Concise paper

IT Graduates' Transition to Productive Employees and Entrepreneurs: An Economic Perspective

Trish Brimblecombe **Dr. Vasanthi M Peter**

Faculty of Business and Information
Technology Whitireia Community Polytechnic
T.Brimblecombe@whitireia.ac.nz

ABSTRACT

The information and communications technology (ITC) sector in New Zealand is a leading growth sector. A primary objective of the New Zealand government's ICT Task Force (2003) is to support the economy to grow to 100 ICT companies with sales exceeding $100 million in each of these companies by 2012. The government's Growth & Innovation Framework (GIF) has targeted ICT as a sector to support. A core element of the GIF is the government's recently announced Digital Strategy (2005), a key goal of which is to invest in ICT initiatives to grow business capability and boost productivity. The contribution to the economy from productive IT graduates is critical to growing the ICT sector share of gross domestic product (GDP) from its current level of 4.3%.

According to the Global Entrepreneurship Monitor 2004 report, New Zealand is one of the most entrepreneurial countries in the world. New Zealand Census (2001) data shows that the level of self-employment increased by 5.6% during the late 1990s. If unpaid family workers are excluded, the rise in self-employment was 11.4%, which is higher than the total rise in NZ employment of 7.1%. Currently the environment is generally favorable toward self employment in the Information Technology (IT) area. The process of income creation by IT contractors or consultants through self employment provides additional career pathways in the economy and has significant implications from a labour market perspective.

The purpose of this study is to examine how IT graduates translate their learning into productive income earning activities, and what factors influence the choices they make, in the context of the New Zealand economy. The study uses both quantitative and qualitative methodology. A better understanding of the factors influencing IT graduates to take up employment or become contractors or entrepreneurs in a business startup will provide important information for growth strategies in the ICT sector and for those advising graduates.

Keywords

IT graduate, IT graduate transition to employment, IT graduate entrepreneur

1. INTRODUCTION

The aim of this research project is to study the outcomes for graduates from Information Technology-related applied degrees from an economic perspective. Stage one examines how graduates translate their learning into productive income earning activities, with particular reference to Whitireia Community Polytechnic Bachelor of Information Technology graduates. This programme has been running since 2000 at the Porirua campus and so far there have been three cohorts of graduates. The results from graduate surveys and case studies will be studied in the context of a literature review and economic data for both Porirua and the Wellington region.

It is planned that later stages of the project will include economic data and IT graduate outcomes from other regions. This will lead to further work on the identification of factors that influence the choices graduates make. The researchers plan to develop a model that illustrates IT graduate outcomes and factors that influence decisions.

This is a positioning paper for the research study which presents the rationale for the project and what progress has been made in the initial stages. It outlines how the proposed outcomes will be reported within an economic perspective.

2. METHODOLOGY

The study uses both quantitative and qualitative methodology. Stage one of the project has been completed. A literature review was undertaken. Information on relevant economic development policies at local, regional and national levels was

gathered from various government, local and regional reports, some of which are available online. A questionnaire was used to survey Whitireia Bachelor of Information Technology graduates from 2004. This data was added to earlier surveys of 2003 and 2002 graduates. Updating and revalidating data from 2002 and 2003 is needed and this is in progress. A case study approach has commenced to gather additional information.

Stage two of the study (due for completion by October 2005) involves the compilation and analysis of quantitative and qualitative data for the ICT sector in Porirua and Wellington region, the completion of the case study analysis of Whitireia IT graduates and the identification of factors influencing Whitireia IT graduate decisions.

Stage three of the study (due for completion by March 2006) involves the compilation and analysis of quantitative data for the New Zealand ICT sector, the collection of comparative data about graduates from other IT programmes, and the development of a model illustrating IT graduate outcomes and factors influencing them to take up employment or become contractors or entrepreneurs in a business startup.

