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Editor's Foreword

Welcome to the bulletin's last edition of the year 2000. It has been an exciting year, though it did not pass without its challenges. And we thank you for your continuing support. As always, we continue to welcome contributions from you in the forms of articles, interviews or stories.

Wishing you a happy and prosperous new year.

In this issue's official statistics section, Stephen K C Leung from the Census and Statistics writes about 2000 Survey on Information Technology Usage and Penetration in the Business Sector. The president, in his forum, discusses progress of work of the Society. Also, in the interview section, Professor Ngai-Hang Chan gives us a delightful account of his career as a statistician, and shares with us his thoughts on the future development of statistics. I hope that readers will enjoy reading it as much as I enjoyed recording and translating it.

Alan Wan

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President's Forum

Professor W.K. Li

Time certainly flies and very soon it will again be time to have our Annual General Meeting which is scheduled to be held on the 29th March of this year.

I would like to take this opportunity to thank you all for your support of the Society in the last year. I am especially grateful for the turn up at the Extraordinary General Meeting last December. The result of which is that we can now use our old name 'HKSS' without the 'limited' designation.

The negotiation with RSS on the possibility of administrating their examination locally is now almost completed, thanks to the effort of Mr. H W Fung. And there will be a meeting with the Secretary of RSS shortly in Hong Kong for

the final touches. The SPC is also well underway under the able leadership of Ms Cecilia Chan. Last but not least, I would like to thank members of various committees and my fellow council members, some of them have been serving for more than two years, for their assistance, hard working and support.

In my other capacity as Chairman of the Organising Committee of the 5th International Chinese Statistical Association Conference, I would also like to invite you to participate in this event which will be held at the University of Hong Kong, August 17-19, this year. An advertisement of the Conference can also be found in this issue of the Bulletin.

I look forward to your continuing support of the Society in the coming year.

2000 Survey on Information Technology Usage and Penetration in the Business Sector

*Stephen K. C. Leung
Census & Statistics Department*

Introduction

The widespread availability of personal computers (PCs) and the explosive growth of the Internet have moved information technology (IT) into every part of our daily activities in recent years. In fact, no other modern advances in technology have had the capacity to affect so fundamentally the way people work, live, learn, play, communicate and govern themselves. More importantly, it is widely believed that IT plays a critical role in stimulating economic growth and productivity.

Given the above development, there is increasing demand in Hong Kong for statistics on the development and progress in this area. The statistics can help us better understand how Hong Kong is moving towards an information society and the development of the local IT industry. They also serve as useful reference in the development of IT strategy in Hong Kong.

Commissioned by the Information Technology and Broadcasting Bureau (ITBB) and the Information Technology Services Department (ITSD) of the Hong Kong Special Administrative Region (HKSAR) Government, the Census and Statistics Department (C&SD) conducted for the first time a Survey on Information Technology Usage and Penetration in the Business Sector (hereafter referred to as IT Survey) in March to June 2000. This article introduces the design of the IT Survey and some of its major

results.

Survey Objective

The objective of the IT Survey was to collect information relating to IT usage and penetration in the business sector. These were assessed by analysing the extent of usage of PC, Internet, web site, and electronic commerce (e-commerce) and the availability of budget for IT in the business firms.

Legislation

The IT Survey was conducted under Part IIIA of the Census and Statistics Ordinance (Chapter 316). It was notified in Government Notice No. 36 in the Government of the HKSAR Gazette of 7 January 2000 as a voluntary survey. In accordance with the provisions of the Ordinance, the collected information relating to individual establishments would be kept in strict confidence. Only aggregate information, which does not reveal details of individual establishments, would be released.

Survey Coverage

The Survey covered all industry sectors except the agriculture and fishing sector and the mining and quarrying sector given their relatively small economic contribution and insignificant usage of IT. Specifically, the following industry sectors were covered: manufacturing; electricity and

gas; construction; wholesale, retail and import/export trades, restaurants and hotels; transport, storage and communications; financing, insurance, real estate and business services; and community, social and personal services.

