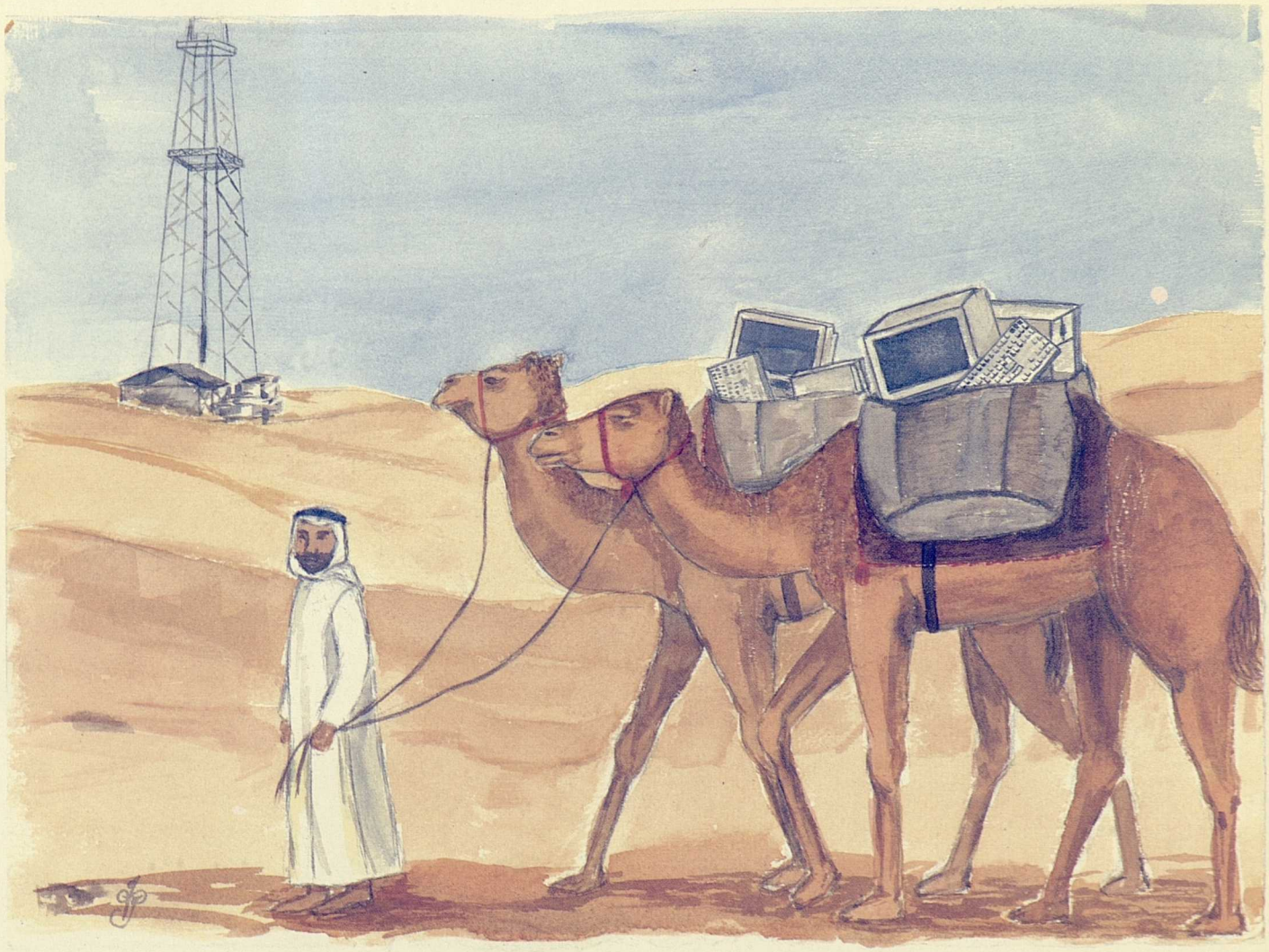
CITY University
BUSINESS SCHOOL

The Impact of Computer Technology on Accounting and Auditing in the Middle East with Special Emphasis on Arabisation, Transfer of Technology and Training



Sami Abbas Hussain Ali

Vol II

A Thesis Submitted for the Degree of Doctor of Philosophy

VOLUME II

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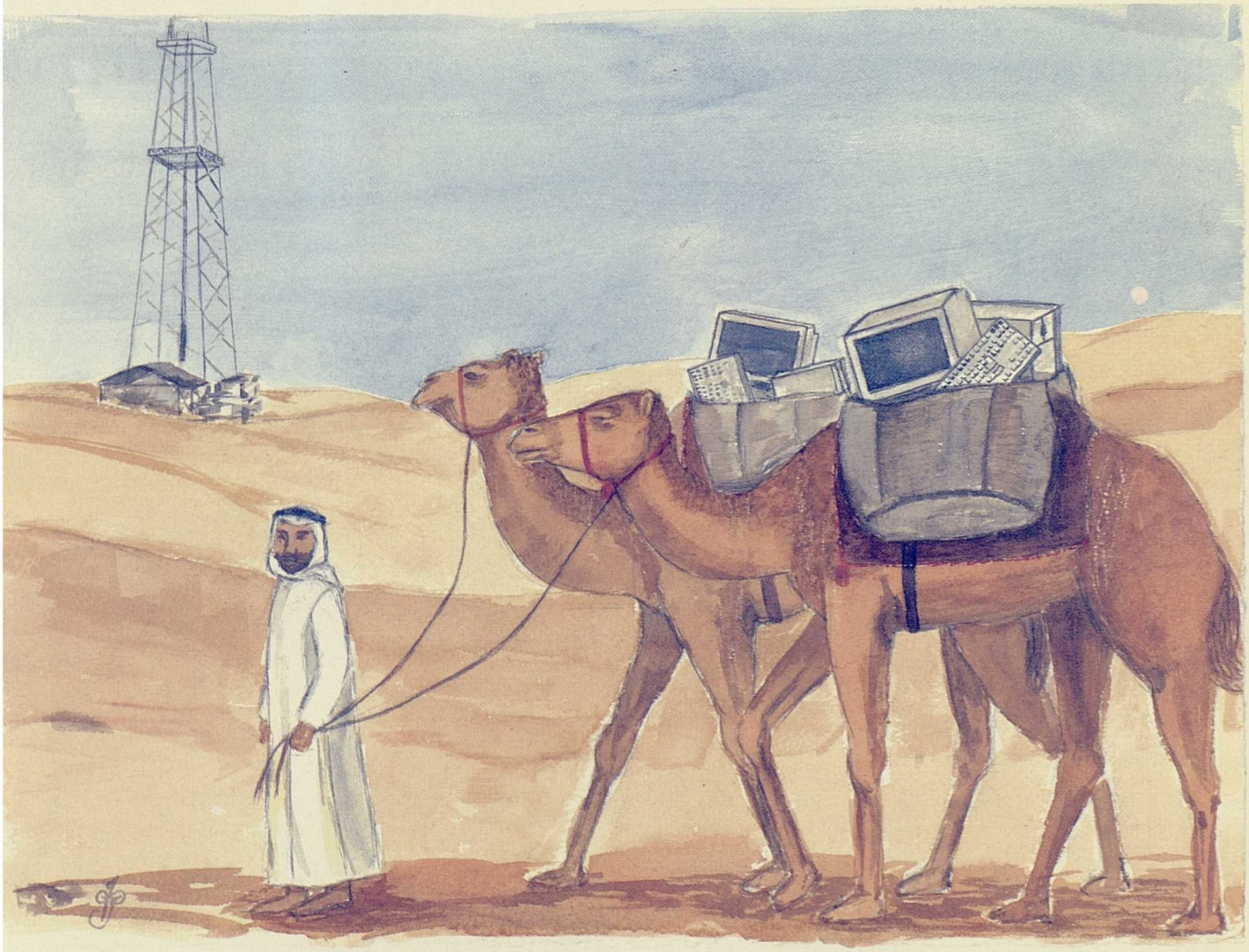


Chapter 6

Descriptive Analysis of Data Collected Phase Four

CHAPTER VI

DESCRIPTIVE ANALYSIS OF DATA COLLECTED PHASE - FOUR

6.1 Introduction

6.1.1. Purpose

The purpose of this chapter is to provide analysis of interview responses to the various situation questions on "The Impact of Computer Technology on Accounting and Auditing in the Middle East with Special Emphais on Arabisation, Transfer of Technology and Training". As shown in Appendix 5 "Research Interview Questionnaire - Phase Four".

6.1.2 Key characteristics of individuals interviewed

The following summarises the key characteristics of individuals interviewed:

- Age : Average age ranges between 30 and 45 years
- Sex : All interviewees were males
- Education : Majority of interviewees were educated to a University level. However the researcher is unsure of the type of University or of their other professional credentials.
- Nationality : Interviewees may be separated as follows:
  - UAE Nationals 10%
  - Expatriates (Arabs, Asian, European and North Americans) 90%

6.1.3 Conducting The Interviews and Interpreting the Data

A phased approach was developed and carried out as shown below:

- Individuals within selected Organisations were contacted in advance and advised of the interview plan.
- Appointments were made.
- Results of the interviews were documented for further analysis.

6.2 Sources of Information

6.2.1 Computer Hardware and Software Users

A sample selection of 72 Individual to be interviewed as follows:

Users	Organisation	Individual	Total Number of Individuals
Finance Director/Managing/Director)		1	12
Manager / Training Manager)	12	3	36
Administration Staff)		2	24
		6	72

Analysis of their responses to the Questions is given as Annexture to this Chapter.

6.2.2 Audit and Accounting Firms

A sample selection of 4 individuals to be interviewed was made as follows:

Accounting Firms	Organisation	Individual	Total Number of Individuals
Partners	2	2	4

Analysis of their responses is given as Annexture to this Chapter.

6.2.3 Colleges and Universities

A sample selection of 6 individuals to be interviewed was made as follows

Education institutions	Organisation	Individual	Total Number of Individuals
Vice Chancellor)		1	2
Directors)	2	2	4
		3	6

Analysis of their responses given as Annexture to this Chapter.

6.2.4 Computer Hardware and Software Suppliers

Computer Suppliers	Organisation	Individual	Total Number of Individuals
Managing Directo r)		1	10
Finance Director)	10	1	10
		2	20

Analysis of their responses given as Annexture to this Chapter.

6.3 Analysis of Interview Responses on Arabisation

6.3.1 Level of Impact on the Development of Nationals on the use of Computer Technology

Views of all individuals interviewed regarding the level of Impact on the development of Nationals on the use of computer technology resulting from the use of English Language is given below:

	Code No.	*Positive Impact*	*Negative Impact*	*No Impact*
- *English (as opposed to Arabic) as a main Language ofAdministration*		46	48	4
- *English (as opposed to Arabic) as a second Language of Administration*		68	11	15
- *English use in Technical Documentation*		69	22	3
- *English use in user documentation*		50	44	4

The above analysis reflect the attitude of the people interviewed towards the use of English. While 48 individuals consider the use of English as a main language of Administration to be a negative impact 46 believed it to have a positive impact and 4 said it had no impact on the development of Nationals on the use of Computer technology .

The overwhelming majority of individuals interviewed considered the use of English as a second language of Administration and a language of Technical and user Documentation to have a positive impact on the development of Nationals. This attitude towards the English language was more apparent among the users than any other group as shown in Annexture one.

6.3.2 Factors Limiting the Expansion of Computerised Accounting/Auditing Systems in Arabic

A number of factors were discussed that may limit the expansion of computerised accounting and auditing systems in Arabic. The interviewees were asked to detemine the extent to which the following specific factors limit the expansion of computerised Accounting and Auditing Systems in Arabic:

	Code No.	*Great Extent*	*Limited Extent*	*Not at all*
a) Hardware constraints		17	50	29
b) Lack of Arbic compilers		38	35	21
c) Lack of Arabic database management systems		44	42	14
d) Cost of Arabic Accounting systems relative to English systems		21	53	23
e) Lack of demand by users		27	47	22
f) Lack of regulations of the Audit profession		22	63	11
g) Lack of official audit requirements		28	45	23

Hardware constraints was considered by majority of interviewees to have limited extent while majority of interviewees believed compilers and database management systems have greater extent on the expansion of computerised accounting/auditing systems in Arabic.

