technology & Mathematics at the University of Canberra. She completed her PhD in linear modelling in the Faculty of Economics & Commerce at the ANU. She has worked there for over 15 years, teaching introductory and advanced statistics to undergraduates, as well as supervising Masters and PhD students both in Statistics and in other disciplines across the University. She has also served for two years as Associate Dean (Education) of the Faculty of Information Sciences & Engineering.

Her research interests are in the areas of applied statistics, particularly linear models; and statistics education. She also contributes to the statistics profession at large, serving as co-Editor of the quarterly newsletter of the Australian Statistical Association.

Section 4

4.1. Assoc. Prof. Dr. Tran Thi Kim Thu, Dean of Faculty of Statistics, Chair of Scientific Board of Faculty of Statistics at NEU. She has been a lecturer at the Faculty of Statistics since she graduated from the NEU with statistics major in 1980. She completed her PhD in socio-economic statistics in 1994 and was awarded the title of Associate Professor in 2006 along her time at NEU. During her 30 years working at NEU, she took many short and long training courses on statistics and market-oriented economics. She led and joined a lot of research projects at all levels and cooperated with many organizations and authorities on practical application of statistics. She is also the chief editor as well as co-editor of many textbooks and materials relating to statistics theory, social statistics, sociological survey methods, statistics in market research, statistics in tourism, computer application in statistics... In addition to her teaching in regular programs (undergraduate and graduate levels), she also teaches in international training programs at the NEU as well as in other institutions. Moreover, she delivers training courses on statistics and data analysis for the staff from ministries, industries and enterprises. At the same time, she participates in consultation activities in the field of statistics.

4.2. Master Tran Thi Phuoc Ha, Lecturer, Deputy Head of Statistics Department, Faculty of Business Information System, Hue College of Economics – Hue University. She delivers lectures on statistics for regular programs and in-service programs at her college. She graduated from Hue

College of Economics in 1999 in Business Administration major. In 2007, she received her Master degree in statistics at Sydney University, Australia.

4.3. Ha Van Son, PhD in statistics, Vice Dean of Mathematics – Statistics Faculty of University of Economics Ho Chi Minh City (UEH). He has been a lecturer at Mathematics – Statistics Faculty of the UEH since 1985. He and his colleagues have written many teaching materials in statistics field. He has delivered lectures on statistics at undergraduate and graduate levels. He is currently the Director of Centre of Statistics – Data Analysis of the UEH, which provides training courses and consultation service for enterprises in the fields of statistics and data analysis. His research projects mainly focus on the application of statistical methods, sampling methods to support enterprises in market research. Moreover, he also studies socio-economic phenomena such as rural development, agriculture, urban poverty in Vietnam.

4.4-4.7 These speakers already are introduced in session 3

4.8. Mr. Jongho Lee is Director of the Training Management Division, Statistical Training Institute, Statistics Korea. He completed master degree in Public administration, Korea University. Since 1985 to present, he took up several positions such as Director of the Training Management Division, Director of the Statistical Information Portal Division; Director of the Statistical Standards Division; Deputy Director, Statistics Coordination Division, General Services Division, Training Management Division.

3.Video Link on Current Status of Statistics Training in Universities in Viet Nam

<http://www.youtube.com/watch?v=YPXqkJwtAb0>































5.List of participants

No	Organization/ Name	Address/ Title
I	Lãnh đạo Bộ Kế hoạch và Đầu tư	6B Hoàng Diệu, Hà Nội
	Ông Nguyễn Văn Trung	Thứ trưởng Bộ KHĐT
II	Tổng cục Thống kê	
a	Lãnh đạo Tổng cục Thống kê	6B Hoàng Diệu, Hà Nội
1	Ông Nguyễn Bích Lâm	Tổng cục trưởng
2	Ông Nguyễn Văn Liệu	Phó Tổng cục trưởng
3	Ông Vũ Thanh Liêm	Phó Tổng cục trưởng
b	Đại diện Lãnh đạo các đơn vị trực thuộc Tổng cục Thống kê	6B Hoàng Diệu, Hà Nội
1	Vụ Phương pháp Chế độ và Công nghệ Thông tin	
2	Vụ Thống kê Tổng hợp	
3	Vụ Hệ thống Tài khoản Quốc gia	
4	Vụ Thống kê Công nghiệp	
5	Vụ Thống kê Nông, Lâm nghiệp và Thủy sản	
6	Vụ Thống kê Thương mại và Dịch vụ	
7	Vụ Thống kê Xây dựng và Vốn đầu tư	
8	Vụ Thống kê Giá	
9	Vụ Thống kê Xã hội - Môi trường	
10	Vụ Thống kê Nước ngoài và Hợp tác Quốc tế	
11	Vụ Tổ chức Cán bộ	
12	Vụ Kế hoạch - Tài chính	