The above industry classification was based on the Hong Kong Standard Industrial Classification (HSIC) devised by using the International Standard Industrial Classification (ISIC) Revision 2 as a framework and adapting it to reflect the structure of the local economy. It is basically adopted in all economic surveys conducted by C&SD, and as such, comparability of statistics across different economic surveys can be maintained.

The Survey covered establishments of all employment sizes. For manufacturing sector, large establishments referred to establishments with number of persons engaged being 100 or more. For other industry sectors, the corresponding number of persons engaged was 50 or more. Small establishments referred to establishments with number of persons engaged being less than 10. The others were regarded as medium establishments.

Survey Reference Period

In order to obtain the latest position on IT usage and penetration in the business sector, data collected in the IT Survey referred to the position when they were collected, unless otherwise specified in the survey questionnaire.

Sample Design

The Central Register of Establishments maintained by C&SD was used as the sampling frame. The sampling unit is

basically an establishment which refers to an economic unit (i.e. a unit engaged in the production of goods and services) which engages, under a single ownership or control, in one or predominantly one kind of economic activity at a single physical location, e.g. an individual factory, workshop, retail shop or office.

However, some closely related establishments (e.g. establishments that are branches of another establishment, and establishments known to be wholly controlled by another establishment in the same industry) were first grouped into a single sampling unit before sample selection.

The overall sample size was set to be about 4 600. A stratified (by industry and employment size) systematic sampling design was then adopted. The sample allocation of the overall sample size to the different strata was devised by reference to the IT Manpower Survey conducted by C&SD on behalf of the Hong Kong Vocational Training Council (VTC).

Questionnaire Design

The following questions were included in the questionnaire.

PC Usage

- Availability of PCs
- Number of PCs by type
- Availability of application software
- Availability of custom-made computer system
- Availability of mainframe/mini computers

Internet Usage

- Availability of Internet connection
- General functions of Internet used
- Media of connection to Internet

- Internet connection charges

Web Site Usage

- Availability of web site
- Availability of web server
- Whether web site connected to related in-firm database
- Whether web site connected to business partners' computer systems
- Type of services offered by the web site

E-Commerce

- Whether had purchased goods/services through electronic means; type of goods/services purchased
- Whether had received goods/services through electronic means; type of goods/services received
- Whether had sold goods/services through electronic means; reasons for selling; media for selling
- Whether had delivered goods/services through electronic means; reasons for delivering; media for delivering
- Business receipts received in selling through electronic means

Budget for IT

- Whether had budget for research and development related to IT; procuring additional IT equipment and software; employing additional IT personnel; acquiring IT application services
- Changes of budget compared with last year

While the questions for most of the above topics were quite straight-forward, there was, however, special consideration in the course of designing the questions on e-commerce.

The rapid development of the Internet in

recent years has dramatically changed the traditional way of conducting business in many industries. Today, many businesses are conducted through the Internet across different geographical regions and 24-hours round the clock. Such new mode of doing business is generally called e-commerce.

However, there are at present no international guidelines and standards yet on what constitutes e-commerce and how it is to be measured. Different countries, and even different organizations within a country, use quite different definitions of e-commerce. Therefore, instead of trying to define e-commerce, the IT Survey just aimed at collecting data on individual activities commonly considered to be highly related to EC.

This is why the series of questions under the topic on e-commerce as mentioned above were included in the survey questionnaire. It would then be up to the users to decide on the exact piece of statistics to use to suit their specific requirements.

Pre-test Survey and Consultation

A pre-test survey was conducted in December 1999 to January 2000 to test the proposed questions and other logistics of the survey operation. A total of about 40 establishments from various different industries were selected for the test. Besides, consultation visits were paid to a number of trade associations and organizations, including the Hong Kong Productivity Council and the Hong Kong General Chamber of Commerce, to consult their views on the design of the survey in general and the survey questionnaire in particular.

Based on the experience of the pre-test survey and the views collected from the trade

associations, the questionnaire of the IT Survey was then suitably modified.

