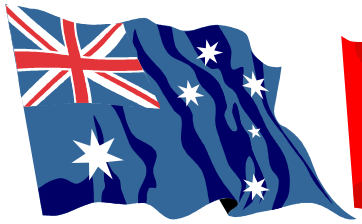
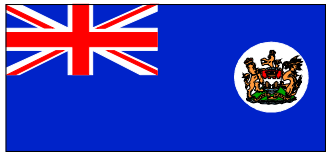


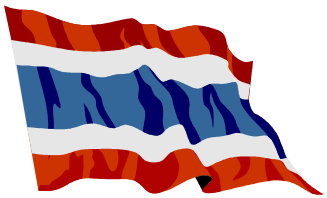
Australia

Canada
(associate)

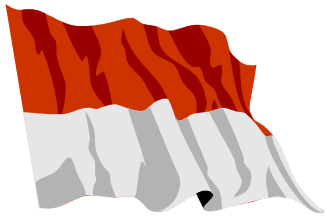


HongKong

India



Thailand

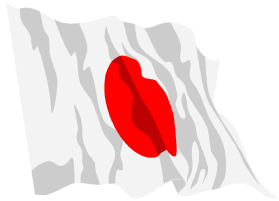


Indonesia

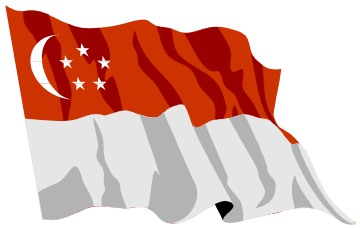
SriLanka

SEARCC

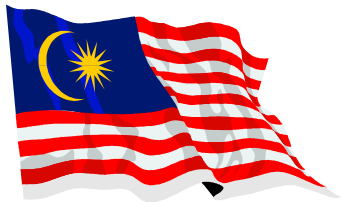
Founded in September, 1976



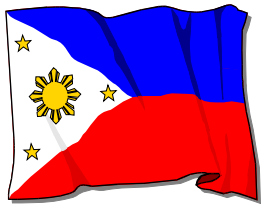
Japan



Singapore

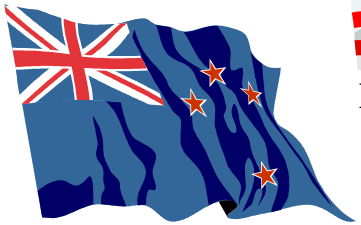


Malaysia



Philippines

Pakistan



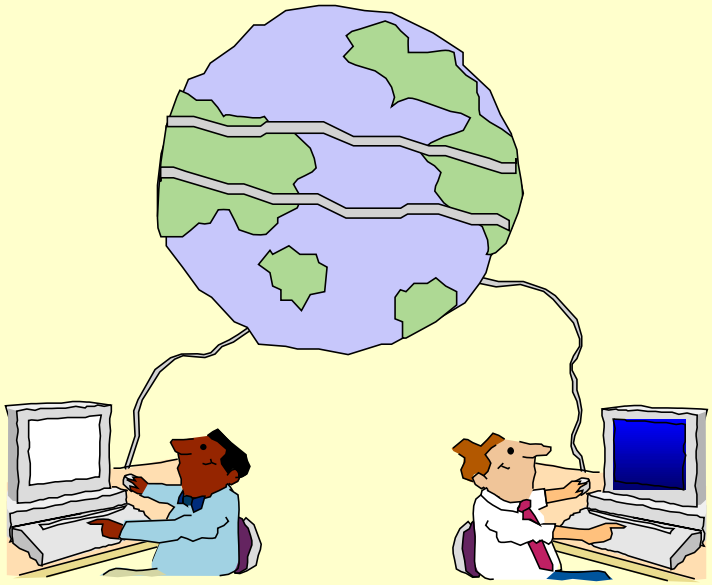
New Zealand

Results of the Regional ICT Manpower and Skills Survey

1999-2000

WHERE ICT REFERS TO…..

The merging of telecommunications, Information, and media technologies.



And ICT Manpower is defined as…

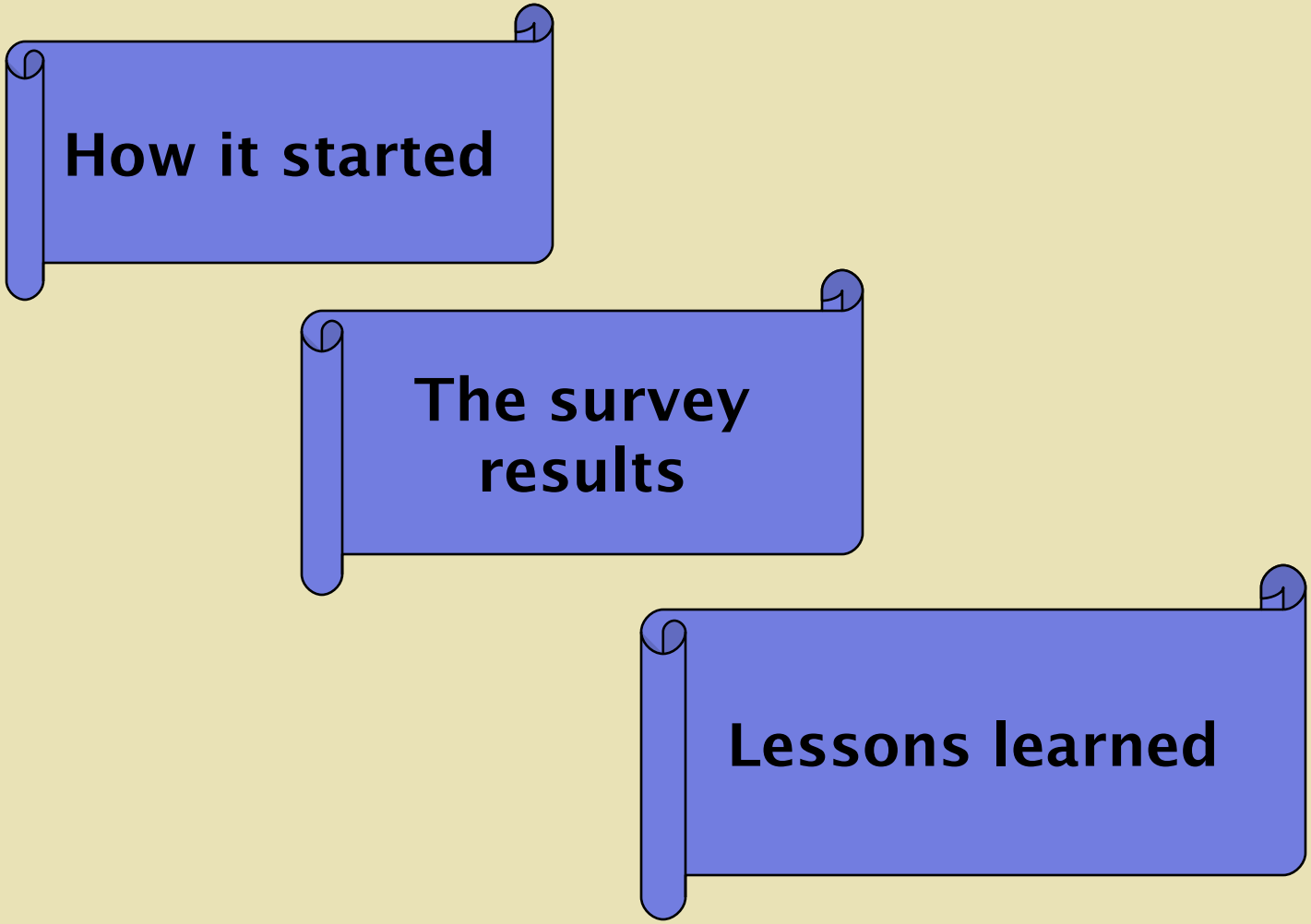
A person engaged primarily in ICT related work for an IT supplier, telecomms vendor, user or government organization; on a full time or part time bases; as permanent or contract staff; working locally or overseas.