Majority of interviewees consider the cost of Arabic Accounting systems relative to English systems to have less serious consequences on the expansion of Arabic systems while 47 of interviewees believed that lack of demand by users to have limited extent. In their view this is because of lack of available Arabic systems to the users.

The overwhelming majority of interviewees consider that lack of regulations of the audit profession and official audit requirements to have limited extent. In their view the government cannot legislate software development. It has to be based on commercial reality and profit.

Few interviewees believed that the path to Arabisation of Accounting and Auditing systems in Arabic has to be at the official level. Government has to take the lead in converting their accounting systems to Arabic which in turn will encourage audit firms to use Arabised Audit software.

6.3.3 Extent of the lack of Arabic Operations and Application Systems

The interviewees were asked to determine the extent of the lack of Arabic operating and application systems. They were given the option of answering one, several or all of the following questions:

	Code No.	*Great Extent*	*Limited Extent*	*Not at all*
a) a disadvantage to your organisation's use of modern technology ?		21	30	43
b) a limiting factor in the recruitment of staff ?		13	17	56
c) a limiting factor in the automation of business processing functions?		13	28	39
d) a limiting factor on the speed of introducing new systems ?		16	35	37

The majority of interviewees responded stated that they do not consider that the lack of Arabic operating and application systems to have an impact at all. While others believed that they had a limited extent. A smaller number of interviewees believed the lack of Arabic operating and application systems to be a major disadvantage to their organisation use of modern technology, recruitment of qualified Arab staff and in Automating business processing functions and in speeding the introduction of new systems in their own language.

6.3.4 Impact of Arabised Software on Future Recruitment of I.T Professionals

This area was divided into two parts namely:

- Organisations who are planning to Arabise their software; and
- Organisations already using Arabised software.

The interviewees were asked to determine the impact the action(s) of their organisation had/will have on the recruitment of I.T Professionals.

Their responses may be summarised as follows:

a) Organisations planning to Arabise Software.

	Code No.	*Very Positive Impact*	*Positive*	*No Impact*	*Negative*	*Very Negative Impact*
- *I.T Arab Profesionals*		31	32	22	9	-
- *Non-Arabic speaking I.T professionals.*		-	7	12	55	20

The majority of individuals interviewed believe that Arabising Software in their organisations will have a very positive impact on the recruitment of I.T Arab Professionals, and will ultimatelly reduce the need for Non-Arabic speaking professionals. This attitude is reflected in the responses given by the majority of interviewees (75) to the recruitment of Non-Arabic speaking I.T. professionals in Arabised software environment as they believe their organisations will have to replace existing Non-Arab with Arab professionals.

b) Organisations already using Arabised Software:

	Code No.	*Very Positive Impact*	*Positive*	*No Impact*	*Negative*	*Very Negative Impact*
- *I.T Arab Profesionals*		15	18	23	1	-
- *Non-Arabic speaking I.T professionals.*		-	-	8	12	2

Similar responses were given by individuals interviewed who are currently working for Organisations already using Arabised Software. The majority stated that there is a positive impact on the recruitment of I.T Arab. 23 interviewees stated that there will be no impact as most of their existing staff are bilingual.

6.3.5 Extent of Non-Arab Expatriates effected on availability of Arabised Software

Interviewees were asked to determine to what extent does the recruitment of Non-Arab Expatriates for Activities connected with computer technology in the following categories would affect the availability of Arabised Software:

	Code No.	*Great Extent*	*Limited Extent*	*Not at all*
a) Computer specialists (eg. systems analysis, programmers)		48	49	4
b) Departmental heads and senior executives		38	57	6
c) Clerical staff (other than specialist data input staff)		33	38	30
d) Non-clerical staff (eg. sales persons, engineers)		16	60	23
e) Data input and data control staff		48	40	13

According to the above it can be seen that the majority of individuals interviewed believe that the recruitment of Non-Arab Expatriates would have an impact on the availability of Arabised Software. Interviewees believed from a limited to a greater extent that their presence in these Organisation would render the need for Arabised Software obsolete.

6.3.6 Barriers to Using Bilingual Computerised Systems

Interviewees were asked to determine what in their view are the barriers to using Bilingual computerised systems. Summary of their responses is given below:

	Code No.	*YES*	*NO*
a) Lack of I.T Professional Arab Nationals to run the bilingual system		44	56
b) Cost of software		29	70
c) Hardware limitation		69	27
Note: It may operate but not sufficiently functional.			
d) Unaware that bilingual systems are available or possible		30	68
e) No operational requirement for bilingual systems		62	38
f) Lack of General Management understanding		38	62

Hardware limitations and no operational requirement for bilingual systems were identified by majority of interviewees to be the barriers to using bilingual systems. Less than half of those interviewed (44) believed that the lack of I.T professional Arab Nationals to run the bilingual system is a barrier. This is a belief shared by (62) interviewees who considered that no operational requirement for bilingual systems to be a barrier.

A minority of individuals interviewed between 29 to 30 interviewees believed that the cost of software and awareness that a bilingual system is available to be a barrier.

6.4 Analysis of Interview Responses on Transfer of Technology

6.4.1 Impact on the personal development and job opportunities for Arab Nationals in I.T resulting from the use of Non-Arab professionals

Interviewees of different nationalities were asked to assess the impact of using non-Arabs on the personal development and job opportunities available for Arab Nationals in jobs relating to computerisation accounting and auditing. Responses of the diferent nationals are given below:

	Code No.	*Positive Impact*	*No Impact*	*Negative Impact*
a) Asians (Pakistanis, Indians)		6	33	63
b) Europeans		11	52	37
c) North Americans		11	50	37
d) Other Nationalities		8	40	34

A very small minority of interviewees believe that there is a positive impact on the personal development and job opportunities in I.T for Arab Nationals. The majority of interviewees consider that Asians would have a negative impact whereas Europeans, North American and other Nationalities would have no impact at all.

It should be noted that majority of interviewees consider Asians to be less interested in the personal development and job opportunities for Arab Nationals because they believe it would have an impact on their own jobs. Whereas expatriates from developed countries such as European and North Americans are less threatened by Arabisation of jobs. However one third of individuals interviewed (34 to 37) believe that Europeans North Americans and other Nationalities do have a negative impact on the personal development and job opportunities for Arab Nationals.

6.4.2 Long term strategy relating to the replacement of Non-Arab and transfer of skills to Arab Nationals

Interviewees were asked to identify their organisations long terms strategy regarding the replacement of Non-Arab Expatriates and program to transfer skills to Arab Nationals on the use of computer technology in jobs relating to computerised accounting and auditing their responses are summarised below:

	Code No.	*YES*	*NO*
- *Utilising expatriates to train Arab Nationals as part of their work contract and within a specified time frame.*		69	27
- *Providing specialised internal training leading to a specialisation in one of the fileds of accounting and auditing.*		65	31
- *Providing specialised external training leading to a specialisation in one of the fields of accounting and auditing.*		71	20
- *Providing formal college education leading to specialisation in one of the fields of accounting and auditing.*		54	37

An overwhelming majority of those interviewed believe that expatriates should be utilised to train Arab Nationals within a given timeframe, providing specialised internal and external training leading to specialisation in one of the fields of Accounting and auditing including college education.

A small minority of interviewees believed that Arabs Professionals who are experts in I.T and currently living abroad in contries such the U.K and U.S.A should be attracted to return to the region and assume the role of the expatriates to accelerate the transfer of technology.

6.4.3 Factors impacting on the transfer of computer technology relating to accounting and auditing in Abu Dhabi

Interviewees were asked to identify whether the following factors had an impact on the transfer of computer technology relating to accounting and auditing in Abu Dhabi. Their responses are given below:

	Code No.	*Major Impact*	*Minor Impact*	*No Impact*
- *Lack of clear statement of direction from private and public sector enterprises on the use and transfer of technology to Arab Nationals.*		62	25	15
- *Lack of trained Professional Arab Nationals in the fields of computerised accounting, auditing and computing.*		62	32	8
- *Lack of Quality Software in Arabic.*		69	20	12
- *Lack of adequate training to run the the Hardware provided to Arabic speaking professionals.*		42	47	13
- *Lack of Senior Management Understanding.*		50	37	13

A small minority of interviewees believed that the above factors have had no impact on the transfer of computer technology in their area.

69 interviewees believe that the lack of quality Software in Arabic to have a major impact whereas 62 interviewees believe that the lack of clear statement of direction from the private and public sectors and the lack of trained professional Arab Nationals in the fields of computerised accounting, auditing and computing to be a major impact.

Less than half of those interviewed, (47) interviewees believed that the lack of adequate training to run the Hardware provided to Arabic Speaking professionals to be a minor impact - whereas (42) interviewees believed it to be a major impact.

Almost half of those interviewed believe that lack of senior management understanding to have a major impact and (37) interviewees believed it had a minor impact.

6.4.4 Factors impacting on the use of computer technology in the fields of accounting, auditing and office automation

Interviewees were asked to determine the level of impact the following have on the use of computer technology in the fields of accounting, auditing and office automation:

	Code No.	*Major Impact*	*Minor Impact*	*No Impact*
- *Using Non-Arab speaking expatriates because when they leave the region so does the knowhow.*		53	27	22
- *Unclear definition of what computer related skills need to be learned by Arab Nationals.*		52	36	14
- *Lack of budgets for computer training.*		46	37	19
- *Poor planning and implementation of training in these fields.*		70	22	10

The majority of individuals interviewed (53) believe that using Non-Arab speaking Expatriates to have a major impact on the use of computer technology in the fields of accounting, auditing and office automation. They believe that when expatriates terms of employment expires and they leave the region so is their know-how. Similar number of individuals interviewed (52) believe that unclear definition of the required computer skills by Arab Nationals to be a major factor whereas (46) interviewees believe that lack of budgets for computer training is a major impact.

Poor planning and implementation of training has been identified by (70) interviewees to have a major impact on the use of computer technology in the fields of accounting, auditing and office automation.

6.4.5 Factors impacting on the training of professional Arab Nationals in the fields of computerised accounting and auditing

Interviewees were asked to determine the level of impact the following factors had on the training of professional Arab Nationals in the fields of computerised accounting and auditing. Their responses are given below:

Factors	*Code No.*	*Major Impact*	*Minor Impact*	*No Impact*
- *Lack of clear policies on the recruitment and training of Arab Nationals.*		77	14	11
- *Lack of clear policy on the recruitment of Arab speaking professionals.*		65	25	12
- *No policy stating conditions, restrictions on the recruitments of Non-Arab expatriates.*		49	34	19
- *Limited numbers of Arabic speaking professional Trainors.*		64	30	7

The above analysis shows that the majority of interviewees believe that the factors listed above have had a major impact on the training of professional Arab Nationals in the fields of computerised accounting and auditing.

6.4.6 Items impacting on the development of Arab National skills to use computer technology in accounting, auditing and automation or information processing

Interviewees were asked to determine the level of impact the items listed below had on the development of Arab National skills to use computer technology in accounting, auditing and automation or information processing. Their responses are summarised below:

	Code No.	*Very positive*	*Positive*	*No Impact*	*Negative*	*Very Negative*
- *Hardware to operate bilingually.*		37	39	15	8	2
- *Bilingual operating environments (systems).*		26	50	12	11	2
- *Arabic compilers.*		27	29	31	12	2
- *Arabic Database Management Systems.*		28	46	15	10	2
- *Bilingual application systems.*		24	55	9	12	2
- *Adequacy of technical Arabic vocabulary in accounting and auditing.*		26	51	11	6	8
- *General quality of technical documentation in Arabic.*		23	57	8	7	7

The overwhelming majority of individuals interviewed believe that the above items had/will have a positive to a very positive impact on the development of Arab National skills to use computer technology.