Data Collection

The questionnaires were mailed to 4591 sampled establishments in end-February 2000. To facilitate the respondents in completing them, softcopy of the questionnaire was available upon request. Field officers visited or phoned respondents to assist them in completing the questionnaires if necessary and to verify the information in the completed questionnaires. By mid-June 2000, 4 030 establishments were successfully enumerated while 561 establishments could not be located or failed to respond.

Data Processing

Completed questionnaires were subjected to thorough checks by office staff and detailed validation checks by computer before tabulation. Such checking covered completeness of entries, consistency among data items and credibility of reported data. Where there seemed to be dubious entries or inconsistency in the reported data, clarifications were made with respondents by phone or field verification visits.

Summary of Major Results

A press release was issued in November 2000 to announce the major results of the IT Survey. A "*Report on 2000 Survey on Information Technology Usage and Penetration in the Business Sector*" was put on sale at the same time. **Table 1** gives a summary of the major survey results.

It has taken some time for the results of

the IT Survey to be released after the completion of Survey because this is the first time for C&SD to conduct such a large-scale survey on IT in Hong Kong. It takes time to check the accuracy of the survey data, to tabulate the data and to fine tune the presentation of the result. The approach, format and framework of this first survey will form the standard for similar surveys in future.

Readers' attention is particularly drawn when interpreting the statistics on e-commerce. An establishment was considered to have ordered or purchased goods, services or information through electronic means if the confirmation of order or purchase was completely done through electronic means. Electronic means as defined in the IT Survey included interactive response system through telephone lines, designated private network, and the Internet.

Goods received through electronic means were only restricted to those products that could be transmitted through the electronic media, such as software packages and songs. On the other hand, browsing information on the Internet was also considered as receiving information through electronic means.

An establishment was considered to have sold its goods, services or information through electronic means if it offered them and accepted orders or purchases that were placed completely through electronic means. Finally, placing information on the Internet about an establishment or its products was also regarded as having delivered goods, services or information through electronic means.

Table 1 : Summary of Major Results of the IT Survey

(A) Personal computer (PC) usage

- **51.5%** of establishments had PCs

(B) Internet usage

- **37.3%** of establishments had Internet connection
- In 1999, total Internet charge for all establishments taken together was **\$819 million, up by 50.4%** compared with 1998

(C) Web site usage

- **7.3%** of establishments had web page/web site

(D) Electronic commerce

- **4.9%** of establishments had *ordered/purchased* goods, services or information through electronic means
- **35.3%** of establishments had *received* goods, services or information through electronic means
- **0.3%** of establishments had *sold* goods, services or information through electronic means
- **8.1%** of establishments had *delivered* goods, services or information through electronic means
- In 1999, business receipts received from selling goods, services or information through electronic means for all establishments taken together was **\$4.6 billion, or 0.11%** of their total business receipts

Note: The above figures relate to the reference period of March to June 2000 when the IT Survey was conducted, unless otherwise specified.

Concluding Remarks

Results of the IT Survey have revealed that using IT to enhance operational efficiency and explore new markets are not uncommon among companies in Hong Kong. Computer and Internet penetration rates in Hong Kong are comparable to the IT advanced economies. As IT will continue to develop, statistics on IT usage and penetration should be collected on a regular basis to keep the Government abreast of the latest development. C&SD will therefore continue to conduct the IT Survey annually.

Further References

Readers interested in knowing further details of the IT Survey may refer to the

“Report on 2000 Survey on Information Technology Usage and Penetration in the Business Sector” available on sale at the Government Publications Centre, G/F., Low Block, Queensway Government Offices, 66 Queensway, Hong Kong, or at the Publications Unit of C&SD, 19/F., Wanchai Tower, 12 Harbour Road, Wan Chai, Hong Kong. Internet users may order the publications through the website of the Information Services Department (address: http://www.info.gov.hk/isd/book_e.htm).

