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EDUCATION AND TRAINING DEFICITS IN INDUSTRIAL CLUSTERS: EMPIRICAL EVIDENCE THAT MANAGEMENT CAN USE TO RECTIFY THE SKILLS GAP IN AUCKLAND PRECINCT

Tertiary institutions should seek continuous feedback from industries to keep track of the needs of businesses to provide education and training. In designing programmes and upgrading curricula, there are important factors to bear in mind so that programmes "cater" for all levels of learners. The Auckland City Council financed this study, focussing on Auckland's Rosebank Business Precinct (ARBP). Surrounding communities, particularly Maori, Pacific peoples and recent migrants, experience disparities in employment. The target population were 500+ businesses operating on Rosebank Road. A total of 529 businesses were identified. Interviews with 102 companies with a 36-question questionnaire were conducted. Areas were identified and covered in this paper in the ARBP for developing programmes and curricula for tertiary institutions to provide employable students with the right knowledge, skills and attributes to grow and manage existing ventures. In the analysis we point out what education or training is necessary for ARBP to provide greater efficiencies and improvement in profit levels. Recommendations and conclusions are provided.

Keywords: higher education; trainings; relations between business and universities; labour market.

Introduction. Universities and business schools should seek continuous feedback from industries and advisory committees in order to stay in touch with the needs of businesses and to provide education and training for the present and future needs. Academia can play a significant role in firm profitability and should be constantly polling communities through networking and consulting. Holland and De Cieri (2006), drawing upon the seminal work of Knowles (1975, 1984) refers to andragogy, namely the process of engaging adults in learning. Adult learners have different learning techniques than young ones. They are continuous learners and they move in and out of formal education according to individual needs or life circumstances, job requirements or career development.

In designing programmes and upgrading curricula for adult learners, these are important factors to bear in mind so that programmes "cater" for these learners as well. Training needs as identified in this study can be carried out by tertiary institutions in various areas such as management, communication, leadership, human resource management etc. Recommendations for education and training to sustain business profitability are discussed towards the end of the paper and the last section is the conclusions.

Literature Review.

Education and training. The education sector has a dual role in supporting business. It delivers training programmes, curricula, and programme and product development. These are the core missions of tertiary education in producing employable workers. But the education sector can also greatly assist productive business with research, and technology transfer.

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The amount of literature in this field shows that the benefits accrue synergistically when education and training are ramped up: The better training employees receive, the better their performance is, the higher their degree of loyalty is, the lower the labour turnover is, and the greater the savings and profits for businesses are. Apart from immigration, education and training is an expedient way to counteract the "hollowing out" of talents currently happening in New Zealand.

The ultimate goal of this research report is labour force improvement (education and training), to promote the creation of new ventures (entrepreneurship), and the growth of existing ventures (small business).

Education, Training and Human Resource development. Human resource development, training programmes, vocational education, skills development, and other workforce-based programmes have long been recognised as viable and cost-effective instruments in economic development policy. The OECD research has shown that programmes targeting human capital are cost-effective because they are built on local resources, provide "value-add" for tax dollars spent, and enrich the local skills base. For example, most Japanese manufacturing companies enjoy worldwide competitiveness precisely because their tertiary education and training systems were matched with the needs of employers (Blakely, 1991; Jones & Vedlitz, 1988; Nothdurft, 1991; O'Toole & Simmons, 1989; Reich, 1982; Thurow, 1980; Wolanan et al., 1991; Wolman and Goldsmith, 1992).

Both government and private sector have roles to play in addressing skill shortages. Government can incentivise the education sector to tackle skills shortages. Firms can invest and provide a receptive climate for education and training.

Adult learning. There are at least 4 levels of recognising adult learning. Firstly, as the workforce ages, business will come to rely more on Knowledge, Skills, and Attributes (KSAs) of mature workers. Compounding this situation, secondly, there will be the need for all workers to continually upgrade their KSAs. The third level is that learning enriches workers' culture, promotes intellectual life and helps people achieve their potential as valuable workers and citizens. The fourth and the last level is that adult learning enables New Zealand organisations to maintain their competitive advantages in an increasingly globalised economy (Delahaye, 2005).

A very cautious argument is from Stone (2008) in saying that an HR manager must first do the human resource needs for an organisation; then identify who of the current employees are in line for a promotion, which needs training to fill projected vacancies and only then training programmes can be decided on.