The work may include:

- *development, distribution, implementation, support and operation of telecommunication, computer hw/sw and multimedia contents;*
- *provision of information services to end-user*
- *dissemination of IT knowledge and skills*
- *management of the above processes*

Exclusions: Data entry clerks and computer operators
ICT staff under the employment of contractors and subcontractors.

A presentation in three parts



How it started

SEARCC EXCO 1991
In the beautiful island of Bali, Indonesia

SEARCC Vision

Establish common quality standards among the IT professionals of the SEARCC family, considering that IT manpower in this part of the world supplies global IT development needs.

Formation of SRIG-PS (SEARCC Regional Interest Group on Professional Standards

CICC

Center for the International Cooperation on Computerization

- Koji Tanabe
- Yoshiki Mikami
- Masaki Komurasaki

8 years in the making…

Phase 1
1992-1994
Ms. Carol Carreon

Phase 2
1995-1997
Ms. Nita Lal

Phase 3
1998-2000
Ms. Dittas Formoso

What had been accomplished

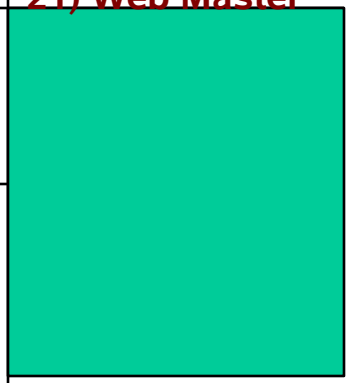
Code of Ethics for the IT Professional

Highest quality of work.....
Professional competence.....
Compliance to existing laws.....
advancement of human Welfare and quality of life ...ethical obligation
beneficial Use of IT .....encourage understanding of IT.....
Counter misrepresentation of facts on IT....

Regional Job Classification Model

Independent/ Managing	3	6	9	12	
Moderately Supervised	2	5	8	11	
Supervised	1	4	7	10	
		Programmer	Systems Analyst	Project Manager	Instructor Non-degree course

13) Datacom Specialist
14) Database Specialist
15) IT Security Specialist
16) QA Specialist
17) Systems Software Sup
18) Distributed Systems
19) Systems Integration
20) Audit specialist
21) Web Master



Technical Specialist

Regional ICT Manpower and Skills Profile (Phase 3)

Participating Countries (9 out of 13 members)

- Japan
- India
- Indonesia
- New Zealand
- Pakistan
- Philippines
- Singapore
- Sri Lanka
- Thailand

3 Objectives of the Survey were met

- Determine the skills profile of the ICT human resource in the region
- Identify areas of skills training and re-training needs
- Determine the careers and work environment concerns of the ICT Professionals in the region

4th Objective (was not met on a regional basis)

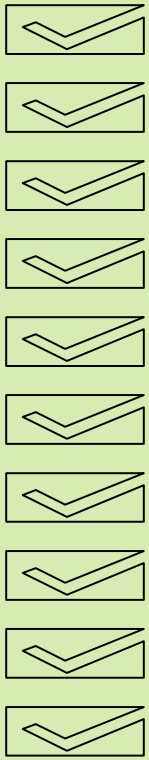
To determine the projected ICT Manpower Requirements for the next two years

- *lack of national statistics to supplement the survey data*
- *shortage of time to gather the relevant data*

Projected ICT Manpower Requirements in Singapore

2 - 93,000 ICT Professionals
3 - 105,000 ICT Professionals
4 - 114,000 ICT Professionals

2 type of questionnaires



ORGANIZATION QUESTIONNAIRE
(21 questions)

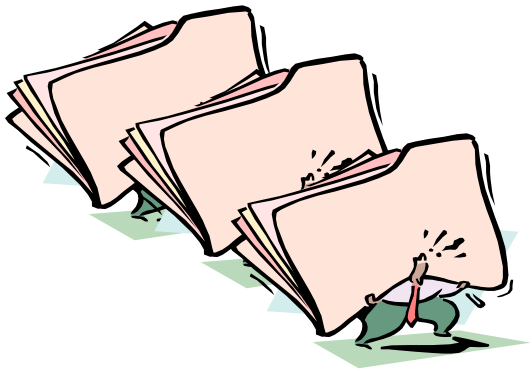
PROFESSIONAL QUESTIONNAIRE
(14 questions)

Adapted from

Infocomm Development Authority of Singapore (formerly National Computer Board)

2,385 organization
Responded
Across 8 countries

9,490 ICT Professionals
Responded
Across 9 countries



Data accuracy and consistency were ensured by the Center for Business Research and Development, National University of Singapore;

Regional Statistical Comparison was carried out by the Central Academy of Information Technology (Japan)

Final report was prepared by the SRIG-PS Core Group led by Mr. Robert Iau, SG of SEARCC

HIGHLIGHTS OF THE SURVEY RESULTS

The survey results in 6 areas...

1. Profile of the Organization Respondents
2. Demographic Profile of the ICT manpower
3. Technical Skills in the Region
4. Non-technical Skills in the Region
5. Training and Certification Related Issues
6. Job Environment Factors

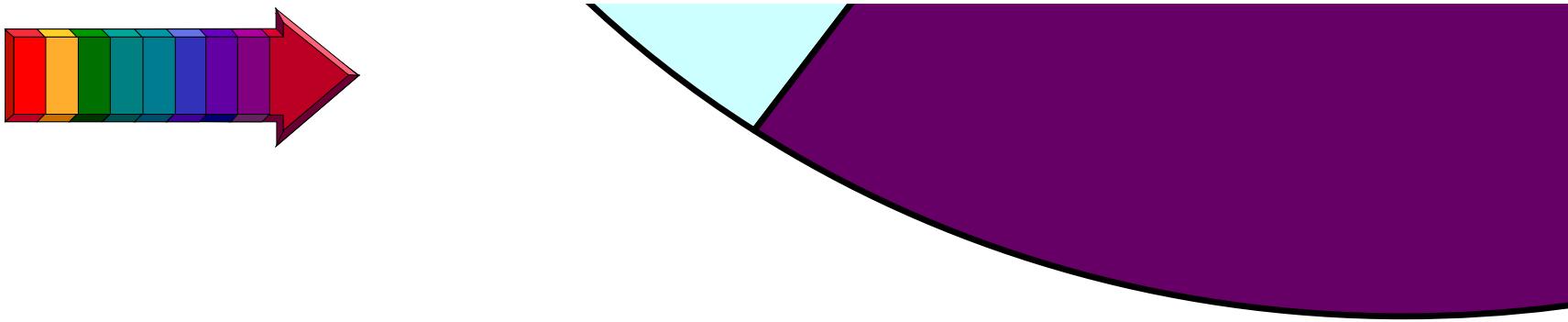
PROFILE OF THE ORGANIZATION RESPONDENTS

ORGANIZATION RESPONDENTS

India	319	13.5%
Indonesia	310	13.0%
Japan	483	20.2%
Pakistan	314	13.2%
Philippines	111	4.7%
Singapore	580	24.3%
Sri Lanka	204	8.5%
Thailand	64	2.7%
TOTAL	2,385	100%

