

FINAL REPORT

Study Research To Assess The Gaps Between Knowledge and Skills Acquired Through Higher Education and Labor Market Demands In The Information Technology and Business Administration Specializations in Jordan

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LIST OF ABBREVIATIONS

MoHESR	Ministry of Higher Education and Scientific Research
MOPIC	Ministry of Planning and International Cooperation
UNDP	United Nations Development Program
EPP	Enhanced Productivity Program
UNIFEM	United Nations Development Fund for Women
INTAJ	Information Technology Association of Jordan
HEP	Higher Education Project
BA	Business Administration
IT	Information Technology
ICT	Information and Communication Technology
MIS	Management Information Systems
CS	Computer Science
CIS	Computer Information Science
HE	Higher Education
PMU	Project Management Unit
TOR	Terms of Reference
DOS	Department of Statistics
EJADA	Euro-Jordanian Action for Development of Enterprises
GEP	Graduate Enterprise Program
JUSBP	Jordan United States Business Partnership
USAID	United States Agency for International Development
SMEs	Small and Medium Size Enterprises
TESP	Training and Employment Support Program
R&D	Research and Development
CAD	Computer Aided Design
CAM	Computer Aided Manufacturing

EXECUTIVE SUMMARY

As part of the HEP components, sponsored by UNDP, the PMU contracted Dajani Consulting to conduct a research study that will illustrate the size of the gap between graduates' knowledge and skills gained through Higher Education, and the actual knowledge and skills demanded by the labor market, particularly private sector firms.

The study was conducted using a three-fold methodology; desk review of existing information, field research covering main stakeholders (universities, graduates, firms and organizations) and analysis of facts to extract results and recommendations. The study lasted for ten weeks, and resulted in the collection of previous work and reports addressing HE, universities, graduates and their relation to the labor market. The field research covered a sample of 12 universities, 50 organizations/employers and more than 400 fresh graduates (graduated within the last 3 years) employed in 5 different economic sectors, representing two specializations; Business Administration and Information Technology/Computer Science. The accumulated results of the desk review and field research was used by consultants to analyze and assess the actual gaps between HE programs and labor market needs.

The study concluded to a number of recommendations directed to the main players in the HE and labor environments; MoHESR, Universities, Graduates and Employers. The study recommended the establishment of a labor market monitoring unit and quality assurance function. In addition, the study recommended a review of the university study plans for each specialization, university repositioning and internship linkages or programs in cooperation with the private sector. The integration of these recommendations will significantly improve the status of the academic outputs and the satisfaction of the labor market.

ABSTRACT

The study objective is to measure the gaps in the academic knowledge and skills of IT and BA fresh graduates that affect their employability and progress in work, and reflect on the economic sector they work in. Stratified Random Sampling method was used for preparing BA/IT Graduates' sample and Employers' sample. Guided face-to-face interviews were conducted with a sample from BA and IT faculties at Jordanian universities. A field research manual was prepared and used for a questionnaire-based survey, which resulted in successful contact with 50 companies from Banking, Insurance, ICT, Industry and Education sectors, in addition to 461 graduates (220 IT and 241 BA). The survey collected data about the general and specific knowledge and skills acquired by IT and BA graduates, the importance of these skills and knowledge for the job duties, the lacking knowledge and skills, in addition to employment-support services from graduates' and employers' perspectives.

The results showed that there are gaps concentrated mainly in the skills of graduates, while general knowledge is considered satisfactory. The study concluded that these gaps are joint responsibility among stakeholders: MoHESR, universities, graduates and employers. The study recommended short-term and long-term interventions and strategies that would bridge the gaps, improve the academic outputs and increase the satisfaction of employers.

3.1 INTRODUCTION

UNDP is the UN's global development network, an organization advocating for change and connecting countries to knowledge, experience and resources to help people build a better life. UNDP is on the ground in more than 160 countries, working with them on their own solutions to global and national development challenges.

UNDP has 18 offices in the Arab region. Their work ranges from capacity building to policy advice, within a region that divers needs due to the varied economic base. UNDP's program in Jordan is based on the UN Country Common Assessment (CCA) and the UN Development Assistance Framework (UNDAF) of 2002 which are in line with the priorities and action plan of the Government of Jordan.

While paying particular attention to the formulation of projects that promote ICT for development, gender equality and equity, the inclusion of youth in development programmes, and Human Rights protection, UNDP in Jordan focuses on the following priorities:

- Reducing Poverty.
- Helping Jordan achieve Sustainable Development.
- Protecting environment and natural resources.
- Achieving the Millennium Development Goals (MDGs).
- Promoting Good Governance.

UNDP carried out a wide range of projects in Jordan in the field of education, one of these project was "Enhancement of Quality Assurance and Institutional Planning in Arab Universities", the project aimed to improve the quality of Higher Education (HE) in Arab universities, to reach the international standards, due to the globalization and the international competition. Another reason behind implementing this project is that the cost of imported or purchased foreign HE is considered very high, financially, culturally and politically. Therefore, raising the quality of local HE would reduce the financial and cultural drainage of Arab countries.

The project consists of the following components:

1. Evaluation of academic programs through internal and external (peer) evaluation.
2. Administration of international tests for assessing the performance of students of reviewed programs.
3. Development of statistical database on the main activities and resources of universities (programs/ students and staff demographics/ finances) in accordance with commonly agreed-upon data definitions and specifications.

While this project studied the academic education elements in isolation of the labor market needs, another approach by UNDP targeting higher education was launched to cover many aspects of academic institutions. The Higher Education Project (HEP) sponsored by UNDP and AHR Danish Trust Fund, which is steered by a committee

formed from HE stakeholders, comes in response to the development needs of HE and universities in Jordan. The HEP was launched March 2005, and it is supposed to operate until the end of December 2005. HEP is managed by a Project Management Unit (PMU) based at MoHESR. As stated in the project charter, it will address several levels including:

- National;
- MoHESR;
- Students and Graduates; and
- Labor Market.

HEP has a number of objectives to be achieved on each level. The objectives on National level focus on overall improvement of human resources, reducing unemployment and the role of HE in sustaining and supporting the economic growth of Jordan. The objectives on the MoHESR level concentrate on assisting the ministry in drawing a HE strategy and policy, linking public and private sectors, establishing of assessment unit, and improving accreditation criteria and standards.

On the other hand, the objectives on the students' and graduates' level circulate around internship and follow up programs to create employment opportunities. On the labor market level, HEP aims to address the gender-related issues and quality of qualified workers.

In order to accomplish the objectives of HEP, the PMU shall ensure the delivery of the following outputs:

1. Progress Assessment and Monitoring Unit, including capacity building of MoHESR staff.
2. Study Research to identify gaps in knowledge and skills between HE supply and labor market demand of graduates.
3. Recommended Programs for Employment Support and Support Services.
4. Gender-Sensitive Policy Recommendations to the HE reform strategy.

The PMU cooperates with independent public and private parties for the purpose of completing the above mentioned deliverables within the allocated timeframe. Therefore, Dajani Consulting took part in assisting HEP to reach its objectives, through offering professional services in the field of Gap Analysis and Research.

II. STUDY OBJECTIVES

The main objective of the study is to carry out a comprehensive research to assess both the supply side through assessing the qualifications attained through universities, and demand side through assessing the needs of labor market in terms of skills, knowledge, academic qualifications, etc.

As a pilot study, this research will cover priority academic specializations as determined by MoHESR, to focus on the status of their graduates in the labor market. These specializations include:

1. Business Administration.
2. Computer Science/Information Technology.

The aim of the study is to collect information, inter-relate findings and draw up conclusions regarding three aspects of the study:

1. Public and Private Universities.
2. BA and IT Employed Graduates.
3. Firms and Organizations (Employers) From Different Economic Sectors.

Another objective of the study is to analyze the acquired knowledge and skills in the fields of IT and BA as supplied by universities and as demanded by the Jordanian employers in order to assess the linkages and gaps.

The study will also address the gender issue in relevance to the labor market in the BA and IT fields, in terms of women participation in the different sectors. Furthermore, the results of the study should provide information and insight on the causes of the unemployment factors among BA and IT graduates in Jordan.

III. STUDY METHODOLOGY AND IMPLEMENTATION

The research approach was based on certain tasks suggested by HEP, which were regarded as consecutive stages of the assignment. Each task required a number of steps to be completed. In general, the tasks were accomplished appropriately, with minor modifications agreed upon between consultants and PMU. At each task/step, consultants cooperated to complete the required work relevant to their participation and involvement level in the assignment. The details of the actual methodology as carried out by consultants can be described in the following points:

Task 1: *“Conduct a comprehensive desk review related to the field of Information and Communication Technology and Business Administration both on the academic side and the labor market side”.*

- i. Consultants started preparation work by meeting HEP staff, to agree on the objectives of the assignment, the work plan and discuss the outcomes and main benefits foreseen on education, employment, involvement of the private sector, increasing of graduates’ skills, and improving market-driven education strategies. In addition, consultants asked HEP staff to provide them with reports and documents related to the project and the assignment.
- ii. Next step was devoted to the review of the existing data about IT and BA programmes at public and private universities, and information about available jobs for graduates at different organizations. First, consultants started with identification of the main sources of information. These sources included DOS, MoHESR, Universities, UNIFEM and UNDP. The information was collected as much as possible in a documented manner (reports, statistics, studies and research papers), to facilitate the review and analysis. It is worth mentioning that HEP provided important and valuable documents and reports to enrich and facilitate this step. This process resulted in a comprehensive picture of the current status of the universities, graduates and –to a lesser extent- employers.
- iii. In order to prepare for survey methods and tools, consultants met representatives of target groups (university staff, graduates, employers) to get familiar with the IT and BA graduates and employers’ environment.
- iv. Based on the collected documentation and information, consultants made an in-depth assessment and analysis of the existing and present status of the academic programmes, graduates and employers. The analysis was held according to selected criteria/indicators such as types of educational subjects or courses, relative concentration on each subject at the university, developed knowledge and skills through university curricula, graduates status in the labor market, and present bridging or follow up initiatives and their impact on the improvement of practical

skills of graduates. Consultants then prepared the assessment framework and methodology for implementing the other assignment tasks.

- v. At the end of this task, consultants submitted a progress report to UNDP project manager containing the detailed work plan, suggested research methodology and the framework of assessment.

Task 2: *“Design the samples which should include a sample of universities and colleges , a sample of businesses and job providers and a sample of university graduates. The latter should be according to the rules of probability sampling”.*

- i. At this step of the project, the team of consultants prepared the overall organization of the field work including work schedule, survey personnel, contact lists, sharing of tasks among the team members, methods to process and analyze the collected data.
- ii. An interview guide (Annex 2) was prepared and used for the purpose of universities research. Consultants met with some of the deans and department heads at IT and BA colleges in public and private universities. Also, a questionnaire was prepared for each of the survey targeted groups. Therefore, three different questionnaires were prepared for each category of the survey (IT graduates, BA graduates, businesses employers). Consultants had to pay attention to the fact that questions must directly lead or deliver data related to the selected assessment points. Some of these questions were “open”, others were with “pre-selected answers” (yes, no, answer 1 or 2...). The data collection instruments were tested on few representatives of each sample, and they were amended accordingly to become more user-friendly and practical. This step yielded a final copy of questionnaire for IT graduates, and another for BA graduates, a questionnaire for employers and an interview guide for university staff. (Annex 3)
- iii. The original size of the graduates’ sample was 200 IT graduates and 200 BA graduates. The original size of the employers’ sample was 50 employers representing five economic sectors (including Banks, Insurance, ICT, Industry and Education). The size and the contents of each sample were further distributed according to statistical criteria relevant to the target group and the nature of the survey. The distribution of the sample was modified in response to the field feedback and the natural distribution of the target segments, taking into consideration the random selection of sample. (Annex 3)
- iv. The sample of employers/businesses was chosen from the database of the Ministry of Industry and Trade, in addition to the database of the Chamber of Commerce.

The sample of graduates was chosen and formed randomly on-spot from the selected firms sample. (Refer to part IV. Facts and Findings)

Task 3: *“Provide a list of universities, colleges, and businesses to be included in the study and present it to the HEP Project Manager for approval”.*

- i. Consultants applied the sampling methodology on the targeted categories, to reveal a list of potential candidates for the survey. Two lists were submitted to the HEP:
 - a) Firms: 53 employers, with the contact person name and coordinates.
 - b) Universities: 12 universities; 4 public and 8 private.