Curricula development. What the students of today are taught has impact on business later when the students of today have the power to make decisions. In conjunction with the ARBP, lecturers of tertiary institutions, in developing needed curricula, should keep two areas in mind, preparing and writing of assignments and the second is the development of discussion skills whether in teams or in class context. These two issues can be some of the hurdles in their learning process amongst many other hurdles or barriers. The authors are of the opinion that strategies which should mainly be included in the curricula are writing skills (report writing); discussion skills (communication at meetings); problem solving skills (use of policies and procedures); observation skills (to act pro-actively); interacting skills (to work in teams or in team environment); negotiation skills (to bargain for good prices or to communicate with trade

unions); training skills (for induction and training of new employees); HR skills (to do the basic functions of human resources such as recruiting, performance appraisals etc.) and last but not least skills to be aware of legislation.

Education and Training in Businesses. Human resource management (HRM) and organisational strategy, structure, and culture are intertwined and changes in the one are likely to have repercussions for one or more of the others according to Hartel et al. (2007). Therefore, education and training in businesses should also put emphasis on organisational behaviour, organisational structure, organisational culture and strategic HRM. It is of the utmost importance that these issues are also lectured and employees are trained how to cope with it in their work environment. It is a definite requirement of businesses and should be in the curricula and programmes of both current employees and tertiary students.

Managers and business owners in the ARBP need a knowledge base in the future from which to draw knowledgeable employees; our research has shown specific areas of importance that managers and academics believe must be included in training programmes and curricula at tertiary institutions. We want to identify how employers and managers in the ARBP can prepare themselves to have a competitive and high performing workforce in the future to add value to their organisations.

Technology and Training. Technology is making an impact on the way organisations structure their work patterns because of the constant changes taking place. With the rising cost of fuel (NZ Herald Staff, 2008), pollution, along with traffic congestion and public transport issues, employers maybe forced to consider how and where their employees work. With the correct training and education, telecommuting can be an option for people who are home bound or have familial responsibilities limiting their travelling and working hours. It also allows for people who live in geographically isolated areas to work and travel to the office in off peak traffic. This technology issue should also be covered in training and educational programmes (Du Plessis and Frederick, 2008).

Methodology. Financed by Auckland City Council this study focuses on Auckland's Rosebank Business Precinct (ARBP). The surrounding communities, particularly Maori, Pacific peoples and recent migrants, experience disparities in employment. Our research questions are:

- Is there a skills match between the present-day workforce and actual business needs over the medium term?
- What can these data tell us about Rosebank's trajectory as a skilled business cluster and about its future workforce requirements?
- What education and training will be necessary for these organisations to maintain their competitive advantages and profit margins?

The present research examines the gaps between what Rosebank businesses actually want and what the workforce presently provides. The hope is to uncover strategies and policies that local economic development organisations might use to overcome these gaps. Beyond this, we examine the potential for cluster development in Rosebank.

The target population were 500–600 businesses operating in Rosebank.

We selected a random sample from the members of each group. If after polling we did not reach the required level of representation in a particular group, then we went back to that grouping for more respondents.

The sampling frame was owner-managers (and sometimes senior, non-shareholding managers) of firms within the Rosebank Business Precinct. This analysis is of firms, not individuals.

Analysis of the Results. Table 1 shows clearly the qualifications of the employees in the neighbouring regions and cities of the ARBP.

Overall, school leavers in this area reached a lower level of attainment compared with both the regional and the national average (Department of Labour, 2008a). Waitakere City, from which Rosebank recruits a great deal of its workforce, has 22.3% of its population with no qualification whatsoever (Table 1).

Table 1. Education qualifications near Rosebank Business Precinct

	Waitakere City	Auckland City	Auckland Region	New Zealand
% No qualifications	22.3%	14.1%	18.9%	23.2%
% school qualifications only	35.2%	33.0%	34.6%	32.5%
% post-school	21.7%	19.2%	21.1%	22.4%
% Bachelor degree and higher	13.7%	27.4%	18.5%	14.7%

Source: Department of Labour Key Information Tool (KIT), January 2008.

Turnover/revenue. 47% of the sample agreed to tell us their annual revenue or turnover (Table 2). The range was from \$250 to \$80m New Zealand dollars. The mean (average) value was \$5.9m and the median (middle) value was \$1.35m. The mode (most frequent) value was \$8m. 30% of the companies had revenues that excess \$3m. Nearly a quarter (23%) of the firms had the annual turnover of \$500,000 or less.

Table 2. Reported annual turnover

Mean	\$5,955,771
Median	\$1,400,000
Mode	\$8,000,000
Minimum	\$250
Maximum	\$80,000,000

Industry composition. We used the Australian and New Zealand Standard Industrial Classification (ANZSIC) categories (Australian Bureau of Statistics, 2006). The sampled companies comprised 33% of manufacturing firms. Wholesaling and retailing taken together accounted for 36% of the responded firms. There are significant groups of small accommodation/cafe/restaurant businesses at 5%, transport & storage 3%, construction 5%, and property & business services 8%.