Figure 1
Organization Respondents by Country

n=2,320



India 13.80%

Professional Respondents

India	3,032	32.0%
Indonesia	410	4.3%
Japan	1,219	12.8%
New Zealand	121	1.3%
Pakistan	2,375	25.0%
Philippines	526	5.5%
Singapore	1,021	10.8%
Sri Lanka	530	5.6%
Thailand	256	2.7%
TOTAL	9,490	100%

Figure 2
Professional Respondents by Country

n=9,369

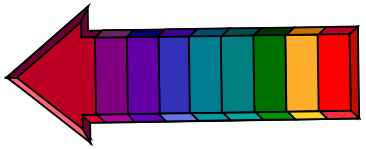


Figure 3
Distribution of Organizations by Sector

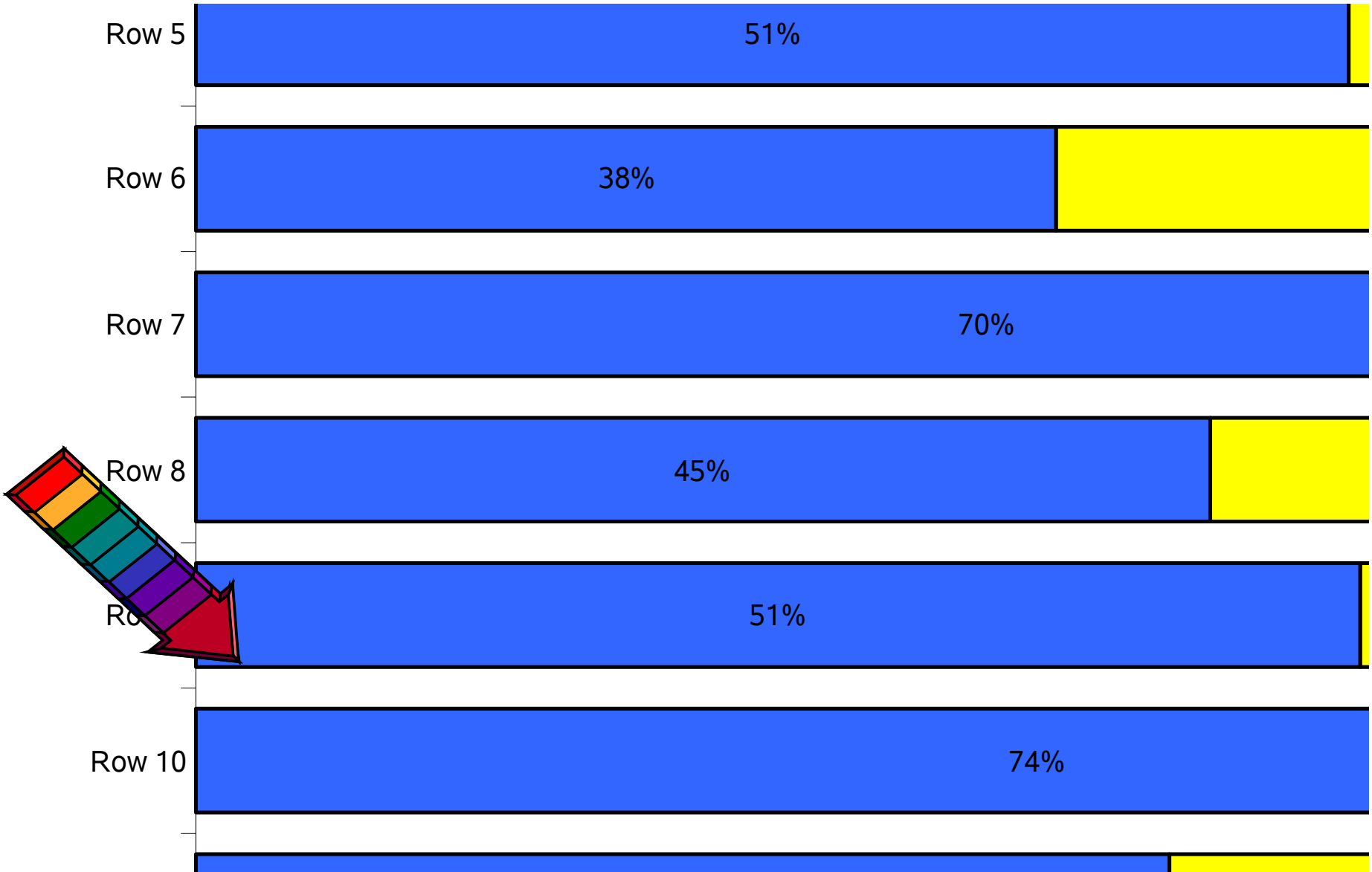
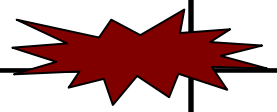
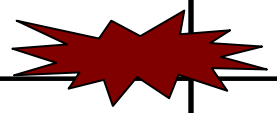


Figure 4
Number of ICT Staff in Organizations

Category / Country	n	Mean	Median	Mode
India	269	309	12	5
Indonesia	251	10	6	4
Japan	452	195	30	5
Pakistan	270	177	10	4
Philippines	90	28	6	3
Singapore	430	35		2
Sri Lanka	185	23	7	2
Total	**1,947**	**125**	**10**	**2**





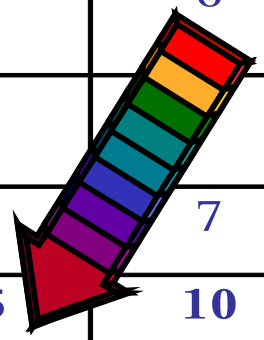
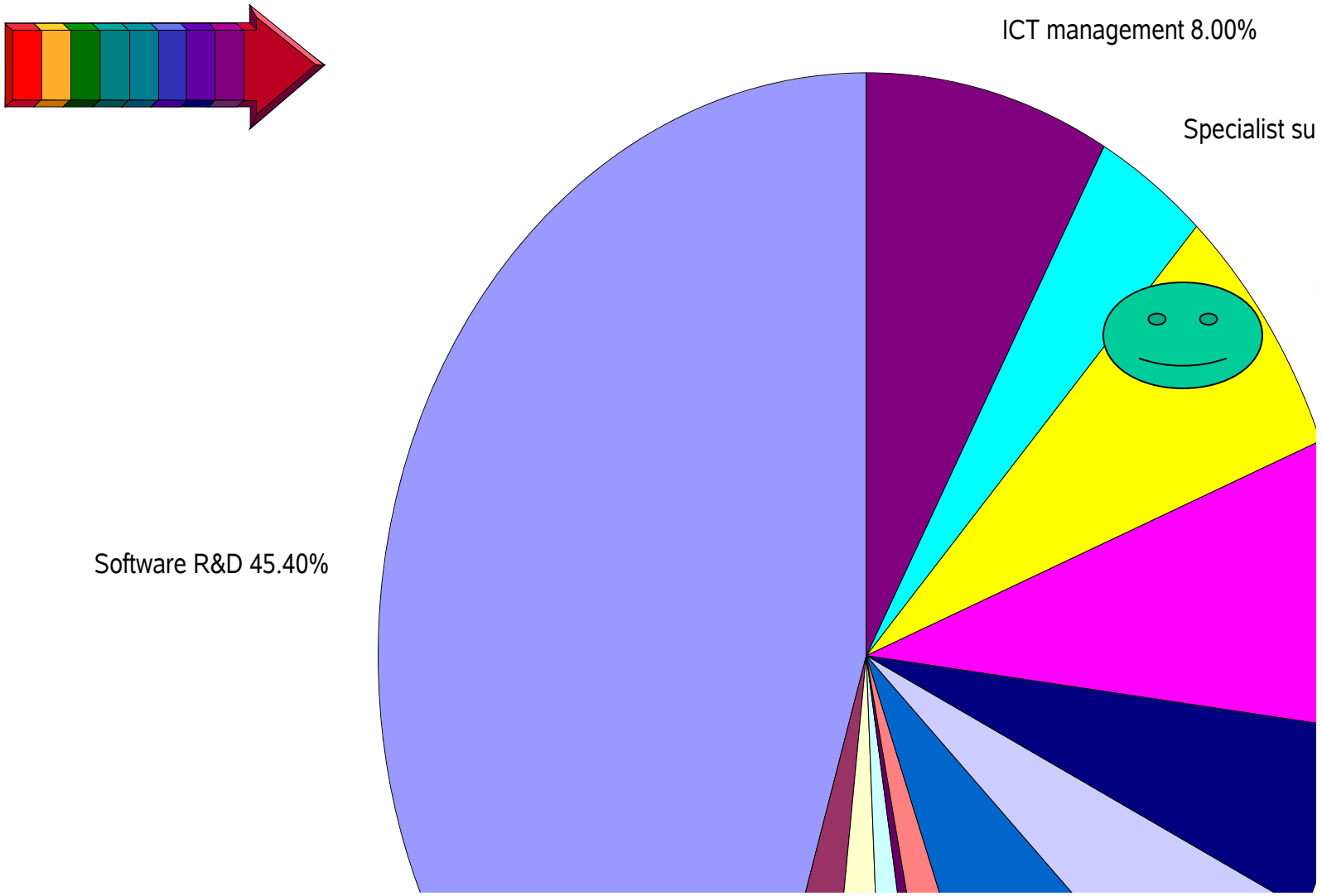