Both lists were further extended to include additional sample members, in order to compensate for any deficiencies or lack of cooperation.

- ii. Sample lists were approved by HEP before proceeding with the survey.

Task 4: *“Conduct the field research using proper research instruments including interviews, questionnaires and survey as considered appropriate”.*

- i. Consultants launched the field survey, by arranging the research work with researchers, and providing them with all needed contact information and guiding tips to facilitate their work.
- ii. Researchers were oriented, trained and instructed on how to use the questionnaires properly to collect the required information. It was planned to conduct the survey through face-to-face interviews and telephone interviews.

Due to the limitations and difficulties of the field work (as stated in the progress reports, including the difficulties of work during Ramadan month, and lack of cooperation among few segments), researchers collected most of the questionnaires through face-to-face interviews, while some of the questionnaires were filled out by the sample members independently. Assistance was offered to interviewee to facilitate the understanding of the questions.

- iii. Consultants ensured reliable data was being collected by ensuring high credibility degree during interviews and encounters with target sample members. Using their sound relationship with different economic sectors, consultants often intervened to

explain and stress the importance of the study to employers. This initiative helped the researchers to be welcomed into the organization.

- iv. After the collection of questionnaires, quality control procedures were applied to check the integrity and honesty of the researcher and the questionnaire. Then the questionnaires were entered and handled using a statistical analysis software (SPSS) to come up with the findings and indicators that were used to assess the status of graduates and employers in terms of supply and demand of knowledge and skills.
- v. At the end of this task, consultants submitted a progress report and preliminary findings of the survey to the HEP. The findings included field work results and the status at the end of the research.

Task 5: *“Analyze the results and findings and come up with conclusions and recommendations”.*

- i. Consultants analyzed and studied the findings of the survey, and linked these findings to the desk review assessment outputs.
- ii. Analysis of data included determination of the level of adequacy of the supplied knowledge and skills as compared to the demands of the employers. Another aspect of analysis was the actual need for certain knowledge and skills by the graduates in the workplace. Also, it is worth mentioning that the analysis process took into account the relevance of the current jobs of graduates to their specializations, and to what extent did the job add to their skills (e.g. communication, teamwork, planning, etc.). The analysis process was carried out using SPSS statistical software which yielded frequencies, means and standard deviation tables. Also, the tables included descriptive analysis of the collected data.(Refer to part V. Analysis and Realization)
- iii. Consultants reviewed the accumulated findings and analysis, to come up with conclusions and suggest recommendations for improvements at the university and economic sectors level. (Refer to part VI. Conclusions and Recommendations)

Task 6: *“Compile the results into one draft report and submit it for approval”.*

- i. Consultants presented their analysis, conclusions and recommendations in a draft report submitted to the HEP.

Task 7: *“Prepare the final report and submit it for approval”.*

- i. Once consultants received feedback and comments on the draft report, they started amending the report accordingly.

ii. Consultants prepared a final report containing the following chapters:

- Executive Summary
- Abstract
- Introduction
- Study Objectives
- Study Methodology and Implementation
- Facts and Findings
- Analysis and Realization
- Conclusions and Recommendations
- Annexes

IV. FACTS AND FINDINGS

1. Desk Review

A number of reports, studies and articles were collected from HEP, MoHESR and other sources contained significant information about the status of universities and graduates. On the other hand, limited studies and information are available regarding the labor market needs of employees with academic degrees in different specializations. This information was mainly collected from DOS and other institutions.

The collected documents and reports were reviewed to extract information relevant to the scope of the study. The desk review results can be categorized into three main parts:

- Universities' and Graduates' Status.
- Graduates' Participation in the Labor Market.
- Follow-up Programs for Employment Support Services.

1.1 Universities' and Graduates' Status:

Official statistics show that there are 9 Jordanian public universities and 12 Jordanian private universities, most of them offer Business Administration and/or Information Technology/Computer Science academic programs and degrees.

A total of 17,000 students have enrolled in IT bachelor level during the period 1998-2000, 27% of whom are females and 73% males. This constitutes a huge base of supply for ICT-related jobs. In fact, a total of 5,604 IT B.Sc. Degree graduates were supplied to Jordan ICT market in the period from 1999 to the end of 2002, 30% of them were females and 70% males¹.

According to the latest statistics², Jordanian public and private universities have 178619 students at the Bachelor's level in all specializations, 50% of whom are females. This figure includes:

- 32415 BA students (31.7 % of whom are females).
- 22105 IT and Mathematics students (38.3 % of whom are females).

On the other hand, the total number of Bachelor Degree graduates from Jordanian universities for the year 2003/2004 is 30115, 15720 (52.2%) of whom are females. BA graduates represent 5636 students, 1789 (31.7%) of whom are females. While IT graduates are about 4093 students, only 1556 (38%) of whom are females.

Regarding the BA study Majors, most of the graduates are distributed on the Accounting and Business Management Majors. Statistics show that there is a tendency towards a few study Majors:

¹ UNIFEM. 2001

² MoHESR, 2004-2005

Study Major	Graduates	Female Graduates	% of Graduates to total	% of Females
Accounting	2099	398	37%	19%
Business Management	1078	406	19%	38%
Finance and Banking	973	458	17%	47%
Marketing	488	137	9%	28%
MIS	215	95	4%	44%
Others	783	295	14%	38%
Total	5636	1789	100%	

Source: Annual Statistical Report on HE in Jordan for the year 2003/2004

Table 1: Number and Percentage of BA Graduates from Jordanian Universities 2003/2004

Regarding the IT study Majors, statistics indicate that Computer Science graduates are the largest segment among other IT graduates:

Study Major	Graduates	Female Graduates	% of Graduates to total	% of Females
Computer Science (CS)	2341	747	68%	32%
CIS	677	274	20%	40%
IT	221	76	6%	34%
Software Engineering	178	32	5%	18%
MIS	30	7	1%	23%
Applied Computer Science	16	0	Insignificant	0%
Total	3463	1136	100%	

Source: Annual Statistical Report on HE in Jordan for the year 2003/2004

Table 2: Number and Percentage of IT Graduates from Jordanian Universities 2003/2004

1.2 Graduates' Participation in the Labor Market:

Relatively, wide information is available about the IT graduates and their status in the labor market, while limited information is available about BA graduates and their status in the labor market. This is due to the increased interest of the government and policy makers in the IT sector, and the hopes of developing it to become a main contributor to the national economy.

Based on the “Jordanian Women in the IT Space” study¹ that covered 22 Jordanian universities and more than 150 ICT organizations and employers, statistics indicate a tendency of females to enroll in the arts stream (such as BA) versus the scientific stream rendering them less likely to enter the IT, computer and engineering-related fields.

From the perspective of the ICT job market there were 2,100 professionals employed in the ICT sector in 1999. Based on indicative results of the field research of ICT employment conducted for the “Jordanian Women in the IT Space” study (UNIFEM), there were 3,764 ICT job opportunities in 152 organizations in Amman alone during

¹ UNIFEM, 2001

2001. Around 72% of this ICT labor force are males and 28% females, in addition to the estimated 1,600 job opportunities in the PC assembly market.

According to the Civil Service Bureau Statistics of 2001, there were 3,288 holders of Bachelor or higher Degrees in ICT-related specializations available for work, of whom 1,026 (31%) are females.

The ICT skills that are mostly in demand by the private sector are those related to Microsoft products, web applications and Oracle. A survey¹ on Jordanian ICT companies, found that they needed a total number of 525 employees by the end of 2003; 78% of these companies needed to fill software related jobs, 15% hardware support jobs, and 7% jobs on the higher end of the ICT job scale. Almost all of the potential jobs in the ICT companies are occupied by IT Bachelor graduates (males and females).

The major findings related to females in the ICT work force are an affirmation of their preference for working in the public sector and dealing with the software aspect of the industry. Research indicates that females make up nearly 28% of the ICT labor force in Jordan, their percentage is higher in the public sector where they constitute nearly half the ICT staff, compared to less than a quarter (22%) in the private sector.

3.1 Follow up Programs for Employment Support Services:

There is an apparent need for graduates empowerment to fulfill the needs of the labor market. This fact was confirmed by different sources; for example the National Competitiveness Unit at the MOPIC prepared a study² to assess the strengths and weaknesses of the HE sector and to formulate strategies to increase its competitiveness. The study praised the quantitative accomplishments of Jordanian universities, but found that a large number of the university graduates were not qualified to enter the labor market, neither the public nor the private. According to the study, fresh graduates lacked not only practical and analytical skills, but also exhibited low levels of computer skills and weak language skills.

There are a number of initiatives that are either ongoing or completed which fall within the spectrum of employment support services. Such programs are financed and managed by local or international agencies, and most of them include components for training support and placement of graduates that will lead to permanent employment. In principle, all of these programs focus on bridging the gap between the academic knowledge and the practical skills needed in the market place. Following is a description of these programs:

1.3.1 Enterprise Development Centers Program (IRADA)

IRADA program is being implemented under the umbrella of Enhanced Productivity Program (EPP) financed by the Ministry of Planning and International Cooperation.

¹ INTAJ, 2000

² Jordan's Competitiveness Book, 2000

MOPIC launched this particular program to improve the livelihood of Jordanians, reduce poverty and create new employment and income-generating opportunities.

Among the mandates of IRADA is the development and establishment of an Internship Program. This program aims at providing opportunities for new graduates to add to their academic knowledge with practical training in local firms all around Jordan.

The program approach extends the training period from the 1st three preliminary months training demanded according to labor law regulations, up to 3-4 months and with a monthly subsidy of JD 50 paid to the trainee/intern through EPP. This ensures that the company does not carry any financial burden while the intern's daily expenses are covered. Additionally, the intern will have plenty of time to learn and gain practical experience, allowing him a better chance of getting employed afterwards, and this does not mean that the company is forced to employ the intern.

The eligibility criteria for selecting candidates for the internship program include:

1. Jordanian nationals
2. Age between 18 – 25 years
3. Unemployed
4. Hold university degree, college degree, or a technical high school certificate.

To achieve maximum benefit and enhance the attainment of Program objectives, the interns are provided with short term in-house training to develop certain skills such as work ethics, communication skills, time management, planning, and team work. During the 3 years of IRADA operations, a total of 622 interns were placed at different institutions to empower them with good experience in their field of study and create job opportunities for them.

1.3.2 Graduate Enterprise Program (GEP)

The Euro-Jordanian Action for Enterprise Development (EJADA) is a European support program dedicated for the development and improvement of Jordanian private business environment. EJADA launched and supported a training and employment support program through its vocational training and human resources development component (VT/HRD). GEP was managed by a private sector operator for a period of 3 years. GEP offered a year-long integrated program of training, in-company placement and ongoing guidance and counseling to selected Jordanian graduates in order to help them make a successful transition from third-level education to the world of professional work within SMEs. VT/HRD facilitated the selection and appointment of over 300 graduates (particularly BA and IT specializations), inducted, trained and guided them during their one-year traineeship and subsidized 50% of their monthly training allowance, which was JD 200.

1.3.3 Ministry of Labor Initiatives

3.1 Training and Employment Support Program (TESP):

TESP is a pilot 6-million USD project, financed through a World Bank loan, and managed by a Project Management Unit (PMU) that was based at the Ministry of Labor, with the objective of developing an employer demand-driven training, while testing the effectiveness and efficiency costs mechanism through the implementation of an employer based training fund targeting the unemployed, the poor and the female segments.

TESP was launched in July 1998 and was ended by March 2002. During this period, it trained and placed more than 7000 young people in different jobs. The mechanism of the project was based on accepting unemployed graduates of community colleges and universities, and placing them in private sector companies for 6 months. During this period trainees were supported financially – stipend – and were given practical training on the skills required to perform their jobs.

b. National Training Program:

The program aims to provide vocational training for 12,000 trainees (males and females). The program includes two phases, which are:

- i. Military training for 3 months at the Military Forces sites.
- ii. Vocational Training at several places, such as Vocational Training Centers, military workshops, and private firms.

Each trainee is given a monthly stipend of JD 50 during military training, and JD 80 during vocational training. Up till now, 7096 trainees have graduated (completed training) but there are still 2088 undergraduates.