Readers may also contact the industry Statistics Branch of C&SD at 16/F, Chuang’s Hunghom Plaza, 83 Wuhu Street, Hung Hom, Kowloon. (Tel. no.: 2805 6108, e-mail address: ips_1@censtatd.gov.hk).

H. K. S. S. interview: Professor Ngai Hang Chan

Alan Wan

The City University of Hong Kong

*Most statisticians in Hong Kong generally agree that the return of Professor Ngai Hang Chan has produced a fresh breeze for Hong Kong's statistics community. Ngai Hang took up his present position as Chair Professor of Statistics and Director of the Risk Management Science program at the Chinese University of Hong Kong (CUHK) in the year of 2000. Before coming to Hong Kong, Ngai Hang was a Professor of Statistics at Carnegie Mellon University (CMU). He also has held academic positions at Indiana University and the Hong Kong University of Science and Technology (HKUST). Currently, an editorial board member of *Econometric Theory*, *Journal of Forecasting* and *Communications in Statistics*, Ngai Hang has produced an immense body of work on a range of topics in statistics. In particular, his work on non-stationary stochastic process is regarded as seminal. On 3 November 2000, I spent an afternoon talking to Ngai Hang in his office at CUHK and recorded the following conversation.*



N.H.: Professor Ngai Hang Chan

A: Dr. Alan Wan

A: *First of all, thank you for sparing the time for this interview. Can you start by telling us about your background; how you became interested in statistics and why did you go to the U.S. to pursue doctoral studies?*

N.H.: Well, it really all started during my undergraduate years as a math major at CUHK. Back then, the university had no statistics department, and statistics was taught only as a minor program within the

math department by a small group of statisticians. Thus my knowledge in statistics was quite spotty then. After my B.Sc., I was undecided as to what I intended to do, but going to the U.S. to do a Ph.D. degree seemed to be a fairly romantic idea. It was one of the prevailing things to do for many of the math graduates at CUHK that time. I was tempted by the notion of experiencing the outside world and decided to try it out. At that stage I also found statistics more interesting than

math, and subsequently I went on to the University of Maryland to join its Ph.D. program in statistics.

A: *Who are some of your most influential teachers in Hong Kong and in the U.S.?*

N.H. : Many of my teachers at CUHK have stimulated my thinking and helped me in various ways. In particular one of my math teachers Dr. K.W. Leung who not only taught me mathematical knowledge, but also served as my mentor and convinced me that studying abroad was the right thing to do. In my undergraduate days, Professors N.N. Chan and S.Y. Lee were some of my teachers in statistics and they certainly stimulated me to develop an interest in the subject. But the biggest influence would have to be my Ph.D. thesis adviser Professor C.Z. Wei. He has taught me how to look at a statistical problem from both a mathematical and a non-mathematical perspective. C.Z. always says that a statistician should not be contented with proving a mathematical result. One must attribute a life to it, that is to say, to provide the result with a statistical relevance. I find this advice to be very useful and try to follow it as much as possible in my later work. C.Z. has often been regarded by some people more as a probabilist than a statistician due to the technical nature of his work. The C.Z. I have worked with is in fact a well rounded scholar with a wide spectrum of interest. When I finished my Ph.D., I went to the Indiana University, where I was offered my first academic post as an assistant professor. That was how I remained in the U.S.

A: *Can you say something about your Ph.D. thesis?*

N.H.: Well, I worked on nonstationary time series, the “unit root” problem, which has been, and still is, a topic of enormous interest among econometricians. In fact,

the problem had been known for quite some time but a thorough analysis of it from a unified viewpoint was lacking then. C.Z. alerted me of the problem and helped me to figure out a way to characterize the limiting distribution of the unit root. To my surprise, results in my thesis have turned out to be very useful in econometrics and received a lot of attentions from the economists. I suppose one contribution of my thesis is that it approached the problem from a general perspective, and as such it provided the seeds of solutions to a series of other related problems. The unit root problem turned out to be a good topic for a fresh Ph.D., when I completed my thesis, some people felt that I had solved too much of the unit root problem within one thesis!