Figure 5
Regional Distribution of Jobs



DEMOGRAPHIC PROFILE OF THE ICT PROFESSIONAL IN THE REGION

Figure 6
Distribution of ICT Professionals by Gender

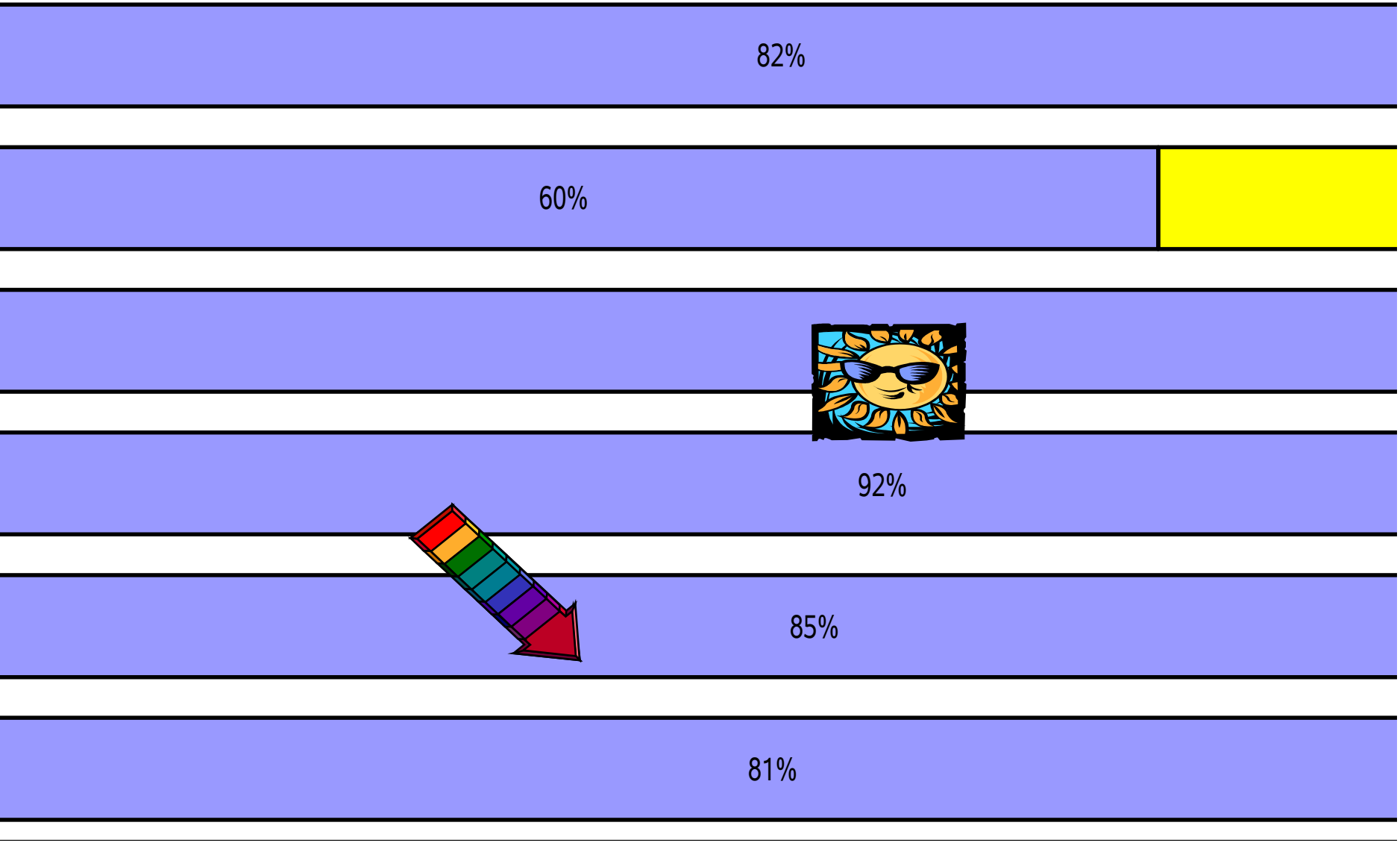


Figure 7
Distribution of ICT Professionals by Age

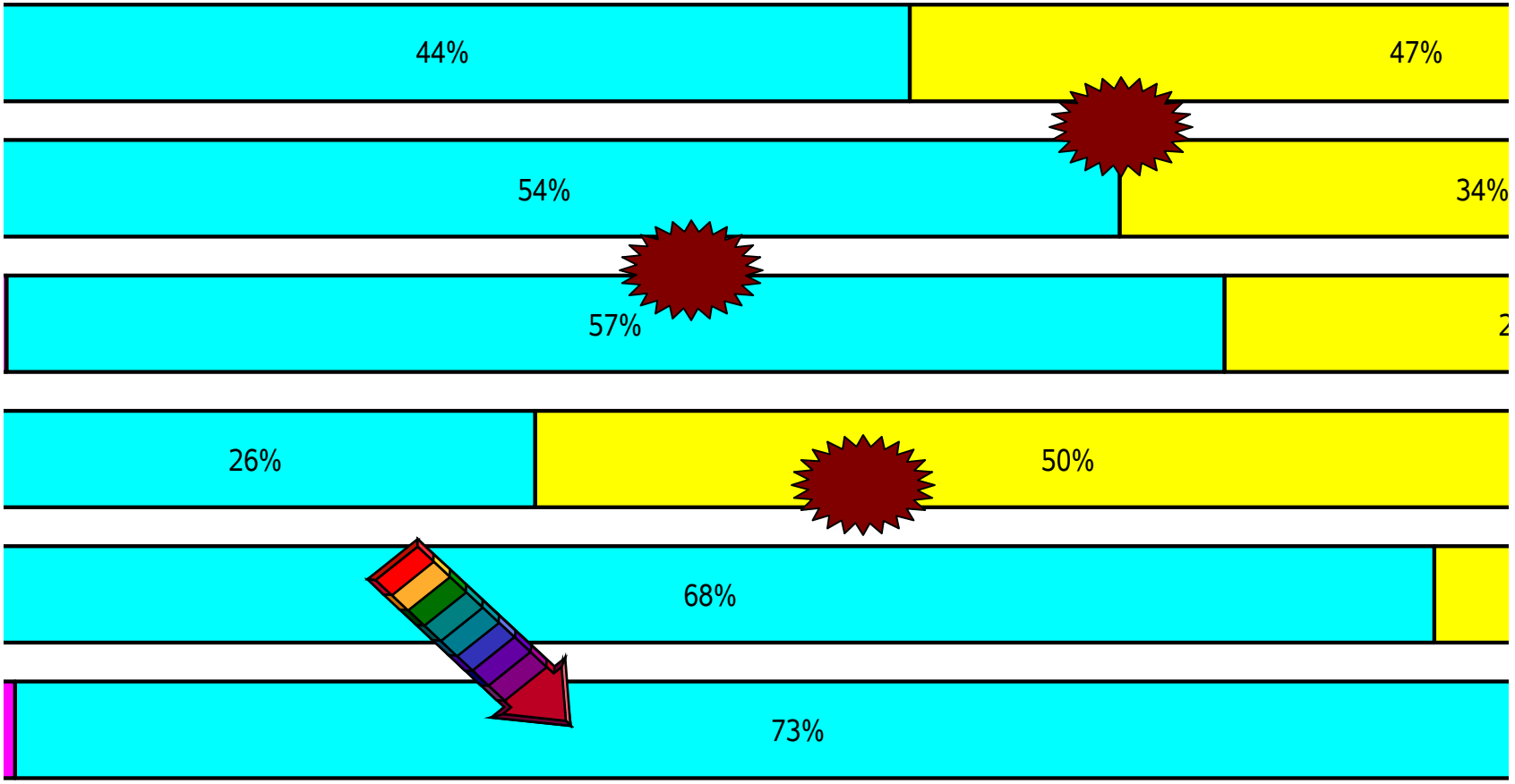


Figure 8
Distribution of ICT Professionals by Gross Annual Remuneration/Compensation

Category / Country	1	2	3	4	5	6	7	8	9	10	11
India (n=2821)	69.8%	11.1%	4.6%	2.6%	2.7%	1.1%	1.0%	0.9%	2.9%	0.4%	0.9%
Indonesia (n=407)	78.3%	7.4%	5.4%	2.7%	1.0%	0.5%	1.5%	0.5%	0.5%	0.7%	1.0%
Japan (1174)	0.0%	0.0%	0.1%	0.0%	2.2%	11.1%	14.8%	26.6%	35.6%	5.5%	3.2%
Pakistan (n=1948)	69.5%	14.4%	6.3%	3.6%	2.6%	0.7%	0.8%	0.5%	0.6%	0.3%	0.2%
Philippines (n=459)	43.6%	18.3%	7.8%	3%	7.2%	4.1%	1.5%	1.1%	1.7%	0.9%	1.3%
Singapore (1021)	3.0%	1.2%	2.4%	11.6%	34.9%	20.3%	10.7%	8.0%	5.9%	0.9%	0.4%
Sri Lanka (460)	72.8%	13.9%	4.7%	2.3%	2.6%	0.9%	0.6%	0.9%	1.3%	0.0%	0.0%
Thailand (245)	36.9%	31.4%	11.8%	6.9%	5.3%	3.3%	2.0%	0.8%	1.2%	0.0%	0.4%
Total (8544)	**50.3%**	**10.1%**	**4.6%**	**4.1%**	**6.7%**	**4.8%**	**4.1%**	**5.2%**	**6.9%**	**1.2%**	**0.9%**

1: <US$5K
2: US$5K-<8K
3: US$8K-<12K
4: US$12K-<17K7
5: US$17K-<26K8
6: US$26K-<35K9
7: US$35K-<44K
8: US$44K-<58K
9: US$58K-<87K
10: US$87K-<100K
11: US$100K-<125K
12: ≥ US$125K