6.5 Analysis of Interview Responses on Training

6.5.1 Acquisition and type of external training

Interviewees were asked to state whether they acquire professional external training to train their Arab Nationals on the use of computer technology in accounting and auditing and if so what type of training is acquired. Analysis of their responses is given below:

a) Professional external training acquired

	Code No.	YES	NO
- In Arabic		36	63
- In English		60	41

Majority of interviewees (60) stated that they acquire professional external training in English whereas only (36) interviewees stated that they acquire such training in Arabic.

b) The type of professional external training acquired is given below:

	Code No.	YES	NO
a) General accounting		37	11
b) Accounting systems and procedures		47	7
c) Spreadsheet and graphics		46	5
d) Financial modelling		38	13
e) Database		47	10
f) Database processing		36	10
g) Office Automation		43	12
h) Other		11	3

The majority of those interviewed (47) stated that they acquire professional external training on the use accounting systems and procedures and database followed by spreadsheets and graphic's, office automation and financial modelling and database processing.

Other training courses mentioned include basic courses in computing and word processing.

6.5.2 Level of impact of external computer training on the development of Arab Nationals

Interviewees were asked to determined the level of impact external training had/will have on the development of Arab Nationals in the Areas listed below. Their responses are summarised as follows:

	Code No.	Very positive	Positive	No Impact	Negative	Very Negative
a) General accounting		13	34	8	-	-
b) Spreadsheet and graphics		15	44	-	-	-
c) Financial modelling		9	35	3	-	-
d) Database		9	46	2	-	-
e) Accounting systems and procedures		8	46	-	-	-
f) Data processing		8	38	11	-	-
g) Office Automation		9	41	5	-	-

It can be seen from the above results that the interviewees consider that external computer training on the development of Arab Nationals in the areas listed above have had a positive to very positive impact.

6.5.3 Development and type of internal training

Interviewees were asked to state whether they develop internal training to train their Arab Nationals on the use of computer technology in accounting and auditing as part of a pre defined plan and what type of training is developed. Analysis of their responses is given below

a) Internal Training Developed

	Code No.	YES	NO
Internal training developed as part of a predefined plan		41	56

The majority of interviewees (56) stated that the do not develop internal training due to lack of resources whereas (41) interviewees stated that they do as part of a predefined plan.

b) The type of internal training expertise developed include:

	Code No.	YES	NO
a) General accounting		29	0
b) Accounting systems and procedures		37	0
c) Spreadsheet and graphics		27	10
d) Financial modelling		18	14
e) Database		25	10
f) Database processing		30	10
g) Office Automation		34	5
h) Other		7	2

The majority of those interviewed stated that they developed internal training in accounting systems and procedures followed by office automation database processing general accounting and spreadsheet and graphics.

Small number of interviewees stated that they have also developed job ordering and customer tracking training.

6.5.4 Level of Impact of internally developed training on the development of Arab Nationals

Interviewees were asked to determine the level of impact internally developed training had will have on the development of Arab Nationals in the areas listed below. Their responses are summarised as follows:

	Code No.	Very positive	Positive	No Impact	Negative	Very Negative
a) General accounting		12	25	-	-	-
b) Spreadsheet and graphics		13	18	-	-	-
c) Financial modelling		5	21	3	-	-
d) Database		3	28	3	-	-
e) Accounting systems and procedures		15	27	2	-	-
f) Data processing		9	26	2	-	-
g) Office Automation		13	29	-	-	-

It can be seen from the above results that internally developed training have had/will have in this opinion of interviewees a positive to a very positive impact on the development of Arab Nationals.

6.5.5 Level of support and promotion of computer technology through direct involvement of business community sectors

Interviewees were asked to determined whether their institution support and promote computer technology through direct involvement with each of the business community sectors listed below:

	Code No.	*YES*	*NO*
a) Universities' faculty members.		24	72
b) Computer consultants.		57	39
c) Hardware and software manufacturers, agents and distributors.		59	37
d) Accounting and auditing firms.		47	47
e) Industrial and commercial concerns.		33	57

If the answer is YES please specify what type of support do you provide

The majority of those interviewed (72) stated that the do not have direct involvement with university faculty members while (57) interviewees stated that do deal with computer consultants and (59) confirmed that their/involvement is through the use of Hardware suppliers.

It should be noted that equal number of interviewees stated that they do not support and promote computer technology through their accounting and auditing firms. 47 interviewees perceive the accounting and auditing firms as users and not as innovators of computer technology.

Industrial and commercial concerns were least considered by those interviewed after Universities faculty members to be the sector were computer technology may be supported or even promoted.

6.5.6 Level of impact of courses offered by the business community and educational institutions on the development of Arab Nationals in accounting and auditing

Interviewees were asked to determine the level of impact the business community courses listed below had/will have on the development of Arab Nationals in Accounting and auditing. Summary of their responses are given below:

	Code No.	Very positive	Positive	No Impact	Negative	Very Negative
a) Basic programming		17	55	15	-	-
b) Advanced programming		25	43	19	-	-
c) System design		35	32	20	-	-
d) Computerised financial accounting systems		27	56	4	-	-
e) Financial modelling		25	53	9	-	-
f) Computerised banking techniques		27	46	13	-	-
g) Computerised planning models		21	53	12	-	-
h) Database		14	71	4	-	-
i) Spreadsheet		28	56	5	-	-
j) Word processing		17	59	13	-	-
k) Computer Assisted Audit Techniques (CAATs)		27	41	17	-	-
l) Computer Aided Design (CAD)		18	47	18	-	-
m) Office automation concepts.		14	62	8	-	-
n) Other: please specify:		3	2	-	-	-

The above results indicate that in the opinion of interviewees the above courses have had/will have a positive to a very positive impact on this development of Arab Nationals in accounting and auditing.

6.6 Conclusion

(a) Arabisation

Development of nationals on the use of computer technology:

- The overwhelming majority are of the view that use of English as a first and second language and as a language used in technical documentation have a positive impact.
- Compilers and bilingual database management systems have greater impact on the expansion of computerised accounting/auditing systems in Arabic.
- Accounting systems have less serious consequences on the expansion of Arabic systems than lack of demand by users.
- Government must take a leadership position with regards to Arabisation by arabising their systems, encouraging audit firms to use Arabic systems and to employee Arab speaking staff.
- Recruitment of Arabs would influence the development of Arabised software and the use of non-Arabs would render the need for Arabised software obsolete.

(b) Transfer of Technology

- Use of non-Arabs (Asians) in the view of majority interviewed would have a negative impact on job opportunities for Arabs. This conclusion is based on the perception that most qualified Asians are less expensive to hire than Arabs and Europeans and their contribution to advancing and transferring technology is limited.
- Utilising expatriates and providing specialised internal and external training are considered to be the two major factors in transferring technology on a longer terms basis.

- Lack of clear policies on training and recruitment of Arab nationals is considered to be a major prohibiting factor in the development of Arab nationals.

(c) Training

- Majority considers (internal and external) training to be a major factor in the development of Arab nationals on the use of computer technology.

- Limited business community involvement in promoting computer technology training is considered to have a negative impact.

ARABISATION

ALL

3 What in your view is the level of Impact on the Development of Nationals on the use of Computer Technology resulting from the use of :

	Code No.	*Positive Impact*	*Negative Impact*	*No Impact*
- *English (as opposed to Arabic) as a main Language ofAdministration*		46	48	4
- *English (as opposed to Arabic) as a second Language of Administration*		68	11	15
- *English use in Technical Documentation*		69	22	3
- *English use in user documentation*		50	44	4

H1.1

1 ANALYSIS FOR COMPUTER H/W, S/W SUPPLIERS

3 What in your view is the level of Impact on the Development of Nationals on the use of Computer Technology resulting from the use of :

	Code No.	*Positive Impact*	*Negative Impact*	*No Impact*
- *English (as opposed to Arabic) as a main Language ofAdministration*		8	9	2
- *English (as opposed to Arabic) as a second Language of Administration*		12	5	2
- *English use in Technical Documentation*		16	1	2
- *English use in user documentation*		11	8	-

H1.1

2 ANALYSIS FOR AUDITORS

3 What in your view is the level of Impact on the Development of Nationals on the use of Computer Technology resulting from the use of :

	Code No.	*Positive Impact*	*Negative Impact*	*No Impact*
- *English (as opposed to Arabic) as a main Language ofAdministration*		-	4	-
- *English (as opposed to Arabic) as a second Language of Administration*		4	-	-
- *English use in Technical Documentation*		2	2	-
- *English use in user documentation*		-	4	-

H1.1

3 ANALYSIS FOR EDUCATIONAL INSTITUTIONS

3 What in your view is the level of Impact on the Development of Nationals on the use of Computer Technology resulting from the use of :

	Code No.	*Positive Impact*	*Negative Impact*	*No Impact*
- *English (as opposed to Arabic) as a main Language ofAdministration*		3	3	-
- *English (as opposed to Arabic) as a second Language of Administration*		6	-	-
- *English use in Technical Documentation*		6	-	-
- *English use in user documentation*		4	2	-

H1.1

4 ANALYSIS ON USERS

3 What in your view is the level of Impact on the Development of Nationals on the use of Computer Technology resulting from the use of :

	Code No.	*Positive Impact*	*Negative Impact*	*No Impact*
- *English (as opposed to Arabic) as a main Language ofAdministration*		35	32	2
- *English (as opposed to Arabic) as a second Language of Administration*		46	6	13
- *English use in Technical Documentation*		51	19	1
- *English use in user documentation*		35	30	4

H1.1

ALL

4 To what extent do the following limit the expansion of computerised accounting/auditing systems in Arabic?

	Code No.	*Great Extent*	*Limited Extent*	*Not at all*
a) Hardware constraints		17	50	29
b) Lack of Arbic compilers		38	35	21
c) Lack of Arabic database management systems		44	42	10
d) Cost of Arabic Accounting systems relative to English systems		21	53	23
e) Lack of demand by users		27	47	22
f) Lack of regulations of the Audit profession		22	63	11
g) Lack of official audit requirements		28	45	23
h) Other factors: Please specify : _____ _____		2	3	1

H21

1 ANALYSIS FOR COMPUTER H/W, S/W SUPPLIERS

4 To what extent do the following limit the expansion of computerised accounting/auditing systems in Arabic?

	Code No.	*Great Extent*	*Limited Extent*	*Not at all*
a) Hardware constraints		-	10	10
b) Lack of Arbic compilers		4	8	8
c) Lack of Arabic database management systems		8	5	5
d) Cost of Arabic Accounting systems relative to English systems		3	12	6
e) Lack of demand by users		6	11	2
f) Lack of regulations of the Audit profession		9	8	3
g) Lack of official audit requirements		9	8	3
h) Other factors: Please specify :		2	-	-

_____

_____

H2.1

2 ANALYSIS FOR AUDITORS

4 To what extent do the following limit the expansion of computerised accounting/auditing systems in Arabic?

	Code No.	*Great Extent*	*Limited Extent*	*Not at all*
a) Hardware constraints		-	2	2
b) Lack of Arbic compilers		-	2	2
c) Lack of Arabic database management systems		2	2	-
d) Cost of Arabic Accounting systems relative to English systems		4	-	-
e) Lack of demand by users		-	2	2
f) Lack of regulations of the Audit profession		-	2	2
g) Lack of official audit requirements		-	2	2
h) Other factors: Please specify :		-	-	-

_____

_____

H2.1

3 ANALYSIS FOR EDUCATIONAL INSTITUTIONS

4 To what extent do the following limit the expansion of computerised accounting/auditing systems in Arabic?

	Code No.	*Great Extent*	*Limited Extent*	*Not at all*
a) Hardware constraints		-	6	-
b) Lack of Arbic compilers		2	4	-
c) Lack of Arabic database management systems		3	3	-
d) Cost of Arabic Accounting systems relative to English systems		-	6	-
e) Lack of demand by users		6	-	-
f) Lack of regulations of the Audit profession		-	6	-
g) Lack of official audit requirements		-	6	-
h) Other factors: Please specify :		-	-	1

_____

_____

H2.1

4 ANALYSIS ON USERS

4 To what extent do the following limit the expansion of computerised accounting/auditing systems in Arabic?

	Code No.	*Great Extent*	*Limited Extent*	*Not at all*
a) Hardware constraints		17	32	17
b) Lack of Arbic compilers		32	21	11
c) Lack of Arabic database management systems		31	32	4
d) Cost of Arabic Accounting systems relative to English systems		14	35	18
e) Lack of demand by users		15	34	18
f) Lack of regulations of the Audit profession		13	47	6
g) Lack of official audit requirements		19	29	18
h) Other factors: Please specify : _____ _____		-	3	-

H2.1

ALL

5 To what extent is the lack of Arabic Operating and Application Systems:

Note: You may answer one, several or all of these questions.