Respondent's Firm size. It is evident that smaller firms outnumbered larger ones. 78% had less than 20 employees. Rosebank has more large firms than the national or even Auckland average, so due consideration must be given to their needs as well. 100 firms in this sample were employing 1714 full-time employees. The respondents expected a decline of 1.8% in job numbers over the next year but a 1% increase by 2011, bringing the total decline in employee numbers to just less than 1% within 3 years. In other words, within the bounds of confidence, Rosebank owner/managers are predicting a steady rate of employment. However, it is important to note that a quarter of the respondents were not able to predict 3 years into the future.

Age of employees. The largest age group was 35–44 at 30.2% followed by 45–54 at 22.4%. Over-55-years-olds at 14% of the Rosebank workforce constituted a significant portion of the total. As New Zealanders are living longer, it is likely that the proportion of "wise elders" will go up in Rosebank over the next few years.

Table 3. Industry composition (ANZIC code) of the sampled firms, %

ANZIC Category	Rosebank sample	West Auckland proportion
C21-C29 Manufacturing	33%	20%
E41-E42 Construction	5%	8%
F45-F47 Wholesale Trade	14%	6%
G51-G53 Retail Trade	22%	19%
H57 Accommodation/Cafe/Restaurant	5%	4%
I61-I67 Transport & Storage	3%	3%
J71 Communication services	2%	1%
K Finance and Insurance	0%	2%
L77-L78 Property & Business Services	8%	9%
N84 Education	1%	8%
O86-O87 Health & Community Services	3%	9%
P Cultural and Recreational Services	0%	3%
Q95-Q97 Personal Services	4%	4%

Education and Training Programme Needs. The respondents were asked to describe the top education and training needs they had over the 3 years, and they could choose more than one category and most respondents chose several categories. The top needs were:

- Management/strategy/operations/sales and marketing;
- Applied technology and trades;
- Computing & information technology;
- Accounting, finance and law.

The business disciplines (categories 1 & 4) had the greatest share. A relatively new training need deserves special mention: "developing a green business". A total of 23% of the respondents mentioned this as a need for the next 3 years.

From our qualitative interviews, we believe this is a relatively new concept for firms, and it has been a development which has been in part driven by media. However, this area of training has the potential to become a real business need in future. As one respondent stated, "Council and RBA need urgently to understand how dire the global environmental crisis is and what great opportunities are lying in the Clean Tech sector".

Green Economy. Rosebank is a relatively "dirty" precinct and there are some "noxious" companies located particularly in the Business 6 zone. This finding deserves more study, but it may be an opening to creating a more green-oriented precinct both in terms of practice but especially in terms of manufacturing and sales potential in the emerging "green economy".

Type of Training. Almost half of the respondents (41%) reported that they already undertook training when they were asked whether their firm had training at all, whilst 57% had none. Those who already had training, were asked to describe that training. This ranged from simple Occupational Health and Safety (OHS) training to more indepth and expensive professional trainings. Responses included project management, time management, sales, IT training, electrical trade, food and hygiene, fire safety, first aid, warehousing, logistics, security, inventory management, competitor intelligence, trade certification, business coaching, and traffic management.

The question was put to the 57% respondents why they had no external training and 46% of them said it was because they did all of their own training on-the-job. The cost of training and availability were of less concern to the respondents.

Sources of training. According to the respondents, the greatest source of training was on-the-job/shop floor training at 71%. Consultants/contractors were also an important training source at 33%. Universities, polytechnics, and private educators provided 27% of the training within businesses. Government agencies and apprenticeships were relatively minor sources of training.

Comparing these figures with the section above on type of training, one can easily be misled because the respondents included the simple and compulsory OSH training in their responses. This was not actually what is meant by "training" or "education" and therefore this section of sources of training could have been influenced or contaminated by the type of training, not giving the required or true figures.

Universities, Polytechnics, and Private Educators. Polytechnics were the most favoured amongst the 28 respondents who used educational institutions, with 50% mentioning this option. Private educators were the second at 29% with universities scoring only 14% and universities offshore at 7%.

Training costs. Nearly half of the respondents (46.9%) said they could not afford any training when asked how much money they could afford a year for education, training and skills development. The range for those who could afford training was wide, with the values ranging from \$200 to \$40,000, with the mean at about \$5,000.

When asked whether they saw a demand for firms like theirs to increase their training and education budgets, the respondents were divided on this issue with half saying "yes" and "no" equally. However, the largest firms on Rosebank, while fewer in number, 64% said yes, namely, that large firms definitely see a need to increased training and education budgets.