Figure 9
Distribution of ICT Professionals by Education Level

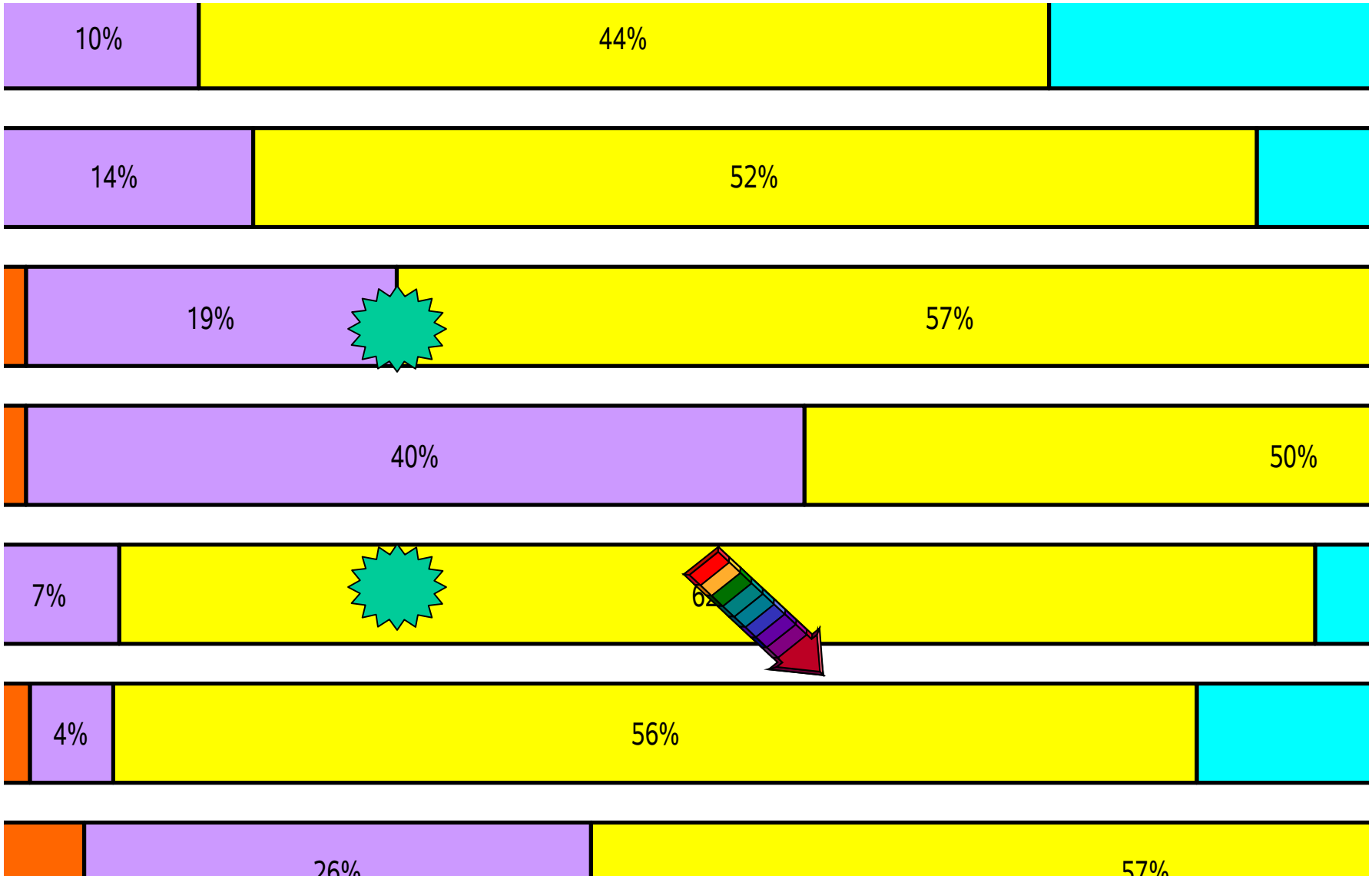


Figure 10
Years of ICT Work-Related Experience

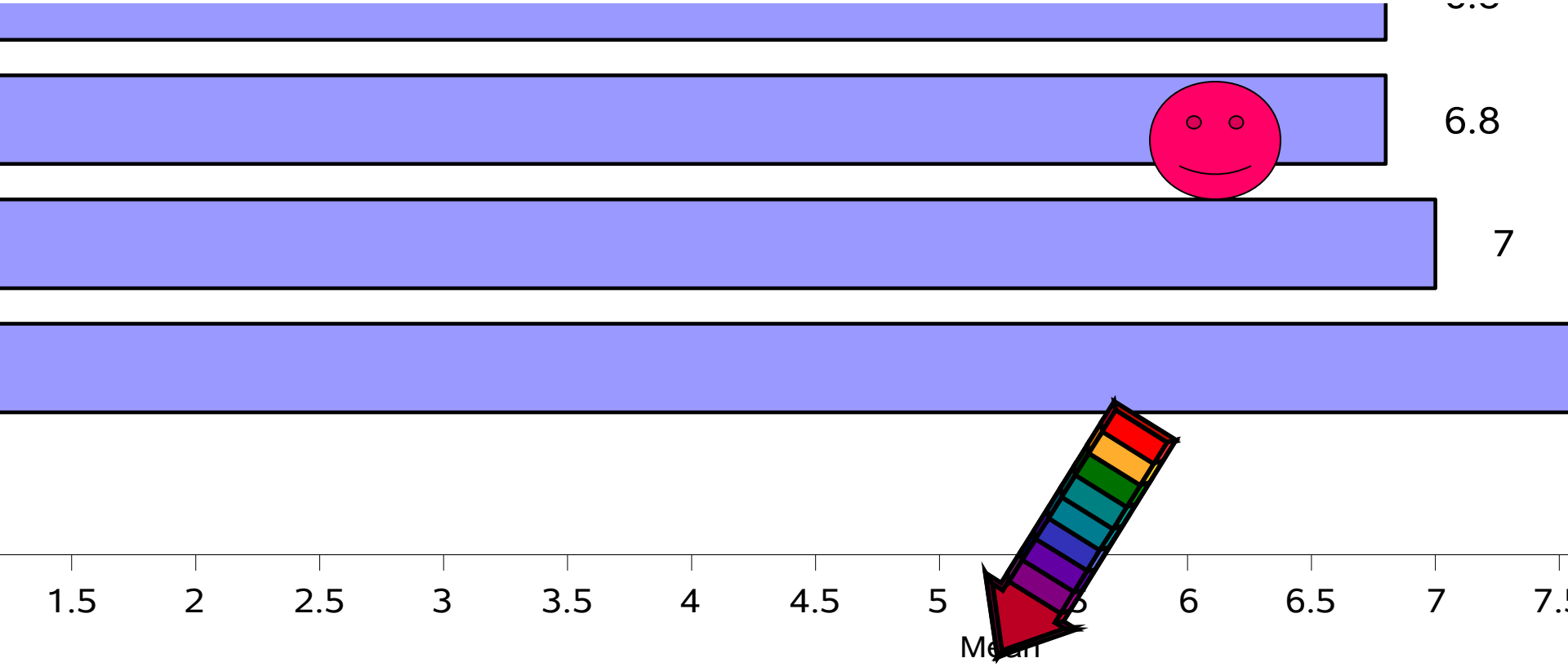
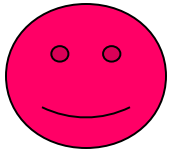
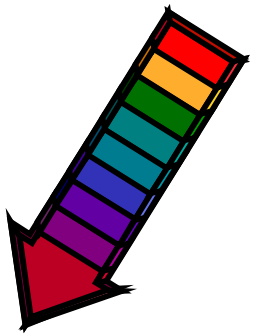


Figure 11
Average Length of Stay Per Organization in ICT Related Work





TECHNICAL SKILLS IN THE REGION

- what skills am I competent on
- what skills would I like to be trained on

- what skills are essential to my organization

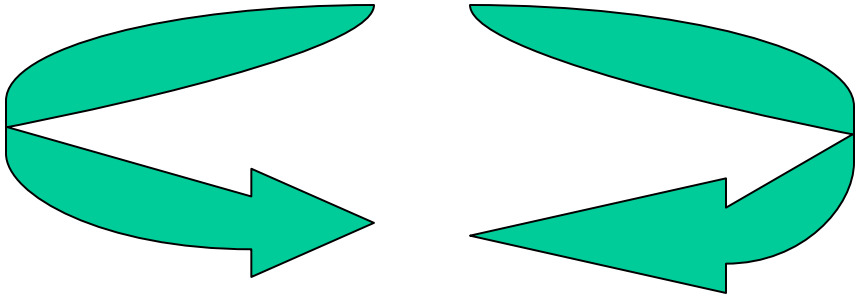


Figure 12
Average Ranking of Top 3 Technical Skill Competency (Professional)

Rank / Country	1st	2nd	3rd
India	Applications/ Syst Development	Database Administration	Project Management
Indonesia	Database Administration	Applications/ Syst Development	NT/Novell Netware
Japan	Applications/ Syst Development	Database Administration	NT/Novell Netware
Pakistan	Applications/ Syst Development	NT/Novell Netware	Project Management
Philippines	DCOM	Applications/ Syst Development	COBRA
Singapore	NT/Novell Netware	Net Protocols/ Topologies	Project Management
Sri Lanka	Applications/ Syst Development	Database Administration	Project Management
Thailand	Applications/ Syst Development	Project Management	Internet Development

Rank 1 refers to the most highly ranked technical skill competency.

Regional Perspective

Skills considered most essential by organizations
Internet Development
E-commerce
Applications/Systems Development
Database Administration
Net Protocols/Topologies

Figure 13
Top 3 Technical Skills Most Frequently Sought (Professionals)

Rank / Country	1st	2nd	3rd
India	Internet Development	JAVA	E-commerce
Indonesia	Internet Development	E-commerce	UNIX/LINUX
Japan	Internet Development	Database Administration	Telecom Systems Engrg
Pakistan	Internet Development	E-commerce	JAVA
Philippines	E-commerce	Internet Development	JAVA
Singapore	E-commerce	Internet Development	Net Protocols/ Topologies
Sri Lanka	Internet Development	E-commerce	JAVA
Thailand	E-commerce	Internet Development	JAVA

Rank 1 refers to the most highly ranked technical skill competency.