A: *So it was quite related to David Dickey and Wayne Fuller’s work in the 1970’s. Was their work the first that treated the unit root problem systematically?*

N.H.: That’s correct. David Dickey did a thesis based around a unit root test in 1975, and in the *Journal of the American Statistical Association* in 1979 he published his article with Wayne Fuller on the so-called Dickey-Fuller test. This was one of the first, if not the first, systematic treatments of unit root. Technically, it seemed possible to consider the problem more directly using a Wiener process, rather than using the sums and transformations as Dickey did. Actually, as early as in the 1950’s, J.S. White approached the problem from the standpoint of a Wiener process. In my thesis, I reformulated the problem and analyzed it for both the one dimensional case as well as the general AR(p) model. This entailed solving some rather complicated convergence issues concerning the stochastic integrals of Wiener processes, which I did and the solutions basically provided the answers to many of the questions that follow. I suppose that my work is useful in pointing out that the unit

root problem can be handled in a unified way, and showing that it is possible to use advanced mathematical tools to tackle this kind of nonstationary problems. This work has in fact set the stage for much of my subsequent research in the 1980's.

A: *How did your interest in time series come about? Did it develop while you were at the Chinese U. or did it start in the U.S.?*

N.H.: It all started in the U.S. Certainly until that stage I had no particular feelings for the time series field. As I mentioned, I did statistics only as a minor in my undergraduate degree. I cannot remember, but either there were no time series courses or if there was one, I could not take it due to a conflict of schedule. In any event, I knew nothing about time series analysis until I did a course from Maryland. I found the subject itself interesting, and it was only natural that I chose to work on it for my dissertation.

A: *During those years, did anyone else from the Chinese U. also go overseas for postgraduate studies? Are most of them in Hong Kong now, or have they ended up staying overseas?*

N.H.: Oh yes, there were plenty of us. For example, many of my colleagues here at CUHK such as Lau Tai-Shing, Li Kim-Hung, Leung Pui-Lam, Poon Wai-Yin and Wu Ka-Ho, your colleague Tse Siu-Keung at City U, Chan Wai-Sum at Hong Kong U, Au Siu-Tong at AT&T, Chan Kung-Sik at Iowa, Duncan Fong at Penn. State, Fanny Ki at Bristol-Myers, Jim Wan at Tennessee, and my former colleague of HKUST, Tsui Kwok-Leung who's now at Georgia Tech, were among my generation. I'm sure there are more but I just couldn't recall them all off hand. We all went to the U.S. to study statistics within a few years apart. Then, there was another group of people that did their Ph.D.'s in math around the

same time. As I mentioned before, it was rather fashionable to pursue graduate study in those days. Interestingly, many of us have returned to Hong Kong. Nowadays, when I walk upstairs to the math department, I often bump into some of my former classmates.

A: *Can you say something about your post Ph.D. days?*

N.H.: After taking my Ph.D., I spent a year as a post-doctoral fellow at the U.S. Bureau of the Census. That turned out to be a very interesting experience because it gave me the chance to see how a government statistics organization worked. Much of my time there was spent on a project relating to spatial statistics. After that, I went to Indiana University and spent my next five years there. Indiana University was, and still is, a huge institution, so there were many statistically related activities. But statistics at Indiana was within the math department and there were obvious tensions between statisticians and mathematicians, as the latter often regard statistics as a branch of mathematics or a sub-topic of applied mathematics. Most of the mathematicians there did not appreciate statistical work. As a result, I ended up working mostly in theoretical areas when I was at Indiana and after a few years, I began to feel the urge to broaden my exposure to other parts of statistics.