1.3.4 Jordan United States Business Partnership (JUSBP)/ Internship Program

The former JUSBP that started in the year 2000 had developed an internship program to provide practical training in local firms for Jordanian unemployed graduates, with a monthly allowance of JD 200 paid to the trainee/intern through JUSBP and firms (with a subsidy of 50%). During the training period, trainees were provided with short term in-house training to develop certain skills including: communication skills, project management, negotiation skills, time management, planning, and teamwork. Trainees were required to submit weekly and monthly reports of their progress in work and skills learned from the workplace. Companies were encouraged to hire interns by supporting them in technical assistance services provided by consultants. Graduates in all specializations benefited from this program. The internship program was terminated by the end of year 2004, when JUSBP ceased operations upon agreement with the donor organization (USAID), and converted into a non-profit company.

1.3.5 Professional Unions

A number of Jordanian professional unions manage training and employment programs for their members since several years, such as Jordan Engineers Association (JEA). The training includes monthly subsidy, placement in a private organization, and offering several training courses to improve the skills of trainees. The standard period of training

is 6 months, during which there is limited follow up on the trainee. These programs are operated regularly with well-established criteria and procedures.

1.3.6 Ministry of Public Works and Housing (MoPWH)

Few years ago, MoPWH developed an internship program for unemployed graduates. The program is similar to those of professional unions. Also, there is close cooperation between these programs, where union members can benefit from training through MoPWH internship program. The program is still operating, but with limited publicity.

2. Research of Universities

The universities selected in the sample (Annex 3) were contacted and a meeting with the deanships of BA and IT faculties was arranged. During the interview a checklist of questions (Annex 2) guided the discussions. Samples of BA and IT study plans were collected to be reviewed in order to prepare the research instruments that will be used in the graduates and employers surveys.

The general perception attained from discussions with faculty deans and heads of departments revealed the presence of a significant gap between the HE programs outputs and the needs or demands of the employers. Basically, this gap is due to the fact that universities, in principle, are academic institutions, that teach theoretical curricula and support them with some practical skills within the credit hours of the program. The policy of the university is to provide the graduate with basic knowledge and skills that would qualify him/her to serve many purposes such as postgraduate studies, R&D and certain careers. In other words, the academic education is a means for the graduates to choose among several options or routes after graduation, therefore it should be designed and implemented to achieve this flexibility in the alternatives available for the graduate.

The interviews revealed interesting information regarding both specialization. BA faculties with different study Majors were originally established in response to MoHESR requirements and the strategies of the university, while the main reason behind establishing and opening IT faculties was the potential labor market needs and the demand of students on the new academic fields and programs.

Although there is a number of basic study Majors offered by all BA and IT faculties, some universities offer additional one or two unique Majors. The basic programs include:

1. BA Faculty:
 - Business Management/Administration.
 - Accounting.
 - Marketing.
 - Economics.
 - Finance and Banking.
 - Management Information Systems.

2. IT Faculty:

- Computer Science.
- Applied Computer Science.
- Software Engineering.
- Computer Information Systems.
- Management Information Systems.

These study Majors were used as a basis for the research instruments developed for the graduates' survey. (Annex 3) Other programs were either newly-introduced by faculties or poorly-known by students.

Upon review of sample study plans for BA and IT specializations at different universities, it was found that the compulsory and elective courses of the study Majors represent about 50% of the total study plan. These courses are considered as the specific knowledge required for the study Major, while university and faculty requirements are regarded as general knowledge courses. Another fact is that Majors resemble each other even in specific knowledge and courses, particularly IT Majors. Sometimes, similarity reaches more than 80% between different programs. Deans and heads of departments highlighted certain specific courses and skills as being essential knowledge that should be gained by any graduate before he/she is considered qualified and eligible to enter the labor market and satisfy the needs of the employer. These skills and knowledge were used later to develop the BA and IT graduates questionnaires (Annex 3).

An important responsibility of the faculty staff at the universities, is the continuous development of educational subjects and curricula. Apparently, there are limited curriculum development activities taking place in the IT and BA specializations in most universities, and the creation of new programs is still minimal. This is due to the following reasons:

- Lack of adequate financial and academic resources;
- Poor information about the student and labor market demand;
- Weak cooperation between faculty members of different universities.

Practical skills provided by universities differ in approach and content. Some BA programs are supported by heavy practical or field training (i.e. finance and banking), while most IT programs contain practical training courses as a significant part of the study plan. The training component of IT programs ranges from 6 to 12 credit hours. Usually these training courses are poorly monitored by the faculty, and students register and take these courses for the purpose of completing the graduation requirements.

In addition, the faculty ensures that practical skills are transferred to students through including an element within the contents of some courses such as assignments, research, report, case study or other applications. Universities usually concentrate on imparting skills to graduates such as communication skills, teamwork, presentation skills, problem solving and research methods. The measurement of the extent of skills gained by graduates is part of the knowledge assessment techniques (exams and tests). Few

universities have established internship or continuous education programs for their graduates as compared to the large number of Jordanian universities.

Qualifications, background and experience of faculty staff play a significant role in shaping the knowledge and skills' outputs of universities. Most of the faculty staff come from academic backgrounds, and hold higher degrees such as Master's and Doctorate. They have limited exposure and practice in the practical business environment, so it becomes difficult for them to transfer real-life practical skills within the programs that they teach. In addition, when judging the quality of the practical applications of done by students, (e.g. research, assignment, case study) faculty staff assess the application from a theoretical point of view (i.e. according to the course contents) rather than the practical parts achieved or gained by the student (actual field information).

In general, there is limited interaction between academic institutions and the labor market. The most evident link is the supply of names and addresses of the best graduates to firms upon direct request, for the purpose of employment. More cooperation rarely happens where a faculty signs an agreement with an organization or firm to place some of its students during study semesters to be trained in the practical business world. The weak connection between the companies and universities is due to the absence of incentives for companies that – if available – would encourage them to participate actively in the training and internship programs. Incentives may include income tax exemptions, social security exemptions and honorary rewards.

3. Field Surveys

Two surveys were conducted during the study according to standard survey methodology (Annex 3). As discussed in the methodology, the graduates sample selection was first planned to be made using universities' databases. This approach proved to be difficult since the available information fails to track the student after graduation in terms of employment status and location.

Alternatively, the graduates' sample was selected randomly from the employer organizations according to the allocated number of each segment. During field work, minor modifications were introduced to the sample in order to accommodate research obstacles and to retrieve valid information.

Survey data was entered and analyzed to produce statistical tables (Annex 4). The final statistics of the graduates survey can be divided into two parts:

- 3.1 General Information Statistics: which describe the graduates' status in terms of specialization, gender, university, year of graduation, year of employment and sector.
- 3.2 Specialization Statistics: which relate to graduates' feedback regarding general knowledge and skills according to specialization.

Table (3) shows actual situation of the graduates and employers samples:

Sector/Graduate /Employer	Target	Total Number	Accepted	Rejected	% Accepted/Total Number	% Total Number/ Target	% Accepted/ Target
Banks							
BA	40	66	60	6	91%	165%	150%
IT	40	46	40	6	87%	115%	100%
Employer	10	11	10	1	91%	110%	100%
Total	90	123	110	13	89%	137%	122%
Insurance							
BA	40	48	47	1	98%	120%	118%
IT	40	25	21	4	84%	63%	53%
Employer	10	11	10	1	91%	110%	100%
Total	90	84	78	162	93%	93%	87%
ICT							
BA	40	55	54	1	98%	138%	135%
IT	40	80	76	4	95%	200%	190%
Employer	10	10	10	0	100%	100%	100%
Total	90	145	140	5	97%	161%	156%
Industry							
BA	40	52	49	3	94%	130%	123%
IT	40	26	19	7	73%	65%	48%
Employer	10	13	11	2	85%	130%	110%
Total	90	91	79	12	87%	101%	88%
Education							
BA	40	31	31		100%	78%	78%
IT	40	66	64	2	97%	165%	160%
Employer	10	10	9	1	90%	100%	90%
Total	90	107	104	3	97%	119%	116%

Table 3: Status of Graduates' and Employers' Survey Sample

The selected sample exceeded the target sample, except in three sectors, which are:

- a. IT graduates within insurance sector.
- b. IT graduates within industry sector.
- c. BA graduates within education sector.

From the afore-mentioned table (3), the accepted questionnaires – collected by random methods – that are used in the data entry and analysis process are:

- a. BA graduates: 241 questionnaires (52.3 % of the total accepted questionnaires)
- b. IT graduates: 220 questionnaires (47.7 % of the total accepted questionnaires)
- c. Employers: 50 questionnaires (100% of the total accepted questionnaires)

Chart (1) illustrates the actual total sample size of graduates and employers for each sector in comparison with the target:

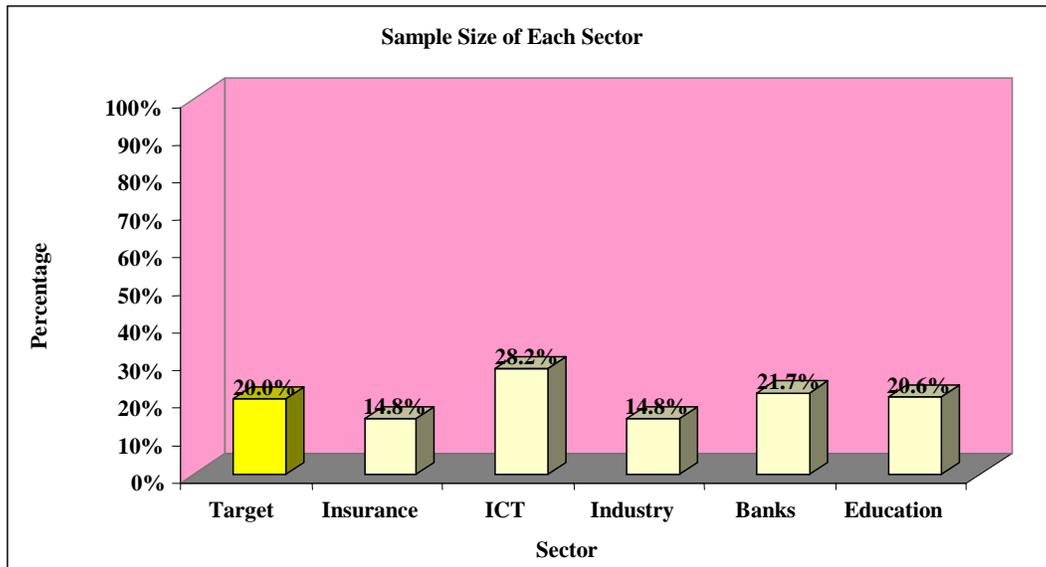


Chart 1: Actual Sample Size of Graduates and Employers

3.1 General Information Statistics:

A. Specialization

According to specializations (IT and BA), the total sample size can be categorized as shown in chart (2):

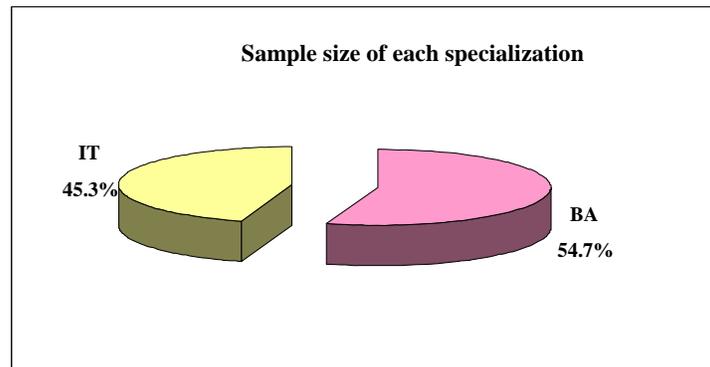


Figure (1): Ratio of IT and BA Graduates' Sample

About 54.7% of the total sample was Business Administration, and 45.3% was Information Technology, while the number of accepted questionnaires was closer to the target number.

