

# SURVEY OF EMPLOYERS' SATISFACTION WITH ICT TRAINING FINANCED BY THE HEART TRUST/NTA



Prepared by Rohan Bell of RAA  
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61a Deanery Road, Kingston 3  
876 789 9564  
raagroup@yahoo.com



Prepared for HEART Trust/NTA  
Planning & Project Development  
Division





# Contents

<b>Executive Summary .....</b>	<b>iv</b>
<b>1. Background.....</b>	<b>vii</b>
1.1. Scope.....	vii
1.2. Definitions .....	vii
1.3. Methods .....	vii
1.3.1. Unit of analysis .....	viii
1.3.2. Field work.....	viii
1.4. Profile of Employers.....	ix
1.4.1. Location .....	ix
1.4.2. Organization type.....	ix
1.4.3. Business experience .....	ix
1.4.4. Economic sector.....	x
1.4.5. Business activity.....	x
1.4.6. Employment .....	x
<b>2. Hiring Record of HEART-Trained Personnel (HTP).....</b>	<b>xii</b>
2.1. Hiring record of Employers .....	xii
2.2. Current hiring of HTPs with ICT training .....	xiii
2.3. Expected Hiring of HTPs.....	xiv
2.3.1. Non Interest in Hiring HTPs with ICT Skills .....	xiv
<b>3. Performance Rating of HEART Graduates.....</b>	<b>xvi</b>
3.1. Ranking of performance by employers .....	xvi
3.2. Differences in performance ratings .....	xvii
3.2.1. Place where HTPs received ICT training .....	xvii
3.2.2. Level of placement and how they were rated.....	xviii
3.2.3. Ratings for different occupational areas.....	xviii
3.3. Comparing expectations with performance .....	xix
3.3.1. Significant differences .....	xix
3.3.2. Performance areas requiring attention .....	xx
3.3.3. Performance areas requiring least attention .....	xxi
<b>4. Relative Importance of Employment Criteria.....</b>	<b>xxii</b>
4.1. Recruiting Factors.....	xxii
4.1.1. Personality Factors .....	xxii
4.1.2. Qualifications.....	xxiii
4.1.3. Demographics .....	xxiii
4.1.4. Other Recruiting Factors .....	xxiii
4.2. Differences in Ranking Recruiting Factors.....	xxiii
4.3. Education Required for Entry Level .....	xxiv
<b>5. Patterns in Recruiting HEART ICT Graduates .....</b>	<b>xxv</b>
5.1. Recruiting patterns.....	xxv
5.1.1. Recent hiring of HTPs with ICT skills .....	xxv
5.1.2. Place of ICT training for HEART graduates on staff.....	xxvi
5.1.3. Methods of recruiting HTPs.....	xxvi
5.1.4. Recent recruiting activity of HTPs for ICT jobs.....	xxvii
5.1.5. Difficulties with recruiting HTPs.....	xxvii
5.2. Placement patterns .....	xxviii
5.3. Levels of Employment of HTP.....	xxix
5.3.1. Constraints in measuring employment .....	xxix
5.3.2. Number of HEART-trained ICT workers .....	xxx
5.4. Workers Hired in Area of Training.....	xxxi
<b>6. Training Strategies of Employers .....</b>	<b>xxxii</b>
6.1. Training strategies used.....	xxxii
6.2. Training needs identified.....	xxxii
6.3. Interests in training partnerships with HEART/NTA .....	xxxiii
6.4. Employers' perceived relevance of HEART training .....	xxxiv
<b>7. Recommendations.....</b>	<b>xxxvi</b>
7.1. Designing future research .....	xxxvi
7.2. Achieving more of the employment potential .....	xxxvii
7.2.1. Converting interest to jobs .....	xxxvii

7.2.2.	More training of call centre workers .....	xxxvii
7.3.	Removing supply constraints .....	xxxvii
7.3.1.	Making training more adequate .....	xxxvii
7.3.2.	Increase outturn of Level 3+ trained workers .....	xxxviii
7.4.	Improvements to training inputs and processes.....	xxxviii
7.4.1.	Performance areas to develop .....	xxxviii
7.4.2.	Mixing best practice between CIT and CISCO .....	xxxix
	Benchmarking training components with CISCO and CIT .....	xxxix
	Removing variable performance outcomes between CIT and CISCO graduates .....	xxxix
7.4.3.	Special skills for programmers .....	xxxix
7.5.	Post training interventions.....	xxxix
7.6.	Reaching more employers that demand training.....	xl
	Bringing training in house .....	xl
	New training areas .....	xl
<b>8.</b>	<b>Appendices .....</b>	<b>41</b>
	<i>Appendix 1. Questionnaire .....</i>	<i>41</i>
	<i>Appendix 2. List of all ICT employers and known employers of HEART graduates .....</i>	<i>49</i>
	<i>Appendix 3. List of employers interviewed .....</i>	<i>50</i>
	<i>Appendix 4. Interviews with employers not originally sampled .....</i>	<i>50</i>

## Tables and charts

<i>Figure 1. Relationship between employers in this study and wider economy.....</i>	<i>viii</i>
<i>Figure 2. Groups of employers by the record of hiring HEART graduates .....</i>	<i>xii</i>
<i>Figure 3. % of employers by schooling required for job entry .....</i>	<i>xxiv</i>
<i>Figure 4. % of employers by hiring of HEART graduates with ICT skills in past 3 yrs.....</i>	<i>xxv</i>
<i>Figure 5. Types of partnership with HEART that partners are interested in by % of employers.....</i>	<i>xxxiv</i>
	<i>***</i>
<i>Table 1. Respondents by role in company.....</i>	<i>ix</i>
<i>Table 2. Distribution of employers by business activity.....</i>	<i>x</i>
<i>Table 3. % of employers by size of workforce.....</i>	<i>xi</i>
<i>Table 4. % of employers by record of hiring HEART graduates .....</i>	<i>xiii</i>
<i>Table 5. % of employers by reason for non interest to hire HTPs for ICT job.....</i>	<i>xiv</i>
<i>Table 6. Mean level of satisfaction with HTPs performance in selected areas.....</i>	<i>xvi</i>
<i>Table 7. Mean performance ratings by place of training HEART workers were recruited .....</i>	<i>xvii</i>
<i>Table 8. Significant differences between employers' expectation and performance of HTPs hired .....</i>	<i>xix</i>
<i>Table 9. Relative importance of selected recruitment criteria .....</i>	<i>xxii</i>
<i>Table 10. % of employers by place of training ICT workers were recruited.....</i>	<i>xxvi</i>
<i>Table 11. % of employers by time since last recruiting HEART trained IT worker.....</i>	<i>xxvii</i>
<i>Table 12. Difficulty in the experience to hire HTPs for ICT jobs by % of employers.....</i>	<i>xxvii</i>
<i>Table 13. Occupational area where HTPs were currently hired by % of employers.....</i>	<i>xxviii</i>
<i>Table 14. % of employers by level of placement of HTPs hired for ICT jobs.....</i>	<i>xxix</i>
<i>Table 15. Place of training HTPs by # hired in ICT jobs &amp; % of employers .....</i>	<i>xxx</i>
<i>Table 16. Occupational area by # of HTP hired* and in area of training.....</i>	<i>xxxii</i>
<i>Table 17. Types of training employers have used in past 3 years.....</i>	<i>xxxii</i>
<i>Table 18. Ways of partnership with HEART identified by % of employers.....</i>	<i>xxxiii</i>
<i>Table 19. % of employers with no interest to hire HEART grads by reason given &amp; schooling demanded.....</i>	<i>xxxv</i>

## Executive Summary

### *Research design*

1. HEART/NTA commissioned Research & Analysis Associates (RAA) in April 2005 to conduct a survey of potential actual and employers of HEART-trained personnel (HTPs) with a major in Information Technology. A sample of 100 employers was targeted in the survey and interviews were completed with 84 of them.
2. This survey does not refer to all employers, but to all potential employers of HEART graduates with specialist training in ICT. In building the listing for this study these employers were targeted
  - a. All employers in the ICT sector
  - b. All known employers of HTPs with ICT training
3. The known employers of HTPs with specialist ICT training were supplied by HEART-NTA. A list of all establishments in the ICT sector was supplied by the consultant, RAA. 104 establishments made up this list (sample frame) from which the sample of 100 was selected.
4. A little more than half (51%) of these employers were in the Information and Communications Technology (ICT) sector. They directly employ more than 26,000 workers between them. For the vast majority (80%), their operating base was in Kingston and St Andrew and St James. The years of operating experience range from 1 to 287 years, with about a third of them having their headquarters overseas and four in every five of them operating as private sector businesses.
5. In keeping with the research design, most employers observed hired HEART graduates in ICT-intensive jobs – data operations, programming, computer maintenance and networking. Among those currently hiring HTPs, 73% of all the jobs mentioned were in these areas.

### *Performance*

6. The most admired qualities emerging from employers' evaluation of the HTPs they hired were
  - a. disposition to accept supervision (manageability) and
  - b. ability and willingness to cooperateAt least 43% of employers hiring these workers rated these qualities above standard.
7. The performance areas where HTPs fell below the level that employers expect were:
  - a. ability for literary and oral communication
  - b. attire and groomingOn these qualities, the gap between expectation and satisfaction was greatest.
8. Other areas where performance was below par include use of technical knowledge and tools, computational skills and measurement skills. The core competence in these performance areas is technical skill and fewer than 20% of employers rated the performance of HEART graduates above standard in these areas. At the same time employers recruiting from CISCO and CIT expressed greater satisfaction than employers recruiting from other centres
9. Among current employers, HEART graduates in ICT jobs usually work under supervision as a skilled worker (49%). This is above the level of the apprentice and the person working under close supervision and indicates the level of confidence employers' have in their job readiness after receiving HEART training.

10. Most employers recruiting a HEART-trained ICT worker placed them under little or no supervision or as a specialist (25 of 37) and almost half of them (12 of 25) were known to recruit workers from CIT and/or CISCO. From this finding, it is inferred that most of the HTPs evaluated may have had ICT training at NCTVET Level 3.
11. More HEART-trained workers in an ICT job were hired in their field compared to those not in an ICT job. Call centres was the only ICT job area mentioned where workers hired exceed the number with training in the field.
12. The Level 1 HEART graduate would exceed or satisfy minimum schooling requirements for entry level jobs at up to 65% of employers. Most employers (36%) require grade-11 schooling as a minimum for filling vacancies at an entry level.

*Interest to hire*

13. Employers are interested in hiring HEART trained workers with ICT skills where a vacancy exists. Those that indicate that interest made up 79% of employers in the ICT sector.
14. Employers that showed the least interest to invest in staff training were also least likely to hire HTPs, with or without ICT training. 43% of employers that facilitate training hired HTPs with ICT skills compared 16% among employers that do not facilitate training.
15. Where there was any hiring activity of HEART grads trained in ICT, most of it has happened in the last 3 years - 73% of employers. Most of this hiring was within the last year, 37%.
16. The HEART graduate in ICT or any other discipline would be competing mainly with persons at a grade-11 level of schooling for the job that a HEART trainee would typically be considered for. Some 71% of employers demand that applicants must be educated at a level that is on par or above grade-11 schooling.

*Prevalence of employers hiring HEART graduates*

17. There are 2 in every 10 of these employers that now hire HTPs with ICT skills. Some of them now hire HTPs with ICT training but are unable to specify how many workers or from which HEART academy they were recruited. When these employers are counted, there would be 3 in every 10 employers that hire HTPs with ICT skills.
18. For every 10 of these employers, roughly 37 HEART graduates with specialist ICT training are expected to be hired – a ratio 3.7:1. That is equivalent to 387 of these workers among the 104 employers i.e., known employers of HTPs with ICT training and all the employers in the ICT sector.
19. Two of every 10 employer that once hired HTPs with ICT training no longer do so. As many as 8 in 10 of them therefore retain these workers after they were appointed.