	Code No.	*Great Extent*	*Limited Extent*	*Not at all*
a) a disadvantage to your organisation's use of modern technology ?		21	30	43
b) a limiting factor in the recruitment of staff ?		13	17	56
c) a limiting factor in the automation of business processing functions?		13	28	39
d) a limiting factor on the speed of introducing new systems ?		16	35	37

H2.2

1 ANALYSIS FOR COMPUTER H/W, S/W SUPPLIERS

5 To what extent is the lack of Arabic Operating and Application Systems:

Note: You may answer one, several or all of these questions.

	Code No.	*Great Extent*	*Limited Extent*	*Not at all*
a) a disadvantage to your organisation's use of modern technology ?		1	7	11
b) a limiting factor in the recruitment of staff ?		1	6	10
c) a limiting factor in the automation of business processing functions?		4	5	5
d) a limiting factor on the speed of introducing new systems ?		4	8	4

H2.2

2 ANALYSIS FOR AUDITORS

5 To what extent is the lack of Arabic Operating and Application Systems:

Note: You may answer one, several or all of these questions.

	Code No.	*Great Extent*	*Limited Extent*	*Not at all*
a) a disadvantage to your organisation's use of modern technology ?		2	-	2
b) a limiting factor in the recruitment of staff ?		2	-	2
c) a limiting factor in the automation of business processing functions?		-	2	2
d) a limiting factor on the speed of introducing new systems ?		-	2	2

H2.2

3 ANALYSIS FOR EDUCATIONAL INSTITUTIONS

5 To what extent is the lack of Arabic Operating and Application Systems:

Note: You may answer one, several or all of these questions.

	Code No.	*Great Extent*	*Limited Extent*	*Not at all*
a) a disadvantage to your organisation's use of modern technology ?		3	-	3
b) a limiting factor in the recruitment of staff ?		2	1	3
c) a limiting factor in the automation of business processing functions?		2	1	3
d) a limiting factor on the speed of introducing new systems ?		-	3	3

H2.2

4 ANALYSIS ON USERS

5 To what extent is the lack of Arabic Operating and Application Systems:

Note: You may answer one, several or all of these questions.

	Code No.	*Great Extent*	*Limited Extent*	*Not at all*
a) a disadvantage to your organisation's use of modern technology ?		15	23	27
b) a limiting factor in the recruitment of staff ?		8	10	41
c) a limiting factor in the automation of business processing functions?		7	20	29
d) a limiting factor on the speed of introducing new systems ?		12	22	28

H2.2

ALL

6.1 If you are planning to Arabise your Software please state what impact in your view it will have in the future on the recruitment of IT professionals.

	Code No.	*Very Positive Impact*	*Positive*	*No Impact*	*Negative*	*Very Negative Impact*
- *I.T Arab Profesionals*		31	32	22	9	-
- *Non-Arabic speaking I.T professionals.*		-	7	12	55	20

6.2 If you are already using Arabised Software, please state what impact it had over the last three years on the recruitment of IT Professionals?

	Code No.	*Very Positive Impact*	*Positive*	*No Impact*	*Negative*	*Very Negative Impact*
- *I.T Arab Profesionals*		15	18	23	1	-
- *Non-Arabic speaking I.T professionals.*		-	-	8	12	2

H2.3

1 ANALYSIS FOR COMPUTER H/W, S/W SUPPLIERS

6.1 If you are planning to Arabise your Software please state what impact in your view it will have in the future on the recruitment of IT professionals.

	Code No.	Very Positive Impact	Positive	No Impact	Negative	Very Negative Impact
- *I.T Arab Profesionals*		4	11	5	-	-
- *Non-Arabic speaking I.T professionals.*		-	-	5	12	3

6.2 If you are already using Arabised Software, please state what impact it had over the last three years on the recruitment of IT Professionals?

	Code No.	Very Positive Impact	Positive	No Impact	Negative	Very Negative Impact
- *I.T Arab Profesionals*		3	5	5	-	-
- *Non-Arabic speaking I.T professionals.*		-	-	4	7	2

H2.3

2 ANALYSIS FOR AUDITORS

6.1 If you are planning to Arabise your Software please state what impact in your view it will have in the future on the recruitment of IT professionals.

	Code No.	Very Positive Impact	Positive	No Impact	Negative	Very Negative Impact
- *I.T Arab Profesionals*		-	2	2	-	-
- *Non-Arabic speaking I.T professionals.*		-	-	-	4	-

6.2 If you are already using Arabised Software, please state what impact it had over the last three years on the recruitment of IT Professionals?

	Code No.	Very Positive Impact	Positive	No Impact	Negative	Very Negative Impact
- *I.T Arab Profesionals*		-	2	2	-	-
- *Non-Arabic speaking I.T professionals.*		-	-	-	4	-

H2.3

3 ANALYSIS FOR EDUCATIONAL INSTITUTIONS

6.1 If you are planning to Arabise your Software please state what impact in your view it will have in the future on the recruitment of IT professionals.

	Code No.	Very Positive Impact	Positive	No Impact	Negative	Very Negative Impact
- *I.T Arab Profesionals*		1	3	-	2	-
- *Non-Arabic speaking I.T professionals.*		-	-	4	2	-

6.2 If you are already using Arabised Software, please state what impact it had over the last three years on the recruitment of IT Professionals?

	Code No.	Very Positive Impact	Positive	No Impact	Negative	Very Negative Impact
- *I.T Arab Profesionals*		3	-	2	-	-
- *Non-Arabic speaking I.T professionals.*		-	-	-	4	-

H2.3

4 ANALYSIS ON USERS

6.1 If you are planning to Arabise your Software please state what impact in your view it will have in the future on the recruitment of IT professionals.

	Code No.	Very Positive Impact	Positive	No Impact	Negative	Very Negative Impact
- *I.T Arab Profesionals*		26	16	15	7	-
- *Non-Arabic speaking I.T professionals.*		-	7	3	37	17

6.2 If you are already using Arabised Software, please state what impact it had over the last three years on the recruitment of IT Professionals?

	Code No.	Very Positive Impact	Positive	No Impact	Negative	Very Negative Impact
- *I.T Arab Profesionals*		9	11	14	1	-
- *Non-Arabic speaking I.T professionals.*		-	-	4	1	-

H2.3

ALL

7 To what extent does the recruitment of Non-Arab Expatriates for activities connected with Computer technology in the following categories affect the availability of Arabised software:

	Code No.	*Great Extent*	*Limited Extent*	*Not at all*
a) Computer specialists (eg. systems analysis, programmers)		48	49	4
b) Departmental heads and senior executives		38	57	6
c) Clerical staff (other than specialist data input staff)		33	38	30
d) Non-clerical staff (eg. sales persons, engineers)		16	60	23
e) Data input and data control staff		48	40	13
f) Others : please specify : _____		4	-	-

H3.1

1 ANALYSIS FOR COMPUTER H/W, S/W SUPPLIERS

7 To what extent does the recruitment of Non-Arab Expatriates for activities connected with Computer technology in the following categories affect the availability of Arabised software:

	Code No.	*Great Extent*	*Limited Extent*	*Not at all*
a) Computer specialists (eg. systems analysis, programmers)		9	10	1
b) Departmental heads and senior executives		2	15	3
c) Clerical staff (other than specialist data input staff)		2	7	11
d) Non-clerical staff (eg. sales persons, engineers)		2	13	5
e) Data input and data control staff		7	11	2
f) Others : please specify : _____		-	-	-

H3.1

2 ANALYSIS FOR AUDITORS

7 To what extent does the recruitment of Non-Arab Expatriates for activities connected with Computer technology in the following categories affect the availability of Arabised software:

	Code No.	*Great Extent*	*Limited Extent*	*Not at all*
a) Computer specialists (eg. systems analysis, programmers)		3	1	2
b) Departmental heads and senior executives		-	4	-
c) Clerical staff (other than specialist data input staff)		-	4	-
d) Non-clerical staff (eg. sales persons, engineers)		-	4	-
e) Data input and data control staff		-	4	-
f) Others : please specify : _____		-	-	-

H3.1

3 ANALYSIS FOR EDUCATIONAL INSTITUTIONS

7 To what extent does the recruitment of Non-Arab Expatriates for activities connected with Computer technology in the following categories affect the availability of Arabised software:

	Code No.	*Great Extent*	*Limited Extent*	*Not at all*
a) Computer specialists (eg. systems analysis, programmers)		2	2	-
b) Departmental heads and senior executives		-	4	-
c) Clerical staff (other than specialist data input staff)		-	4	-
d) Non-clerical staff (eg. sales persons, engineers)		-	4	-
e) Data input and data control staff		-	4	-
f) Others : please specify : _____		-	-	-

H3.1

4 ANALYSIS ON USERS

7 To what extent does the recruitment of Non-Arab Expatriates for activities connected with Computer technology in the following categories affect the availability of Arabised software:

	Code No.	*Great Extent*	*Limited Extent*	*Not at all*
a) Computer specialists (eg. systems analysis, programmers)		34	36	1
b) Departmental heads and senior executives		33	37	1
c) Clerical staff (other than specialist data input staff)		28	26	17
d) Non-clerical staff (eg. sales persons, engineers)		14	39	16
e) Data input and data control staff		41	21	9
f) Others : please specify : _____		4	-	-

H3.1

ALL

8 In your view what are the barriers to using bilingual computerised systems.

	Code No.	*YES*	*NO*
a) Lack of I.T Professional Arab Nationals to run the bilingual system		44	56
b) Cost of software		29	70
c) Hardware limitation *Note: It may operate but not sufficiently functional.*		69	27
d) Unaware that bilingual systems are available or possible		30	68
e) No operational requirement for bilingual systems		62	38
f) Lack of General Management understanding		38	62

H3.2

1 ANALYSIS FOR COMPUTER H/W, S/W SUPPLIERS

8 In your view what are the barriers to using bilingual computerised systems.

	Code No.	*YES*	*NO*
a) Lack of I.T Professional Arab Nationals to run the bilingual system		7	12
b) Cost of software		4	15
c) Hardware limitation		6	13
Note: It may operate but not sufficiently functional.			
d) Unaware that bilingual systems are available or possible		6	13
e) No operational requirement for bilingual systems		10	9
f) Lack of General Management understanding		4	13

H3.2

2 ANALYSIS FOR AUDITORS

8 In your view what are the barriers to using bilingual computerised systems.

	Code No.	*YES*	*NO*
a) Lack of I.T Professional Arab Nationals to run the bilingual system		2	2
b) Cost of software		2	2
c) Hardware limitation		-	4
Note: It may operate but not sufficiently functional.			
d) Unaware that bilingual systems are available or possible		-	4
e) No operational requirement for bilingual systems		-	4
f) Lack of General Management understanding		-	4

H3.2

3 ANALYSIS FOR EDUCATIONAL INSTITUTIONS

8 In your view what are the barriers to using bilingual computerised systems.

	Code No.	YES	NO
a) Lack of I.T Professional Arab Nationals to run the bilingual system		5	-
b) Cost of software		2	3
c) Hardware limitation		3	2
Note: It may operate but not sufficiently functional.			
d) Unaware that bilingual systems are available or possible		3	3
e) No operational requirement for bilingual systems		6	-
f) Lack of General Management understanding		4	2

H3.2

4 ANALYSIS ON USERS

8 In your view what are the barriers to using bilingual computerised systems.

	Code No.	YES	NO
a) Lack of I.T Professional Arab Nationals to run the bilingual system		30	42
b) Cost of software		21	50
c) Hardware limitation		60	9
Note: It may operate but not sufficiently functional.			
d) Unaware that bilingual systems are available or possible		21	48
e) No operational requirement for bilingual systems		46	25
f) Lack of General Management understanding		29	43

H3.2

TRANSFER OF TECHNOLOGY

ALL

9 What is the impact on the personal development and job opportunities for Arab Nationals in I.T resulting from the use of the following Non-Arabic professionals in jobs relating to computerisation, accounting and auditing ?