13	Vụ Pháp chế, Tuyên truyền và Thi đua Khen thưởng	
14	Chánh Thanh tra	
15	Văn phòng TCTK	
16	Trung tâm Tư liệu và Dịch vụ Thống kê	54, Nguyễn Chí Thanh, Hà Nội
17	Tổng biên tập Tạp chí Con số và Sự kiện	54, Nguyễn Chí Thanh, Hà Nội
18	Viện Khoa học Thống kê	42, Tô Hiệu, Hà Đông, Hà Nội
19	Trung tâm Tin học Thống kê Khu vực I	54, Nguyễn Chí Thanh, Hà Nội
20	Trung tâm Tin học Thống kê Khu vực II	54A, Nơ Trang Long, P.14, Q.Bình Thạnh, Hồ Chí Minh
21	Vụ TK Dân số và Lao động	
<i>c</i>	<i>Bộ Kế hoạch và Đầu tư</i>	6B Hoàng Diệu, Hà Nội
1	Vụ Tổ chức Cán bộ	
2	Vụ Lao động, Văn hóa, Xã hội	
3	Vụ Tổng hợp kinh tế quốc dân	
4	Viện Chiến lược phát triển	65, Văn Miếu, Hà Nội
III	Cục Thống kê các tỉnh, TP (1 lãnh đạo + 1 lãnh đạo phòng TCHC)	
1	Hà Nội	01, Hàn Thuyên, Q.Hai Bà Trưng, TP. Hà Nội
2	Hải Phòng	03, Đinh Tiên Hoàng, Q.Hồng Bàng, TP.Hải Phòng
3	TP Đà Nẵng	310, Hoàng Diệu, TP. Đà Nẵng
4	TP Hồ Chí Minh	29, Hàn Thuyên, P. Bến Nghé, Q.1, TP.Hồ Chí Minh
5	TP Cần Thơ	160, Lý Tự Trọng, Q.Ninh Kiều, TP. Cần Thơ
6	Lâm Đồng	8D, đường 3/4, P.3, TP. Đà Lạt, Lâm Đồng
7	Đồng Tháp	9, Võ Trường Toản, P.1, TP. Cao Lãnh, Đồng Tháp
8	Cao Bằng	036, Phố Xuân Trường, TX.Cao Bằng, Cao Bằng

9	Bắc Ninh	8, Nguyễn Đăng Đạo, Tiền An, TP.Bắc Ninh, Bắc Ninh
10	Đồng Nai	Đường Đồng Khởi, P.Tân Hiệp, TP. Biên Hòa, Đồng Nai
11	Thừa Thiên Huế	02, Hà Nội, TP.Huế, tỉnh Thừa Thiên Huế
IV	Các Trường Đại học/ Bộ/Ban/Ngành	
1	Trường Đại học Kinh tế Quốc dân	207 Đường Giải phóng, Hà Nội
2	Trường Cao đẳng Thống kê Bắc Ninh	568 Đường Thành Cổ - P. Vệ An - TP Bắc Ninh
3	Trường Trung cấp Thống kê Đồng Nai	Khu phố 5, P. Tân Hiệp, TP. Biên Hòa, Đồng Nai
4	Trường Đại học Thương Mại	Đường Hồ Tùng Mậu, P. Mai Dịch, Q. Cầu Giấy, TP. Hà Nội
5	Trường Đại học Dân lập Phương Đông	28, Phố Minh Khai, Phường Vĩnh Tuy, Quận Hai Bà Trưng, Hà Nội
6	Trường Đại học Thăng Long	Đường Nghiêm Xuân Yêm, Đại Kim, Quận Hoàng Mai
7	Trường Đại học Ngoại Thương	91 Chùa Láng, Đống Đa, Hà Nội
8	Trường Đại học Công đoàn	169 Tây Sơn, Quận Đống Đa
9	Trường Đại học Huế	3 Lê Lợi, thành phố Huế
10	Trường Đại học Kinh tế TP HCM	59C Nguyễn Đình Chiểu, Quận 3. Thành phố Hồ Chí Minh
11	Trường Đại học Quản lý và Kinh doanh công nghệ	29A Ngõ 124 Vĩnh Tuy, Vĩnh Tuy, Hai Bà Trưng, Hà Nội
12	Trường Đại học Kinh tế - ĐHQGHN	Nhà E4 - 144 đường Xuân Thủy, Cầu Giấy, Hà Nội
13	Trường Học viện Ngân hàng	Số 12, đường Chùa Bộc, Quận Đống Đa, Hà Nội,
14	Trường Đại học Thái Nguyên	Phường Tân Thịnh - Thành phố Thái Nguyên
15	Trường Đại học Tôn Đức Thắng	Đường Nguyễn Hữu Thọ, Phường Tân Phong, Quận 7, TP.HCM
16	Trường Đại học Lao động và Xã hội	43 Trần Duy Hưng, Phường Trung Hoà, Quận Cầu Giấy,