*HEART support for training*

20. Chances are that where there is a HEART graduate with ICT training on staff, the training was through the CISCO programme. If not, then it was with CIT. These two sources were mentioned most frequently by employers for the HEART trained IT specialists hired.
21. When seeking HEART trained workers with ICT training, most employers may not contact HEART agencies directly in doing so. Those that do usually use the job placement office (32%) or training centres (14%).
22. Most employers that tried (37%) said that it was not difficult to hire HEART graduates with ICT training (93%). This reflects the effectiveness of the labour market information system or the minimalist effort involved in recruiting these workers.

23. Eighty-eight (88) percent of all the employers were willing to partner with HEART one way or another to develop technical and vocational training in Jamaica. This shows wide scale support for the work of HEART even if employers are not interested in HEART developing programs for training needs in their organisation.
24. No wide scale support was indicated for any new area of training to be developed by HEART. Recommendations on the areas of training for HEART to develop were specific to the employer's operation but not more than 4 of them agreed on any one area.
25. Aptitude is as crucial or even more crucial than ability in terms of what employers seek in any recruit, including HEART graduates with ICT training. The factors that focus on personal interaction skills – viz., mannerisms and oral ability, were rated more highly than any other factors, including those that focus on education and training.
26. The type of business activity tends to significantly influence how employers rated the importance of certain recruitment factors. Generally, employers in call centres and software development in particular tended to behave similarly and more of them regard the social skills as vital relative to employers in other business activities.
27. Very few employers (6%) believe that HEART training is irrelevant. At the same time, the perception of the irrelevance of HEART training seems to more relate to the *level* of training rather than the *area* that training is provided in.

*Perceptions and attitudes*

## 1. Background

HEART-NTA was interested in a study of firms' level of satisfaction with graduates trained in information technology (IT) skills. This interest reflects the need to evaluate and improve training processes and outputs of the Agency.

### 1.1. **Scope**

The study seeks to determine employers' level of satisfaction with the graduates trained in IT skills, particularly high level, from HEART-NTA institutions and programs. More specifically, the objectives are as set out below.

1. Evaluate the performance of HEART-NTA graduates as perceived by employers
2. Determine the interest of employers to hire HEART-NTA graduates
3. Identify ways employers expect HEART-NTA should support their training needs
4. Explore the attitude and perception of employers to HEART-NTA

### 1.2. **Definitions**

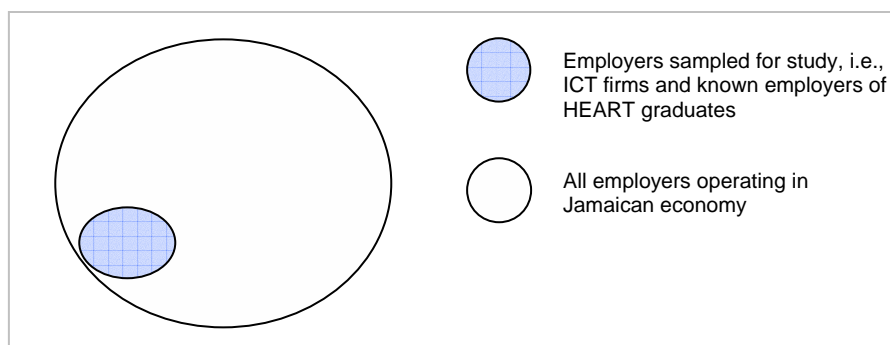
Employers, HEART-trained personnel and information and communications technology (ICT) firms are three key expressions used in this research.

- Employers do not refer to all employers in Jamaica but to all the private, public and joint venture establishments who are either known to hire HEART graduates or whose explicit line of business identify them as part of the ICT sector. Figure 1 below illustrates this idea that is further expanded in the section describing the unit of analysis.
- ICT is the combination of computer-related and telecommunications services. Hence, businesses offering various configurations of telephony or data transfer services as well as the development, distribution and maintenance of applications and equipment are included in the reference to the ICT sector. Those establishments where these operations make up the main end-of-line outputs (vis-à-vis inputs or processes) are referred to as ICT establishments.
- HEART-trained personnel include persons hired who completed a programme (course) at an institution, community-based or enterprise-based outreach programmes managed by HEART.

### 1.3. **Methods**

The survey used in-person interviews to collect data that was processed to produce the survey outputs.

**Figure 1. Relationship between employers in this study and wider economy**



### **1.3.1. Unit of analysis**

The subject of the study is the actual or potential employer of the HEART-NTA graduate with a major in information technology (ICT).

From a macro economic standpoint, most of these employers (or establishments) would be attached to the ICT sector, but they can include any establishment in Jamaica that is a potential employer of the HEART-NTA graduates with the ICT major.

Essentially, this definition of the unit of analysis (or research subject) includes nearly all the 2,000 or more large establishments (i.e., employing more than 10 persons) identified by Statistical Institute of Jamaica (STATIN) as well as the over 20,000 small and micro enterprises (SME) not in the distribution sector<sup>1</sup>.

The decision was made to focus on establishments in the ICT sector, the most likely source of employers for the graduates evaluated, in addition to any known employer of HEART trained personnel (HTPs) with an ICT major. The listing of known employers was supplied by HEART. Also, there was a special interest in finding employers of graduates from CIT and CISCO who were likely to be trained at Level 3 and 4 in ICT.

The result is that the known employers of HTPs with an ICT major, plus all known establishments in the ICT sector define the sample frame for this study. A total of 104 of these establishments were identified (see Appendix 2 on page 49), which is equivalent to 1 for every 300 businesses estimated in Jamaica<sup>2</sup>.

### **1.3.2. Field work**

The field work was conducted between Monday April 11 and Tuesday May 31<sup>st</sup> 2005 with a team of four persons.

<sup>1</sup> This estimate is based on previous work done by the consultant, RAA.

<sup>2</sup> Based on the estimate of some 22,000 business establishments.

The interview team applied a survey instrument that was developed by HEART. The instrument was modified by the consultant using experiences from the pilot interviews (7) and review sessions with HEART. The modifications are outlined below.

The person in charge of human resource recruitment in the organisation was targeted for the interview and most of the respondents were from the HR section (28) or in a managerial capacity (32) where required knowledge or access to that knowledge is assumed. Table 1 below shows the position of the respondents.

**Table 1. Respondents by role in company**

Role	Count
Manager, Human Resources	17
Manager, not Human Resources	32
Officer, Administration and/or Accounts	15
Officer, Human Resource	11
<b>Other</b>	<b>9</b>

There were more than 30 employers that interviews could not be located. Some 18 of these employers were replaced to recover as much of the sample as possible. Interviews were completed with 86 of the 89 that were contacted during the survey period. Two of the interviews were not used due to methodological issues.

## **1.4. Profile of Employers**

The operational features of employers that were included in the survey are described in this section.

### **1.4.1. Location**

Interviews were done with employers in 4 of the 14 parishes in Jamaica. The majority were located in Kingston and St Andrew (80%) followed by St James (15%). These two locations accounted for 85% of the employers responding to the survey. The location of the units in the sample reflects how employers are distributed nationally.

### **1.4.2. Organization type**

The organisational structure of the employer was described in terms of either private sector, public sector or a combination of both – joint venture.

Those that described themselves as private sector made up 83% of the employers, followed by public sector (12%) and 4 employers (5%) described themselves as a joint venture.

### **1.4.3. Business experience**

The employers have more than 100 years of cumulative operating experience between them. The range was between 1 and 287 years and the half of them are operating for more than 15 years.

#### 1.4.4. Economic sector

The sample frame was built to include as many ICT establishments as could be identified. To this extent, it is expected that the majority of businesses were in ICT (52%). The employers in the non ICT sector make up 48%. These were mainly financing and business services (20%), followed by trading (5%).

#### 1.4.5. Business activity

There could be more than one type of business activity for an employer. As such, the percentage distribution of responses can exceed 100%. Table 2 below shows the type of business activity between the employers surveyed.

The most popular businesses activities were software development (16%), followed by financial services (13%) and data processing (11%). This distribution reflects the research design where the ICT sector was specifically targeted, not the actual distribution of business type activity in the economy.

**Table 2. Distribution of employers by business activity**

Category label	Count	Pct of Responses	Pct of Cases
call centre (outbound and inbound)	7	7.2	8.3
data and/or image processing	9	9.3	10.7
telecommunications	4	4.1	4.8
financial services including insurance	11	11.3	13.1
training & education services	6	6.2	7.1
trading in computer or other merchandise	10	10.3	11.9
courier services	2	2.1	2.4
entertainment or tourist attractions	1	1.0	1.2
auto sales, rentals	2	2.1	2.4
software development, systems design	13	13.4	15.5
ISP	5	5.2	6.0
meat processor	2	2.1	2.4
security and justice	1	1.0	1.2
advocacy, lobby group	1	1.0	1.2
govt. operations/industry regulation	5	5.2	6.0
accommodation and vacation	1	1.0	1.2
aircraft ground handling	1	1.0	1.2
professional services	3	3.1	3.6
export promotion and support services	1	1.0	1.2
debt collection	1	1.0	1.2
web design	1	1.0	1.2
electrical/electronic equipment, mnfctr.	1	1.0	1.2
computer maintenance services	2	2.1	2.4
mapping Jamaica's geology	1	1.0	1.2
media services	2	2.1	2.4
manufacture fluorescent fixtures	1	1.0	1.2
printing services	1	1.0	1.2
real estate	1	1.0	1.2
transport services	1	1.0	1.2
Total responses	97	100.0	115.5

0 missing cases; 84 valid cases

#### 1.4.6. Employment

There were 26,356 workers employed between all the employers surveyed. ICT was the single largest contributing economic sector in terms of workers employed: 6,313 (or 24% of total).

Most (57%) of these employers were large, i.e., with a workforce of 50 or more persons. In some sense, this reflects the high labour intensity of operations in call centres/telemarketing, data processing and telecommunications. Small and micro enterprises (i.e., those with 10 or less workers) comprise 14% of the employers surveyed.

**Table 3. % of employers by size of workforce**

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid micro/small	12	14.3	14.5	14.5
medium	29	34.5	34.9	49.4
large	42	50.0	50.6	100.0
Total	83	98.8	100.0	
Missing System	1	1.2		
Total	84	100.0		

Half of all the employers surveyed employ more than 53 workers. Those with more than 170 workers make up the top 25% of the firms with the highest number of workers.

Male workers made up 12,057 of the total when female workers comprised 14,318. Telecommunications, call centres and data processing operations tend to generally reflect a higher participation of female workers compared to males. In this data set, these differences were observed between male and female workers and were found to be statistically significant.

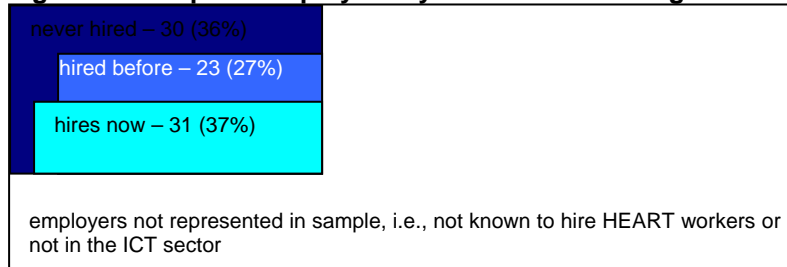
## 2. Hiring Record of HEART-Trained Personnel (HTP)

### 2.1. *Hiring record of Employers*

Employers were identified by their record of hiring HEART graduates.

- There were those that currently hire HTPs – 4 in every 10 employers targeted or more precisely, 37% (see Figure 2). For these employers, details were collected as to whether the HTP has specialist training in information and communications technology (ICT).
- There were those that do not hire HEART graduates now but have done so before - 3 in 10 or 27%. Those that hired them before and those that do so now define employers who have an historical incidence of hiring HEART graduates, which amounts to 64% (in Figure 2, refer to light blue and sky blue vectors).
- Whether or not the employers have any historical incidence of employing HTPs, the likelihood or interest for them to do so in the future was recorded.