Also the sample can be classified according to study Majors of each specialization; Business Administration, Accounting, Finance and Banking, Computer science and other study Majors within BA and IT. The following chart (2) shows these findings:

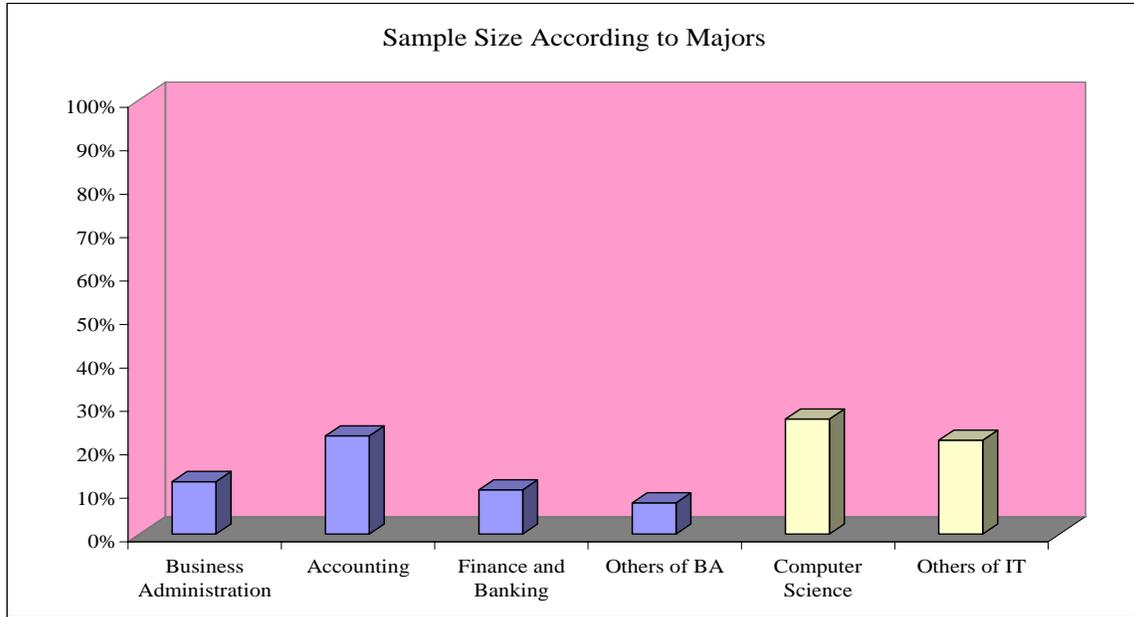


Chart 2: Graduates' Sample According to Study Majors

The graduates' sample can be categorized according to specialization and employment sectors, as shown in chart (3):

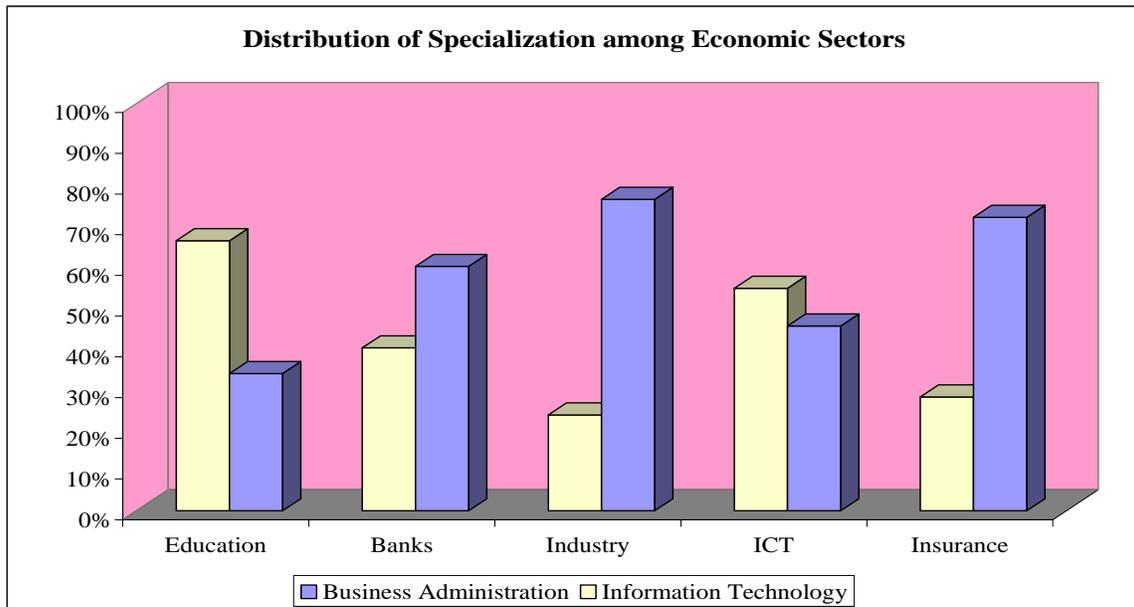


Chart 3: Distribution of Graduates' Sample According to Economic Sector

B. Gender

Based on the gender, the selected sample can be represented in figure (2):

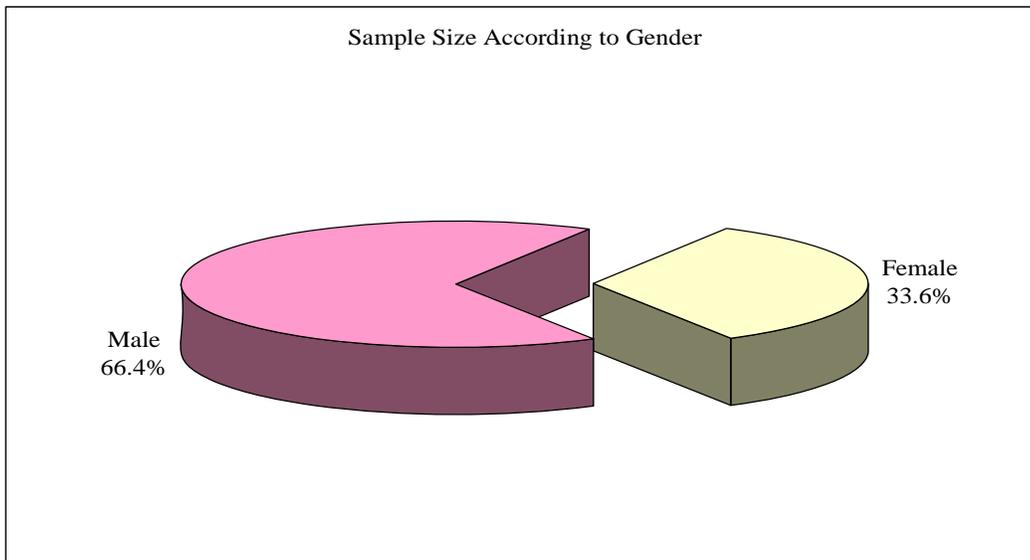


Figure 2: Graduates' Sample According to Gender

Approximately, two thirds of the sample were males, while the remainder were females. The average age of participants was 25 years.

Also, the sample may be categorized according to the gender of employees within each economic sector. Chart (4) summaries these findings:

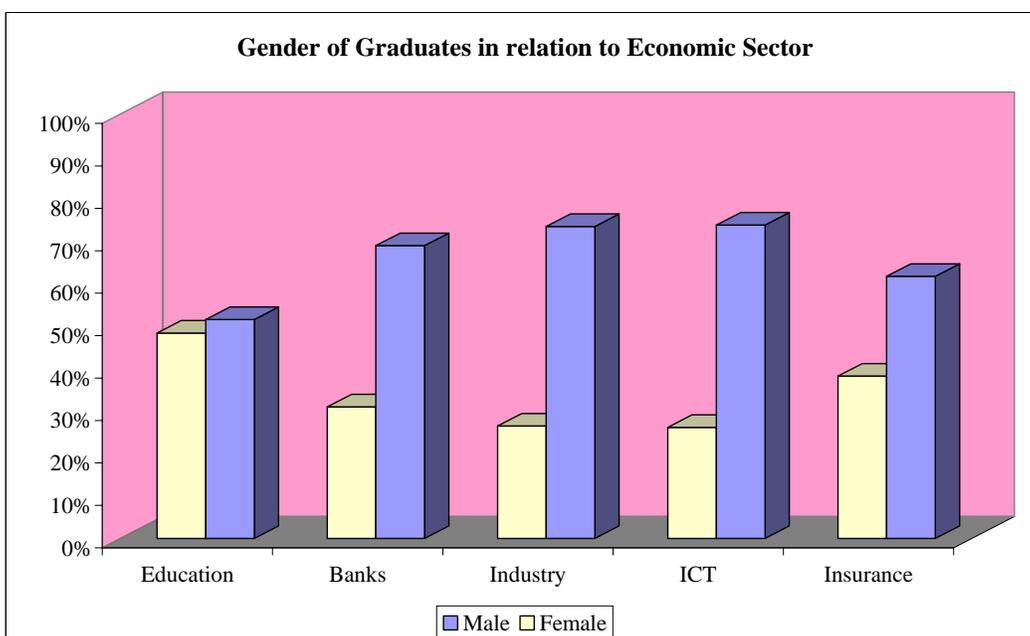


Chart 4: Graduates' Gender According to Economic Sector

C. University and Specialization

The random sample of the employed graduates was classified according to the University of Graduation as shown in the charts (5) and (6):

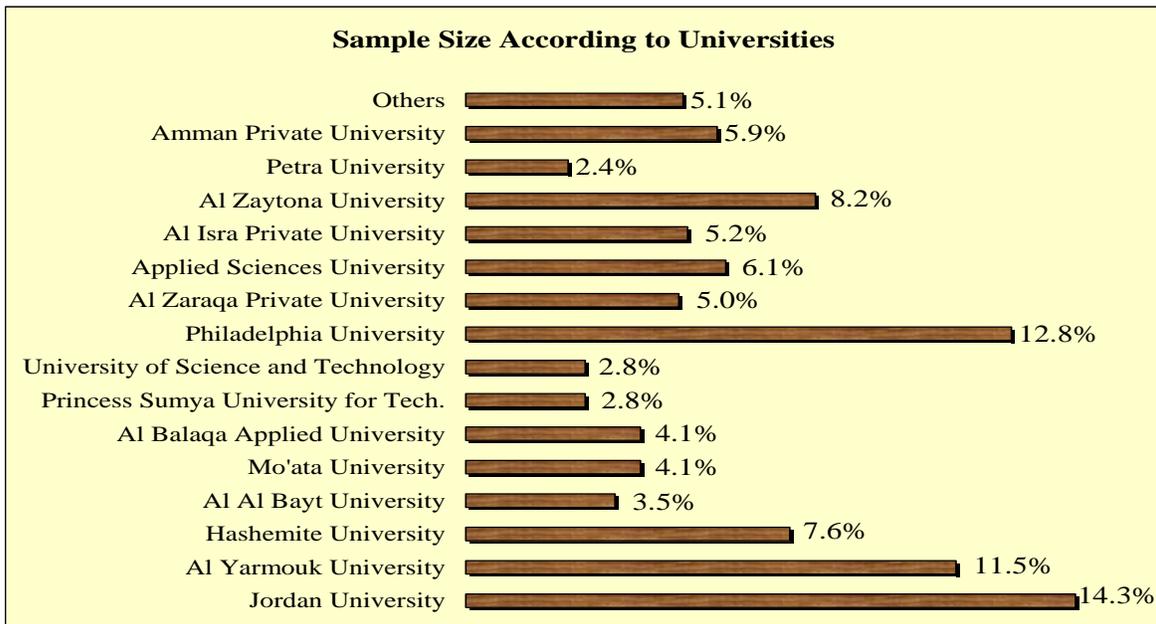


Chart 5: Graduates' Sample According Universities

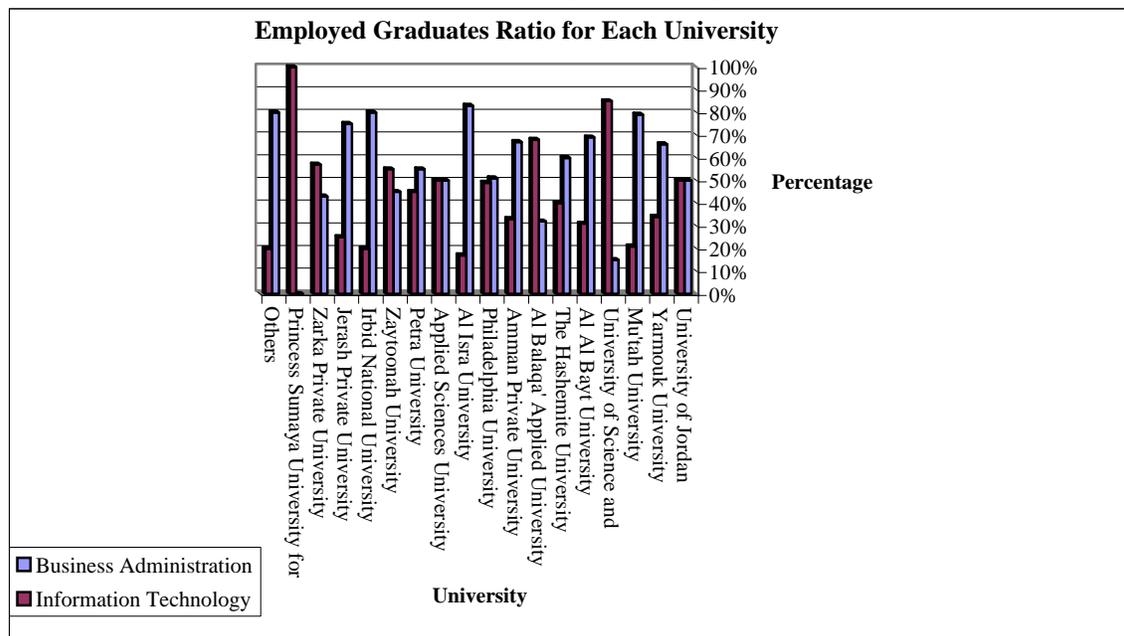


Chart 6: Graduates' Sample Specialization According to University

D. Date of Graduation and Employment

Finally, the sample may be classified according to the date of graduation and the date of employment. Chart 7 reflects these findings:

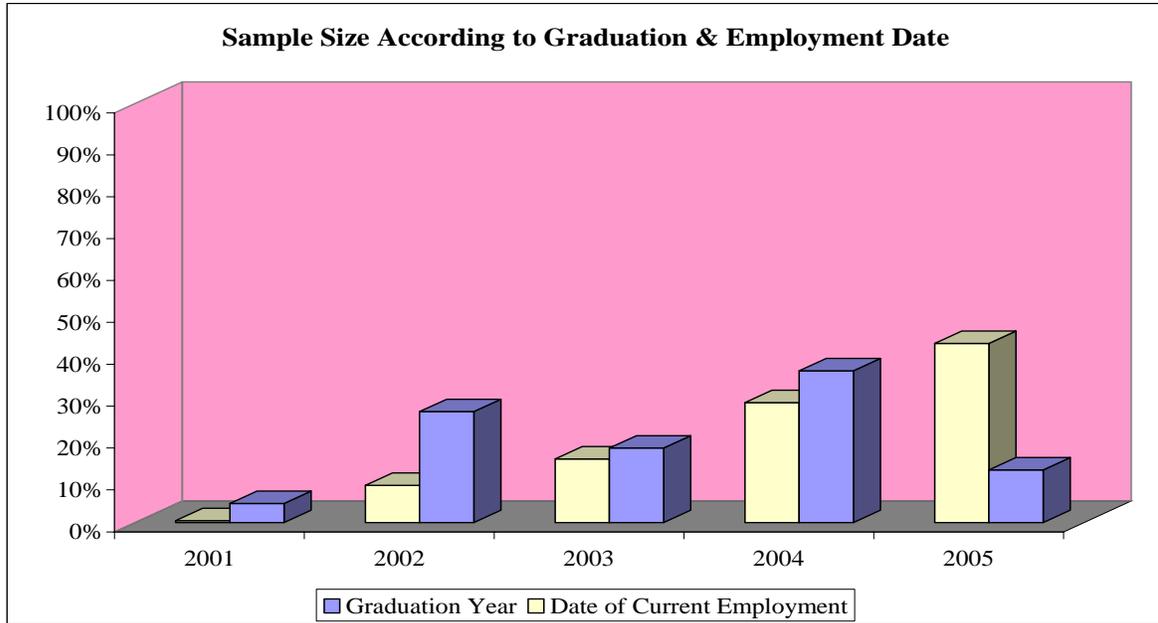


Chart 7: Graduates' Sample According to Graduation and Employment Years

The chart illustrates the fluctuation of the number of graduates during 2001-2005, but the employment rate during these years is ascending, since the number of employees of a certain year includes the graduates from the previous year(s), for example, the employed graduates during 2005 may be graduates of any year between 2001 and 2005.

3.2 Specialization Statistics:

3.2.1 Importance and usefulness of specialization in finding the job: Chart 8 shows the average importance:

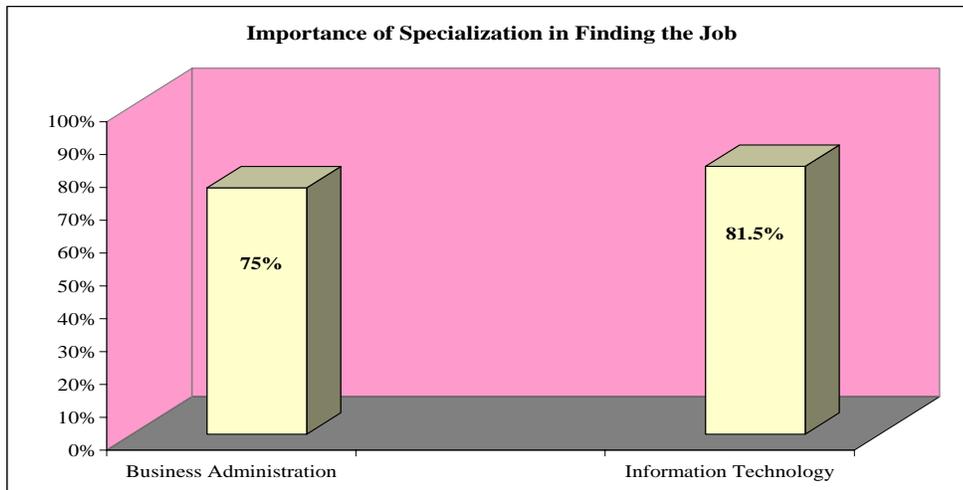


Chart 8: Importance of Specialization in Finding a Job

The relative importance of specialization in getting the current job is around 75% for BA, and 81.5% for IT. These results reflect the significance of the university study, and its role in the labor market.

3.2.2 Importance and usefulness of General Knowledge (Faculty Requirements) in performing job tasks and making progress at work, chart (9) illustrates the results of BA graduates survey:

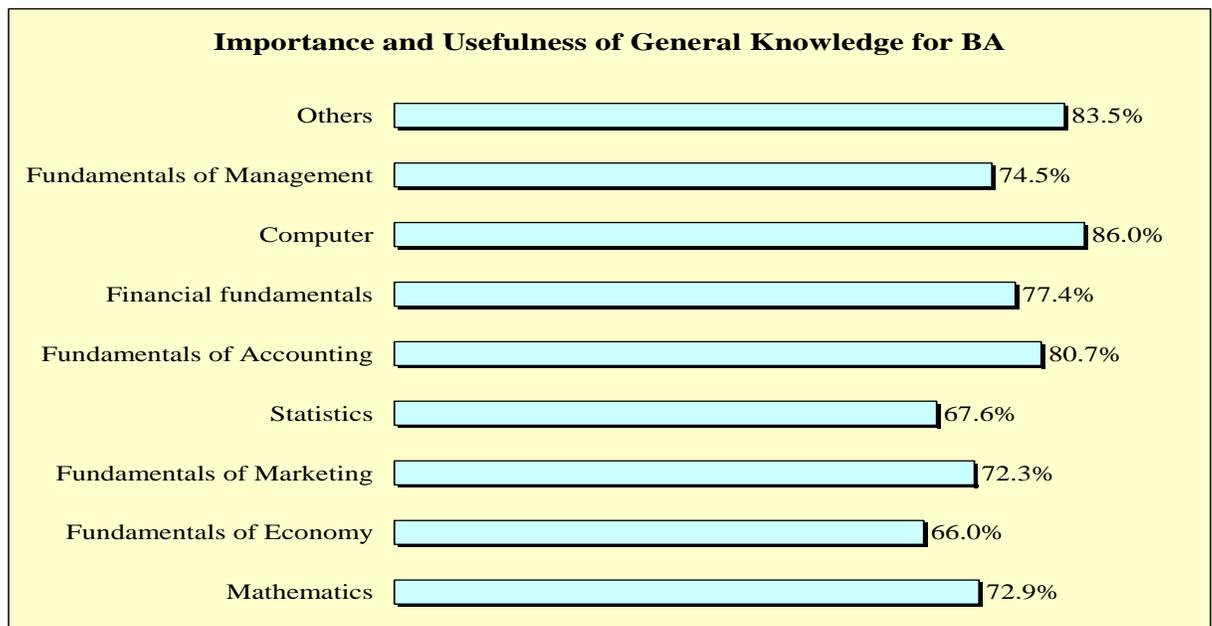


Chart 9: Importance and Usefulness of BA General Knowledge

According to chart (9), it was found that:

- i. Most of the participants confirmed the importance of general knowledge, all the mentioned subjects achieved relative importance of more than 50%. This means that all general knowledge topics are considered important for the job.
- ii. Computer Skills and Fundamentals of Accounting are the most important subjects, followed by Financial Fundamentals, Fundamentals of Management, Fundamentals of Marketing and Mathematics.
- iii. Some of the participants concentrated on advanced knowledge instead of general knowledge, this explains item others, which attained 83.5% of the graduates feedback.

On the other hand, the results of IT graduates' survey are illustrated in chart (10):

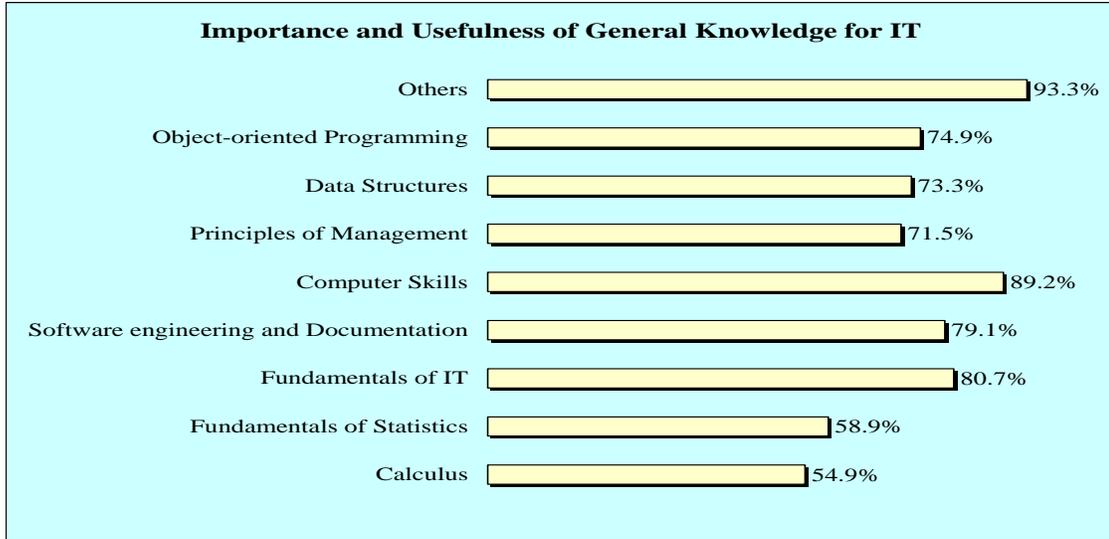


Chart 10: Importance and Usefulness of IT General Knowledge

According to chart (10), it was found that:

- i. Some knowledge subjects achieved high importance; Computer Skills, Fundamentals of IT, Software Engineering and Documentation, Object-Oriented Programming, Data Structures, and Principles of Management. Other subjects achieved moderate importance, such as Fundamentals of Statistics and Calculus.
- ii. Item “others” achieved the highest importance, since the participants mentioned advanced subjects such as Programming Languages like Oracle, JAVA, etc.

Statistics tables show that some of the general knowledge is of **low importance** in securing jobs, or in performing job tasks, as described in chart (11).

