

YOUTH IN TECHNOLOGY

for Community Development

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بؤسسة تنمية القدرات الشبابية
Youth Leadership
Development Foundation

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Youth Leadership Development Foundation (YLDF)

Vision :

A Yemen in which skilled, well qualified and active young women and men play leadership roles in all domains of society and enable Yemenis to contribute to a better world.



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IDRC ICT4D-ME

Vision :

People in the Middle East building and benefiting from an inclusive knowledge society.

Youth in Technology for Community Development Situation analysis- Sana'a city

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EXECUTIVE SUMMARY

Yemen is facing a significant problem of being far away from the Information and Communication Technology (ICT) revolution in the world, although the country possesses the basic ICT infrastructure to catch up, it still faces problems in effectively utilizing the local ICT capacity and human resources.

ICT stands for information and communication technology and are defined as a “diverse set of technological tools and resources used to communicate, and to create, disseminate, store, and manage information.” This technology includes computers, the Internet, broadcasting technologies (radio and television), and telephony. The use of computers and the Internet is still in its infancy in the developing countries due to limited infrastructure and the attendant high costs of access.

This research is focusing on Yemeni ICT different Institutions who represent the community development partners. These ICT partners are; educational institutions, private companies and foundations, training institutions, final year students, employees and NGOS.

NGOs are playing a key role in the modern community development in Yemen but unfortunately, they still use the traditional ways in dealing with information, and are not very much aware of the modern technological methods which are now considered as key for any success globally. Many NGOs miss opportunities of getting funds and grants because of the lack of the very basic of ICT usage; like for example the inability to use word-processing programs, email, and the Internet. In addition, the unavailability of the necessary data and reports as they are usually kept in paper files and this takes them long time to be professionally summarized, formatted, and safely allocated.

The number of Yemeni university students majored in Information Technology is noticeably increasing. This would definitely play a very important role in the country’s ICT infrastructure development and may increase income as experiences might be transferred and even exported outside the country. India is a successful example of utilizing ICT as a significant source for national income.

Youth in Technology for Community Development focuses on two important sides in the society, youth and NGOs. The project aims to enhance the participation of ICT in development through ICT graduates and NGOs.

The project will be implemented in two phases:

1. Research phase through which:

- A study would be conducted to identify the ICT graduates’ needs, difficulties and more focus and attention shall be on female ICT graduates
- Identify labor market needs and expectations of ICT graduates
- Study and analyze NGOs’ ICT backgrounds and awareness of the importance of ICT to them.

- Investigate how comfortable are different sectors to work with local ICT graduates, especially fresh ones.

2. Project implementation

According to research outcomes and recommendations 60 ICT graduates will be recruited (30 females & 30 males). They will be divided into groups according to their specializations and interests. Actually, the proposed skills to be trained on, although very important and highly required in the market, are not usually offered in the academic programs at Yemeni universities. ICT graduates strongly need to have those skills to successfully start their career in the ICT market. Additionally, the proposed program shall give the trainees the opportunity to practice the skills they will learn as most of ICT skills taught in universities depend heavily on theoretical teaching. This would positively give the trainees the chance to gain real experience from the market. The training will be conducted in the YLDF halls and trainees will be sent to the selected NGOs to work as interns and thus assist in the development of ICT at these NGOs as part of their graduation projects.

Research Objectives:

- Enhance the linkages between ICT market needs and university curricula;
- Identify the factors and difficulties hindering the participation of female ICT graduates in the job market;
- Increase the marketability of Yemeni graduates (particularly females) in ICT;
- Increase the adoption of ICTs by local community organizations in Yemen.

Research Methodology

The targeted area of this research is Sana'a city to be considered as the representative sample of urban areas in Yemen. The stages of this research are as follows:

- Desk review of the available earlier studies and initiatives in ICT.
- Designing the data collection tools, selection of the sample size from the targeted groups of ICT (incl. academics and students and graduates in public and private universities, community colleges, ICT private institutions and companies and employees and NGOS).
- Designing data collection plan and questionnaires involving quantitative and qualitative tools to ensure a successful achievement of the needed data. Data was collected through; visits, interview, questionnaires distribution and focus groups discussions with ICT graduates.
- Conducting the field survey for ICT academics and graduates in the Public university, Community colleges and the Private universities, ICT private institutions and companies and its employees and NGOS.
- Analyzing data to define gap analysis between supply and demand, in which gender perspective is considered

- Writing the report and building the database for ICT skills training program. Proposing a training program that could be a first step in filling the gaps between demand and supply in ICT market in Yemen.