**Figure 2. Groups of employers by the record of hiring HEART graduates**



Several factors affect the veracity of the count of firms that hired HTPs.

- The respondent relies on their knowledge of employees' background rather than a review of personnel records. The risk for errors with this recall is high, especially with larger employers.
- The human resource information systems did not track information on whether the employee was trained at HEART. This was what some respondents explained though it would be expected that each employee file would have an account of their training history.
- Some employers could not be bothered to do the review of employee records to identify whether they were trained by HEART anytime before.

The effect of these factors was that the number of firms with an historical incidence of hiring HEART graduates is understated and so too is the count of HEART trained employees.

## 2.2. **Current hiring of HTPs with ICT training**

Twenty three percent (23%) of employers currently hire HTPs with ICT training. This is not including those that now hire HEART graduates but don't know if they had ICT training (another 7%)<sup>3</sup>. Table 4 shows detailed groups of employers according to their practice of hiring the HEART trained ICT worker.

**Table 4. % of employers by record of hiring HEART graduates**

	Frequency	Percent	Valid Percent	Cumulative Percent
- hires HTP with ICT training	19	22.6	22.6	22.6
- hires HTP w/out ICT training	6	7.1	7.1	29.8
- hires HTPs but don't know of any ICT training	6	7.1	7.1	36.9
- hired HTPs with ICT training	5	6.0	6.0	42.9
- hired HTPs w/out ICT training	7	8.3	8.3	51.2
- hired HTPs but don't know of any ICT training	11	13.1	13.1	64.3
- no record of hiring HTPs	30	35.7	35.7	100.0
Total	84	100.0	100.0	

Four of every 10 employers (or 43%) that once hired HTPs no longer do so. The fall off was not so steep among HTPs with ICT training: only 2 of every 10 employers (24%) are no longer doing so.

The fall off in employers with HEART trained ICT staff has occurred even though the outturn of ICT trained personnel from HEART has increased over the years.

The gap between employers that once hired HTPs and those no longer doing so suggests either one or a combination of the following

- demand shifted away from occupational areas that HEART training supported
- demand moves away from HEART as source of supply for employers' staffing needs or HEART as a source of supply of trained workers is declining
- There is scope for further penetration of the labour demand by employers with HEART trained graduates

This research does not investigate those issues, but it appears from intuition that the explanation for the fall off could be in a combination of an increase in the supply of ICT personnel from non-HEART sources and an increase in the demand for ICT workers.

Anecdotal evidence does not suggest that demand is shifting away from ICT-intensive jobs. Also, the data shows that more of the employers that no longer hire HTPs are in the non-ICT sector (32%) compared to ICT sector (23%).

The evidence from this research is that there is widespread interest to hire HTPs with ICT skills where a vacancy exists (discussed in section 2.3 below). However, an increase over the last 10 years in suppliers of

<sup>3</sup> This is a respondent who knows that there are HEART grads on staff but don't know which HEART institution trained them.

trained personnel with ICT skills is generally acknowledged. This would have the effect of decreasing HTPs as a proportion of the workforce especially if employers' preference is tending away from HEART to other suppliers.

### 2.3. **Expected Hiring of HTPs**

Employers are interested in hiring HEART trained workers with ICT skills where a vacancy exists. Those that indicate that interest made up 73% of all employers and 79% of employers in the ICT sector.

Having interest to employ workers with HEART training is not the same as saying that these firms would actually do so. In addition to a vacancy existing, the possibility of hiring such a worker would be influenced by

- Whether HTPs are competitive with other applicants.
- Whether the flow of information in the labour market is such that the job-seeker and the job supplier can become aware of each other.

The prevalence of employers that are open to hiring HTPs indicate the potential support that exist for HEART when the economy is at full employment (i.e., where every job-seeking member of the labour force is employed). Currently this interest exists among 73% of employers but only 37% of them currently hire HTPs.

#### 2.3.1. **Non Interest in Hiring HTPs with ICT Skills**

Employers that do not express an interest to hire HTPs for ICT jobs were prompted to say which of the listed reasons they would give for their position. This should help HEART to know what action to take if any to stimulate the interest of these employers. Table 5 below shows the prevalence of employers for the different prompted reasons given.

**Table 5. % of employers by reason for non interest to hire HTPs for ICT job**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	-inadequately trained	5	6.0	21.7	21.7
	-prefer to train on the job	3	3.6	13.0	34.8
	-prefer to employ from other institutions	1	1.2	4.3	39.1
	-not required in my type of business	5	6.0	21.7	60.9
	-just not interested	3	3.6	13.0	73.9
	-other reason	6	7.1	26.1	100.0
	Total	23	27.4	100.0	
Missing	-N/A - employer shows interest	61	72.6		
Total		84	100.0		

The most prevalent reason is that HTPs are not required in my type of business (22%) or they were perceived as inadequately trained (22%).

The required schooling for entry level jobs had a significant influence on the reason for not having an interest to hire applicants trained by HEART. Employers who perceive that HEART graduates are inadequately trained or not appropriate to their type of business tended to require grade-11 schooling as a minimum for entry level jobs at their firms. Grade-11 is compatible with NCTVET Level 1, which is probably the level where most

Academy-based training occurs. To this extent, it may not be the case that employers have a problem with the level at which training is done.

The problem could more be the scope of training. Is the training penetrative enough in areas that are of special interest to employers? Do workers demonstrate enough competency in the skill they are trained?

From the data set, answers to these questions can only be indirect at best. A focus group is more appropriate to unravel issues in response to those questions. However, the analysis can identify those factors that are important to employers that have statistically significant ( $<.05$ ) influence on reasons to not hire HEART trained workers. These factors include the applicant's

- Oral ability and
- Mannerism/attitude or demeanour

Employers that believe applicants from HEART are inadequately trained or not required for their business type show greater tendency to think oral ability is important/very important (100%) than employers who have no problem in hiring those applicants (69%).

Similarly, employers that believe applicants from HEART are inadequately trained or not required for their business type showed more likelihood (80%) to assert mannerisms/attitude of an applicant as important compared to employers that do not have a problem hiring them (78%).

### 3. Performance Rating of HEART Graduates

#### 3.1. *Ranking of performance by employers*

The most admired qualities emerging from employers' evaluation of the HTPs they hired were

- i) disposition to accept supervision (manageability) and
- ii) ability and willingness to cooperate
- iii) attitude to work

See Table 6 for details of rating results.

**Table 6. Mean level of satisfaction with HTPs performance in selected areas**

Performance area	Employers with	
	Mean rating	'above standard' rating
o accept supervision	3.57	56.5%
o cooperativeness	3.39	43.5%
o attitude to work	3.39	43.5%
o trainability	3.35	34.8%
o self discipline	3.30	39.1%
o attendance	3.26	30.4%
o punctuality	3.13	21.7%
o quality of work	3.05	9.1%
o grooming	3.04	4.3%
o level of production	3.04	13.0%
o care of equipment	3.04	13.0%
o Oral skills	2.96	13.0%
o safety habits	2.96	13.0%
o use of technical knowledge	2.95	4.5%
o use of tools	2.91	4.3%
o computation skills	2.86	..
o measurement skills	2.78	..
o writing skills	2.77	4.5%
o self initiative	2.76	4.8%

(..) Indicates that no employer rated the quality at this level

On manageability, the average rating was 3.57, where the highest or most favourable rating is 4. For cooperativeness and attitude to work, the average score was 3.39. At least 2 of every 5 participating employers rated these qualities of HTPs at 4, i.e., 'above standard'.

The performance areas that attracted the lowest rating from employers were

- i) writing skills,
- ii) application of self initiative/problem solving disposition and
- iii) measurement skills

The average rating for these areas was below 3, i.e., 'below standard' (see Table 6 for details).

### 3.2. Differences in performance ratings

#### 3.2.1. Place where HTPs received ICT training

In the following performance areas, employers recruiting workers from CISCO and CIT tended to have a higher rating of performance than the overall average for HEART workers:

- use of technical knowledge, 3.00 compared to overall average of 2.95
- use of tools, 3.00 compared to 2.91
- computational skills, 3.00 compared to 2.86

The results (see Table 7) also show that employers recruiting workers from CISCO consistently rated performance in these and other areas more highly than employers hiring workers from CIT.

However, there was not enough statistical evidence (sig. >.10) to assert that where they were trained influenced outcomes of how they were rated in performance areas – except in terms computational skills. Both CISCO and CIT trained workers were rated above the average in this performance area.

**Table 7. Mean performance ratings by place of training HEART workers were recruited**

	place of training in ICT for HEART recruits							Total
	CIT	CISCO	Kenilworth	Multiple sources	Other Academies	Don't know	None	
	Mean	Mean	Mean	Mean	Mean	Mean	Mean	Mean
oral skills	3.00	3.00	3.00	2.00	3.25	3.50	2.00	2.96
writing skills	2.67	3.00	3.00	2.00	2.75	3.33	2.00	2.77
trainability	3.00	3.14	4.00	4.00	3.25	3.75	3.33	3.35
cooperativeness	3.00	3.29	3.00	4.00	3.50	3.75	3.33	3.39
accept supervision	3.33	3.29	4.00	4.00	4.00	3.75	3.33	3.57
self discipline	3.00	3.14	3.00	3.00	3.50	3.75	3.33	3.30
attitude to work	3.33	3.29	3.00	4.00	3.50	3.50	3.33	3.39
initiative	3.00	2.86	2.00	1.00	3.00	3.00	2.00	2.76
grooming	3.00	3.00	3.00	3.00	3.00	3.00	3.33	3.04
attendance	2.67	3.14	3.00	3.00	3.50	3.75	3.33	3.26
punctuality	2.33	3.00	3.00	3.00	3.25	3.75	3.33	3.13
technical knowledge	3.00	3.00	3.00	3.00	3.00	3.00	2.50	2.95
use of tools	3.00	3.00	2.00	3.00	3.00	3.00	2.67	2.91
quality of work	3.00	3.00	2.00	3.00	3.00	3.50	3.00	3.05
production	2.67	2.86	3.00	3.00	3.25	3.50	3.00	3.04
safety habits	2.67	2.71	2.00	4.00	3.00	3.25	3.33	2.96
care of equipment	2.67	3.14	2.00	3.00	3.00	3.25	3.33	3.04
measurement skills	2.67	3.00	2.00	2.00	2.50	3.00	3.00	2.78
computation skills	3.00	3.00	2.00	2.00	2.75	3.00	3.00	2.86

In terms of use of oral and literary skills, performance ratings were low overall (less than 3.0). However, while employers recruiting workers from CIT and CISCO rated their HEART workers above the average for oral skills, employers recruiting workers from CIT rated use of writing skills (2.67) below the overall average.

The differences in how employers attached to CISCO and CIT rated oral and writing skills were significant (sig. <.05). These differences were likely to be observed if the analysis was repeated among many different samples of these employers.

### **3.2.2. Level of placement and how they were rated**

There was no significant differences ( $>.10$ ) in how employers rate performance between HEART trained workers at different levels of placement in the establishment. The implication of this finding is that the employers evaluation of performance apply to HEART workers whether they were skilled or semi skilled and specialist or closely supervised.

### **3.2.3. Ratings for different occupational areas**

Programmers were not particularly punctual, nor did their writing skills attracted rave reviews from employers. Data operators, network specialists and computer maintenance workers got better reviews from employers in these performance areas. Tests confirm that these differences were systematic (sig.  $<.10$ ) as against random.

### 3.3. Comparing expectations with performance

#### 3.3.1. Significant differences

This section examines employers' expectation with how they rated the performance of HEART workers. In so doing, the importance employers attach to a recruitment factor was used as an indicator of their expectation and was compared with rating of a performance factor that used similar skills.