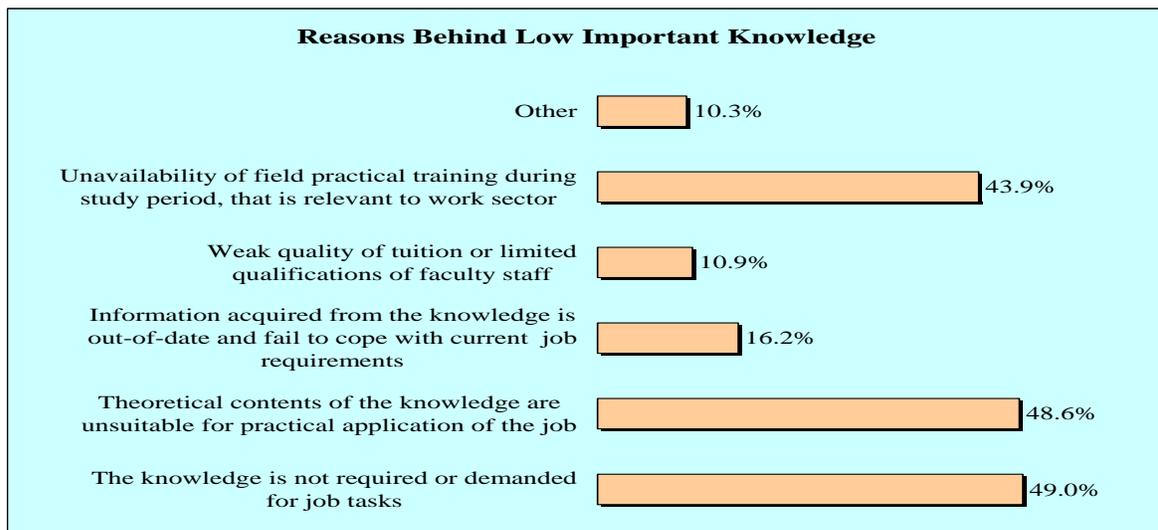


Chart 11: Reasons Behind Low Importance of Some General Knowledge

From chart (11) it was found that:

- i. 49% of participants believed that the general knowledge topics were not required or demanded for job tasks.
- ii. 48.6% of them said that the theoretical contents of the knowledge were unsuitable for practical application of the job.
- iii. 43.9% of them thought that the unavailability of field practical training during study period, that is relevant to work sector, was the reason behind the low importance of general knowledge.
- iv. A few of the participants believed that the reasons were due to the weak quality of tuition or the limited qualifications of faculty staff. Furthermore, the information acquired from the general knowledge (course) is out-of-date and fails to cope with current job requirements.

3.2.3 The importance of practical skills gained during academic education in relation to the job: Chart (12) shows the results of the survey regarding these skills:

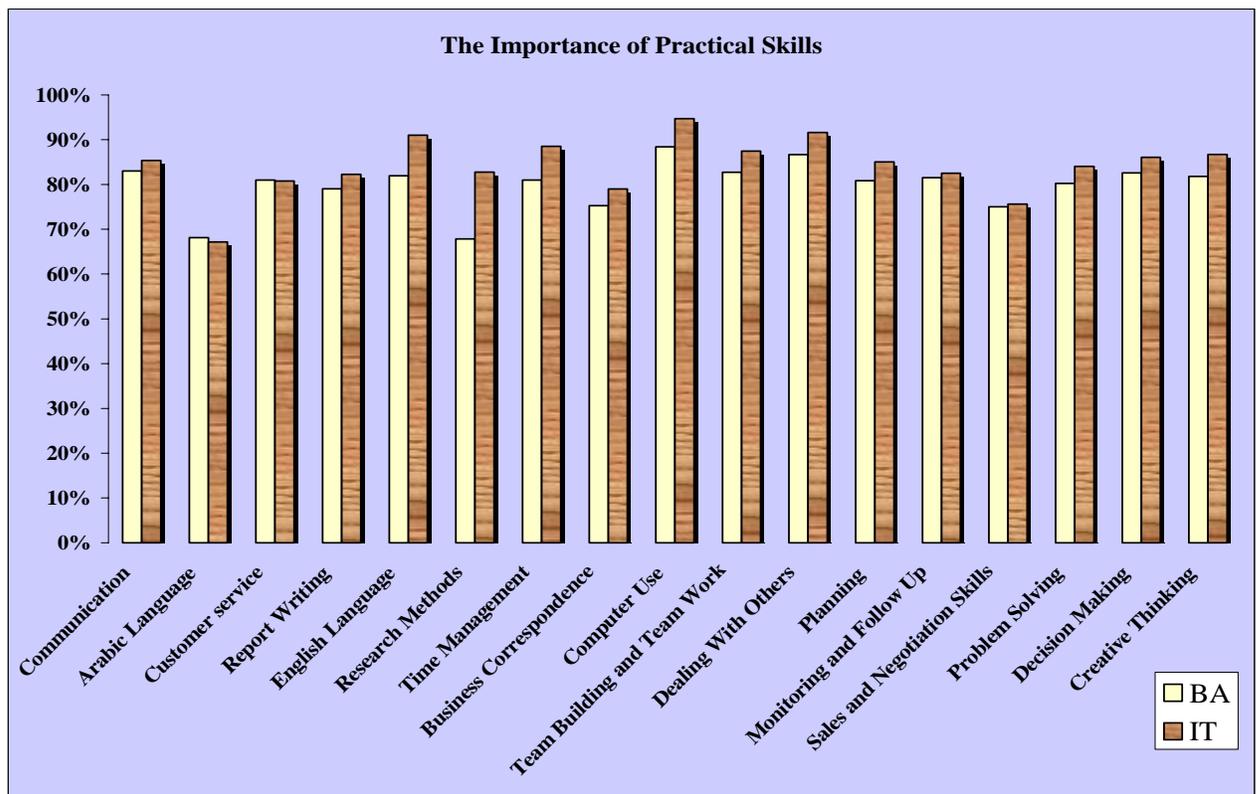


Chart 12: The Importance of Gained Practical Skills in Relation to Job

Most of the skills were considered important when compared to the need of the labor market.

3.2.4 Gaining supporting skills such as practical application (including Computer lab., Graduation Project, Assignment, Case Study, Research, Report) or field training (Internships in relevant business organizations) during university study. Chart

(13) illustrates the percentage of the graduates that received any of these supporting skills:

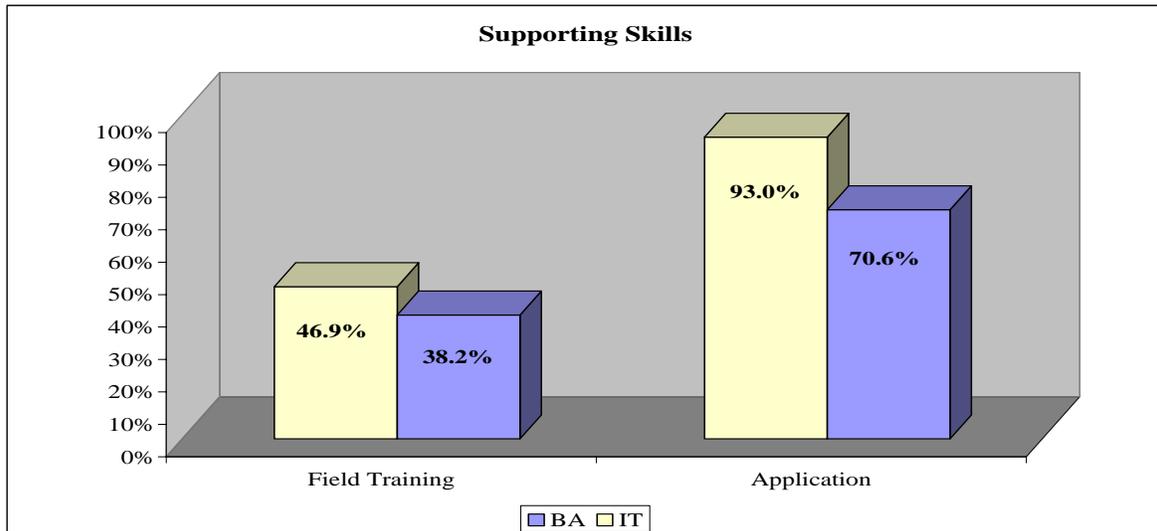


Chart 13: Gaining Supporting Skills During Academic Education

The following findings can be drawn from chart (13):

- i. The majority of IT graduates received practical application during their university study, while 46.9% of them received field training.
- ii. Around 70.6% of BA graduates received practical application during their university study, while 38.2% of them received field training.

Regarding the quality effect of practical application on the general knowledge that was received during academic education in relation to job tasks, Chart (14) demonstrates the quality level of application:

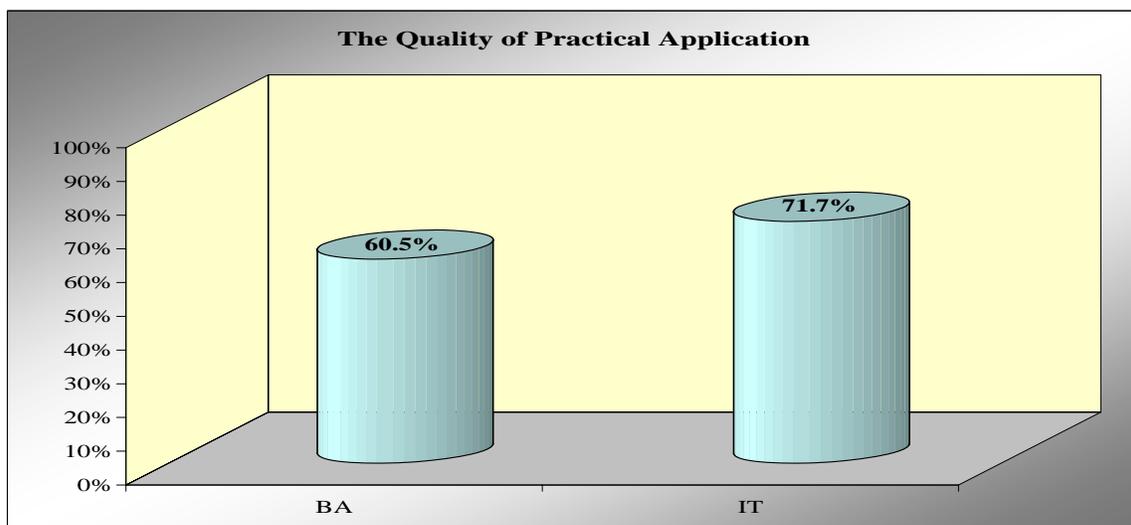


Chart 14: The Quality Effect of Practical Application on the General Knowledge

IT graduates said the quality of practical application was very good, while BA graduates thought it was good.

Finally, concerning the quality of the field training associated with the general knowledge that was received during academic education in relation to job tasks, Chart (15) shows the survey results:

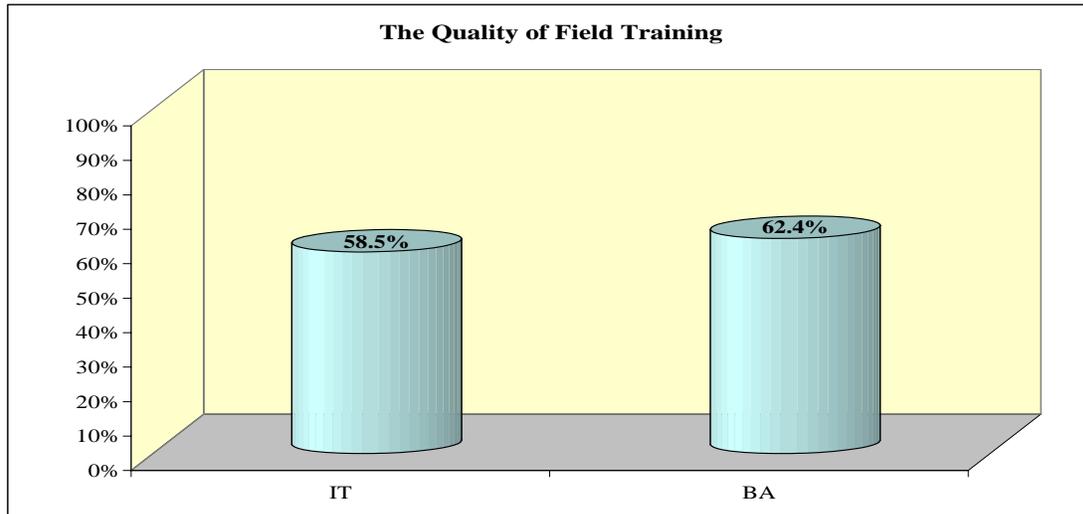


Chart 15: The Quality of Field Training

3.2.5 Attendance of training courses after academic education. As represented in chart (16), 65% of the IT graduates and 61% of BA graduates attended training courses after graduation.