More than three quarters (76.8%) nonetheless said that their businesses were not constrained by their ability or inability to train employees despite their interest or disinterest in training. They had several reasons for this, such as: Nature of the work needs no training; Industry is already declining; Government policy encourages manufacturers to leave the country; The industry is too small; Staff are reluctant to learn; There is too much business coming in; Training is frustrating and time consuming; and Equipment suppliers do the training.

Recommendations. The authors make the following recommendations. As a first step, Rosebank should take a "Top Three" approach to education and training: Computing/IT; Management & Accounting; and Applied Technologies.

There is opportunity for the Rosebank Business Association to carry out a feasibility analysis of a possible green business cluster on Rosebank. This could lead not only to a better environment for Rosebank, but provide a showcase and illustrate the market demand for this, giving Rosebank businesses differentiation value.

Rosebank Business Association should seek best-practice advice on labour force education and training.

Educational institutions and Rosebank businesses should develop relationships to better understand business needs, provide education and training, and revamp curricula to fit the needs.

HR departments, and managers/owners, not outside contractors, are best placed to know the education, training and career development needs as well as the corporate culture and will therefore need to make final decisions in consultation with their

own business managers and other interested parties within the ARBP organisations in the future.

Learning is a relatively permanent change in behaviour or cognition occurring as a result of education, training and experience. It is recommended therefore that management / employers in the ARBP budget for education and training of their employees. Knowledgeable employees are usually more productive and loyal.

New Zealand organisations should compare their working conditions with Europe, Asia, Americas to point out similarities and differences; some KSAs, policies and practices used in one part of the world may not work in another.

Cultural values, norms and beliefs can interfere with how business goals are achieved. The authors recommend that evidence obtained by this research should show management/employers how important it is to be knowledgeable in these issues to manage their businesses effectively, efficiently and maintaining their profit margins and competitive advantages.

The Future Role of ARBP Managers. New ideas, technology and processes are going to open new possibilities. But there is always going to be a need to find a balance between financial viability, the degree of control over a process and how to best manage the education and training needs of business. It is the trials and tribulations in finding this balance and the successes and failures that will prove that education, training, and career development deserve its place in the ARBP businesses and is not just an administrative cost to either be borne or reduced wherever possible to make the balance sheet look better.

To sum up the future role of managers/owners in ARBP, one can say that there is no one grand linking theory that signifies education and training and it is most likely that there will not be one at all, but education and training will be necessary in any business. Therefore the evolution of education and training will provide interesting developments, both theoretically and practically and the academics (tertiary institutions) should be up to date with these changes with their programmes and curricula.

Conclusions. In the survey done in the Auckland Rosebank Business Precinct (ARBP), important areas were identified for developing programmes and curricula for tertiary institutions to provide employable students and training for current employees to ensure they have the right knowledge, skills and attributes (KSAs). What the students of today are taught impacts business later. Education and training in businesses should also put emphasis on organisational behaviour, organisational structure, organisational culture and strategic human resource management. ARBP businesses need a knowledge base in the future from which to draw employees with the right KSAs.

In particular, we were interested in whether there is a skills match between the present-day workforce and the actual business needs in the medium term. The objective was to uncover strategies and policies that local economic development organisations might use to overcome these gaps.

This study examined the gaps between what ARBP businesses actually want and what the workforce presently provides. Training was done in 41% businesses, whilst 57% had no training at all. On-the-job/shop floor training was the greatest source of training at 71%. Polytechnics were the most favoured with 50%, while private educa-

tors were the second at 29%, with universities scoring only 14% and universities off-shore at 7%.

From the present analysis, it is apparent that many Rosebank firms lack basic managerial, computing and technology skills. Training and education can help enterprise survival, improve employee performance, raise bottom lines, and reward people for having increased skills. Some evidence (Zwick, 2005) shows that general education and training such as certificates and degrees is more effective on firm productivity than specific training; although education and training is more relevant for younger companies than for established enterprises, who are experienced in facing a common set of managerial challenges.

Educational practices and training programmes are recommended in this paper, among others, which will enable managers in the ARBP to be independent thinkers with a more practical and applied approach to learning and training. Further it advises on developing KSAs for their current employees as well as for adult learners in general. These developed skills are valued by employers in the ARBP.

The study advocates that local educational institutions must play a greater role. They can adapt schemes to an area's specific needs. They can operate near Rosebank and allow workers to undertake training without spending excessive time away from the workplace.

As New Zealand moves into a niche-based, knowledge and value-adding economy, Rosebank's contemporary workforce needs to have the right education, training, skills and attributes to meet the globalised business world and the Earth's changing environment head-on.

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