The analysis of differences between expectation and performance was applied using the paired samples t-test technique<sup>4</sup>. The statistically significant results (i.e., non random outcomes) are reported in Table 8. The results show that HEART graduates performed below expectation in terms of their oral skills, grooming, measurement skills, computational skills and use of technical knowledge.

**Table 8. Significant differences between employers' expectation and performance of HTPs hired**

Performance areas	Paired Differences					t	df	Sig. (2-tailed)
	Mean	Std. Deviation	Std. Error Mean	90% Confidence Interval of the Difference				
				Lower	Upper			
oral skills	.74	.75	.16	.47	1.01	4.715	22	.000
attitude to work	.30	.70	.15	.52	.56	2.077	22	.050
Grooming	.48	.67	.14	.24	.72	3.447	22	.002
use of technical knowledge*	.55	.80	.17	.25	.84	3.196	21	.004
computation skills*	.62	.80	.18	.32	.92	3.525	20	.002
measurement skills*	.67	.84	.20	.32	1.01	3.367	17	.004
level of production**	-.52	.99	.21	-.88	-.17	-2.517	22	.020
quality of work**	-.55	1.10	.23	-.95	-.14	-2.324	21	.030
writing skills*	.68	.89	.19	.35	1.01	3.578	21	.002
problem solving initiative*	.71	.90	.20	.37	1.05	3.627	20	.002

\*compared to expectations when recruiting based on minimum academic skills

\*\* based on expectations of related work experience

For e.g., when the mean rating of importance was compared with the mean rating of performance for oral ability, expectations were ranked more highly than performance (+.74 higher mean score) and the differences were significant (sig. <.01). The *reverse* was true for quality of work and level of production based on what employers expect from the work experience of HEART workers: performance exceeded expectations by -.52 and -.55 respectively. A negative difference in the means indicate an area where performance exceeds expectations.

The smaller the difference between the means, the greater the convergence between what employers expect (based on importance ranking assigned to the factor) and their satisfaction with HTPs performance. This measure of convergence was highest for HEART workers attitude to work and lowest for their use of measurement skills.

<sup>4</sup> This test uses pair(s) of related variables (e.g., mom's and dad's view their child's curfew time) to test the hypothesis that there is no difference in the outcomes.

Also, the lower the measure of significance for the t statistic, the greater is the reliability of the finding when expectation was compared with performance. Hence, findings on the 'attitude to work' was significant at .05 or at a 95% confidence level while for 'oral skills' the significance was .00 or at a 99% confidence level.

### **3.3.2. Performance areas requiring attention**

It may be asserted on the basis of the forgoing analysis that where expectations exceed performance, there is a need to direct attention to the training system used by HEART. This should go some way towards greater convergence between what employers think about who is a good employee and performance of HTPs.

These areas include: oral skills, writing skills, measurement skills, computational skills, self initiative for problem solving and use of technical knowledge. These areas attracted less than 1 in every 5 employer with a rating of 4 - 'above standard', and the average rating was below 3 ('at standard') – refer to Table 6 on page xvi.

Some of these areas were significantly correlated to where the employer recruited workers. In particular, these findings are noted:

- More employers linked to CIT and CISCO tended to rate oral skills at standard (100%) compared to other academies (67%).
- Employers linked to CIT and 'other academies' (33%) rated writing skills 'below standard' while none recruiting from CISCO did so (0%).
- More employers linked to CISCO and other academies (at least 14%) were rated below standard for 'initiative' than employers linked to CIT (0%).
- More employers (75%) taking workers from other academies rated measurement skills below standard than CIT (67%) or CISCO (100%).
- This was also true for computational skills: more employers (50%) with workers from other HEART centres gave a below standard rating when none using CIT or CISCO did so (0%).

Performance in terms of 'grooming' and 'level production' were rated highly, but expectations when recruiting were higher given importance attached to 'physical appearance' and 'minimum academic qualifications', respectively.

### **3.3.3. Performance areas requiring least attention**

Some performance areas appear to be least in need of further development in the system HEART/NTA uses to produce graduates.

These include willingness to accept supervision, cooperativeness, attitude to work. The satisfaction with performance in these areas was based on expectations related to mannerism or demeanour of the worker when recruited. These were the areas where more than 1 in 5 employers had a rating of 'above standard' and where the mean rating was 3 ('at standard') or higher.

Although trainability, punctuality, attendance and self discipline were factors that employers rated generally as above standard (see Table 6), expectations based on 'mannerisms/ demeanour' were higher.

What is noticeable about these performance areas that employers are satisfied with is that they are not typical outputs of training curriculum. In fact, they are outcomes of a values and attitude system built through socialisation (not limited to the school).

None of these performance areas were correlated to the place of training for the HEART graduate the employer hired. This implies that the satisfaction in these areas was not linked to where the HEART worker was trained.

## 4. Relative Importance of Employment Criteria

At the operational level (micro), various intuitive factors will influence the demand for labour. The influence of these factors on potential and actual employers of HEART graduates with ICT training is investigated in this section.

### 4.1. Recruiting Factors

#### 4.1.1. Personality Factors

There is widespread consensus among employers that the factors listed below rank highest in the determination of a suitable worker. Employers have this attitude to a job applicant whether or not the person is trained by HEART. These factors are the applicant's:

- Mannerism, attitude or demeanour
- Performance in the job interview
- Ability for good oral communication

**Table 9. Relative importance of selected recruitment criteria**

	N	Mean	% of N rating 'very important'
mannerism/demeanor	82	3.68	72.0%
performance in interview	84	3.63	71.4%
oral communication ability	84	3.58	65.5%
minimum academic qualifications	84	3.37	56.0%
physical appearance	83	3.24	44.6%
references	82	3.09	41.5%
formal training in skills for the job	83	2.86	30.1%
minimum post secondary qualifications	84	2.70	28.6%
certified skills	84	2.70	26.2%
related work experience	84	2.57	22.6%
workplace entrance exams	84	2.06	17.9%
age of applicant	82	1.79	1.2%
gender of applicant	84	1.54	4.8%
area of residence	84	1.33	2.4%

Where the maximum rating that a factor could attract is 4, these factors had an average rating of 3.58 or higher (see Table 9). At least 68% of all potential employers of HTPs with an IT major agreed that these factors were very important.

The common factor in these skills is their importance for social interaction outcomes and impressions formed in others from one's self conduct. They are intrinsic qualities and show the impact of social environments on development of personality.

#### **4.1.2. Qualifications**

Factors such as academic qualifications, formal training and certification, attract an average rating of between 2.70 and 3.37. This range is lower than the range for social factors.

These factors were:

- Minimum academic qualifications
- formal training in skills for the job
- certified skills
- minimum post secondary qualifications
- related work experience

Clearly, these education and training (qualification) factors rank second to the personality factors in the thinking of employers about the qualities they want to see in workers. This finding supports the position that ability needs aptitude for the job applicant to make their mark on the would-be worker.

#### **4.1.3. Demographics**

The demographic factors attract the lowest priority on the decision of who to hire. The range for the average rating of importance is between 1.33 and 1.88. These factors were

- age
- sex
- residence

These factors are outside the discretion or control of the applicant. And employers recognise this. As much as 76% agree generally that these factors are not important at all in assessing potential of the applicant.

#### **4.1.4. Other Recruiting Factors**

Other factors include performance in workplace entry exam and references. They are part of previously mentioned groups (e.g., workplace entrance exam is grouped with qualifications) but the pattern of how they were rated is lower than other factors in the group. The level of importance range between 2.06 and 3.24 (see Table 9).

### **4.2. Differences in Ranking Recruiting Factors**

Employer's attitude to different recruitment factors vary. The business activity of the employer tended to influence more recruitment factors than any other characteristic of the employer, for e.g., where the head office is located.

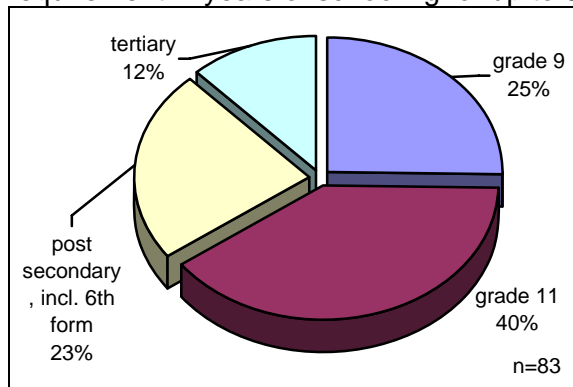
In particular, more of the employers in call centre and software development, compared to other employers, tend to regard performance in the job interview as very important. Similarly, the ability to speak well was held high among this group. Employers in training services, financial services and trading also regard these skills as very important. Another social skill, i.e., mannerisms, was considered highly among employers in this business range.

Generally, employers do not show any significant variation in their attitude to how the other recruiting factors are rated. Education and training factors as well as demographic factors either showed employers behaving similarly or there are too many differences between them to show a meaningful pattern.

### 4.3. **Education Required for Entry Level**

The minimum level of schooling that most employers (36%) require for entry-level jobs is grade-11 (fifth form). Those satisfied with grade-9 - entry level for most of the Academy-based training by HEART - make up 24% of employers. Figure 3 shows the level of completed schooling that potential employers require for jobs sought by HTP, whether or not they have a major in IT.

Generally, the person with NCTVET Level 1 qualification is comparable academically to the person with grade-11 schooling. Where this is the case, the HEART Level 1 program would satisfy the entry level requirement in years of schooling for up to 60% of the employers.



**Figure 3. % of employers by schooling required for job entry**

There was a significant concentration of employers hiring graduates as software developers that demand tertiary (30%) and post secondary (26%) schooling compared to grade-11 or lower (3%).

Most employers (57%) that accept up to grade-11 schooling do not value related work experience when recruiting as important. This was less the case for bosses that require post secondary level (26%) or tertiary level (50%) schooling. However, these differences were not statistically significant.

What employers require in terms of schooling for entry level jobs indicate the type of competition that HEART graduates must face for job placements. This competition will come mainly from applicants with grade-11 education or higher.

## 5. Patterns in Recruiting HEART ICT Graduates

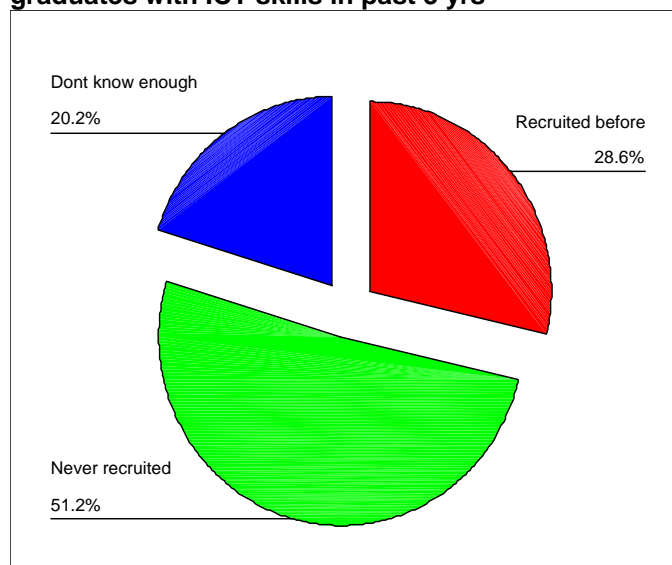
### 5.1. *Recruiting patterns*

#### 5.1.1. **Recent hiring of HTPs with ICT skills**

Employers that have hired ICT graduates in the past 3 years make up 29% of all potential employers, whether or not they hired HTPs (see Figure 4 below). In the ICT sector, this prevalence is slightly higher, 32% of employers.

While it is expected that more HTPs with ICT training would be hired among ICT firms than non ICT firms, the difference between the two sectors is not significant in this data set.