A: *So all along you were at the Indiana until the early 1990's?*

N.H.: Yes, I stayed there until 1990. In 1989, I met Ruey Tsay at a conference. He invited me to visit Carnegie Mellon and we started collaborating on a few ideas. When I visited Ruey, I found that CMU offered a very conducive and exciting environment for a statistician. Although many people perceived CMU as a fort for Bayesian statistics, what I found out was completely different. Many other areas were also

strongly represented. Since CMU has a very strong interdisciplinary culture and as such, it provides lots of interesting problems for statisticians, be it Bayesian or non-Bayesian. As a result of Ruey's departure in 1990, the recruitment chairman of CMU approached me and I ended up joining the department. I worked there until I returned to Hong Kong in 2000, though in between I also had spent two years at HKUST to set up a statistics group within the math department. Looking back, I think the experience I acquired at HKSUT was very valuable. It is very comforting to see that the statistics discipline has found a place at HKUST. With some of the good students they produced, I am convinced that my two years there had been well spent.

A: *You have also published in the area of Bayesian inference. How did you get interested in it and what future do you see for it in statistics?*

N.H.: I became interested in Bayesian inference after joining CMU. Prior to that I only took a course in Bayesian statistics and did not have any real experience in it. When I joined CMU in 1990, there was a resurgence of interest in Bayesian inference due to the development of the Markov Chain Monte Carlo method. By interacting with my colleagues, I gained a better understanding of the Bayesian methodology. I would not say that I am a Bayesian but I do not object to use a Bayesian approach to look at a statistical problem, especially if the Bayesian solutions compare favourably with non-Bayesian solutions. From a practical standpoint, the vital thing is to be able to solve a problem regardless of the method being used, whether it is Bayesian or frequentist. Of course, many die-hard Bayesians have their own set of beliefs to which I do not necessarily subscribe. But on the other hand, we cannot discount the relevance and usefulness of a Bayesian

solution just because it belongs to another school of thought.

A: *Would you like to say something about your own research career: what topics you have worked on, and the reasons for branching out into other areas later on in your career?*

N.H.: My doctoral thesis was on the unit root, and much of the subsequent work that I did in the early stages of my career focused around that theme. While at Carneige Mellon, I was exposed to different kinds of problems through interdisciplinary collaborations of which three topics worth mentioning. Beginning in the early 90's, CMU decided that computational finance was an important area and we strategically teamed up with math, finance, and computer science to develop an interdisciplinary program in computational finance. That turns out to be a very smart thing and the program becomes one of the best programs in the quantitative finance area offered in the U.S. As a result of my involvement in the program, I had the opportunity to do consulting work for a number of financial institutions in the Wall Street. I was amazed at the depth and breath of some of their problems. At the beginning, I spent a lot of time in understanding their jargons. Due to my early work in nonstationary time series, I had acquired some econometric background and once I anchored into the field, I found out that many of their problems have a strong statistical component. One thing leads to another and that's how I began my research in finance. Another line of research I pursued at CMU was oceanography. This activity began with a joint project funded by the Office of Naval Research on turbulence. Because my collaborators are oceanographers, I learned a lot from them and the project turned out to be very exciting. That has lasted for about six years until the late 90's. Recently, I have been involved with data mining. Through the collaboration with a

colleague at the school of computer science at CMU, we look at computer hard disc traces. The goal is to find a way to build a tool kit to analyze hard disk traces so that better disk design can be achieved. Naturally, every disc trace contains a time series component. This is an ongoing project and we're beginning to see some interesting results

A: *Looking back at the past twenty years, what do you feel to be your biggest accomplishment in terms of research? Have there been any papers you are particularly proud of?*

N.H.: That's a very difficult question to answer. I'm not sure if there is any paper of mine that can be considered to be a great accomplishment. I'll have to leave that judgment to my colleagues. However, I enjoy every paper that I have written and each one of them has contributed one way or another to my academic life and hopefully to the field of statistics.

A: *Do you have any general thoughts on the subject of time series you would like to mention?*

N.H.: Traditionally, time series has often been on the rim of statistics and a time series is usually regarded as an example of a stochastic process. Due to the mathematical nature of the theory of stochastic processes, theoretical time series can be pretty abstract and the subject is sometimes difficult to follow. In the past, people who made the most advances in the theoretical front were probabilists such as Kolmogorov or Wiener. While lots of economists were interested in time series techniques as tools, there were few who paid serious attentions to the mathematical details of the subject. Unfortunately, there were not many interactions between the tool-users and the tool-makers in the past. One could rarely find more than one time series analyst in any statistics department

twenty years ago. But things have changed a lot during the last two decades. The subject of time series has developed immensely and people have come to realize its importance, not only as a subject with profound theoretical insights, but also as a useful statistical method with wide applications. Nowadays, it is quite common for large organizations or university departments to hire a team of time series analysts.