3. BACKGROUND

The ICT sector is a leading growth sector in New Zealand. Deloitte (2004) reports that of the top 50 fastest-growing companies, 25 are ICT or Internet-based businesses. A primary objective of the government's ICT Task Force (2003) is to support the New Zealand economy to grow to 100 ICT companies with sales exceeding $100 million in each of these companies by 2012. The GDP share of the ICT sector will need to rise substantially (say, 10% of GDP by 2012) from the current level of 4.3%. The government's Growth and Innovation Framework has targeted ICT as a sector for further growth. A core element of the GIF is the government's recently announced Digital Strategy (2005), a key goal of which is to invest in ICT initiatives to grow business capability and boost productivity. The Digital Strategy report outlines new market development initiatives to accelerate expansion of technology companies (over 30% are ICT companies) into global markets. The report also highlights a significant gap between the number of ICT jobs currently available and the number of suitably qualified applicants. It reports ICT jobs in 2012 are estimated at 125,000 compared with 41,000 at present. The economic contribution from IT graduates both as productive employees and successful entrepreneurs is critical to meeting these growth targets.

In the conventional Solow's (1956) growth model with the existing factors of production, a regional economy (for example, Porirua region) grows positively but at a decreasing rate due to diminishing labour productivity. This may not be the case with the inclusion of information technology. As stated in the Romer's (1990) model of growth, it is believed that the knowledge based economy would grow at an increasing rate due to acceleration of labour productivity with the increased use of IT (skilled human capital and technology). Gates (1999) argued that intelligent software would raise labour productivity by shifting people from repetitive, non-thinking work to more productive and value added activities. The Digital Strategy report (2005) links digital literacy with labour productivity. Several studies in the United States, Oliner and Sichel (2000), Stiroh (2002) and Triplett and Bosworth (2003) have linked increases in IT capital per worker to increased labour productivity.

The Global Entrepreneurship Monitor (2004) reported that New Zealand is one of the most entrepreneurial countries in the world. New Zealand Census (2001) data shows that the level of self-employment increased by 5.6% during the late 1990s. If unpaid family workers are excluded, the rise in self-employment was 11.4%, which is higher than the total rise in NZ employment of 7.1%. Currently the environment is generally favorable toward self employment in the Information Technology (IT) area. Communications and IT Minister David Cunliffe has stated that he would actively encourage small technology companies by providing constructive deals for SMEs to sell to the Government. The Digital Strategy views the Government's procurement policies as critical to the domestic ICT market and the report signals that these will change in future. The process of income creation by IT contractors or consultants through self

Table 1: Survey of Whitireia Bachelor of Information Technology Graduates							
Year	No of graduates	IT related employment	IT related contractor, self employed	Non-IT-related employment	Non-IT-related contractor, self employed	Post-grad study	Other or unknown
2002	22	11	7	2		1	1
2003	24	12	6	2		1	3
2004	20	12	3	3			2

employment provides additional career pathways in the economy and has significant implications from a labour market perspective.

The ICT sector in Porirua is growing. There are a number of ICT companies however the majority of these are very small and face the constraints that are normal for small businesses attempting to grow. The local economic development agency, Business Porirua, has recently formed an ICT sector network to assist with removing barriers to growth and to provide support for development. The Wellington Regional Economic Development Trust, trading as Positively Wellington Business, has also identified the ICT sector as a growth area for the region. Support is coordinated through a full-time ICT sector manager and an ICT cluster provides networking and collaboration opportunities. The ICT cluster currently has over 400 members. Again, there is a predominance of small businesses with 75% of the cluster companies employing five or less people. Focused task groups have formed around areas of expertise, including mobile solutions, open source development and education, with the aim of targeting domestic and export opportunities.

There has been significant and ongoing change in ICT and major structural changes in information systems (IS) design and implementation during the past decade. In spite of the changes, studies indicate that a majority of IT graduates surveyed have been successful in adapting to these changes and in gaining productive work. Licker (2004) stated "The bulk of what we research (and teach) in IS concerns how people learn and adapt to new systems and the challenges that these adaptations pose to the existing order." Conlon (2004) argued "Academic and policy debate on the future of work and learning has come to be constellated around the concepts of a knowledge intensive, post-industrial economic order."