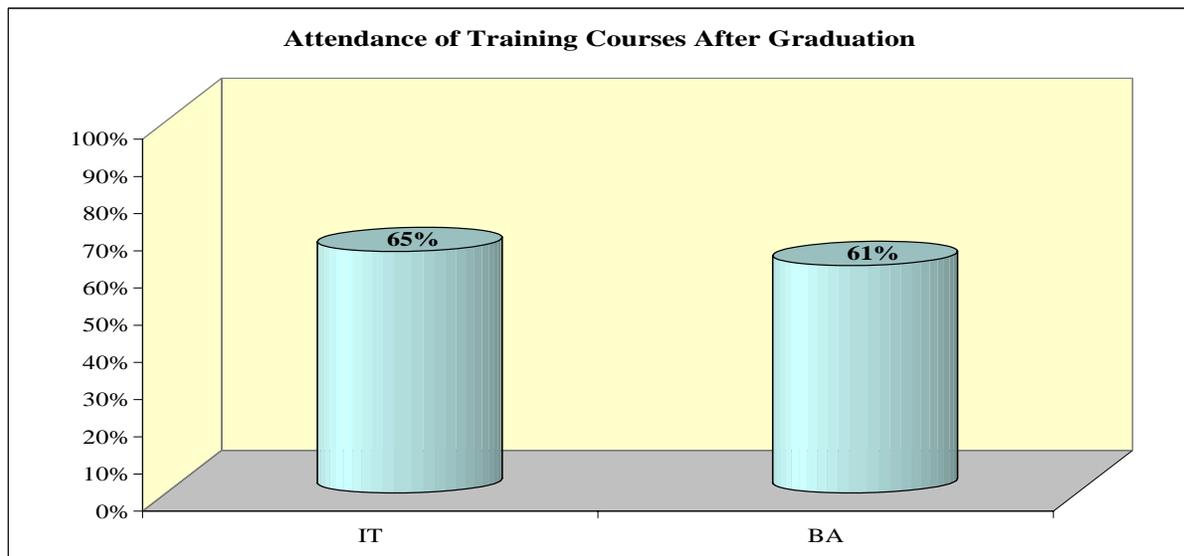


Chart 16: Graduates Attendance of Training Courses After Graduation

3.3 Employers' Survey Findings:

Although the design of the employers' questionnaire included detailed specific questions, yet the answers came in a general manner. This is due to the busy nature of employers, and the unavailability of human resources data storage and retrieval systems. Therefore employers depended on their memory and experience with graduates. The survey covered employers from five economic sectors, thus resulting in the following findings:

3.3.1 Banks:

Banks are well-established organizations and have long experience with graduates. Most banks recruit employees from among BA and IT graduates through a series of testing and interview processes. Afterwards, banks apply a controlled program for orientation and training of newly-employed graduates.

In general, banks employ the excellent and the exceptional graduates; to ensure capturing of the adequate knowledge base required for the banking and finance operations. Few knowledge areas are considered weak or lacking among BA graduates such as "Financial Analysis" and "Economic Feasibility Study". Regarding the skills, banks are partially satisfied with the skills of BA graduates, particularly:

- English and Arabic Languages.
- Computer Applications.
- Decision Making.
- Negotiations and Sales.
- Time Management.

Banks usually coordinate and cooperate extensively with universities in order to recruit their potential future workforce among graduates. Each year Jordanian banks contact HE institutions asking them for lists of excellent graduates from each specialization, including BA and IT. Among the personal traits of graduates favorable by banks:

- Good Appearance.
- Courtesy.
- Open Mind.
- Loyalty.

3.3.2 Insurance:

Regarding the knowledge of graduates, insurance companies highlighted a number of knowledge and skills either lacking, or poor, among graduates, such as:

- IT graduates:
 - Business Management, Accounting knowledge.
 - Planning, Report Writing, Selling, Customer Service skills.
- BA graduates:
 - Planning and Monitoring, Negotiation, Creativity, Problem Solving and Decision Making skills.
 - Language skills (Arabic, English) and Computer skills.
 - Knowledge of Insurance Principles and Concepts.

Insurance companies noted that fresh graduates lack some personal traits and attitudes such as cooperation with coworkers, good appearance and courtesy.

3.3.3 Information and Communication Technology:

ICT sector employers focused in their answers on the IT graduates, because they form the bulk of their staff. The general perception of IT graduates in the ICT sector is that they have adequate scientific and theoretical knowledge gained from their academic study, but they lack the applications and practical skills needed to maximize utilization of this knowledge. Few knowledge areas are considered weak among IT graduates working in the ICT sector such as Technical Documentation, Reporting, and Business Concepts.

On the other hand, IT graduates in the ICT sector lack basic skills such as research methods, dealing with others, selling skills, presentation skills and teamwork. Another lacking skill is using modern and advanced programming languages (Oracle, dot net).

Regarding behavioral and personal aspects of IT graduates, in general they lack Leadership and Commitment when working within ICT companies.

3.3.4 Industry:

The industrial facilities and companies in the interviewed sample were from pharmaceuticals, hygienic tissue paper, plastics, electronics, metal and chemical industries. In general, there are limited number of IT and BA graduates employed within the industrial companies during the last three years.

Regarding the knowledge of graduates, employers agreed that all general and specific knowledge gained during academic study are essential as a basic starting point for graduates in the workplace. This knowledge is relatively acceptable, regardless of the university, specialization, or the study Major of the graduates. Most industrial employers stated that IT and BA graduates lack, or have poor practical skills, such as:

- Customer Service and Care.
- Vision and Planning.
- Time Management and Utilization.
- Research.
- English language.

In particular, employers emphasized some lacking knowledge among IT graduates, including:

- Accounting.
- Business Management.
- Stores Management.
- Production Management.
- Marketing and Sales.

Among the attitudes shown by all graduates, lack of commitment and weak conduct were the most apparent ones.

Regarding the recruitment of graduates, industrial employers usually use different methods to select and employ graduates (coordination with faculties, advertising for resumes, internal relations, labor and employment offices).

3.3.5 Education:

Education employers interviewed as part of the employers' sample included universities, colleges and schools. Usually IT graduates are employed as computer teachers in schools or as computer laboratory supervisors or teaching assistants in colleges and universities. BA graduates are rarely employed in the education sector, and they usually work in the administrative departments.

According to schools, IT graduates working as teachers have more than acceptable knowledge base, but lack some essential skills such as:

- Teaching Techniques.
- Classroom Management.
- Problem Solving.
- Certain Programs.

On the other hand, IT graduates employed by colleges and universities have satisfactory level of general and specific knowledge, while having some deficiency in the following skills:

- Research Techniques.
- English Language.
- Creative Thinking.

V. ANALYSIS AND REALIZATION

Based on the facts and findings of the research and collected information, an analysis process revealed causes and justifications of the possible gaps in knowledge and skills of graduates as compared to job requirements. First, it is important to identify the level of analysis for each set of information:

1. Statistical data of graduates survey: It is possible to analyze this data to a detailed level that includes analysis according to study Majors within each specialization. The analysis of data according to skills or knowledge (course) is rather difficult because of the limited size of the graduates' sample and the diversity of Majors and courses. For example, there are few members of the sample who are specialized in CS from the same university. Nevertheless, graduates data was analyzed quantitatively and qualitatively to extract meaningful results.
2. Raw data of employer survey: Employers' survey was designed to be an open questionnaire, to allow for collecting sector-relevant information about employer's perception and demands of the graduate's knowledge and skills. The level of data collected using employers' questionnaire was on the specialization level (IT or BA), and rarely covered the study Majors (e.g. MIS) or the specific knowledge and skills of the graduate. Therefore, the raw data was analyzed qualitatively to come up with a general understanding, or consensus, of the situation in each economic sector from the point of view of several employers.

The analysis of the gaps was based mainly on the facts and findings of the desk research, universities' research and graduates' survey. The employers' survey facts were used to confirm or verify the analysis results. Graduates and faculty members tend to know more about the subject of the research, because of the direct relationship to academic programs, and the familiarity with the terms and expressions used in the HE institutions. This is expected especially because the research covered fresh graduates, who still remember their study plans and courses that they had finished 1-3 years ago. On the other hand, employers come from various backgrounds, where they recognize the difference between academic specializations (e.g. IT and BA), but rarely differentiate between Majors (e.g. MIS and CIS) when recruiting fresh graduates for jobs at their organizations. Needless to say that this fact also applies on the requirements and courses of each Major program.

1. Graduates' Employment in Relation to Economic Sectors:

The random sample of graduates that were interviewed shows different ratios of the graduates from public and private universities distributed among the economic sectors and in different ratios also. This indicates that most of the IT and BA graduates are employed extensively by certain sectors. Taking into consideration that other sectors were not included in the research, it appears that IT graduates are mainly employed by ICT and education sectors, while BA graduates are concentrated in the banking sector. Banks usually employ BA graduates for their financial and management backgrounds, where graduates further develop it through training and on-the-job coaching.

According to the facts and findings, there is a higher demand on IT graduates regardless of the economic sector. This can be attributed to the need of our organizations for computer-literate employees, as the introduction of IT in the business environment in Jordan is increasing day by day. Organizations can utilize the IT graduates in different positions, building on their background, in addition to providing them with the required skills and training.

2. Graduates' Employment in Relation to Specialization and Study Majors:

The employment rate of BA graduates within the education sector is the minimum, because most of schools' curricula lack any BA subjects. Also, most of the educational institutions – specially governmental educational institutions – need a few number of BA graduates each year. Within the same context, the employment rate of IT graduates within the industry and insurance sectors is minimum, since most of the industrial institutions and the insurance companies contract IT firms for maintenance and programming. In addition, the IT graduates are employed in these sectors regardless of the type of Major (e.g. CIS, MIS) they studied at the university.

3. Graduates' Employment in Relation to Gender:

The employment rate of males within all sectors is higher than females, for many reasons; the capability of males to work under any conditions and environments, the cultural barriers, and the social practices and norms. The afore-mentioned reasons differ from one organization or sector to another. The level of knowledge and skills of BA and IT graduates is similar among males and females, so it does not affect the gender preference in employment. However, employers insist on offering equal opportunities in the recruitment of male and female graduates. It is realized, from the random sample, that there is a gap between the employed BA and IT graduates in terms of gender.

4. Graduates' Employment in Relation to University:

Based on the findings, it is concluded that most of the employed IT and BA graduates are from Jordan University, Philadelphia University and Al- Yarmouk University. As the sample was randomly selected, this represents the natural situation in the labor market. This means that graduates of these universities are highly-demanded and accepted in the labor market. Most of the sample's members were from Amman, Zarqa, and a few from Irbid, this may explain the afore mentioned results, where the majority of southern universities' graduates live near those universities. Such is the case of remote universities also. Employers judge the level of university graduates by experience, through employing graduates of different universities and monitoring their performance, which is a product of their acquired knowledge and skills.

The analysis of employed graduates' specializations according to university, shows that one specialization is more demanded in the labor market than the other specialization for the same university. For example, BA graduates of Al- Isra University are more

demanded and employed than the IT graduates of the same university. This means that there is a trend in the labor market for employing BA and IT graduates from certain universities. Consequently, universities become known for particular specializations in the labor market. This is useful for university planning, where it can determine which specializations/faculties to be expanded and which specializations/faculties to be cancelled in the future.

When comparing graduates of public universities to graduates of private universities, in terms of acquired knowledge and skills, facts indicate that there is no significant difference among universities in this aspect. This is due to the similarities in the academic programs, and the standard level of faculty staff accepted by universities.

5. Importance of “General Knowledge” to Job Performance:

Graduates survey illustrates the importance of general knowledge in performing job tasks and making progress in the workplace during the early stages of employment, since this knowledge is the bridge for advanced and specialized knowledge. There are some minor exceptions to this rule; few knowledge subjects are considered of low importance in both specializations (i.e. Fundamentals of Economy in the BA specialization, and Calculus in the IT specialization). This is due to the types of jobs taken by graduates, which consider these subjects unnecessary. But in general, this basic knowledge gives a flexible space for graduates to adapt to different jobs in different sectors.