A: *After working at Carneige Mellon for nearly a decade, you have decided to take up a job in Hong Kong. How did that come about? And how would you look at the future development of the field of statistics in Hong Kong in the next ten years?*

N.H.: I was raised in Hong Kong and I had a lot of fond memories about this place. I think it is really my sentiment for Hong Kong that has brought me back. I consider myself very fortunate to be able to contribute to the place where I was born. One of my main reasons for returning to Hong Kong this time has something to do with the new program in risk management science at CUHK. As one of the financial centers, I anticipate the need to develop such a program in Hong Kong because of its relevance to the financial industry, particularly after Asian economic crisis in 98. Unlike the U.S. where risk management is well developed, Hong Kong is still at its infant stage. Hong Kong is a commercial city and as such, statistics related to business and finance has a key role to play in many areas. More importantly, I can see the need to train more people in Hong Kong with advanced mathematical and statistical tools. A case in point is the Black-Scholes option pricing formula that is established using the Ito's integral. If you asked someone working in the Wall Street thirty years ago, hardly would anyone know what an Ito's integral was. But if you ask people on the Wall Street today, I

think almost everyone can say something about it. In Hong Kong, we are still lagging behind. We definitely need more experts in this area. In the field of statistics, renowned colleagues such as Professors L.K. Chan, J.Q. Fan, Albert Lo, and Howell Tong have already returned to Hong Kong. What we need is to have more people like them, not only in the area of statistics, but also in risk management and finance. Collectively, we can make a big difference in advancing the field. Interestingly, CUHK is the only institution in Hong Kong that has a department of statistics. All other universities have changed the names of their statistics departments to something else. In this sense, statistics is still searching for its place in Hong Kong. On the bright side, it is good to see that the field of statistics is diverging into other disciplines. Elementary statistics is now being taught in high school. However, statistics is still at a disadvantage compared with the more traditional disciplines. If you ask a high school student what mathematics was, he would probably be able to give you an answer. But if you asked him what is statistics, he will most likely not be able to tell you. We must find a way to raise public awareness of statistics, what role statistics can play and what its relevance and importance is to our daily lives.

A: *What do you hope to achieve with the risk management science program that you are setting up now?*

N.H.: Naturally, I hope the program to be successful and I strongly believe it will be. The program is still in its infancy so it is difficult to predict what the stable equilibrium will be. It is my sincere hope that it will be as successful as the program that we set up at Carnegie Mellon. I feel

that Hong Kong really needs experts in the field of risk management and the general public ought to appreciate what the subject is. Today, most annual reports of listed companies have a section on risk management that discusses the risk management philosophy of the company. I am sure nine out of ten shareholders would not read it, but there must be a good reason to include this section in the reports. With this new program, I hope to bring to the general public the importance of risk management. In the future, the public may be more interested in reading the risk management section of companies' annual reports and understand what it is all about – what risk is and what impact it may have on their investments. If we can raise the public awareness of the importance of risk management, then our program has achieved its first stage of success.

A: *Okay, a final question. What other thoughts do you have about the future of statistics in Hong Kong?*

N.H.: This is a tricky question, really. Going back to what I mentioned earlier, I think we should promote the importance of statistics at an early stage, like in the high school's curriculum. But we must do that in a relevant and interesting way, not as a sheer number crunching exercise. Today, many people in Hong Kong have a misperception about statistics and I hope that can be changed. As to my own involvement in Hong Kong's statistical community, I would be glad to help out to whatever extent that's possible, but I think currently colleagues in the Hong Kong Statistical Society like yourself have already been doing a great job.