	Code No.	*Positive Impact*	*No Impact*	*Negative Impact*
a) Asians (Pakistanis, Indians)		6	33	63
b) Europeans		11	52	37
c) North Americans		11	50	37
d) Other Nationalities		8	40	34

H4.1

1 ANALYSIS FOR COMPUTER H/W, S/W SUPPLIERS

9 What is the impact on the personal development and job opportunities for Arab Nationals in I.T resulting from the use of the following Non-Arabic professionals in jobs relating to computerisation, accounting and auditing ?

	Code No.	*Positive Impact*	*No Impact*	*Negative Impact*
a) Asians (Pakistanis, Indians)		1	8	11
b) Europeans		5	8	7
c) North Americans		5	8	7
d) Other Nationalities		1	8	7

H4.1

2 ANALYSIS FOR AUDITORS

9 What is the impact on the personal development and job opportunities for Arab Nationals in I.T resulting from the use of the following Non-Arabic professionals in jobs relating to computerisation, accounting and auditing ?

	Code No.	*Positive Impact*	*No Impact*	*Negative Impact*
a) Asians (Pakistanis, Indians)		-	-	4
b) Europeans		-	4	-
c) North Americans		-	4	-
d) Other Nationalities		-	4	-

H4.1

3 ANALYSIS FOR EDUCATIONAL INSTITUTIONS

9 What is the impact on the personal development and job opportunities for Arab Nationals in I.T resulting from the use of the following Non-Arabic professionals in jobs relating to computerisation, accounting and auditing ?

	Code No.	*Positive Impact*	*No Impact*	*Negative Impact*
a) Asians (Pakistanis, Indians)		-	5	1
b) Europeans		-	3	3
c) North Americans		-	3	3
d) Other Nationalities		-	3	3

H4.1

4 ANALYSIS ON USERS

9 What is the impact on the personal development and job opportunities for Arab Nationals in I.T resulting from the use of the following Non-Arabic professionals in jobs relating to computerisation, accounting and auditing ?

	Code No.	*Positive Impact*	*No Impact*	*Negative Impact*
a) Asians (Pakistanis, Indians)		5	20	47
b) Europeans		6	37	27
c) North Americans		6	35	27
d) Other Nationalities		7	25	24

H4.1

TRANSFER OF TECHNOLOGY

ALL

10 What is the long term strategy regarding the replacement of Non-Arab expatriates and your program to transfer skills to Arab Nationals on the use of computer technology in jobs relating to computerised accounting and auditing?

	Code No.	YES	NO
- *Utilising expatriates to train Arab Nationals as part of their work contract and within a specified time frame.*		69	27
- *Providing specialised internal training leading to a specialisation in one of the fileds of accounting and auditing.*		65	31
- *Providing specialised external training leading to a specialisation in one of the fields of accounting and auditing.*		71	20
- *Providing formal college education leading to specialisation in one of the fields of accounting and auditing.*		54	37
- *Other*		16	1

H4.2

1 ANALYSIS FOR COMPUTER H/W, S/W SUPPLIERS

10 What is the long term strategy regarding the replacement of Non-Arab expatriates and your program to transfer skills to Arab Nationals on the use of computer technology in jobs relating to computerised accounting and auditing?

	Code No.	*YES*	*NO*
- *Utilising expatriates to train Arab Nationals as part of their work contract and within a specified time frame.*		17	3
- *Providing specialised internal training leading to a specialisation in one of the fileds of accounting and auditing.*		11	9
- *Providing specialised external training leading to a specialisation in one of the fields of accounting and auditing.*		12	8
- *Providing formal college education leading to specialisation in one of the fields of accounting and auditing.*		5	15
- *Other*		1	1

H4.2

2 ANALYSIS FOR AUDITORS

10 What is the long term strategy regarding the replacement of Non-Arab expatriates and your program to transfer skills to Arab Nationals on the use of computer technology in jobs relating to computerised accounting and auditing?

	Code No.	*YES*	*NO*
- *Utilising expatriates to train Arab Nationals as part of their work contract and within a specified time frame.*		4	-
- *Providing specialised internal training leading to a specialisation in one of the fileds of accounting and auditing.*		4	-
- *Providing specialised external training leading to a specialisation in one of the fields of accounting and auditing.*		4	-
- *Providing formal college education leading to specialisation in one of the fields of accounting and auditing.*		4	-
- *Other*		2	-

H4.2

3 ANALYSIS FOR EDUCATIONAL INSTITUTIONS

10 What is the long term strategy regarding the replacement of Non-Arab expatriates and your program to transfer skills to Arab Nationals on the use of computer technology in jobs relating to computerised accounting and auditing?

	Code No.	*YES*	*NO*
- *Utilising expatriates to train Arab Nationals as part of their work contract and within a specified time frame.*		4	2
- *Providing specialised internal training leading to a specialisation in one of the fileds of accounting and auditing.*		6	-
- *Providing specialised external training leading to a specialisation in one of the fields of accounting and auditing.*		5	1
- *Providing formal college education leading to specialisation in one of the fields of accounting and auditing.*		6	-
- *Other*		-	-

H4.2

10 What is the long term strategy regarding the replacement of Non-Arab expatriates and your program to transfer skills to Arab Nationals on the use of computer technology in jobs relating to computerised accounting and auditing?

	Code No.	*YES*	*NO*
- *Utilising expatriates to train Arab Nationals as part of their work contract and within a specified time frame.*		44	22
- *Providing specialised internal training leading to a specialisation in one of the fileds of accounting and auditing.*		44	22
- *Providing specialised external training leading to a specialisation in one of the fields of accounting and auditing.*		50	11
- *Providing formal college education leading to specialisation in one of the fields of accounting and auditing.*		39	22
- *Other*		13	-

H4.2

TRANSFER OF TECHNOLOGY

ALL

11 Do the following factors have an impact on the transfer of computer technology relating to Accounting and Auditing in Abu Dhabi?

	Code No.	*Major Impact*	*Minor Impact*	*No Impact*
- *Lack of clear statement of direction from private and public sector enterprises on the use and transfer of technology to Arab Nationals.*		62	25	15
- *Lack of trained Professional Arab Nationals in the fields of computerised accounting, auditing and computing.*		62	32	8
- *Lack of Quality Software in Arabic.*		69	20	12
- *Lack of adequate training to run the the Hardware provided to Arabic speaking professionals.*		42	47	13
- *Lack of Senior Management Understanding.*		50	37	13

H5.1

1 ANALYSIS FOR COMPUTER H/W, S/W SUPPLIERS

11 Do the following factors have an impact on the transfer of computer technology relating to Accounting and Auditing in Abu Dhabi?

	Code No.	*Major Impact*	*Minor Impact*	*No Impact*
- *Lack of clear statement of direction from private and public sector enterprises on the use and transfer of technology to Arab Nationals.*		9	9	2
- *Lack of trained Professional Arab Nationals in the fields of computerised accounting, auditing and computing.*		7	11	2
- *Lack of Quality Software in Arabic.*		7	8	5
- *Lack of adequate training to run the the Hardware provided to Arabic speaking professionals.*		3	12	5
- *Lack of Senior Management Understanding.*		7	10	3

H5.1

2 ANALYSIS FOR AUDITORS

11 Do the following factors have an impact on the transfer of computer technology relating to Accounting and Auditing in Abu Dhabi?

	Code No.	*Major Impact*	*Minor Impact*	*No Impact*
- *Lack of clear statement of direction from private and public sector enterprises on the use and transfer of technology to Arab Nationals.*		4	-	-
- *Lack of trained Professional Arab Nationals in the fields of computerised accounting, auditing and computing.*		2	2	-
- *Lack of Quality Software in Arabic.*		4	-	-
- *Lack of adequate training to run the the Hardware provided to Arabic speaking professionals.*		-	2	2
- *Lack of Senior Management Understanding.*		-	4	-

H5.1

3 ANALYSIS FOR EDUCATIONAL INSTITUTIONS

11 Do the following factors have an impact on the transfer of computer technology relating to Accounting and Auditing in Abu Dhabi?

	Code No.	Major Impact	Minor Impact	No Impact
- *Lack of clear statement of direction from private and public sector enterprises on the use and transfer of technology to Arab Nationals.*		3	-	3
- *Lack of trained Professional Arab Nationals in the fields of computerised accounting, auditing and computing.*		3	3	-
- *Lack of Quality Software in Arabic.*		3	-	3
- *Lack of adequate training to run the the Hardware provided to Arabic speaking professionals.*		3	2	1
- *Lack of Senior Management Understanding.*		3	2	-

H5.1

4 ANALYSIS ON USERS

11 Do the following factors have an impact on the transfer of computer technology relating to Accounting and Auditing in Abu Dhabi?

	Code No.	Major Impact	Minor Impact	No Impact
- *Lack of clear statement of direction from private and public sector enterprises on the use and transfer of technology to Arab Nationals.*		46	16	10
- *Lack of trained Professional Arab Nationals in the fields of computerised accounting, auditing and computing.*		50	16	6
- *Lack of Quality Software in Arabic.*		55	12	4
- *Lack of adequate training to run the the Hardware provided to Arabic speaking professionals.*		36	31	5
- *Lack of Senior Management Understanding.*		40	21	9

H5.1

TRANSFER OF TECHNOLOGY

ALL

12 What is the level of impact on the use of computer technology in the fields of accounting, auditing and office Automation resulting from ?

	Code No.	Major Impact	Minor Impact	No Impact
- *Using Non-Arab speaking expatriates because when they leave the region so does the knowhow.*		53	27	22
- *Unclear definition of what computer related skills need to be learned by Arab Nationals.*		52	36	14
- *Lack of budgets for computer training.*		46	37	19
- *Poor planning and implementation of training in these fields.*		70	22	10

H5.2

1 ANALYSIS FOR COMPUTER H/W, S/W SUPPLIERS

12 What is the level of impact on the use of computer technology in the fields of accounting, auditing and office Automation resulting from ?

	Code No.	*Major Impact*	*Minor Impact*	*No Impact*
- *Using Non-Arab speaking expatriates because when they leave the region so does the knowhow.*		6	11	3
- *Unclear definition of what computer related skills need to be learned by Arab Nationals.*		6	13	1
- *Lack of budgets for computer training.*		12	7	1
- *Poor planning and implementation of training in these fields.*		16	4	0

H5.2

2 ANALYSIS FOR AUDITORS

12 What is the level of impact on the use of computer technology in the fields of accounting, auditing and office Automation resulting from ?

	Code No.	*Major Impact*	*Minor Impact*	*No Impact*
- *Using Non-Arab speaking expatriates because when they leave the region so does the knowhow.*		2	2	-
- *Unclear definition of what computer related skills need to be learned by Arab Nationals.*		-	4	-
- *Lack of budgets for computer training.*		-	4	-
- *Poor planning and implementation of training in these fields.*		4	-	-

H5.2

3 ANALYSIS FOR EDUCATIONAL INSTITUTIONS

12 What is the level of impact on the use of computer technology in the fields of accounting, auditing and office Automation resulting from ?