Research Techniques

Five questionnaires were designed to collect needed information; each questionnaire involves quantitative and qualitative tools. Data collection techniques involved interviews, questionnaires, visits and focus groups discussions with the heads of ICT Departments and its staff in universities, colleges and ICT training institutes, final year and graduate students, management leaders and employees in private companies, foundations and NGOs.

Data collection

Data was collected for a period of 40 days within the period of 1/6/2009-10/7/2009 aiming to capture a good representation of the ICT population in Sana'a city. The sample size comprised 19 teachers, Deans and Heads of ICT departments in Universities and colleges, 100 students (53 males and 47 females) and about 39 ICT employees from 19 companies, institutes and NGOs (where 33% are females).

Main findings

Current situation in academic institutes

- ICT majors in Yemen involve a number of programs as follows:
 - ICT majors through 4-5 years programs in the university of Sana'a and graduates are granted BSc in ICT in the Faculty of Engineering, Faculty of Science and the Faculty of Automated Computer and Information System
 - ICT majors in 4 years programs in private universities: Science and technology, Saba, and others where graduates get BSc in ICT.
 - ICT majors in the Community College with two qualifications; a three-year diploma program and a four-year Bachelor program. Graduated go to the labor market as ICT specialists.
- Difficulties face ICT students include insufficient practical applications or practice exacerbated with old and un-updated curriculum in almost all ICT programs in the academic institutions.
- There is not any coordination between labor market and universities to share the process of improving its curricula and practical part, supporting talented and distinguished students or supporting graduation projects and summer training programs.
- Most of the final year's students do not know what is needed in the labor market (job's requirements). They have no information on where to search for vacant jobs and they rely on family, friends support as well as mediation to get jobs.

Fig 1: Difficulties in ICT learning as perceived by students and ICT employees (views of 100 of the final year students, 47females, 53males views of the 30 ICT employees,)