**Figure 4. % of employers by hiring of HEART graduates with ICT skills in past 3 yrs**



There were employers that do not know whether their staff is a HEART graduate. In many cases, their record keeping could not produce this information. In other cases, the requirement to determine this was too much to oblige the researcher. The effect is that there are 20% (see Figure 4) of all employers that may or may not have been employers of HEART graduates with ICT training.

### 5.1.2. Place of ICT training for HEART graduates on staff

Half (51%) of all employers never recruited HTPs with ICT training<sup>5</sup> and another 20% don't know if they ever had. This leaves only 3 of every 10 employers in a position to give details of where they recruited HEART graduate with ICT training.

**Table 10. % of employers by place of training ICT workers were recruited**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	CIT	4	4.8	4.8	4.8
	CISCO	12	14.3	14.3	19.0
	Kenilworth	1	1.2	1.2	20.2
	Multiple sources	2	2.4	2.4	22.6
	Other Academies	5	6.0	6.0	28.6
	Don't know	17	20.2	20.2	48.8
	Never hired any grads	43	51.2	51.2	100.0
	Total	84	100.0	100.0	

CISCO and then CIT were the most likely place of training for HTPs hired with ICT training. Table 10 shows grouping of employers by place of ICT training for their staff from HEART. 'Multiple sources' refer to two of the 3 specified academies and 'other academies' refer to Portmore, Stony Hill, the Ripon Road office, Work Experience and the School Leavers Program.

### 5.1.3. Methods of recruiting HTPs

The HEART job placement office followed by the HEART training centre were the most popular methods used by employers to recruit HEART graduates, 32% and 14% respectively.

These recruitment sources – relative to others like job ads or employee recommendations – are under the control of HEART. To that extent, HEART is able to manage the response to labour demand for up to 48% of employers using these sources. For e.g., HEART should be able to go beyond referrals to the employer and offer screening and interview coaching services to the applicants and job orientation to the successful applicants.

More ICT firms (14%) show preference to using job ads than non ICT firms (2%). More exposure of the HEART facilities that support employers recruiting needs may help to increase their use by firms in the ICT sector.

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<sup>5</sup> This is not the same as saying employers that never hired any HEART trained personnel, which was 36% of all employers (refer back to 0 for that discussion).

#### 5.1.4. Recent recruiting activity of HTPs for ICT jobs

Not a lot of hiring of HTPs with ICT training was observed among the potential employers. Where there was any hiring activity (36%), most of it has happened in the last 3 years (see Table 11). Most of this hiring was within the last year, 37%.

**Table 11. % of employers by time since last recruiting HEART trained IT worker**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	less than a year	11	13.1	36.7	36.7
	less than 2 years ago	5	6.0	16.7	53.3
	2 - 3 years ago	6	7.1	20.0	73.3
	3 years and over	8	9.5	26.7	100.0
	Total	30	35.7	100.0	
Missing	never did	51	60.7		
	no response	3	3.6		
Total		84	100.0		

#### 5.1.5. Difficulties with recruiting HTPs

Most employers that tried had no difficulty with hiring HEART graduates with ICT training (93%). But in most cases (59%), employers have never tried and so unable to judge (see Table 12).

**Table 12. Difficulty in the experience to hire HTPs for ICT jobs by % of employers**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not difficult	29	34.5	93.5	93.5
	Difficult	2	2.4	6.5	100.0
	Total	31	36.9	100.0	
Missing	Never tried	50	59.5		
	System	3	3.6		
	Total	53	63.1		
Total		84	100.0		

To the extent that employers had no difficulty doing so, there is some satisfaction with the mechanisms for potential employers to support their needs for ICT workers through HEART. These mechanisms may not involve interface with HEART, such as when they use job ads. However, for most employers that recruit these workers, there is interface with HEART mechanisms.

Some respondents say they 'don't know' if the recruiting was difficult for HTPs with ICT major. This could (among things) reflect either that they were not involved or don't know that the establishment set out to recruit an ICT worker (as against one specifically from HEART).

Where employers report a difficulty, it had to do with

- HEART being too slow to respond
- HEART trainee not at a level to be ready for entry at the firm

These difficulties are important to know, but might be too infrequent to justify realignment of resources by HEART to address these concerns.

## 5.2. *Placement patterns*

The occupational areas HTPs were deployed are shown in the Table 13 below. The missing cases relate to employers that do not currently hire HTPs.

Most employers place workers trained by HEART in data operations (32%). Other ICT-intensive jobs they were placed in were networking (9%), programming (18%), call centre (6%) and computer technician (15%). These occupational areas account for 73% of all the responses about the job area that HEART graduates were placed in. This outcome reflects how the research was designed vis-à-vis actual situation.

**Table 13. Occupational area where HTPs were currently hired by % of employers**

Category label	Count	Pct of Responses	Pct of Cases
o clerical, book keeping	5	13.5	14.7
o maintenance	2	5.4	5.9
o food and beverage & housekeeping	1	2.7	2.9
o data/computer operation	11	29.7	32.4
o customer service	1	2.7	2.9
o network specialist	3	8.1	8.8
o programming	6	16.2	17.6
o call centre	2	5.4	5.9
o computer technician	5	13.5	14.7
o telephone operator	1	2.7	2.9
	-----	-----	-----
Total responses	37	100.0	108.8

50 missing cases; 34 valid cases

Different positions have different intensity of skill (level of training required). Generally, the higher the skill-intensity of jobs, the higher is compensation. Most firms hire HTPs for positions that have a relatively low skill-intensity. For e.g., in the ICT area, more firms hire in data operations than in programming.

**Table 14. % of employers by level of placement of HTPs hired for ICT jobs**

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Apprentice	4	4.8	10.8	10.8
Closely supervised semi skilled worker	8	9.5	21.6	32.4
Supervised skilled worker	18	21.4	48.6	81.1
Autonomous skilled worker	7	8.3	18.9	100.0
Total	37	44.0	100.0	
Missing No response/dont know	17	20.2		
Never employed any	30	35.7		
Total	47	56.0		
Total	84	100.0		

Among current employers, HTPs hired for ICT jobs usually work under supervision as a skilled worker (49%). The fact that employers put them at this level shows confidence in their job readiness after receiving HEART training. Where they are closely supervised as semi skilled workers, 22% of current employers hire HEART graduates at this level.

### **5.3. Levels of Employment of HTP**

#### **5.3.1. Constraints in measuring employment**

In this section, a count is made of the number of HEART graduates generally and in ICT jobs is made. There are couple of constraints that must be recognised in the count based on this data set.

1. There are problems with the sample.
  - a. The design of the sample was based on the assumption that there are known employers of HEART graduates in ICT. In the field work, several of these employers report that they never hired HEART graduates with ICT training. The effect is that the participation of known employers in the sample is less than expected and therefore sampling error estimates should be higher.
  - b. There is likely to be employers of HEART graduates with ICT training that are not known and therefore not included in the sample frame used to make the sample for this study. This limits the ability to extrapolate sample findings to all actual employers of HEART graduates with specialist training in ICT.
  - c. The sample deliberately targets known employers of HTPs. This would over represent employers who hire HTPs compared to those that don't in the sample. To extrapolate these findings to a population of all employers would therefore overstate the situation for employers hiring HTPs.
2. In the field work, it became apparent that employers' record keeping does not take stock of who is a HEART graduate in a way that could readily output that information. To this extent, employers cooperating with researchers were not able to provide adequate information. This constraint increased as the number of workers for the employer increased.

3. Many respondents appear to rely on their memory rather than their records to count HEART graduates on staff and evaluate their performance. The risk of data errors increase the further back they recall and the more the number of workers recall is done for. Many respondents saw the requirement to do the necessary checks as a disincentive to participate in the survey.

### 5.3.2. Number of HEART-trained ICT workers

There were 26,375 workers between the 84 employers in the sample. Three hundred and thirteen (313) of these workers were identified as HEART graduates with specialist ICT training. This finding supports estimate of 10 HEART graduate with ICT training hired for every 1,000 persons working for employers represented by the sample.

Alternatively, 313 workers were found in a sample with 84 employers. This is equivalent to 373 for every 100 employers the sample represents. Based on the sample frame of 104 employers that was compiled for this study, 387 HEART graduates with ICT training are now hired<sup>6</sup>.

**Table 15. Place of training HTPs by # hired in ICT jobs & % of employers**

Place of ICT Training for HEART Recruits	# of HEART ICT workers	# of employers	% of Total N
o CIT	80	4	4.8%
o CISCO	106	8	9.5%
o Kenilworth	10	1	1.2%
o Multiple sources	3	2	2.4%
o Other Academies	2	4	4.8%
o Don't know which Academy	112	6	7.1%
Sub total	<u>313</u>	<u>25</u>	<u>29.8%</u>
o Non ICT workers	37	6	7.1%
Total for all current employers	350	31	36.9%

It was pointed out earlier that CISCO is where most employers indicate their HEART workers were trained. Table 15 shows that, if the place that employers identify is where all their HEART workers came from, then just about a third came from CISCO (106 of 313). CIT followed with 80.

One implication of this finding is that CISCO followed by CIT graduates bears the most responsibility for employers' evaluation of the HEART-trained ICT workers on staff<sup>7</sup>.

<sup>6</sup> This estimate was not straightforward. Employment was estimated for 6 of 25 current employers of HTPs with ICT training. This was done by using the size of the total staff and a coefficient of .042. The coefficient was derived by finding the number of HEART graduates with ICT training as a proportion of staff for all the employers with non missing data.

<sup>7</sup> These evaluations though are suspect. The respondent is not necessarily the line manager for the HEART worker evaluated and the rating was for a group rather than individual when more than 1 HTP does the same job. Again, for any occupational group, there could be workers at different levels. In summary, the worker rather than the employer would have to be the unit of analysis to more properly support the evaluations.

## 5.4. *Workers Hired in Area of Training*

For call centres in particular, more HEART trained ICT workers were hired (54) than were trained for the area (33). In other ICT-intensive jobs including data operations, programming and computer maintenance, HEART trained workers had jobs that matched their training.

Not so for HEART trained workers generally. From the workers found in bookkeeping/clerical operations, the majority worked in an area for which they were not trained. Table 16 shows these findings of the survey for the 18 of 25 employers for which adequate data was reported.

**Table 16. Occupational area by # of HTP hired\* and in area of training**

ICT-intensity	Occupational area	HEART grads now hired	HEART grads now hired in trained area
ICT job area	o data/computer operation	20	20
	o programming	23	23
	o call centre	54	33
	o computer technician	5	5
	o telephone operator	2	2
	Total	104	83
non ICT job Area	o clerical, book keeping	24	8
	o auto mechanic	1	1
	Total	25	9
<b>Total</b>		<b>129</b>	<b>92</b>

\* not adjusted for missing data as per footnote 6

Workers in a field for which no formal training was received reflects both the adaptability of the training received as well as dynamics between demand and supply in the labour market. The robustness of the training given and the resourcefulness of the trainee are important qualities for a worker to adapt their training to a 'new' field.

The symmetry between where you are hired and for what you are trained that showed up well for the ICT jobs indicates the coincidence or relevance between training areas and manpower needs.

Similarly, where the number hired exceeds the number trained for the area, the greater the ratio, the greater indication that the demand exceeds the supply for the job area. Clerical operations, followed by call centre were the areas most showing this excess demand.

## 6. Training Strategies of Employers

### 6.1. *Training strategies used*

Employers were asked to indicate from a list the type of training they facilitate with their workers. Twenty three percent (23%) of the employers say they do not facilitate or sponsor any training (see Table 17 below).

The majority of employers however do support training in one form or the other. The multiple-response frequency table below (where one employer may choose one or more choices) shows how they do.