	Code No.	*Major Impact*	*Minor Impact*	*No Impact*
- *Using Non-Arab speaking expatriates because when they leave the region so does the knowhow.*		3	1	2
- *Unclear definition of what computer related skills need to be learned by Arab Nationals.*		-	4	2
- *Lack of budgets for computer training.*		-	2	4
- *Poor planning and implementation of training in these fields.*		3	-	3

H5.2

4 ANALYSIS ON USERS

12 What is the level of impact on the use of computer technology in the fields of accounting, auditing and office Automation resulting from ?

	Code No.	*Major Impact*	*Minor Impact*	*No Impact*
- *Using Non-Arab speaking expatriates because when they leave the region so does the knowhow.*		42	13	17
- *Unclear definition of what computer related skills need to be learned by Arab Nationals.*		46	15	11
- *Lack of budgets for computer training.*		34	24	14
- *Poor planning and implementation of training in these fields.*		47	18	7

H5.2

TRANSFER OF TECHNOLOGY

ALL

13 What level of impact do the following factors have on the training of professional Arab Nationals in the fields of computerised accounting and auditing?

Factors	*Code No.*	*Major Impact*	*Minor Impact*	*No Impact*
- *Lack of clear policies on the recruitment and training of Arab Nationals.*		77	14	11
- *Lack of clear policy on the recruitment of Arab speaking professionals.*		65	25	12
- *No policy stating conditions, restrictions on the recruitments of Non-Arab expatriates.*		49	34	19
- *Limited numbers of Arabic speaking professional Trainors.*		64	30	7

H5.3

1 ANALYSIS FOR COMPUTER H/W, S/W SUPPLIERS

13 What level of impact do the following factors have on the training of professional Arab Nationals in the fields of computerised accounting and auditing?

Factors	*Code No.*	*Major Impact*	*Minor Impact*	*No Impact*
- *Lack of clear policies on the recruitment and training of Arab Nationals.*		13	7	0
- *Lack of clear policy on the recruitment of Arab speaking professionals.*		7	12	1
- *No policy stating conditions, restrictions on the recruitments of Non-Arab expatriates.*		7	10	3
- *Limited numbers of Arabic speaking professional Trainors.*		9	9	1

H5.3

2 ANALYSIS FOR AUDITORS

13 What level of impact do the following factors have on the training of professional Arab Nationals in the fields of computerised accounting and auditing?

Factors	*Code No.*	*Major Impact*	*Minor Impact*	*No Impact*
- *Lack of clear policies on the recruitment and training of Arab Nationals.*		4	-	-
- *Lack of clear policy on the recruitment of Arab speaking professionals.*		4	-	-
- *No policy stating conditions, restrictions on the recruitments of Non-Arab expatriates.*		2	2	-
- *Limited numbers of Arabic speaking professional Trainors.*		4	-	-

H5.3

3 ANALYSIS FOR EDUCATIONAL INSTITUTIONS

13 What level of impact do the following factors have on the training of professional Arab Nationals in the fields of computerised accounting and auditing?

Factors	*Code No.*	*Major Impact*	*Minor Impact*	*No Impact*
- *Lack of clear policies on the recruitment and training of Arab Nationals.*		3	1	2
- *Lack of clear policy on the recruitment of Arab speaking professionals.*		3	1	2
- *No policy stating conditions, restrictions on the recruitments of Non-Arab expatriates.*		-	4	2
- *Limited numbers of Arabic speaking professional Trainors.*		-	3	3

H5.3

4 ANALYSIS ON USERS

13 What level of impact do the following factors have on the training of professional Arab Nationals in the fields of computerised accounting and auditing?

Factors	*Code No.*	*Major Impact*	*Minor Impact*	*No Impact*
- *Lack of clear policies on the recruitment and training of Arab Nationals.*		57	6	9
- *Lack of clear policy on the recruitment of Arab speaking professionals.*		51	12	9
- *No policy stating conditions, restrictions on the recruitments of Non-Arab expatriates.*		40	18	14
- *Limited numbers of Arabic speaking professional Trainors.*		51	18	3

H5.3

TRANSFER OF TECHNOLOGY

ALL

14 What is the level of impact of the following items on the development of Arab National skills to use computer technology in accounting, auditing and (automation or information processing).

	Code No.	*Very positive*	*Positive*	*No Impact*	*Negative*	*Very Negative*
- *Hardware to operate bilingually.*		37	39	15	8	2
- *Bilingual operating environments (systems).*		26	50	12	11	2
- *Arabic compilers.*		27	29	31	12	2
- *Arabic Database Management Systems.*		28	46	15	10	2
- *Bilingual application systems.*		24	55	9	12	2
- *Adequacy of technical Arabic vocabulary in accounting and auditing.*		26	51	11	6	8
- *General quality of technical documentation in Arabic.*		23	57	8	7	7

H6.1

1 ANALYSIS FOR COMPUTER H/W, S/W SUPPLIERS

14 What is the level of impact of the following items on the development of Arab National skills to use computer technology in accounting, auditing and (automation or information processing).

	Code No.	Very positive	Positive	No Impact	Negative	Very Negative
- *Hardware to operate bilingually.*		5	10	5	-	-
- *Bilingual operating environments (systems).*		6	8	6	-	-
- *Arabic compilers.*		2	11	5	2	-
- *Arabic Database Management Systems.*		5	11	4	-	-
- *Bilingual application systems.*		5	11	2	2	-
- *Adequacy of technical Arabic vocabulary in accounting and auditing.*		4	10	5	1	-
- *General quality of technical documentation in Arabic.*		4	4	4	-	-

H6.1

2 ANALYSIS FOR AUDITORS

14 What is the level of impact of the following items on the development of Arab National skills to use computer technology in accounting, auditing and (automation or information processing).

	Code No.	Very positive	Positive	No Impact	Negative	Very Negative
- *Hardware to operate bilingually.*		2	-	2	-	-
- *Bilingual operating environments (systems).*		2	2	-	-	-
- *Arabic compilers.*		-	4	-	-	-
- *Arabic Database Management Systems.*		2	2	-	-	-
- *Bilingual application systems.*		2	2	-	-	-
- *Adequacy of technical Arabic vocabulary in accounting and auditing.*		2	2	-	-	-
- *General quality of technical documentation in Arabic.*		2	2	-	-	-

H6.1

3 ANALYSIS FOR EDUCATIONAL INSTITUTIONS

14 What is the level of impact of the following items on the development of Arab National skills to use computer technology in accounting, auditing and (automation or information processing).

	Code No.	*Very positive*	*Positive*	*No Impact*	*Negative*	*Very Negative*
- *Hardware to operate bilingually.*		1	2	2	1	-
- *Bilingual operating environments (systems).*		1	2	2	1	-
- *Arabic compilers.*		1	2	2	1	-
- *Arabic Database Management Systems.*		1	2	2	1	-
- *Bilingual application systems.*		1	2	2	1	-
- *Adequacy of technical Arabic vocabulary in accounting and auditing.*		1	2	-	1	2
- *General quality of technical documentation in Arabic.*		1	2	-	1	2

H6.1

14 What is the level of impact of the following items on the development of Arab National skills to use computer technology in accounting, auditing and (automation or information processing).

	Code No.	Very positive	Positive	No Impact	Negative	Very Negative
- *Hardware to operate bilingually.*		29	27	6	7	2
- *Bilingual operating environments (systems).*		17	38	4	10	2
- *Arabic compilers.*		24	12	24	9	2
- *Arabic Database Management Systems.*		20	31	9	9	2
- *Bilingual application systems.*		16	40	5	9	2
- *Adequacy of technical Arabic vocabulary in accounting and auditing.*		19	37	6	4	6
- *General quality of technical documentation in Arabic.*		16	41	4	6	5

H6.1

TRAINING

ALL

15.1 Do you acquire professional external training for your Arab Nationals on the use of computer technology in accounting and auditing?

	Code No.	YES	NO
- In Arabic		36	63
- In English		60	41

If the answer is NO please proceed to the next question # 16

15.2 What type of professional external training do you acquire?

	Code No.	YES	NO
a) General accounting		37	11
b) Accounting systems and procedures		47	7
c) Spreadsheet and graphics		46	5
d) Financial modelling		38	13
e) Database		47	10
f) Database processing		36	10
g) Office Automation		43	12
h) Other		11	3

15.3 What is the level of impact of external computer training on the development of Arab Nationals in each of the following areas:

	Code No.	Very positive	Positive	No Impact	Negative	Very Negative
a) General accounting		13	34	8	-	-
b) Spreadsheet and graphics		15	44	-	-	-
c) Financial modelling		9	35	3	-	-
d) Database		9	46	2	-	-
e) Accounting systems and procedures		8	46	-	-	-
f) Data processing		8	38	11	-	-
g) Office Automation		9	41	5	-	-

H7.1

1 ANALYSIS FOR COMPUTER H/W, S/W SUPPLIERS

15.1 Do you acquire professional external training for your Arab Nationals on the use of computer technology in accounting and auditing?

	Code No.	YES	NO
- In Arabic		2	18
- In English		1	19

If the answer is NO please proceed to the next question # 16

15.2 What type of professional external training do you acquire?

	Code No.	YES	NO
a) General accounting		1	2
b) Accounting systems and procedures		1	2
c) Spreadsheet and graphics		1	2
d) Financial modelling		1	2
e) Database		2	2
f) Database processing		2	2
g) Office Automation		1	2
h) Other		1	2

15.3 What is the level of impact of external computer training on the development of Arab Nationals in each of the following areas:

	Code No.	Very positive	Positive	No Impact	Negative	Very Negative
a) General accounting		1	3	-	-	-
b) Spreadsheet and graphics		1	3	-	-	-
c) Financial modelling		1	3	-	-	-
d) Database		1	3	-	-	-
e) Accounting systems and procedures		1	3	-	-	-
f) Data processing		1	3	-	-	-
g) Office Automation		1	3	-	-	-

H7.1

2 ANALYSIS FOR AUDITORS

15.1 Do you acquire professional external training for your Arab Nationals on the use of computer technology in accounting and auditing?

	Code No.	*YES*	*NO*
- In Arabic		-	4
- In English		4	-

If the answer is NO please proceed to the next question # 16

15.2 What type of professional external training do you acquire?

	Code No.	*YES*	*NO*
a) General accounting		2	2
b) Accounting systems and procedures		4	-
c) Spreadsheet and graphics		2	2
d) Financial modelling		2	2
e) Database		4	-
f) Database processing		4	-
g) Office Automation		2	2
h) Other		-	-

15.3 What is the level of impact of external computer training on the development of Arab Nationals in each of the following areas:

	Code No.	*Very positive*	*Positive*	*No Impact*	*Negative*	*Very Negative*
a) General accounting		2	2	-	-	-
b) Spreadsheet and graphics		-	4	-	-	-
c) Financial modelling		-	4	-	-	-
d) Database		-	4	-	-	-
e) Accounting systems and procedures		-	4	-	-	-
f) Data processing		-	4	-	-	-
g) Office Automation		-	4	-	-	-

H7.1

3 ANALYSIS FOR EDUCATIONAL INSTITUTIONS

15.1 Do you acquire professional external training for your Arab Nationals on the use of computer technology in accounting and auditing?

	Code No.	YES	NO
- In Arabic		-	6
- In English		2	4

If the answer is NO please proceed to the next question # 16

15.2 What type of professional external training do you acquire?

	Code No.	YES	NO
a) General accounting		-	2
b) Accounting systems and procedures		-	2
c) Spreadsheet and graphics		2	-
d) Financial modelling		-	2
e) Database		2	-
f) Database processing		2	-
g) Office Automation		2	-
h) Other		-	-

15.3 What is the level of impact of external computer training on the development of Arab Nationals in each of the following areas:

	Code No.	Very positive	Positive	No Impact	Negative	Very Negative
a) General accounting		-	-	-	-	-
b) Spreadsheet and graphics		-	2	-	-	-
c) Financial modelling		-	-	-	-	-
d) Database		-	2	-	-	-
e) Accounting systems and procedures		-	-	-	-	-
f) Data processing		-	2	-	-	-
g) Office Automation		-	-	-	-	-

H7.1

4 ANALYSIS ON USERS

15.1 Do you acquire professional external training for your Arab Nationals on the use of computer technology in accounting and auditing?