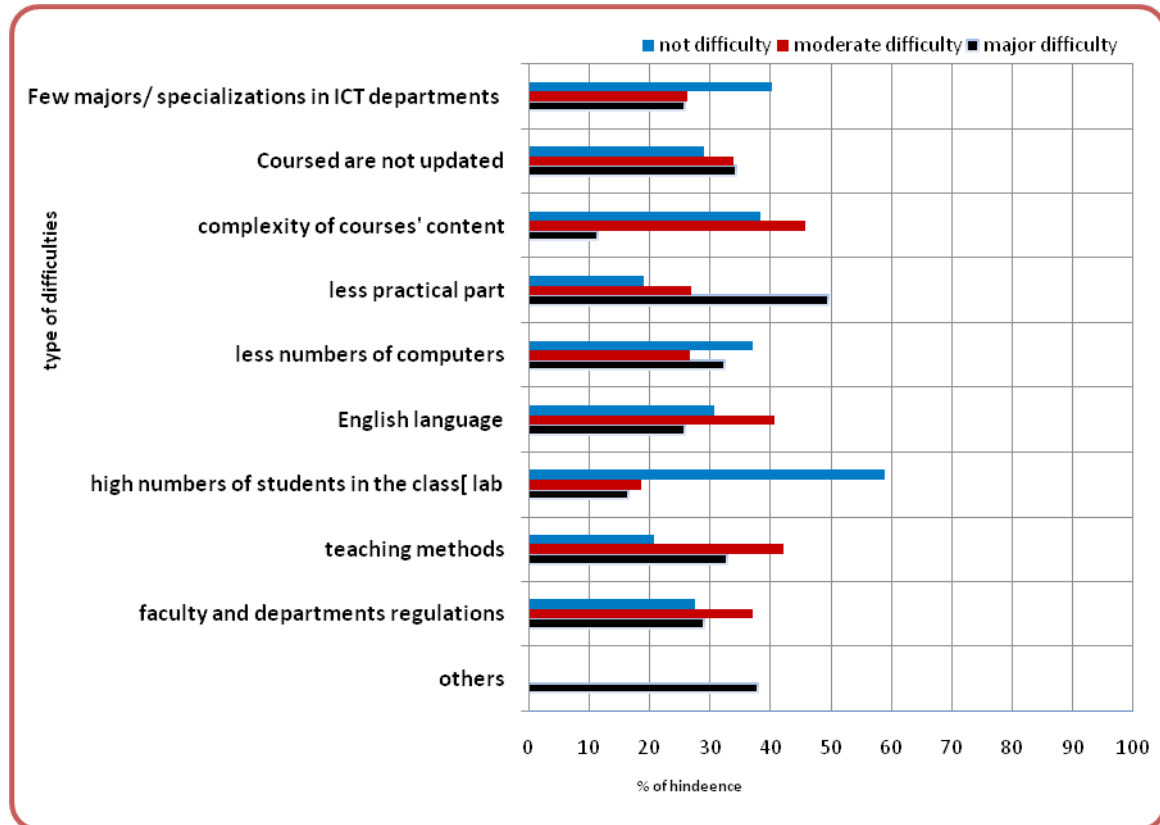
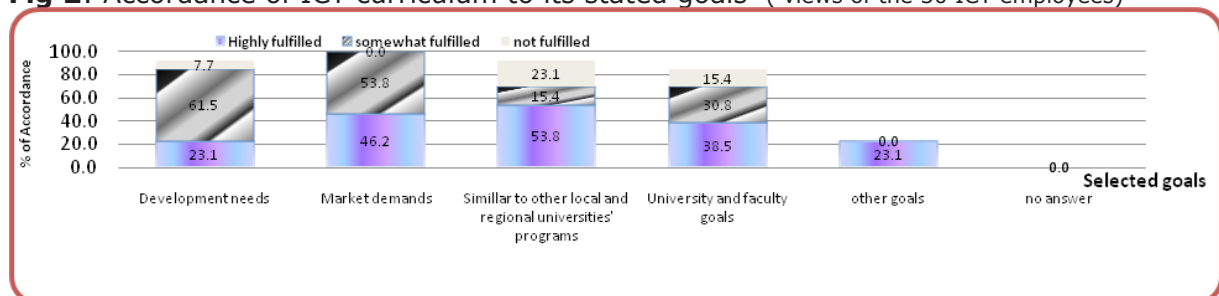


Fig 2: Accordance of ICT curriculum to its stated goals (views of the 30 ICT employees)



ICT labor market

- There is not any coordination between the academic institutions and the Labor market to create accordance between supply and demand of ICT specialists to improve the graduates' employability and capacity to search for jobs. Also, there is no a follow up or trace system to see the extent to which graduates from these institutions opportunities in local market needs. In other word to assess the adequacy and effectiveness of its ICT programs in job creation.
- Government civil service cannot absorb all the graduates but at the same time there are not any solid strategies to activate the role of the private sector to upgrade its absorbing capacity and of fulfilling its demands through educational and training institutions. Human resources and employment offices in both the government sector and the private sector do not provide information for graduates what jobs opportunities and where. Partly this is due the lack of ICT marketing policies and the lack of a labor market information system.
- There are high numbers of graduates from academic institutions but with limited chances of ICT jobs in the labor market every year. There is an information gap between labor market demands and strategic vision of ITC education and training. Private institute are in a better situation than the academic educational institutions as they provide learning and training opportunities that fill part of the gap due to its administration flexibility in terms of developing most update the current gap through training programs and to their ability to market these program to employers and institutions.
- Fresh graduates expressed their essential need to get focused training on specific skills in ICT combined with some none-technical human development skills and English language.
- The supply of highly skilled employees with ICT specific skills remains low relative to demand. Add to this, the job training provided by employers is insufficient or rarely provided. Therefore, private training institutes or NGOs training programs depend on their assessment and prediction (not systematic process) to what is needed in the labor market and then translated it into tailored programs.
- Lack of professionalism in terms of skills such as being knowledgeable of their field, updated, possessing other non-technical skills such as management skills and personal skills was highly indicated by many employers as one of the biggest frustration faced with Yemeni ICT employees.