Regional Perspective

Figure 14
Top 3 Technical Skills Considered Most Essential by Organizations

Rank / Country	1st	2nd	3rd
India	E-commerce	Internet Development	JAVA
Indonesia	Database Administration	Applications/ Syst Development	Internet Development
Japan	Applications/ Syst Development	Database Administration	Internet Development
Pakistan	Database Administration	E-commerce	Applications/ Syst Development
Philippines	Applications/ Syst Development	Internet Development	Net Protocols/ Topologies
Singapore	Internet Development	E-commerce	Net Protocols/ Topologies
Sri Lanka	E-commerce	Applications/ Syst Development	Database Administration

Regional Perspective

Skills considered most essential by organizations
Internet Development
E-commerce
Applications/Systems Development
Database Administration
Net Protocols/Topologies

Figure 15
Comparison of Top 3 Technical Skills Required by Organizations and Stated/Hope to Have by Professionals

Ranking	Skills considered most essential by organizations	Skills considered most essential by organizations
1	Internet Development	Internet Development
2	E-commerce	E-commerce
3	Applications/Systems Development	Applications/Systems Development
4	Database Administration	Database Administration
5	Net Protocols/Topologies	Net Protocols/Topologies




NON-TECHNICAL SKILLS IN THE REGION

Figure 16
Average Ranking of Top 3 Non-Technical Skill Competency (Professionals)

Rank / Country	1st	2nd	3rd
India	Creative Thinking	Presentation	Interpersonal
Indonesia	Creative Thinking	Presentation	Interpersonal
Japan	Presentation	Interpersonal	Creative Thinking
Pakistan	Creative Thinking	Presentation	Interpersonal
Philippines	Interpersonal	Creative Thinking	Presentation
Singapore	Interpersonal	Presentation	Customer Service
Sri Lanka	Creative Thinking	Interpersonal	Presentation
Thailand	Creative Thinking	Presentation	Interpersonal

REGIONAL PERSPECTIVE

Skills considered most essential by organizations
Marketing
Strategic Planning
Customer Service
Presentation
Interpersonal

Figure 17
Top 3 Non-Technical Skill Most Frequently Sought (Professionals)

Rank / Country	1st	2nd	3rd
India	Presentation	Creative Thinking	Interpersonal
Indonesia	Strategic Planning	Creative Thinking	Presentation
Japan	Presentation	Interpersonal	Strategic Planning
Pakistan	Presentation	Creative Thinking	Interpersonal
Philippines	Strategic Planning	Presentation	Creative Thinking
Singapore	Strategic Planning	Presentation	Interpersonal
Sri Lanka	Presentation	Strategic Planning	Interpersonal
Thailand	Strategic Planning	Creative Thinking	Presentation

Regional Perspective

Figure 18
Top 3 Non-Technical Skills Considered Most Essential by Organizations

Rank / Country	1st	2nd	3rd
India	Marketing/ Sales	Strategic Planning	Creative Thinking
Indonesia	Marketing/ Sales	Customer Service	Presentation
Japan	Change Mgmt/BPR	Presentation	Strategic Planning
Pakistan	Marketing/ Sales	Customer Service	Strategic Planning
Philippines	Strategic Planning	Marketing/ Sales	Customer Service
Singapore	Marketing/ Sales	Customer Service	Interpersonal
Sri Lanka	Marketing/ Sales	Customer Service	Strategic Planning

Regional Perspective

Skills considered most essential by organizations
Marketing
Strategic Planning
Customer Service
Presentation
Interpersonal

Figure 19
Comparison of Top 5 Non-Technical Skills Required by Organizations and Stated/Hope to Have by Professionals

Ranking	Skills considered most essential by organizations	Skills considered most essential by organizations
1	Marketing	Marketing
2	Strategic Planning	Strategic Planning
3	Customer Service	Customer Service
4	Presentation	Presentation
5	Interpersonal	Interpersonal

TRAINING AND CERTIFICATION RELATED ISSUES

Figure 20
Most Common Training Method Done Currently

Yr.	Rank / Country	1st	2nd	3rd	4th
1999	India	OJT	Classroom	CBT	Web
	Indonesia	Classroom	OJT	CBT	Web
	Japan	OJT	Classroom	CBT	Web
	Pakistan	OJT	Classroom	CBT	Web
	Philippines	Classroom	OJT	CBT	Web
	Singapore	Classroom	CBT	Web	-
	Sri Lanka	OJT	Classroom	CBT	Web

Figure 21
Most Preferred Training Method for the Next 2 Years

Yr.	Rank / Country	1st	2nd	3rd	4th
2001	India	OJT	CBT	Web	Classroom
	Indonesia	Classroom	OJT	CBT	Web
	Japan	OJT	Classroom	CBT	Web
	Pakistan	OJT	Classroom	CBT	Web
	Philippines	Classroom	CBT	OJT	Web
	Singapore	Web	CBT	Classroom	-
	Sri Lanka	OJT	Classroom	CBT	Web