**Table 17. Types of training employers have used in past 3 years**

	Count	Pct of Responses	Pct of Cases
no training	19	15.1	23.2
in house training	49	38.9	59.8
day release for training	23	18.3	28.0
scholarships for training	12	9.5	14.6
work experience	7	5.6	8.5
on-the-job training	14	11.1	17.1
other training	2	1.6	2.4
	-----	-----	-----
Total responses	126	100.0	153.7

2 missing cases; 82 valid cases

The training that most employers do is in-house for employees (60%). Otherwise, they authorise day releases for their staff (28%). Apprenticeship or on-the-job training also figured prominently among employers (17%).

The employer that does not facilitate any type of training is not following best practices in human resource development. Fewer of these employers were found among companies currently hiring HTPs (10%) compared to those that never hired any (23%) or those that are no longer doing so (39%). Similarly, fewer of them that do not facilitate training were found among employers of HTPs with ICT training (12%) compared to those that never hired this type of workers before (21%).

### 6.2. *Training needs identified*

Most employers (67%) did not have employment needs that they would like to see a training program developed for. The message from them is either that their needs can be satisfied from programs that exist or that they have mechanisms to deal with these needs. In either case they would not feature in HEART's testing for new training programs.

In some sense, this reflects the traditional nature of their operations and product lines. The more established their operations, the more

established are the lines of support at the front end (e.g., training) and back end (e.g., marketing) of business operations.

Those that were interested in having training programs developed (33%) did not show any consensus for any one training area that HEART needs to respond to. The areas that training was needed for that employers showed the most agreement on were customer service and programming. There were 4 and 5 employers respectively from the sample of 84 that recommended these areas.

HEART is already providing training in the area of programming. Employers are likely to know this so that their response is more seen as where emphasis might be placed as against starting new programs. In particular, the areas of programming they specified were

- JAVA
- The skill of structuring a program vis-à-vis just writing it
- Database design

On the question of customer service, the impression is that there is need for improving communications skill, especially in the front office setting where there is greater customer interface.

### **6.3. *Interests in training partnerships with HEART/NTA***

Eighty-eight (88) percent of all the employers were willing to partner with HEART one way or another to develop technical and vocational training in Jamaica. This shows wide scale support for the work of HEART even if employers are not interested in HEART developing programs for training needs in their organisation.

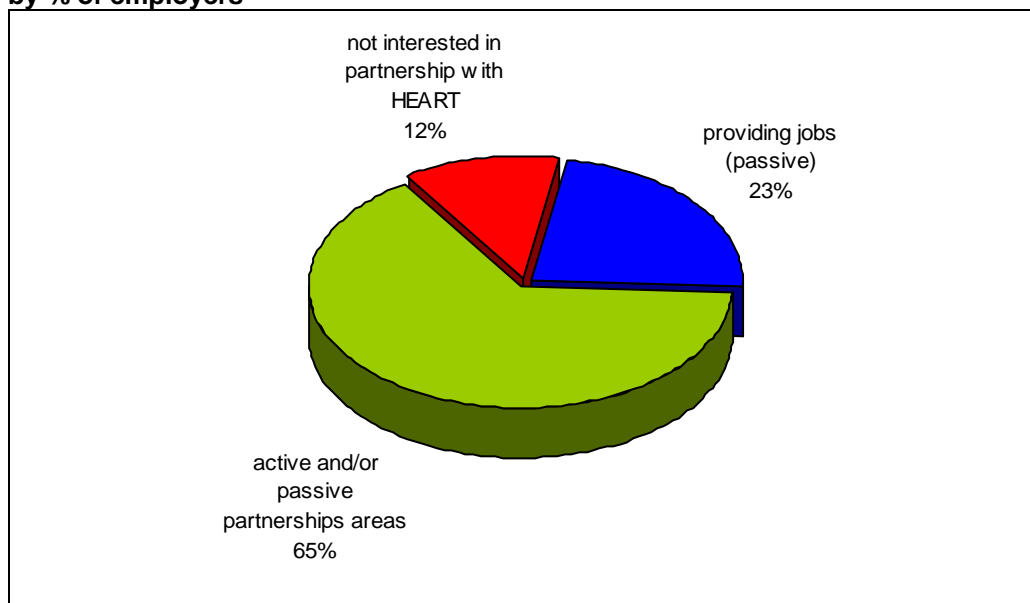
**Table 18. Ways of partnership with HEART identified by % of employers**

Labels	Count	Pct of Responses	Pct of Cases
identify programs for workers	15	12.5	20.3
work experience for trainees	32	26.7	43.2
jobs for HEART grads	37	30.8	50.0
provide on-going information on manpower	20	16.7	27.0
use VTCs to train and certify workers	13	10.8	17.6
other ways identified for partnership	3	2.5	4.1
	-----	-----	-----
Total responses	120	100.0	162.2

10 missing cases; 74 valid cases

From a list provided, employers were asked to say how they would be interested in partnering with HEART. The findings are indicated in see Table 18 above. The most popular (50%) area of partnership was providing job for HEART graduate. Other areas were providing work experience (43%) and on-going information on training needs within the sector (27%).

**Figure 5. Types of partnership with HEART that partners are interested in by % of employers**



Some of these areas of partnership are passive; i.e., does not involve direct interface between the employer and HEART. For e.g., one area was provision of jobs. This area of partnership does not imply that they will seek out HTPs or use recruitment methods specific to supplying HTPs.

The other areas imply active partnership. When the employers were identified by areas of passive and active partnerships, 65% of employers are actively interested in partnering with HEART (see Figure 5), even if they also wish to participate in a passive area.

#### **6.4. *Employers' perceived relevance of HEART training***

When employers do not show interest to hire HTPs for a vacant ICT job, they were asked to indicate their reason from a list. One of these reasons was

*'Workers trained in these skills areas are not required in my type of Business.'*

Employers taking this position would have implied that HEART training is irrelevant, i.e., not useful for their type of business operation. They amount to only six percent (6%) of all employers.

When their range of business activities was examined, HEART training does in fact support their type of business activity. The range includes training services, software development and accounting. In these cases, these employers would be mistaken if they believe that HEART does not train workers for these occupational areas.

These employers were not attached to any particular economic sector or type of business activity. Nor do their businesses have any identifying

characteristic. What was observed though was that they tend to have a higher threshold than others in terms of the minimum schooling required for entry level jobs.

In particular, more of them tended to require schooling at tertiary level (75%) than grade-9 (20%), grade-11 (10%) or post secondary (0%). The differences in minimum schooling accepted are statistically significant (<.10) between employers that are not interest to hiring HEART graduates.

**Table 19. % of employers with no interest to hire HEART grads by reason given & schooling demanded**

Reason for non interest in employing HEART-trained IT personnel	level of schooling required by employer for job entry				Total
	grade 9	grade 11	post secondary, incl. 6th form	tertiary	
- inadequately trained		50.0%			22.7%
- prefer to train on the job	20.0%	10.0%	33.3%		13.6%
- not required in my type of business	20.0%	10.0%		75.0%	22.7%
- just not interested	40.0%	10.0%			13.6%
- other reason	20.0%	20.0%	66.7%	25.0%	27.3%
<b>Total</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>

n=22

This finding reinforces the view that employers who view HEART graduates as irrelevant may be responding to perceptions about the *level* of training HEART provides rather than the *area* of training. This is especially the case when their business activities fall into categories that HEART in fact provides training for.

## 7. Recommendations

### 7.1. *Designing future research*

This research was affected by

- employers not knowing who on their staff was trained by HEART in ICT,
- the sample purporting that employers hire HEART-trained graduates in ICT when they do not hire such persons,
- too few numbers of employers in sample that currently hire staff with HEART training in ICT,
- employers who are averse to the time it would take to research who on their staff is a HEART graduate
- the absence of any capability in the human resource information systems to track staff with HEART training and among other things
- employers not providing (or who believe they are not able to provide) adequate feedback on the performance of HEART graduates on their staff

The most common factor behind these issues is the use of the employer as the unit of analysis or the subject of the research. It is recommended that rather than employers, the subject of this research be the employee with HEART specialist training in ICT.

These guidelines would apply in this approach:

- The graduates would be identified from the listing at selected HEART academies or programmes and a sample of the graduates used for the study.
- The graduates would be contacted for consent to participate in the study and their most recent employer or employers within the last 3 years.
- The interview would be done with the most recent line supervisor or manager for that employee.

In this approach, these benefits apply:

- The employer is interviewed about an employee rather than being asked to do research to determine and provide feedback for who on staff is/are HEART-trained ICT specialist.
- An interview is done for the employee with his/her line supervisor or manager – the person most knowledgeable about the employee.
- The performance rating would be applicable to a graduate – therefore not raising issues of validity for a rating that one employer applies to more than one graduates in the same field but working at different levels or stages in the learning curve.
- There would be more HEART-trained ICT specialists than employers of them, allowing for a larger listing to be sampled than what obtained in this research

- More current or past employers now hiring HTPs would participate in the sample since only those traced to the graduate would be in the sample frame.
- The importance of a human resource information system that tracks HEART graduates on staff becomes irrelevant since the interview is about an employee that is known to the respondent

A research design based on this outline benefits from the experiences of doing this research and should provide more adequate results at the level of where (CIT etc) the HEART graduate was trained and the particular programme of training in which the graduate was enrolled.

## **7.2. *Achieving more of the employment potential***

### **7.2.1. *Converting interest to jobs***

Hiring of HEART graduates in ICT is below potential. The survey did not investigate how many of those bosses that were permissive to hiring a HEART trained ICT specialist actually has a vacancy. However, where the economy is in a full employment state, those now hiring the HEART ICT specialist would be closer to 74% (compared to 23% now) and more than 8 of every 10 bosses that hired and are hiring these workers would continue to do so now.

Making more of the potential for hiring is an outcome that HEART should explore and one action towards that outcome is to improve information flow between interested employers with ICT vacancy (supply) and graduates with specialist ICT training seeking the job (demand). This may mean more targeted career fairs, brokering activity between HEART centres and employers and among other things, direct promotions to potential employers.

### **7.2.2. *More training of call centre workers***

Higher outturns of trained call centre workers are needed based on the excess of workers hired for call centre jobs over the number trained for the area. At the same time, the fact that HEART trained workers with other job competencies could be hired for call centre work indicates the adequacy of the base training provided by HEART. It may be more efficient to build the core training that allows this flexibility between job types by graduates compared to increasing the provision of specialist training (for e.g., call centres).

## **7.3. *Removing supply constraints***

### **7.3.1. *Making training more adequate***

Certain non price factors distorts the supply of jobs for a HEART trained ICT specialist. These include perceptions about inadequate training, inadequate knowledge about the scope and level of ICT and other training by HEART and linked to the above, the schooling requirement for entry level jobs at some employers.

There are some non technical factors used in recruiting that were significantly correlated to employers that raise questions about the adequacy of HEART training. These factors were the oral ability and the mannerism of the applicant. Reviewing the training program to strengthen what is done in building these social skills is recommended and the positive outcomes in this regard should be promoted among employers. This could go some way towards dispelling the notion that there are inadequacies in the HEART graduate and build the tolerance to hiring them.

There is an impression that HEART students were low achievers in the regular school system and that access to training is more emphasised by HEART policy than quality of training. There were 35% of employers in this sample that demand tertiary or post secondary level certification for job entry and it was not insignificant (statistically) that more of them (in percentage) were among employers not interested in hiring HEART graduates compared to those who are. Promoting knowledge of the level 3 and level 4 (NCTVET) training that HEART does through programmes as CISCO and CIT can counter the association between HEART and low-achievers training and so help to build the receptiveness to hiring HEART graduates.

### **7.3.2. Increase outturn of Level 3+ trained workers**

There were 35% of employers that require post grade-11 schooling for job entry. That is equivalent to 1 in every 3 of the employers with the strongest potential to hire HEART trained ICT workers. The Level 1 graduate is not of interest to these employers. More enrolment in Level 2, 3 and 4 and promoting understanding of the diploma and/or degree equivalency of training at these levels should release further supply of jobs to HEART trained ICT specialist and non specialist that are job seekers.