Table 1: Perception of respondents whether graduates are qualified enough to work in ICT jobs

Category	Type of ICT Co.	% companies deal with advance ICT services (hardware & software)	% companies deal with normal ICT services (hardware & software)	% companies deal with basic computer skills (sales, secretary, MS office,..)
	Qualification scale			
views of the 7 colleges- 13 academic lecturer	well qualified	38.5	61.5	76.9
	qualified to a certain extent	53.8	30.8	23.1
	not qualified	7.7	7.7	0.0
views of 100 of the final year students(47females, 53males)	well qualified	18.0	34.0	44.0
	qualified to a certain extent	43.0	34.0	19.0
	not qualified	67.0	16.0	13.0
views of the 19 Foundation-institute- company, 30 ICT employees: 39 questionnaires	well qualified	0.0	9.1	45.5
	qualified to a certain extent	18.2	54.5	36.4
	not qualified	63.6	18.2	0.0

Table 2: Places for graduates to get a job in the labor markets

Job place	% Governmental sectors- IT department	% private sectors- IT department	% private sectors- computer sales department	% private sectors- oil companies	% private sectors- factories
Perception of academic institutions lecturers views of the 7 colleges- 13 academic lecturer	61.5	84.6	71.9	15.32	23.08
Perception of students views of 100 of the final year students(47females, 53males)	46	59	16	12	1

Table 3: Main sources for graduates to get an information for any vacancy job in the labor markets

Source	Newspapers magazines	Internet	family, friends	Civil services ministry	self visit, submit CV at related IT companies- human resources unit	jobs search private companies	no information
views of the 7 colleges- 13 academic lecturer	61.5%	69.2%	30.8%	0.0	61.5	15.4	0.0
views of 100 of the final year students (47females, 53males	38%	27%	29%	9%	26%	10%	4%
views of the 30 ICT employees	6.7%	13.3%	50%	20%	6.7	0.0	0.0

•There were more than one answer at each category

Table 4: Fresh graduates and jobs in Private sectors (views of the19 Foundation- institute-company)

Challenges faced when employing ICT graduates	Actions taken by employers
Weak capacity (low of practical experience In ICT skills, English language, low management and general communication skills, low of logical systems analysis, no idea about company systems)	Intensive and regular training programs developed
No coordination between universities and colleges to absorb ICT graduates	Little coordination. Serious coordination with universities and colleges to get the genius students need to be put in place
Selection criterion is too high compared to the output of ICT education. Criterion include qualifications and grade, experience, language, passing oral and practical exam, personal skills (e.g. reporting, self improvement, trying to find solutions, work in a team, look), loyalty to the employer	Applying the criterion of selection which is seen to be comprehensive enough to cover other skills beside qualification.
Few annual vacant jobs advertised depending on work expansion and market opportunities	Seeking opportunities to expand and create more vacant jobs

Gender

- ICT female employees were found to prefer isolated work environment in offices as they do not prefer to work in the field or in workshops (maintenance work or program equipments installation, etc. Such places are gender unfriendly (mixed environment). Female ICT employees prefer to work on ordinary office work that requires use of basic Microsoft skills or programming, due to the way women are treated in such a patriarchal community. Even in the college where co-education is offered, female students suffer of being marginalized and given less attention by lecturers and faculties.

Civil society and ICT in Yemen

- NGOs utilization of ICT skills depends on the nature and characteristics of its management leadership and to what extent do they believe in ICT benefits. Also, it is negatively affected by the poor ICT infrastructure in most of the NGOs, high cost of ICT services in Yemen, availability of low-cost ICT cadre with good English language skills.