		Hà Nội
17	Trường Đại học Kinh tế - Thái Nguyên	Ba Tháng Hai, Tích Lương, TP. Thái Nguyên, Thái Nguyên
18	Ban Tôn giáo Trung Ương	Phường Yên Hòa, Quận Cầu Giấy, Hà Nội
19	Tập đoàn Than và Khoáng sản Việt Nam	226 Lê Duẩn, Quận Đống Đa, Hà Nội
20	Tổng Liên đoàn Lao động Việt Nam	82 Trần Hưng Đạo, Hà Nội
21	Viện Khoa học Xã hội Việt Nam	1 Liễu Giai, Hà Nội
22	Bộ Y tế	138A Giảng Võ, Quận Ba Đình, Hà Nội
24	Bộ Xây dựng	37 Lê Đại Hành, Hà Nội
	- Cục Quản lý đô thị	
	- Cục quản lý nhà và thị trường bất động sản	
IV	Các tổ chức quốc tế	
1	Quỹ Dân số Liên hợp quốc - UNFPA (United Nations Population Fund)	Tầng 1, Tòa nhà Liên Hợp Quốc, 2E Khu Vạn Phúc, quận Ba Đình, Hà Nội
2	Tổ chức Lao động Quốc tế - ILO (International Labour Organization)	Số 48-50 Nguyễn Thái Học, Hà Nội
5	Chương trình Phát triển Liên Hợp Quốc - UNDP (United Nations Development Programme)	25-29 Phan Bội Châu, Hà Nội
6	Quỹ Nhi đồng Liên Hợp Quốc - UNICEF (United Nations Childrens Fund)	81A Trần Quốc Toản, Hà Nội
7	Quỹ Phát triển vì phụ nữ Liên Hợp Quốc - UNIFEM (United Nations Development Fund for Women)	25-29 Phan Bội Châu, Hà Nội
8	Tổ chức Y tế Thế giới - WHO (World Health Organization)	63 Trần Hưng Đạo, Hà Nội
9	Tổ chức Di dân Quốc tế - IOM (International Organization of Migration)	Tầng 7, Tòa nhà DMC, 535 Kim Mã, Hà Nội
10	Chương trình định cư Liên Hợp Quốc tại Việt Nam - UNHABITAT (United Nations Human Settlements Programme)	Phòng 203, 32 Vạn Phúc, Khu Ngoại giao đoàn Hà Nội
11	Tổ chức phát triển Hà Lan (Netherlands Development Organization)	Nguyễn Trung Hiếu, cố vấn nước sạch và vệ sinh; Email: hnguyentruong@snnworld.org (Tầng 6 nhà B, Khách sạn La Thành)

12	World Bank	Christian Bodewig, Senior Economist; cbodewig@worldbank.org
V	Các cơ quan báo chí	
1	Ban Thời sự Đài truyền hình Việt Nam	43, Nguyễn Chí Thanh, Ba Đình Hà Nội
2	Thông tấn xã Việt Nam	Số 79 Lý Thường Kiệt, Hà Nội
3	Ban biên tập, Đài Truyền hình Kỹ thuật số VTC	404 Trần Khắc Trân, Hà Nội
4	Ban Thời sự Đài Phát thanh và Truyền hình Hà Nội	3-5 Huỳnh Thúc Kháng, Hà Nội
5	Ban biên tập Báo Lao động	167/15 Tây Sơn, Đống Đa, Hà Nội
6	Báo Vietnamnews	newsdesk@vnsmail.com (0979000836)
7	Ban biên tập Báo Phụ nữ Việt Nam	47 Hàng Chuối, Hà Nội
8	Ban biên tập Báo điện tử Chính phủ	16 Lê Hồng Phong, Hà Nội
9	Báo điện tử Vietnamnet	141 Bà Triệu, Hà Nội
10	Ban biên tập Tạp chí Con số và Sự kiện, Tổng cục Thống kê	54, Nguyễn Chí Thanh, Hà Nội
11	Ban biên tập Website Tổng cục Thống kê,	54, Nguyễn Chí Thanh, Hà Nội