In conjunction with the technical knowledge and skills required by graduates, "soft skills" such as communication and team-working are now proposed as professional skills essential for employment (Crockett & Peter, 2002). Billings, Nodder and Young (2004) argued that IT employers seek capabilities-driven graduates who possess professional skills beyond their technical expertise. A number of studies have reported on skills and associated attributes associated with successful entrepreneurs. It is intended that the identification of factors influencing graduate decisions on employment or entrepreneurial alternatives as part of this research study should include some consideration of skill sets.

A number of studies Wieck (2003), Bridgeman (2003) have reported on the industry project model which is incorporated in most applied IT degrees at New Zealand polytechnics and institutes of technology. The project experience provides a supported transition to work or the opportunity to consider whether the product or service which is developed has some commercial viability. The development of models to measure the value of industry projects incorporated in applied IT degrees and the contribution they make to the economy is proposed as a future stage of this research project.

4. PRELIMINARY RESULTS

The survey of graduates from the 2004 intake of the Bachelor of Information Technology has been completed. The data has been added to that from earlier surveys of 2003 and 2002 graduates and appears in Table 1. Updating of data from 2003 and 2002 is in progress. Follow up interviews with a selection of graduates are

being arranged to provide detailed information for the case studies.

5. CONCLUSION

This study examines how IT graduates translate their learning into productive income earning activities and will identify factors which may influence their decisions to take up employment or follow entrepreneurial options. The research will report on proposed outcomes within an economic perspective informed by local, regional and national economic development policies and recent initiatives. Results from the surveys and case studies will be used to develop an explanatory model illustrating IT graduate outcomes and factors influencing decisions. The research report should provide valuable input for ICT-related economic development policy work and useful information for those working in advisory roles with IT graduates.

REFERENCES

Billings, D., Nodder, C. and Young, A. (2004). Professionally speaking: Reflecting on a professionalism-first approach. Proceedings of National Advisory Committee on Computing Qualifications, July, 31-38.

Bridgeman, N. (2003). Project Success: Defining, Designing, Constructing and Presenting a Capstone Project. Proceedings of National Advisory Committee on Computing Qualifications, July, 211-216.

Crockett, G. & Peter, V. (2002). "Peer assessment and team work as a professional skill in a second year economics unit." Teaching and Learning Forum 2002, published refereed proceedings, Western Australia.

Deloitte Fast50 Report. Unlimited, November 2004.

Gates, B. (1999). "Business @ the Speed of Thought: Using a Digital Nervous System." Warner Books, Inc., New York: 222-235.

ICT Taskforce Report. (2003). "Breaking Through the Barriers", available online www.industrytaskforces.govt.nz

Licker, P. S. (2004). "Editorial Preface Article." Journal of Information Technology Cases and Applications. Marietta: 2004.Vol.6, Iss. 1; pp. 1-10.

Oliner, S.D. & Sichel, D.E. (2000). "The Resurgence of Growth in the Late 1990s: Is Information Technology the Story?" Journal of Economic Perspectives, 14 (Fall): 3-22.

Stiroh, K. (2002). "Information Technology and U.S. Productivity Revival: What Do the Industry Data Say?" The American Economic Review, December: 1559-1576.

Digital Strategy Report. (2005). "The Digital Strategy: Creating Our Digital Future", available online www.digitalstrategy.govt.nz

Triplett, J.E. & Bosworth, B.P. (2003) "Overview: Industry Productivity Trends" in Productivity in Services Industries: Trends and Measurement Issues, The Brookings Institution, Washington, DC: 1-50.

Wieck, M. (2003). The capstone project – a foundation for work? Proceedings of National Advisory Committee on Computing Qualifications, July, 455-458.