Figure 22
Preferred Methods by which Organization Acquire Skills

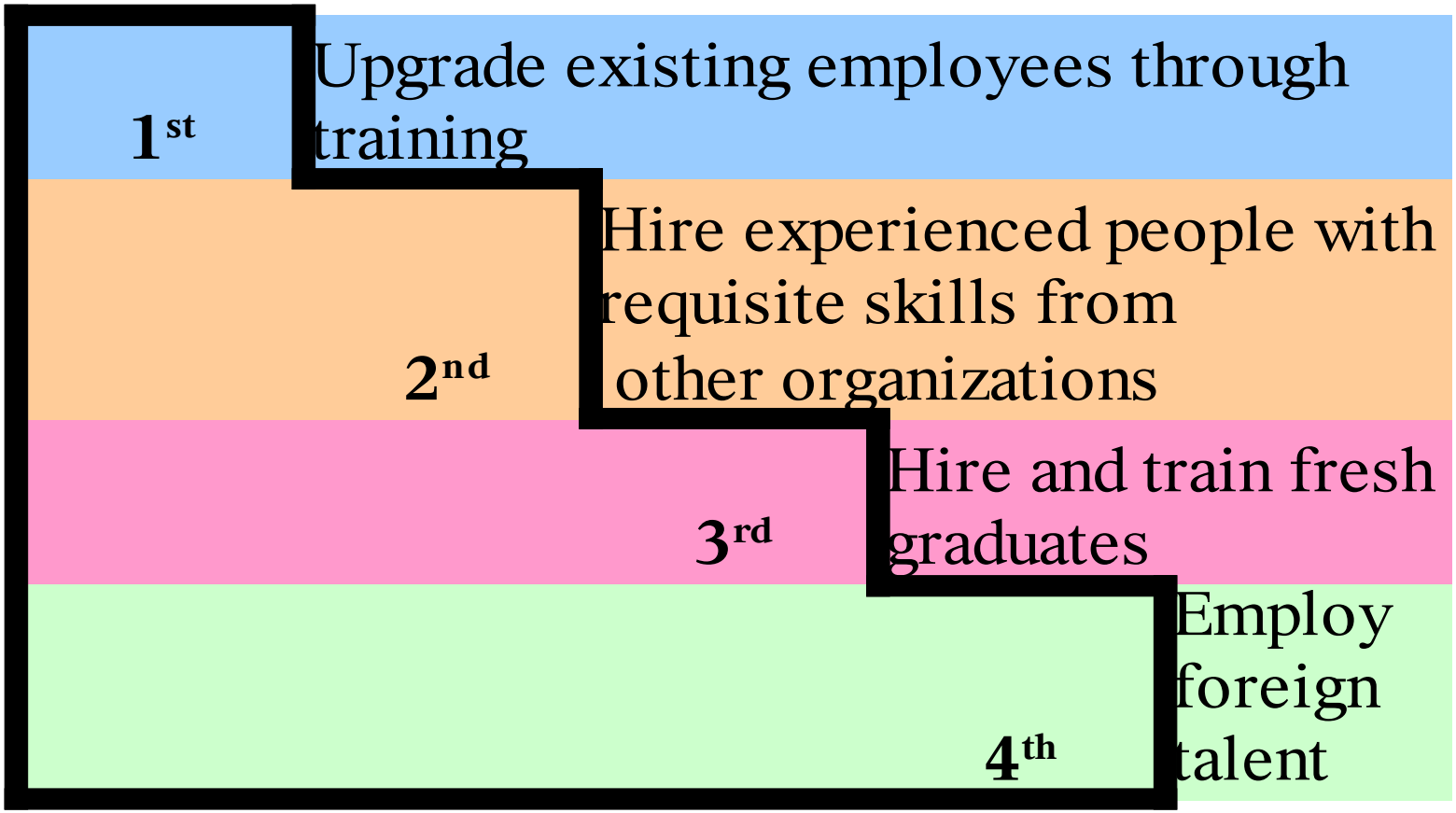
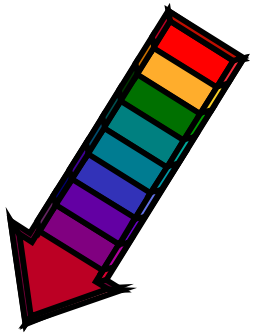
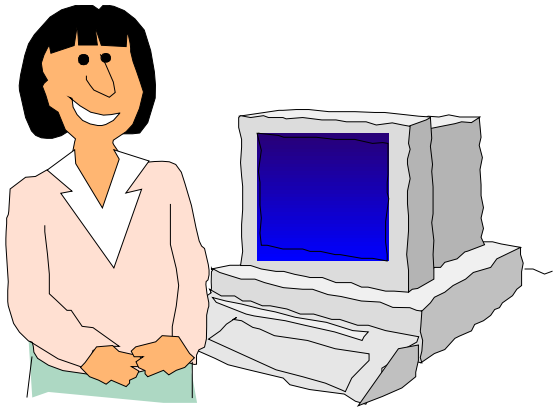
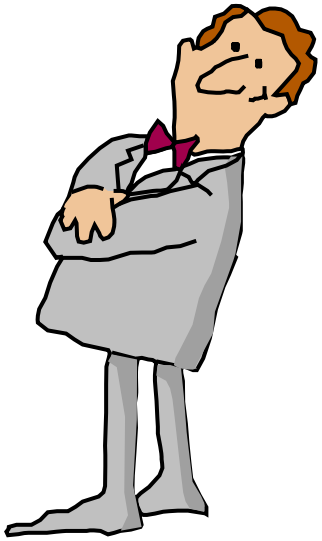


Figure 23
Willingness to Pay Premium for Certified ICT Professionals



Job Environment Factors (Career Issues)





What job environment factors are important to me (from a list of 20)

How satisfied am I with the job factors that are important to me?

MISMATCH???

Figure 24
Top 3 Most Important Job-Environment Factors by Country

Rank / Country	1st	2nd	3rd
India	Image of Company	Job Responsibility	Career Advancement
Indonesia	Salary	Career Advancement	Achievement of Goals/ Targets
Japan	Job Content	Salary	Relationship with Supervisor
Pakistan	Job Responsibility	Achievement of Goals/ Targets	Image of Company
Philippines	Career Advancement	Salary	Achievement of Goals/ Targets
Singapore	Career Advancement	Salary	Recognition from Management
Sri Lanka	Achievement of Goals/ Targets	Job Responsibility	Career Advancement
Thailand	Co-worker Relationships	Achievement of Goals/ Targets	Job Content

Ranking is based on average level of importance of factors.
Rank 1 refers to the top most important factor.

Figure 25
Most Important Job-Environment Factors in the Region

Ranking	Job-related Factors
1	Career advancement
2	Achievement of goals/targets
3	Salary
4	Job Responsibility
5	Job Content

Figure 26
Top 3 Job-Satisfaction Factors by Country

Ra Country	1st	2nd	3rd
India	Co-worker Relationships	Image of Company	Job Responsibility
Indonesia	Co-worker Relationships	Relationship with Supervisor	Achievement of Goals/ Targets
Japan	Co-worker Relationships	Relationship with Supervisor	Job Responsibility
Pakistan	Co-worker Relationships	Image of Company	Relationship with Supervisor
Philippines	Co-worker Relationships	Relationship with Supervisor	Job Responsibility
Singapore	Co-worker Relationships	Relationship with Supervisor	Job Security
Sri Lanka	Relationship with Supervisor	Job Responsibility	Co-worker Relationships
Thailand	Co-worker Relationships	Job Security	Job Responsibility

Ranking is based on average level of satisfaction of factors.

Figure 27
Ranking of Job-Satisfaction Factors in the Region

Ranking	Job-related Factors
1	Co-worker relationships
2	Relationship with supervisor
3	Job responsibility
4	Image of company
5	Job security

Figure 28
Mismatch Between Expectations and Satisfaction in Job-Environment Factors by Country

Rank / Country	1st	2nd	3rd
India	Overseas Travel	Salary	Stock Options
Indonesia	Salary	Career Advancement	Training by Organization
Japan	Salary	Training by Organization	Job Content
Pakistan	Overseas Travel	Training by Organization	Career Advancement
Philippines	Stock Options	Overseas Travel	Career Advancement
Singapore	Career Advancement	Salary	Recognition from Management
Sri Lanka	Overseas Travel	Training by Organization	Career Advancement
Thailand	Salary	Overseas Travel	Career Advancement

Mismatch occurs in all countries

Ranking is based on average absolute difference between rating of importan

Figure 29
Ranking of Importance of Satisfaction Mismatch in the Region

Ranking	Job-related Factors
1	Salary
2	Overseas travel
3	Career advancement
4	Training by organization
5	Stock options

A typical ICT Professional the region is

- most likely to be male, 20-29 years of age
- earns less than U$5,000 a year
- holds a bachelor's degree
- would probably stay in his current job for 3 years
- would be proficient in applications/ systems dev
- would like to learn internet dev skills
- thinks he is a creative thinker
- thinks he needs to improve his presentation skills
- doesn't think marketing skill is important,
  but his boss says otherwise
- must have done a lot of OJT and classroom training
- reluctant in doing Web or CBT based training
- thinks career advancement is important
- delirious with his current relationships (professional)
- thinks he is not paid enough

Lessons learned… the good ones

- Project of such magnitude can be done in the SEARCC family
- Timeliness of the survey – provided inputs to the country's development strategy

… the not so good ones…

- Survey fatigue experienced in some countries, notably New Zealand
- Web based survey didn’t really work; paper and pencil technology did the job
- Material awards were needed to encourage responses

And as Robert Iau aptly wrote….

… the Family spirit of SEARCC came through as it always did. Assignments became deep personal commitments. Numberless were the lighted windows across the immense region that shone through the night, as the deadline drew near. Re-writes and further re-writes flowed in from all over the world, via the net, as those responsible continued to work on the survey report even as they were traveling the world on their own businesses.

And the SEARCC Family delivered!