6. Importance of Practical Skills Gained During Academic Study:

Some employers concentrate on the practical skills more than the academic knowledge or study Majors when hiring graduates. Therefore, there is a recent trend among universities' leaders to enhance the graduates' skills to the level of the market needs. In general, there is limited emphasis by universities on the field training in comparison with practical applications. This is due to the weak communications between academic institutions and public and/or private organizations. Numerous academic institutions have high numbers of students in the Bachelor degree programs, which exceeds the training capacity of organizations, and this limits the field training opportunities. In addition, any field training program should be designed to eliminate certain knowledge and skills deficiencies of students through proper preparation and follow up, while most universities lack the system and resources to prepare and monitor the field training.

The quality of practical applications is higher in the IT specialization, due to the use of computer labs., simulations and actual projects as part of the graduation requirements. For the field training, both specializations (IT and BA) believed that the quality is good, because the trainee is dealt with as a “temporary guest or employee”, and only simple tasks are assigned to him/her. As an example, for confidentiality reasons, BA trainees placed in banks have limited and controlled access to clients accounts, thus limiting their training on observing transactions without being involved in actual work.

To become more attractive to the labor market, graduates tend to attend training courses after graduation. These courses provide graduates with practical skills useful in hunting for jobs and performing the job tasks efficiently.

7. Gaps in Knowledge and Skills – Graduates’ Perspective:

Graduates identified the gaps in their knowledge and skills depending on their perception of the tasks and duties required from them during work. In general, there were some skills that graduates felt poor or lacking, compared to their jobs and employers’ demands:

- BA Graduates:
 - i. New general knowledge (Insurance, Promotion, Sales).
 - ii. Knowledge of laws (tax, customs, government procurement).
 - iii. Practical skills as applications for knowledge (accounting, finance, trading).
 - iv. Computer skills related to business (ICDL, Microsoft Applications, PowerPoint).
 - v. English language skills.
 - vi. Other skills (communication skills, dealing with others, problem solving).
- IT Graduates:
 - i. General Knowledge of new technologies (dot net).
 - ii. General knowledge of new courses (software quality control, networks).
 - iii. Knowledge and skills of advanced programming languages (Oracle, Web design).
 - iv. Management skills (Project Management, Team Leadership, Planning).
 - v. Other knowledge (Accounting, Finance).
 - vi. Other skills (Teaching, Training).

8. Gaps in Knowledge and Skills – Employers’ Perspective:

To be realistic, employers usually expect the minimum from fresh graduates, therefore they invest heavily in training, particularly targeting the missing skills among employed graduates. In general, employers accept the general and specific knowledge of BA and IT graduates, and consider them basics for advanced knowledge. The existing gaps are in the practical part of the knowledge, in other words; the weak skills of graduates. For example, BA graduates with a Major in Accounting have adequate level of accounting principles and knowledge, but they poorly apply these principles in the work environment due to lack of practical experience. In the same sense, IT graduates have the adequate background about programming and technical concepts of computers, but fail to use it or relate it to job duties.

Accordingly, employers identified gaps in knowledge and skills of graduates as:

- BA graduates:
 - i. Knowledge of new financial systems (e.g. accounting software)
 - ii. Knowledge of Human Resources Management.
 - iii. Management Skills (Managing people, team work, time management, stress management and working under pressure).

- IT graduates:
 - i. Knowledge of some Programming Languages (Oracle, JAVA, Adobe Acrobat, dot net).
 - ii. Skills of Hardware Maintenance.
 - iii. Skills of Servers and Networking.

9. List of Graduates' Knowledge and Skills Demanded by The Labor Market:

As previously mentioned, employers have limited awareness about the specific topics and courses taught in the Bachelor degree programs at Jordanian universities, therefore they concentrate on general knowledge when selecting fresh graduates for employment. Regarding the skills, employers tend to look for basic personal skills among graduates, where they prefer to employ graduates enjoying social and interactive skills. These skills are more beneficial and utilizable if they were given as separate educational units to students during the academic stages.

9.1 IT Graduates:

Knowledge	Skills
<ul style="list-style-type: none"> - IT Management - Data Base Administration - Software Development - Programming Languages (Oracle, JAVA) - Networking and Communication - Systems Analysis - Technical Writing - Telecommunications Technology - Multimedia - Arabization - CAD/CAM 	<ul style="list-style-type: none"> - Project Management - Teamwork - Problem Solving - Decision Making - Technical Skills (Hardware Maintenance, Microsoft Applications, Cisco, Quality Control, Web Design) - English Language (IELTS, TOEFL) - Report Writing - Interpersonal Communication - Sales and Negotiations

Table 4: List of Demanded IT Knowledge and Skills

9.2 BA Graduates:

Knowledge	Skills
<ul style="list-style-type: none"> - International Accounting Standards - Financial Auditing Principles - Social Security and Tax laws - International Trade Agreements - Human Resources Management - Marketing and Sales Management - Insurance Policies and Systems - Statistical Analysis 	<ul style="list-style-type: none"> - English Language - Arabic Language - Computer Applications (MS Word, MS Excel, MS Power Point, MS Access) - Teamwork - Time Management - Selling Techniques - Research and Survey

Table 5: List of Demanded BA Knowledge and Skills

VI. CONCLUSIONS AND RECOMMENDATIONS

Based on the study results, analysis and realization, a number of conclusions and recommendations can be reached, which could satisfy the purpose of bridging the gaps in knowledge and skills between supply (universities and graduates) and demand (labor market). It is advisable to implement the recommendations in parallel at all levels, and with complete integration and coordination between stakeholders.

1. Conclusions and Recommendations for MoHESR:

1.1 Labor Market Monitoring Unit:

Universities launch and offer different study Majors in IT and BA based on the trends of students and as requirements of MoHESR. Lack of labor market information limits the decision making and choices available for universities management when revising or restructuring Majors.

As the highest authority responsible for the policies and strategies of HE institutions, MoHESR is encouraged to establish a function or a unit that monitors the labor market needs of graduates in terms of specializations, quantity and quality. This unit will provide updated information about the status of the labor market to the decision makers in universities in order to introduce new specializations, cancel or limit old specializations, modify study plans of study Majors, or develop and improve certain subjects within the Majors study plans. This unit will conduct regular surveys of the needs of the labor market, using standard survey instruments, and create links with public and private universities to keep open channels of communications regarding this matter. Furthermore, this unit may benefit the entry-level university student in deciding which specialization or study Majors that best suits his/her interest and vision.

2. Conclusions and Recommendations for Universities:

2.1 Review of Study Plans:

Both graduates and employers concentrate on the specific knowledge and skills related to the line of work or the sector. As a result of the fast track of advancement in the BA and IT fields, new technologies and techniques are introduced into the market every day. To sustain business and competitiveness, employers become interested in up-to-date knowledge and skills of graduates that can be utilized effectively in the workplace.

IT and BA faculties in public and private universities should review the study plans of study Majors, in light of the scientific developments and the labor market needs. The review process should result in increased number of subjects that meet the requirements of business organizations, in addition to more balanced ratio of practical application and field training compared to theoretical courses. Within the same understanding, compulsory and elective program courses should have higher ratio compared to basic and general knowledge of faculty requirements.

2.2 Quality Assurance:

Due to the increasing number of HE institutions and students in Jordan, there are variations in the quality of graduates entering the labor market every year. Employers rarely have a well-designed mechanism to assess the quality and competence of graduates during recruitment, and they rely on personal judgments or reputation of the university.

Universities should develop and establish a central quality assurance function that ensures that the graduate complies with high standards as determined by MoHESR. The quality assurance scope should cover the curriculum components, course contents, teaching and lecturing methods, qualifications of faculty staff, level measurement methods and tools (testing) and students' knowledge and capacity levels. This recommendation has already started through UNDP's activities in the HE field.

2.3 University Repositioning:

In developed countries, with excellent reputation in HE such as USA and UK, it is customary that academic institutions are categorized according to the type of specializations and study Majors they offer. Some universities are known for their Business programs, others are known for their Medical specializations, while some are famous for their IT programs. Jordanian universities are increasing day by day, and MoHESR is approving and licensing more and more private universities, so it is expected to create tough competition among universities in the HE market of Jordan in the near future. Unless a repositioning process is carried out, the quality of HE is expected to be negatively affected, which is not in favor of the graduates nor the labor market.

The purpose of university repositioning is to publicly recognize each Jordanian university for being a landmark in a certain field of HE. The recognition should be on the specialization level or the study Majors level. For example, Princess Sumaya University for Technology (PSUT) could be recognized as the main academic and professional source of IT specializations, particularly Software Engineering Major, while Al-Yarmouk University could be recognized as the unique source of BA graduates in the Finance and Banking Major. This process will lead to distinct and unique position for each and every existing university in Jordan.

Furthermore, to preserve the quality and uniqueness of each university, regulation should require the introduction of one, or more, new specializations/programs from any new university or academic institution opening in Jordan. This measure will provide labor market with up-to-date graduates, and facilitate the process of recruitment to the employer, since certain vacancies can only be filled with graduates from certain universities and certain specializations.

2.4 Linkages with Business Community:

Significant gaps exist between academic institutions and business community, due to the absence of communication channels and lack of coordination.

Universities should seriously work to establish links with firms and organizations which form the labor market. There are many feasible approaches to do so; a memorandum of understanding or an agreement regarding students' field training or internship programs, arrangement of regular open days to discuss the needs of potential employers in presence of future graduates, and organizing academic-labor market conferences to address the gaps in knowledge and skills, and ways to overcome these gaps. Such activities are expected to create awareness among employers of the relevance of universities and study Majors to their businesses.

3. Conclusions and Recommendations for Graduates:

3.1 Orientation:

Students are usually driven by personal preference, rumors and peers' advice when selecting certain specialization or Bachelor degree study Major.

Students, before and while completing their academic education should seek help and orientation to assist them in making the right decision regarding the desired university, specialization, and the study Majors based on the study plans. In addition, students should do their own research to find their expected position in the labor market.

3.2 Skills Upgrading:

Students assume that academic education is the only source of knowledge and skills needed to obtain a career in the business world. They think that the study period absolutely qualifies them to win a job in the labor market and to adequately perform job duties.

Graduates should continue adding to their knowledge and skills after graduation and even during work. For example, IT graduates should engage in Programming Languages training courses needed by the labor market, while BA graduates should attend training on business skills and financial skills. There are a variety of skills upgrading sources available in the market, which suit the needs and conditions of different graduates.

4. Conclusions and Recommendations for Employers:

4.1 Employer Satisfaction Survey:

In general, employers are concerned with their own business issues and employees, and use their experience to build their own perception about the graduates and the labor market trends, without referring to scientific or statistical information.

Certain bodies or committees (e.g. Chamber of Industry, Chamber of Commerce) working in the business environment should conduct an annual or biennial Employer Satisfaction Survey to measure the level of satisfaction among different economic sectors regarding the newly-appointed graduates in various fields. The survey should detect critical knowledge, skills and attitudes which are unsatisfactory from an employer perspective. The results can then be published for maximum awareness and benefits.

4.1 Sponsorship and Support of Universities:

Employers always expect that universities should address their needs when designing certain specializations and programs. Employers interaction with academic institutions is limited, though the number of companies and private organizations is huge.

Labor market organizations should offer financial and in-kind support to universities, basically because they are regarded as the suppliers of educated human resources . The cooperation relation between companies and universities will influence the students and graduates to gain more relevant knowledge and skills that can be used in the workplace. Sponsorship could take several forms; support of exceptional students, sponsorship of academic activities, support of R&D projects and other forms.

4.2 Links with Internship Programs:

Employers suffer from different economic and legal stresses in Jordan, and try to answer to the growing demands of the market and the needs of the existing staff. Also, employers allocate limited resources for contribution to the development of staff.

Business organizations and firms should positively respond and apply to the different graduates training and internship programs. Their involvement will provide them with almost free labor, and the opportunity to build the human resources capital of the organization. Recruitment of employees will be kept to the minimum if the employer supported and invested in graduates nominated by internship programs and showed rapid progress in work, to the degree that they can hold their positions independently. Internship programs would serve as “Employment Offices” for firms and companies.

ANNEXES