	Code No.	YES	NO
- In Arabic		34	35
- In English		53	18

If the answer is NO please proceed to the next question # 16

15.2 What type of professional external training do you acquire?

	Code No.	YES	NO
a) General accounting		34	5
b) Accounting systems and procedures		42	3
c) Spreadsheet and graphics		41	1
d) Financial modelling		35	7
e) Database		39	8
f) Database processing		28	8
g) Office Automation		38	8
h) Other		8	1

15.3 What is the level of impact of external computer training on the development of Arab Nationals in each of the following areas:

	Code No.	Very positive	Positive	No Impact	Negative	Very Negative
a) General accounting		10	29	8	-	-
b) Spreadsheet and graphics		14	35	-	-	-
c) Financial modelling		8	28	3	-	-
d) Database		8	37	2	-	-
e) Accounting systems and procedures		7	39	-	-	-
f) Data processing		7	29	11	-	-
g) Office Automation		8	34	5	-	-

H7.1

TRAINING

ALL

16.1 Do you develop internal training for your Arab Nationals on the use of computer technology in Accounting and auditing as part of a predifined plan?

Code No.	YES	NO
	41	56

If the answer is NO please proceed to the next question # 17

16.2 what area of internal training expertise have you developed?

	Code No.	YES	NO
a) General accounting		29	0
b) Accounting systems and procedures		37	0
c) Spreadsheet and graphics		27	10
d) Financial modelling		18	14
e) Database		25	10
f) Database processing		30	10
g) Office Automation		34	5
h) Other		7	2

16.3 What is the level of impact of internally developed training, on the Development of Arab Nationals in each of the following Areas:

	Code No.	Very positive	Positive	No Impact	Negative	Very Negative
a) General accounting		12	25	-	-	-
b) Spreadsheet and graphics		13	18	-	-	-
c) Financial modelling		5	21	3	-	-
d) Database		3	28	3	-	-
e) Accounting systems and procedures		15	27	2	-	-
f) Data processing		9	26	2	-	-
g) Office Automation		13	29	-	-	-

H7.2

1 ANALYSIS FOR COMPUTER H/W, S/W SUPPLIERS

16.1 Do you develop internal training for your Arab Nationals on the use of computer technology in Accounting and auditing as part of a predifined plan?

Code No.	YES	NO
	5	15

If the answer is NO please proceed to the next question # 17

16.2 what area of internal training expertise have you developed?

	Code No.	YES	NO
a) General accounting		4	-
b) Accounting systems and procedures		6	-
c) Spreadsheet and graphics		7	-
d) Financial modelling		4	-
e) Database		7	-
f) Database processing		7	-
g) Office Automation		7	-
h) Other		4	-

16.3 What is the level of impact of internally developed training, on the Development of Arab Nationals in each of the following Areas:

	Code No.	Very positive	Positive	No Impact	Negative	Very Negative
a) General accounting		1	4	-	-	-
b) Spreadsheet and graphics		1	7	-	-	-
c) Financial modelling		1	4	-	-	-
d) Database		1	6	1	-	-
e) Accounting systems and procedures		4	5	-	-	-
f) Data processing		2	6	-	-	-
g) Office Automation		2	5	-	-	-

H7.2

2 ANALYSIS FOR AUDITORS

16.1 Do you develop internal training for your Arab Nationals on the use of computer technology in Accounting and auditing as part of a predifined plan?

Code No.	YES	NO
	4	-

If the answer is NO please proceed to the next question # 17

16.2 what area of internal training expertise have you developed?

	Code No.	YES	NO
a) General accounting		4	-
b) Accounting systems and procedures		4	-
c) Spreadsheet and graphics		4	-
d) Financial modelling		4	-
e) Database		4	-
f) Database processing		4	-
g) Office Automation		4	-
h) Other		-	-

16.3 What is the level of impact of internally developed training, on the Development of Arab Nationals in each of the following Areas:

	Code No.	Very positive	Positive	No Impact	Negative	Very Negative
a) General accounting		2	2	-	-	-
b) Spreadsheet and graphics		2	2	-	-	-
c) Financial modelling		2	2	-	-	-
d) Database		-	4	-	-	-
e) Accounting systems and procedures		2	2	-	-	-
f) Data processing		-	4	-	-	-
g) Office Automation		2	2	-	-	-

H7.2

3 ANALYSIS FOR EDUCATIONAL INSTITUTIONS

16.1 Do you develop internal training for your Arab Nationals on the use of computer technology in Accounting and auditing as part of a predifined plan?

Code No.	YES	NO
	4	2

If the answer is NO please proceed to the next question # 17

16.2 what area of internal training expertise have you developed?

	Code No.	YES	NO
a) General accounting		6	-
b) Accounting systems and procedures		6	-
c) Spreadsheet and graphics		4	2
d) Financial modelling		4	2
e) Database		4	2
f) Database processing		4	2
g) Office Automation		4	2
h) Other		3	-

16.3 What is the level of impact of internally developed training, on the Development of Arab Nationals in each of the following Areas:

	Code No.	Very positive	Positive	No Impact	Negative	Very Negative
a) General accounting		6	-	-	-	-
b) Spreadsheet and graphics		4	2	-	-	-
c) Financial modelling		2	2	-	-	-
d) Database		1	3	-	-	-
e) Accounting systems and procedures		3	3	-	-	-
f) Data processing		1	3	-	-	-
g) Office Automation		1	3	-	-	-

H7.2

4 ANALYSIS ON USERS

16.1 Do you develop internal training for your Arab Nationals on the use of computer technology in Accounting and auditing as part of a predifined plan?

Code No.	YES	NO
	28	39

If the answer is NO please proceed to the next question # 17

16.2 what area of internal training expertise have you developed?

	Code No.	YES	NO
a) General accounting		15	-
b) Accounting systems and procedures		21	-
c) Spreadsheet and graphics		12	8
d) Financial modelling		6	12
e) Database		10	8
f) Database processing		15	8
g) Office Automation		17	3
h) Other		0	2

16.3 What is the level of impact of internally developed training, on the Development of Arab Nationals in each of the following Areas:

	Code No.	Very positive	Positive	No Impact	Negative	Very Negative
a) General accounting		3	19	-	-	-
b) Spreadsheet and graphics		6	9	-	-	-
c) Financial modelling		-	13	3	-	-
d) Database		1	15	2	-	-
e) Accounting systems and procedures		6	17	2	-	-
f) Data processing		6	13	2	-	-
g) Office Automation		8	19	-	-	-

H7.2

TRANSFER OF TECHNOLOGY

ALL

17 Does your institution support and promote computer technology through direct involvement with each of the business community sectors listed below?

	Code No.	*YES*	*NO*
a) Universities' faculty members.		24	72
b) Computer consultants.		57	39
c) Hardware and software manufacturers, agents and distributors.		59	37
d) Accounting and auditing firms.		47	47
e) Industrial and commercial concerns.		33	57

H8.1

If the answer is YES please specify what type of support do you provide

1 ANALYSIS FOR COMPUTER H/W, S/W SUPPLIERS

17 Does your institution support and promote computer technology through direct involvement with each of the business community sectors listed below?

	Code No.	*YES*	*NO*
a) Universities' faculty members.		17	2
b) Computer consultants.		19	-
c) Hardware and software manufacturers, agents and distributors.		15	3
d) Accounting and auditing firms.		15	2
e) Industrial and commercial concerns.		17	-

If the answer is YES please specify what type of support do you provide

H8.1

2 ANALYSIS FOR AUDITORS

17 Does your institution support and promote computer technology through direct involvement with each of the business community sectors listed below?

	Code No.	*YES*	*NO*
a) Universities' faculty members.		-	4
b) Computer consultants.		2	2
c) Hardware and software manufacturers, agents and distributors.		2	2
d) Accounting and auditing firms.		-	4
e) Industrial and commercial concerns.		2	2

If the answer is YES please specify what type of support do you provide

H8.1

3 ANALYSIS FOR EDUCATIONAL INSTITUTIONS

17 Does your institution support and promote computer technology through direct involvement with each of the business community sectors listed below?

	Code No.	YES	NO
a) *Universities' faculty members.*		5	1
b) *Computer consultants.*		6	-
c) *Hardware and software manufacturers, agents and distributors.*		6	-
d) *Accounting and auditing firms.*		5	1
e) *Industrial and commercial concerns.*		4	2

H8.1

If the answer is YES please specify what type of support do you provide

4 ANALYSIS ON USERS

17 Does your institution support and promote computer technology through direct involvement with each of the business community sectors listed below?

	Code No.	YES	NO
a) *Universities' faculty members.*		2	65
b) *Computer consultants.*		30	37
c) *Hardware and software manufacturers, agents and distributors.*		36	33
d) *Accounting and auditing firms.*		27	40
e) *Industrial and commercial concerns.*		10	53

H8.1

If the answer is YES please specify what type of support do you provide

TRAINING

ALL

18 There are many courses offered by the Business Community and Educational Institutions relating to I.T .

What is the level of impact do the follwing courses have on the development of Arab Nationals in accounting and auditing?

	Code No.	Very positive	Positive	No Impact	Negative	Very Negative
a) *Basic programming*		17	55	15	-	-
b) *Advanced programming*		25	43	19	-	-
c) *System design*		35	32	20	-	-
d) *Computerised financial accounting systems*		27	56	4	-	-
e) *Financial modelling*		25	53	9	-	-
f) *Computerised banking techniques*		27	46	13	-	-
g) *Computerised planning models*		21	53	12	-	-
h) *Database*		14	71	4	-	-
i) *Spreadsheet*		28	56	5	-	-
j) *Word processing*		17	59	13	-	-
k) *Computer Assisted Audit Techniques (CAATs)*		27	41	17	-	-
l) *Computer Aided Design (CAD)*		18	47	18	-	-
m) *Office automation concepts.*		14	62	8	-	-
n) *Other: please specify:*		3	2	-	-	-

H8.2

1 ANALYSIS FOR COMPUTER H/W, S/W SUPPLIERS

18 There are many courses offered by the Business Community and Educational Institutions relating to I.T .

What is the level of impact do the follwing courses have on the development of Arab Nationals in accounting and auditing?

	Code No.	Very positive	Positive	No Impact	Negative	Very Negative
a) Basic programming		-	1	9	9	-
b) Advanced programming		-	2	9	8	-
c) System design		-	5	7	7	-
d) Computerised financial accounting systems		-	5	14	-	-
e) Financial modelling		-	4	15	-	-
f) Computerised banking techniques		-	3	15	-	-
g) Computerised planning models		-	1	15	2	-
h) Database		-	3	13	3	-
i) Spreadsheet		-	6	13	-	-
j) Word processing		-	2	13	4	-
k) Computer Assisted Audit Techniques (CAATs)		-	4	13	1	-
l) Computer Aided Design (CAD)		-	-	10	8	-
m) Office automation concepts.		-	3	14	2	-
n) Other: please specify:		-	-	-	-	-

H8.2

2 ANALYSIS FOR AUDITORS

18 There are many courses offered by the Business Community and Educational Institutions relating to I.T .

What is the level of impact do the follwing courses have on the development of Arab Nationals in accounting and auditing?

	Code No.	Very positive	Positive	No Impact	Negative	Very Negative
a) Basic programming		-	4	-	-	-
b) Advanced programming		4	-	-	-	-
c) System design		4	-	-	-	-
d) Computerised financial accounting systems		4	-	-	-	-
e) Financial modelling		2	-	2	-	-
f) Computerised banking techniques		-	4	-	-	-
g) Computerised planning models		2	-	2	-	-
h) Database		2	2	-	-	-
i) Spreadsheet		2	2	-	-	-
j) Word processing		2	2	-	-	-
k) Computer Assisted Audit Techniques (CAATs)		2	-	2	-	-
l) Computer Aided Design (CAD)		2	-	2	-	-
m) Office automation concepts.		-	4	-	-	-
n) Other: please specify:		-	-	-	-	-

H8.2

3 ANALYSIS FOR EDUCATIONAL INSTITUTIONS

18 There are many courses offered by the Business Community and Educational Institutions relating to I.T .

What is the level of impact do the follwing courses have on the development of Arab Nationals in accounting and auditing?