ICT in Yemen

- The number of ICT users in Yemen, especially in the business sector, is Low. For many people ICT services as unnecessary tool due to high illiteracy rate, low awareness level of modern technology and its applications, poverty level, poor and insufficient ICT infrastructure.
- Many governmental efforts in ICT field are due to the pressure from external projects or donors, but these projects or donors (as well as the government) do not efficiently support solid focused and intensive training for ICT staff or towards improving the efficiency of ICT infrastructure.
- Many employers (especially those engaged in traditional business and those of small entrepreneurs) do not trust new technology because they are unaware how new technologies can optimize their work's efficiency. One of the other reasons is related to the high cost of ICT service in Yemen.

Table 5: Difficulties of using ICT in the Yemeni community

Difficulty of using ICT	illiteracy, lack of awareness	poverty	Insufficiency of equipment and infrastructure	Decision makers do not trust new technology vs. traditional methods	unavailability of qualified ITC staff	others	no answer
Category							
views of the 7 colleges- 13 academic lecturer	30.8	7.7	46.2	53.85	61.54	46.15	7.692
views of 100 of the final year students (47females, 53males)	49	23	47	13	40	12	15
views of the 19 Foundation- institute- company, 30 ICT employees: 39 questionnaires	66.2	12.7	49.4	22.86	37.71	22.31	19.0

- There were more than one answer at each college

Table 6. Importance of ICT in Yemen as perceived by teacher, students and ICT employees

Importance of ICT	Very important	Somewhat important	Not important
Easy and speedy access/ communication	82.2	14.8	0.3
Getting information and data	81.3	11.2	4.4
Enhancing community development	77.1	15.3	4.6
E- government	75.4	17.8	5.4
E- learning	61.4	29.4	6.2
Archiving	55.3	33.6	7.5
E-commerce & online business	54.8	30.8	11.0
Electronic health	39.2	44.5	14.9
other	20.8	0.0	0.0

- views of views of the 7 colleges- 13 academic lecturer ,100 of the final year students : 47females, 53males, views of the19 Foundation- institute- company, 30ICT employees: 39 questionnaires

Skill Gaps Analysis

A skill gap is the gap between the needed skills and the existing capabilities of the workforce in an environment (labor market, an institutions, etc). The causes of skill gaps are varied and some of the main ones is the changing trends of in the world of work and the labor market such as globalization, commercialization, flexi-hour, outsourcing, power of revolutionary communication, etc. Such dynamic changes require multi-skilled people who could adapt and quickly learn and update themselves. In the coming section, we will provide a brief gap analysis for the ICT situation in Yemen based on the findings of this research.

Current situation

- Existing academic institutes provide graduates with broad and basic knowledge in ICT fields with little capacity to apply due to the small portion f practice provided in the curriculum
- Private institutes and few development projects (funded projects through some NGOs) provide a kind of remedial training programs (short and long ones) focusing on the practice side and granting certificates that are somewhat creditable. These training programs claim to be based on the needs of the local market.
- Urban based NGOs, technical and vocational training institutes (governmental) and private institutes provide large number of courses on basic skill computer use (typing, Microsoft package, internet surfing, etc). These curses mainly target youth and women to get them acquainted with computer applications. These courses are free or partially free of charge where trainees pay symbolic fees. However, its accessibility is for urban residents.

Existing Gaps

Overall, the main gap is the high rate of unemployment in the Yemeni labor market exacerbated by poor supply of ICT skilled people and weak demands for ICT specialists. This fact is the real challenge facing any investment efforts in ICT training and education. Below is a list of the main concluded from the research respondents:

- Shortage of availability of medium to highly skilled ICT personnel in the Yemeni market
- Lack of focused ICT specializations in many ICT majors
- Old and un-updated courses in the academic sphere that grants a first degree qualifications is a common problem
- Weak capacity of fresh graduates to compete in a competitive market
- The need to unify and standardize the different certificates granted for different training programs provided by private institutes and NGOs.

Bridging the Gaps

What is needed to be provided in terms of extra training to bridge the skill gaps, most of

the respondents asserted on the necessity to combine ICT specialized skills that focus on real application and soft skills component that include management, leadership skills, report writing, etc.