## **7.4. Improvements to training inputs and processes**

### **7.4.1. Performance areas to develop**

Writing skills, initiative for problem solving, computational and measurement skills and use of tools were the areas of performance that employers of HEART graduates had the most problems with. Employers rated these areas below standard. Though oral and the grooming skills of HEART-trained workers were more highly rated, their performance in these areas was still below employers' expectation.

It is recommended that training programs be reviewed within these skill areas with a view to add or build on the curriculum and the testing and measurement systems that support higher achievement of HEART graduates on these elements. A special evaluation involving employers should be designed to measure impact of these changes on graduates' performance.

### **7.4.2. Mixing best practice between CIT and CISCO**

#### Benchmarking training components with CISCO and CIT

Employers recruiting workers from CISCO or CIT represent about 39% of the firms hiring (or that hired) HEART graduates with ICT training. The training in these programs are specialist oriented; however, employers' ratings in some technical (or training) skills was below average overall despite strong representation in the sample of employers recruiting from CISCO and CIT.

Among the areas that employers rate the lowest in performance were measurement skills, computational skills, self initiative for problem solving and use of technical knowledge. This was the case even though employers recruiting from CISCO and CIT rated performance in these areas most times higher than those from other HEART programs.

CISCO and CIT are leading the way for the better performing graduate at the workplace in these areas. However, planners at HEART should consider a review of training components to identify and test actions that could lead to better impressions of performance in these areas among employers of HEART graduates with specialist ICT training. Also, there is need for action in these areas towards incorporating and testing the best practices at CISCO and CIT in the training of ICT specialist at other HEART programmes.

#### Removing variable performance outcomes between CIT and CISCO graduates

There is feedback that suggest variable quality of training between CISCO and CIT. In the review of performance ratings the pattern was either that employers recruiting workers from both places would give high ratings (above the average) or those recruiting through CISCO give higher ratings than those from CIT for the same performance area.

The latter was the case where writing skills were rated. It is in view of this finding that a comparative review of the design and delivery of training is recommended at CIT and CISCO to ensure graduates are exposed to same inputs, resources and processes when they are enrolled in the same course.

### **7.4.3. Special skills for programmers**

Punctuality and writing skills are areas of performance that should be emphasised with persons trained as programmers through HEART. This group compares unfavourably with other ICT-intensive job categories in these performance areas.

## **7.5. Post training interventions**

At least 4 of every 10 employer that is most likely to hire a HEART graduate with specialist ICT training goes through HEART to find a worker. These employers use the HEART placement office or training centre for recruitment.

Because these routes for recruits are controlled by HEART, there is the potential to directly influence recruitment outcomes for these employers. HEART planners

can explore the type of outcomes desired and how manipulation of these recruiting mechanisms leads to achievement of these outcomes. For e.g., a desired outcome might be to increase the ICT specialists placed on flexi-time contracts. Promoting awareness of the flexitime work benefits and doing seminars on contractual issues to employers and HEART graduates using these recruiting resources could support more of the desired outcome.

If 4 in 10 use these recruiting resources managed by HEART, 6 in 10 does not. Hence, HEART should recognise that the average potential employer of a HEART graduate do not interface with HEART if they seek that graduate. These employers may use means that are more exposed to the labour market than a HEART placement office that would broker only for HEART graduates. The HEART graduates compete in a wider pool at the entry point to a firm and HEART has less of a say in managing the interface between graduates and these employers. Placement strategies should therefore recognise these factors in projecting employment and preparing the transition from training to employment

## **7.6. *Reaching more employers that demand training***

### Bringing training in house

More training is done by employers through in house programmes than through day release, scholarships or apprenticeship. These are employers that would not provide demand for employee training that is not onsite-based and establishment (vis-à-vis sector) focused. HEART would be able to penetrate more of the employers' demand for training by designing programs that recognise these preferences.

### New training areas

No wide scale support between 10 or more employers was indicated for any new area of training to be developed by HEART. In this context, HEART resources for new programs might be more effective when applied to enterprise-based vis-à-vis academy-based training.

## 8. Appendices

### Appendix 1. Questionnaire



**2004/05  
EMPLOYERS' SATISFACTION SURVEY**

*(On Graduates of Informational Technology Program)*

**QUESTIONNAIRE**

**PREPARED BY: PLANNING & PROJECT DEVELOPMENT DIVISION**  
**CONTACT NUMBER: 9293410 - 8**

**SECTION 1. OVERVIEW OF ORGANIZATION**

1. Name of firm/organization: \_\_\_\_\_
2. Address of firm/organization: \_\_\_\_\_  
 \_\_\_\_\_ Parish: \_\_\_\_\_ (Parish code) 

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3. Phone no: \_\_\_\_\_ e-mail: \_\_\_\_\_

4. Name of respondent (s) and position held in the organization:

NAME	POSITION

5. Which of these types of structure best describes this organization?  
 Public/Gov't Organization 1 Private Organization 2 Private/Public 3
6. Is the head office for this organization based overseas?  
 Yes 1 No 2 DK 3
7. Number of years in operation? \_\_\_\_\_ years
8. Please indicate the: a). Sector (s) in which the organization operates

SECTORS	CODE	SECTORS	CODE
Agriculture	1	Wholesale/Retail Trade	7
Mining	2	Information & Communication Technology	8
Manufacturing	3	Transport & Storage	9
Electricity, Gas & Water	4	Financing, Insurance, Real Estate & Business Services	10
Construction	5	Community, Social & Personal Services	11
Restaurants & Hotels	6	Activities not Adequately Described	99

(see appendix 1 for clearer description of the sectors and sub-sectors.)  
 b). Primarily, what is the nature of your business?  
 (eg., manufacturing of blocks, trading, call centre services, software development etc.)

	BUSINESS ACTIVITY (IES) DESCRIBED	CODE
1		
2		
3		

9. Please state by gender, number of persons employed in your organization.

GENDER	NUMBER EMPLOYED
Male	
Female	
<b>TOTAL</b>	

**SECTION 2. - RECRUITMENT AND EMPLOYMENT CRITERIA**

10. Below is a list of possible criteria used when employing HEART graduates or other applicants for similar job. On a scale of 1 to 4, with "1" being not at all important and "4" being very important, please indicate how important each criteria is to your organization.  
(Refer to level that a HEART graduate would normally be paced)

Possible Criteria For Employing HEART Graduates And Other Applicants	LEVEL OF IMPORTANCE			
	Not At All Important [ 1 ]	Some What Important [ 2 ]	Important [ 3 ]	Very Important [ 4 ]
1. A minimum number of academic exams passed at the secondary school level (e.g. CXC/CAPE, GCE, RSA, etc.)				
2. Minimum level of post secondary level of education achieved (e.g. certificate, associate degree, diploma, degree, etc.)				
3. Whether applicant has a skill with certification from a recognized examination body (e.g., NCTVET NVQ-J)				
4. Must pass an entrance exam for the job or workplace.				
5. Related work experience (e.g. holiday job etc.)				
6. The individual's performance in employment interview(s)				
7. Ability to make good oral communication				
8. The individual's physical appearance/presentation.				
9. The individual's mannerism/attitude or demeanor.				
10. Recommendations/References from applicant.				
11. Gender preference based on the type of job or occupation				
12. Age of Applicant				
13. The individual's area of residence				
14. Whether applicant has formal training in skills that match job				

11. Others employed in similar jobs as those from HEART institutions are primarily from what level of schooling and achieved what level of education?  
(Tick the appropriate number or response. Show table)

Public/Private Secondary System:	LEVEL OF EDUCATION ACHIEVED					
	Below Grade 9	Grade 9	Grade 10	Grade 11	Grade 12	Grade 13
All –Age /Junior High	11	12				
Secondary High	21	22	23	24	25	26
Technical/Vocational High	31	32	33	34	25	26
Post Secondary School/Institution	Certificate		Associate Degree	Diploma	Degree	
Vocational Training School/Institution (other than HEART)	70		71	72	73	
Community Colleges	80		81	82	83	
Tertiary Institution (eg., U/Tech, UWI, NCU, etc.)	90		91	92	93	
Other Institutions	100		101	102	103	

12. Which of the following applies to your organization? (Please tick appropriate box)

RESPONSE	CODE
Currently employ HEART graduates/beneficiaries	1
Do not currently employ HEART graduates/beneficiaries but have done so in the past	2
Never employed HEART graduates. → Go To Q. 0	3

Over the past 3 years, from which HEART institution(s) did you employ graduates trained in Information Technology?

HEART INSTITUTIONS	CODE
Caribbean Institute of Technology (CIT)	1
CISCO Programmes (Offered at Stony Hill HEART Academy & VTDI)	2
Kenilworth HEART Academy	3
Rockforth VTC	6
Falmouth VTC	7
Other HEART Programmes/ Institutions (Please Specify)	

-2 N/A      -3 N/R      -4 D/K

Please state the information technology skill areas (e.g., programmer, web administrator etc) you recruited HEART graduates for?

SKILL /OCCUPATIONAL AREA	CODE

-2 N/A      -3 N/R      -4 D/K

At which of these levels in your organization are/were the Information Technology HEART graduates usually placed?

	CODE
As an apprentice or on-the-job trainee with very low skill in the area employed	1
As a closely supervised semi-skill worker	2
As a supervised skill worker	3
As an independent or autonomous skilled worker.	4
As a specialized worker and/or supervising others	5
Other (Please specify):	8

-2 N/A      -3 N/R      -4 D/K

When recruiting HEART graduates, from which source or what method does/did your organization usually use? (Please tick the one that applies)

RECRUITMENT METHOD	CODE
HEART Job Placement Offices (Regional Offices, etc)	1
HEART Training Centre/Institutions	2
HEART Work Experience Program (i.e., where HEART trainees were placed in your firm)	3
Job Ads	4
Job Fairs/Career Day Visits	5
Employee's Recommendation	6
Other (Please Specify)	8

-2 N/A      -3 N/R      -4 D/K

How long since you last attempted to recruit an IT trained HEART graduate?

	CODE	
Less than a year	1	
One to less than 2 years	2	
Two to less than 3 years	3	
3 years and over	4	
Never Attempted To Recruit HEART Graduates	5	→ Go To Q. 0

Based on your organization's experience, is it difficult to recruit HEART graduates trained IT?

Yes 1      No 2 → Go to Q. 0      DK/NA/Never tried 3 → Go to Q. 0

If yes, please specify the difficulties experienced by your organization in recruiting these HEART graduates?

DIFFICULTIES	CODE
Usually none are available in the areas requested from HEART	1
HEART is too slow in responding to requests by employers	2
HEART graduates are often inadequately prepared for the job	3
Other Reasons (Specify):	4

If there was a job vacancy in the IT area, would you be interested in recruiting a HEART graduate?

Yes 1      Go to q.0 if no HEART graduate currently employed,      No 2      go to q.0  
 else go to q.0      DK -2

If no, please give reason (s) for not wanting to) employ the HEART graduate (or why you don't know whether or not you would)?

REASONS	CODE
HEART IT graduates are inadequately trained to meet the organization's standards.	1
I have had bad experiences with HEART IT graduates.	2
We prefer to take an on-the-job trainee and train that person.	3
We prefer to employ from other institutions	4
Workers trained In these skills areas are not required in my type of Business.	5
No reason at all. Just not interested	6
Other (Specify):	9

SECTION 3. EMPLOYMENT STATUS AND PERFORMANCE

This Section May Require the Input or Feedback from Current and/or Past Supervisors

For jobs currently held by HEART graduates, please list their occupational area(s), the number employed and number in jobs related to training received?

Occupational Area/Job Currently Held	Number Employed	Number Employed in Jobs Related to Training

N/A -2      N/R -3      DK -4

If information technology trained HEART graduates are employed and they are from different skill areas (e.g., web administration, telemarketing programmer etc.), please state which area of IT trained HEART graduates employed in their related field requires the:

- a) most training when hired? \_\_\_\_\_
- b) least training when hired? \_\_\_\_\_

By using a scale between 1 and 4 with "1" being far below standard, "2" being just below standard, "3" being at standard, and "4" being above standard;

How would you rate the performance of the HEART graduates, within the early period of employment (say, the first year) in the following areas?

(If two or more graduates are rated, make ratings within employee level and report the average rating

Category	Rating
1. Oral Communication Skills	
2. Written Communication Skills	
3. Trainability; ability and willingness to learn	
4. Cooperativeness; ability to work with others	
5. Acceptance of advice and supervision	
6. Self disciplined and self -motivated	
7. Attitude to work (responsible, honest, reliable, etc)	
8. Ability to use own initiative and problem solving skills	
9. Appearance and Grooming	
10. Attendance; reporting for work regularly	
11. Punctuality; reporting for work on time.	

Category	Rating
12. Application of technical skills and knowledge.	
13. Use of tools and equipment	
14. Quality of work; ability to meet quality demands.	
15. Quantity of work – output	
16. Safety habits; minimizing chance of accidents.	
17. Care of equipment, materials and supplies.	
18. Measurement Skills	
19. Computation Skills	

**Survey Of Employers' Satisfaction with ICT Training Financed by HEART Trust/NTA**

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You may need to duplicate this page in order to address all relevant occupational areas stated in q 0

By using a scale between 1 and 3 with "1" being superior, "2" being about the same, and "3" being inferior, how would you rate during the employee's first year on the job the performance of the HEART Information Technology graduates as against other employees in similar jobs in the following categories?

1) Occupational Area: \_\_\_\_\_

(Please read and tick the appropriate response given.)

CATEGORY	SUPERIOR	ABOUT THE SAME	INFERIOR
1. Communication skills	1	2	3
2. Numeric skills	1	2	3
3. Appearance and grooming	1	2	3
4. Overall attitude towards work	1	2	3
5. Interpersonal skills on the job.	1	2	3
6. Job Knowledge and competency; application of skills and knowledge	1	2	3
7. Quality of work - ability to meet quality demands.	1	2	3
8. Quantity of work - output.	1	2	3

N/A -2       N/R -3

2) Occupational Area: \_\_\_\_\_

(Please read and tick the appropriate response given.)

CATEGORY	SUPERIOR	ABOUT THE SAME	INFERIOR
1. Communication skills	1	2	3
2. Numeric skills	1	2	3
3. Appearance and grooming	1	2	3
4. Overall attitude towards work	1	2	3
5. Interpersonal skills on the job.	1	2	3
6. Job Knowledge and competency; application of skills and knowledge	1	2	3
7. Quality of work - ability to meet quality demands.	1	2	3
8. Quantity of work - output.	1	2	3

N/A -2       N/R -3

SECTION 4. EMPLOYERS' KNOWLEDGE & OPINION on HEART Trust/NTA

Please indicate in what way the organization facilitated training over the past three years?

TYPE OF TRAINING FACILITATED	CODE
Never facilitated or sponsored any training → Go to Q. 0	0
In-house/In-plant Training for Employees	1
Day release/Time-off for employees participating in training	2
Scholarships/Grants offered for training	3
Provide work experience for trainees in vocational centres/institutions	4
Participated in On-The-Job Training/Apprenticeship training	5
Other (Specify):	9

N/A -2    
  N/R -3    
  D/K -4

Are there any areas of employment needs in your organization that you would like to see training programmes developed for?

Yes 1    
  No 2    
 → Go to Q. 0    
  N/A -2

What training areas would you like to see HEART develop or offer to meet the needs of your organization?

SKILLS TRAINING NEEDS	CODE
1.	
2.	
3.	
4.	

In which of these ways your organization is willing to work in partnership with HEART for the development of Technical Vocational Training in Jamaica? (Can tick more than one)

	CODE
Development or identification of training programmes for employees	1
Provide Work Experience for Trainees	2
Provide Jobs for HEART graduates	3
Provide on-going information regarding training needs within the sector	4
Utilize the VTC for the training and certification of our employees	5
OTHER (Please specify)	

Do you have any other comments on how to improve the HEART Trust/NTA's training system in order to better meet your organizational needs?

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Thank you for your co-operation.

## Appendix 2. List of all ICT employers and known employers of HEART graduates

1. ACS BPS Jamaica Limited
2. Advanced Digital Services
3. Advanced Integrated Systems
4. Affiliated Computer Systems
5. Air Jamaica
6. AJAS
7. Apple Vacations (Ja) Limited
8. Bay Telemarketing Agency Ltd
9. Blue Cross of Jamaica
10. Cable & Wireless (Ja) Limited
11. Capital Assets Management Company Limited
12. Caribbean Institute of Technology
13. Caribbean Institute of Technology/ Cisco Networking
14. Central Data Processing Inc.
15. Computer Electronics
16. Compuworks Multimedia Ltd
17. Contact Communications
18. Cybervale
19. Data Key Processors (Ja.) Limited
20. Datagraphics Limited
21. DHL
22. Digicel
23. Digital Technology Co. Ltd.
24. Digital Transtec Limited
25. Dolphin Cove
26. E-Services Group International/Sitel Caribbean
27. First Point
28. First Union Financial Co. Ltd.
29. Fujitsu-ICL Caribbean (Ja) Ltd
30. Globe Insurance
31. GM Challenger
32. Gormann Corporation
33. Grace
34. Guardian Life
35. Hertz Car Rental
36. IBM World Trade Corporation
37. Illuminat Ja. Limited
38. Imaginative Computer Service Ltd
39. IMEX Limited
40. INC
41. Indusa Global Services
42. INFO. Exchange
43. Infochannel
44. Infotech & Controls Ltd.
45. Inter-Connect Business & Limited
46. Interface Consultants Limited
47. Interlinc Communications
48. Jamaica Agents Services Ltd./West Corporation
49. Jamaica Broilers
50. Jamaica Constabulary Force (JCF)
51. Jamaica Digiport International
52. Jamaica Exporters's Association
53. Jamaica Online Information Services Ltd
54. Jamaica Reservations Limited
55. Jamaica Teachers' Association (JTA)
56. Jamaica Teachers' Association Credit Union
57. Jamaica Tourist Board (JTB)
58. Jamaica Tours Ltd.
59. KASNET Online Communications Ltd
60. KPMG
61. Lerner Shops
62. Macronet
63. Management Control Systems (MCS)
64. Media Track Inc.
65. Ministry of Education (MOE)
66. Ministry of National Security
67. Mona Informatix Limited
68. N5 Systems Limited
69. National Asset Recovery Services Ltd.
70. National Commercial Bank (NCB)
71. New Generation Solutions Ltd.
72. NTT Verio
73. Oceanic Digital Communications Jamaica
74. Office of the Services Commission
75. Olympic Sport Data Services Ltd
76. Outsourcing Management Inc.
77. PeopleCorp Technology
78. PriceWaterhouseCoopers
79. Ritz-Carlton Hotel
80. Sam Sharpe Teachers' College
81. Satellite Imagine System
82. Sherwood Data Corporation
83. Sitel Caribbean Limited
84. Sitel/Phillips Jamaica
85. Smart Certify Direct
86. Social Development Commission (SDC)
87. Software Technology Consultants
88. Standard Data Limited
89. Students' Loan Bureau (SLB)
90. Sun Computers & Information Services
91. Systems Alliance (Ja) Limited
92. Taxpayer Audit and Assessment Department
93. Tele Services Direct Jamaica Limited
94. Telnet Communications Ltd.
95. Touchpoint Systems Limited
96. University of Technology (UTECH)
97. University of the West Indies
98. Verizon International Teleservices
99. VistaPrint
100. West Corp.
101. Westcom Jamaica Limited
102. Western Computer Lab
103. Western Mirror
104. Xerox/PBS

### Appendix 3. List of employers interviewed

1. Advanced Digital Services Ltd
2. Affiliated Computer Services Jamaica
3. AJAS Ltd
4. Apple Vacations (Ja) Limited
5. Areo International
6. Blue Cross of Jamaica
7. British Caribbean Insurance Company
8. Cable and Wireless Jamaica
9. Cen Consultants Ltd
10. Central Data Processing Incorporated (Ja) Ltd.
11. Chambers, Henry & Partners
12. Citrad Ltd
13. Computech Institute
14. Consolidated Software Ltd
15. Contractor General
16. Cybervale
17. Data Key Processors (Ja.) Limited
18. DGS Jamaica
19. DHL
20. Digicel
21. Digital Technology Co. Ltd.
22. Digital Transtec Limited
23. Dolphin Cove
24. Electoral Office
25. Envision Solution Limited
26. First Point
27. First Union Financial Co. Ltd.
28. Fujitsu-ICL Caribbean (Ja) Ltd
29. Gaurdian Life
30. Globe Insurance
31. GM Challenger
32. Gorman Corporation Limited
33. Grace Kennedy & Co Ltd
34. Hertz Libery Car Rentals
35. Illuminat Ja. Limited
36. Imex Technologies Ltd
37. INC Limited
38. Indusa Global Services
39. Infochannel Limited
40. Inland Revenue
41. Jamaica Agent Services (formerly Teleservices Direct Ja)
42. Jamaica Broilers Ltd
43. Jamaica Constabulary Force (JCF)
44. Jamaica Digiport International
45. Jamaica Exporters Association
46. Jamaica Police Coop
47. Jamaica Printing Service
48. Jamaica Teachers Association
49. Jamaica Teachers Association Credit Union
50. Jamaica Tours Ltd.
51. KPMG
52. Lerner Shops
53. Macronet Computer
54. Management Consultant Ltd
55. Media Track Inc.
56. Microbridge Software Associates Ltd
57. Mines and Geology Division
58. Ministry of Agriculture
59. Ministry of Education (MOE)
60. Mona Informatics Limited
61. N5 Systems Limited
62. Oceanic Digital Communications Jamaica Ltd
63. One Stop Computer Limited
64. Outsourcing Management Inc.
65. PeopleCorp Technology
66. PriceWaterHouseCoopers
67. Productive Business Solutions (formerly Xerox)
68. Professional Alternative Ltd
69. Ritz Carlton Gulf and Spa Resorts
70. Sangster Bookstore
71. Satellite Image Systems
72. Students' Loan Bureau (SLB)
73. Target Software Development
74. Telecommunication & Computer Network Ltd
75. Touchpoint Systems Limited
76. Train IT
77. University of Technology (Utech)
78. University of the West Indies
79. Valerie Levy & Associates
80. Verizon International Teleservices
81. Vista Prints Jamaica Ltd
82. Westcom Jamaica Limited
83. Western Mirror
84. Worldwide Technologies Ltd

### Appendix 4. Interviews with employers not originally sampled

1. Areo International
2. British Caribbean Insurance Company
3. Cen Consultants Ltd
4. Chambers, Henry & Partners
5. Citrad Ltd
6. Computech Institute
7. Consolidated Software Ltd
8. Contractor General
9. DGS Jamaica
10. Digital Transtec Limited
11. Electoral Office
12. Envision Solution Limited
13. Gorman Corporation Limited
14. Inland Revenue
15. Jamaica Broilers Ltd
16. Jamaica Police Coop
17. Jamaica Printing Service
18. Macronet Computer
19. Management Consultant Ltd
20. Microbridge Software Associates Ltd
21. Mines and Geology Division
22. Ministry of Agriculture
23. One Stop Computer Limited
24. Professional Alternative Ltd
25. Sangster Bookstore
26. Satellite Image Systems
27. Target Software Development
28. Telecommunication & Computer Network Ltd
29. Train IT
30. Valerie Levy & Associates
31. Worldwide Technologies Ltd