- ICT qualification or certificates in the ICT fields
- ICT basics
- Soft skills/Personal and self development skills
- Management skills

Accordingly, a proposal of training program for the fifty fresh ICT graduates That YLDF will target in the project can be proposed in two phases as follows:

Phase I: ICT training for fresh ICT graduates ,

Phase II: Orientation component targeting selected number of NGOs)

Phase II that will target NGOs could take the following steps:

- Trainees in phase I to work as volunteers for an internship period in some selected youth and women's NGOs to apply their learnt skills and at the sometime to develop ICT component in these NGOs
- Orientation workshops on use, effectiveness of ICT in NGOs can be introduced in the form of interactive workshops with selected NGOs. Tools, proposals and experiences from other countries can be introduced to broaden thinking scope of these NGOs.
- Joint needs assessment can be conducted, with the support of YLDF ICT expert and trainees, to develop ICT component in these NGOs and to enable these NGOs of effectively manage it.
- Lessons learnt and successful stories can be shared in a workshop with a wider spectrum of NGOs to scale up the project activities.

Table 7 : ICT skills needed for fresh graduates in order to be trained to improve the opportunities to get jobs in the labor market

Field	Skills needed	% of the training content
ICT qualification or certificates in the ICT fields	License of computer driving: Cisco certificate, Microsoft certificate	60
	Networks	
	security	
	Web design and graphics	
	Programming language	
	Data Base	
	Servers management	
	Information systems (Yemen soft)	
	Logic control and analysis	
ICT basics	computer installation	10
	computer maintenance	
	MS office package	
	use internet and e mail	
Soft skills/Personal and self development skills	English language	20
	CV writing	
	reports writing	
	reports presentation	
	self learning and development	
	marketing	
	time management	
Management skills	project planning and management	10
	communication skills	
	work in a team	
	create alternatives of solutions to the problems	

Conclusions

- Graduates exist in the market but not necessary in the specialized ITC jobs. Their workability is limited as many of them engaged in jobs that require basic computer skills such as word processing, designing simple database, Photoshop, etc. Intensive and specialized training programs with creditable and recognized certificates are needed to fill the gaps. For such programs to be accessible and cost effective, they should be supported with strategic marketing mechanisms and coordination among different actors in the IT world to ensure accessibility of trainees to the market.
- Many employers emphasized the importance of possessing soft skills such as communication skills, ability to work in teams, and ability to manage others in addition to specialized ICT skills. Such skills can be provided in a separate package in the form of summer training or can be acquired through on- the- job training. This needs to be taken as the responsibility of academic institutions and employers. However, such suggestion might be abolished due the current financial crises.
- Women's accessibility to ICT services is quite limited as internet for example is only available in private internet cafes (in main cities only) but which are also perceived by many families to be socially unacceptable environment for their girls. ICT Training programs for women are in more general type. This affects the level of experience, confidence, skills and opportunities for women to get jobs in Yemeni ICT market.
- Cost of ICT services, poor infrastructure, unawareness of how to utilize ICT in business, and low investment in training ICT personnel and services provision are some of the barriers to the development of ICT in Yemen. ICT is still seen to be a luxury thing and a fashion trend for many sectors including business sector.
- A new approach to the role of human resources and employment offices in both the government sector and the private sector is necessary to provide information for graduates what jobs opportunities and where to improve the ICT employability in Yemen.
- Severe shortage of well-trained and specialized ICT professionals, weak and quite poor infrastructure and inadequate investment in ICT will hinder in development of ICT in Yemen. One initial step should be taken is to develop a national ICT policy and action plan in collaboration with the private sector. Another immediate step will be improving

an efficient and dynamic labor market information system in Yemen.

- Coordination must be done among urban based NGOs, technical and vocational training institutes (governmental) and private institutes that provide large number of courses on different computer related skills to improve the ICT employability in Yemen.

Recommendations of further research projects

- Further investigation in the form of a tracer assessment are needed to check if provided ICT training programs do really improve job opportunities for its trainees. Rural areas and accessibility as well as potentials to improve accessibility and use of ICT are other recommended research area.
- The impact and quality of the various scattered efforts in ICT training provided by NGOs and other development funded projects in Yemen need to be assessed in order to find ways to coordinate these efforts and to enhance its effectiveness and coverage (rural- urban & gender balance).