	Code No.	Very positive	Positive	No Impact	Negative	Very Negative
a) Basic programming		2	4	-	-	-
b) Advanced programming		2	4	-	-	-
c) System design		4	2	-	-	-
d) Computerised financial accounting systems		4	2	-	-	-
e) Financial modelling		2	4	-	-	-
f) Computerised banking techniques		2	2	2	-	-
g) Computerised planning models		2	4	-	-	-
h) Database		2	4	-	-	-
i) Spreadsheet		4	2	-	-	-
j) Word processing		2	4	-	-	-
k) Computer Assisted Audit Techniques (CAATs)		2	4	-	-	-
l) Computer Aided Design (CAD)		2	2	2	-	-
m) Office automation concepts.		2	4	-	-	-
n) Other: please specify:		1	2	-	-	-

H8.2

4 ANALYSIS ON USERS

18 There are many courses offered by the Business Community and Educational Institutions relating to I.T .

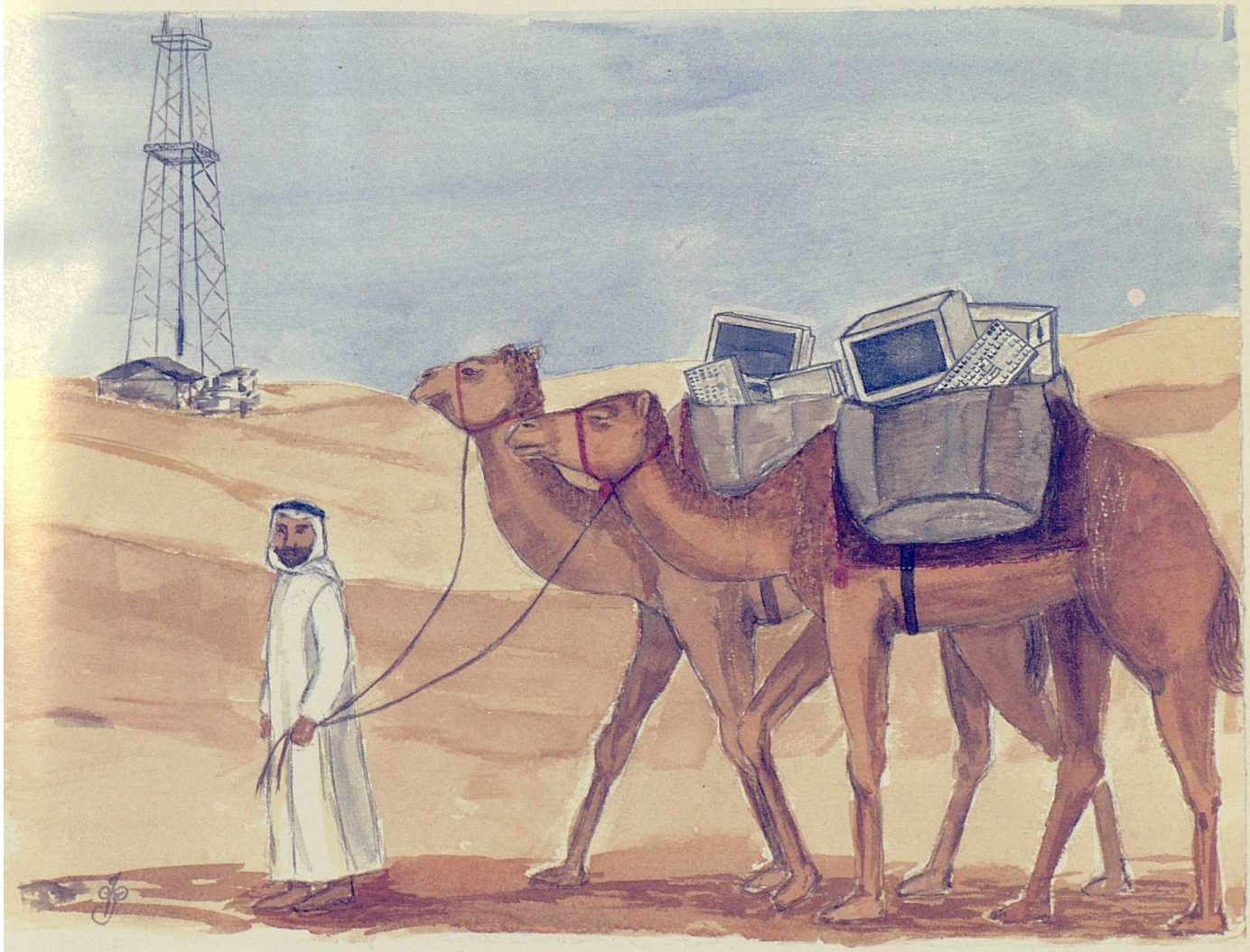
What is the level of impact do the follwing courses have on the development of Arab Nationals in accounting and auditing?

	Code No.	Very positive	Positive	No Impact	Negative	Very Negative
a) Basic programming		14	38	6	-	-
b) Advanced programming		17	30	11	-	-
c) System design		22	23	13	-	-
d) Computerised financial accounting systems		14	40	4	-	-
e) Financial modelling		17	34	7	-	-
f) Computerised banking techniques		22	25	11	-	-
g) Computerised planning models		16	34	8	-	-
h) Database		7	52	1	-	-
i) Spreadsheet		16	39	5	-	-
j) Word processing		11	40	9	-	-
k) Computer Assisted Audit Techniques (CAATs)		19	24	14	-	-
l) Computer Aided Design (CAD)		14	35	6	-	-
m) Office automation concepts.		9	40	6	-	-
n) Other: please specify:		2	-	-	-	-

H8.2

CITY University
BUSINESS SCHOOL

The Impact of Computer Technology on Accounting and Auditing in the Middle East with Special Emphasis on Arabisation, Transfer of Technology and Training



CHAPTER 7

TESTING OF HYPOTHESES

CHAPTER VII

TESTING OF HYPOTHESES

7.1 Introduction

7.1.1 Purpose

Following the descriptive analysis of data collected in Chapter V and Chapter VI in which full analysis of responses to the survey questionnaire and interview questionnaire were given. The purpose of this chapter is to present detailed analysis of the non-parametric testing of Hypotheses,, the model used and the conclusions reached regarding the acceptance and or rejection of Hypotheses.

This chapter is divided into various parts and is organised to deal with the eight Hypotheses formulated in this research dealing with arabisation, transfer of technology amd training.

7.1.2 Population Interviewed

As stated in Chapter VI and shown in Appendix 5 "Research Interview Questionnaire" that formal interviews were carried out by the researcher eliciting opinions and information from the four categories of respondents listed below:

	Number of Individuals Interviewed
• Computer hardware are software users	72
• Accounting/auditing firms	4
• Educational institutions	6
• Computer suppliers	20
	102

The interview questionnaire given in Appendix 5 consists of 18 general are specific questions.

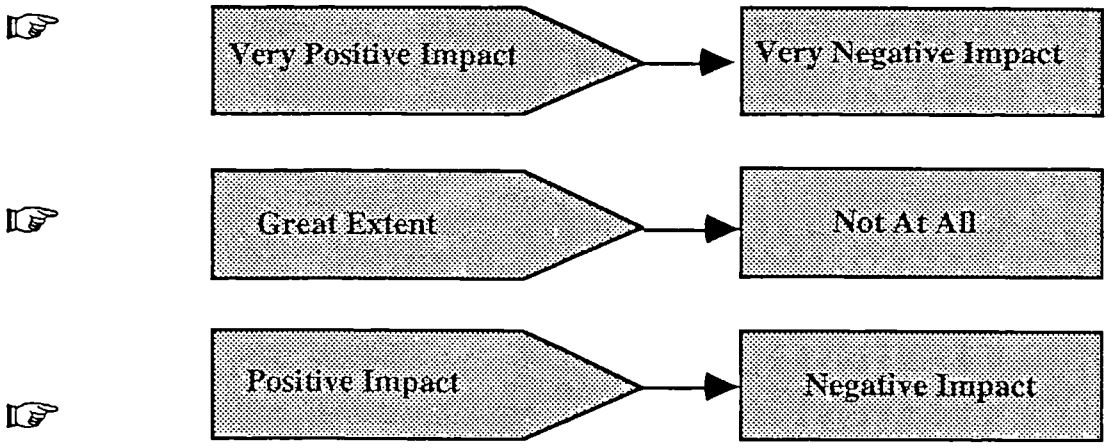
Almost all the questions were answered by about 102 individuals from different nationalities, background and level of expertise. Each completed questionnaire can thus be considered as 18 observations expressing the opinions of the individuals interviewed in each of the above categories.

7.1.3 Statistics Used in Testing the Hypotheses

7.1.3.1 Introduction

According to Siegle "when alternative statistical tests are available for a given research design as is very often the case, it is only necessary to employ some rationale for choosing among them" (2). The choice of the statistical techniques employed in this chapter to test the Hypotheses were primarily influenced by the required level of measurement of the data generated from the questionnaire given in Appendix 5.

It should be noted that the categories within most questions are presented as follows:



The above categories are designed to measure the perception of impact and represented as ordinal variables. The sub-items within each question are nominal. Hence, both the chi-square statistics (within question) and gamma (also chi-square) between questions are appropriate measures of association. It should also be noted that impact, previously mentioned, is really perceived impact on the part of the respondent, whether or not this is actual impact is debateable.

7.1.3.2 Choice of chi-square statistic

The chi-square test assesses the degree of correspondence between the observed and expected observation in each category. When the experimental data consist of frequencies in discrete categories (ether nominal or ordinal) (as is the case with the data collected by the research), the chi-square test may be used to assess the significance of differences among K independent groups.(3). The Kendal Coefficient of Concordance (W) is another non-parametric test that has been chosen to confirm (where applicable) the level of concordance among individuals expresses the degree of association among K sets of rankings.

The following points as taken from the SPSS guide to data analysis should be noted about interpreting the chi-square tests given in this chapter.

☞ Observed frequencies are simply the numbers of cases with specific combination of values;

☞ Expected frequencies are the numbers of cases that would have specific combinations of values if the null Hypothesis were true;

☞ The chi-square statistic is based on a comparison of observed frequencies with expected frequencies. From it we can obtain an observed significance level for the Hypothesis that two or more proportions are equal;

☞ Two variables are independent if knowing the value of one variable tells us nothing about the value of the other;

☞ Chi-square increases in direct proportion to sample size if the strength of the relationship stays the same. If we double the number of cases in each cell of a cross tabulation, chi-square is doubled.

☞ Observed and expected frequencies:

- A residual with positive sign indicates that more cases were observed than are expected if the null Hypothesis is true;
- A negative residual indicates that fewer cases were observed than expected.

- ☞ If there is no difference in the population variables, the observed are expected frequencies should be fairly close. When this is true the chi-square statistics is not very large;
- ☞ In general, large chi-square values occur when the sample results differ from those predicted by the null Hypothesis.(4)

7.1.3.3 Choice of Goodman and Kruskal's Gamma

Goodman and Kruskal's Gamma is a measure of association between two variables measured on an ordinal level. It can be thought of as the probability that a random pair of observations is concordant minus the probability that the pair is discordant, assuming the absence of ties. Gamma is symmetric and ranges between 0 are 1. The results of Gamma tests may be interpreted as follows:

- ☞ A positive Gamma tells that there are more "like" (concordant) pairs of cases than "unlike" pairs. That means that there is a positive relationship between the variables.
- ☞ The absolute value of Gamma has a proportional reduction in error interpretation. The prediction is whether a pair of cases is like or dislike.
- ☞ If most of the pairs are concordant the prediction is "like" for all pairs.
- ☞ If most of the pairs are discordant then the prediction is "unlike".
- ☞ If half the pairs of cases are concordant and half are discordant, the value of Gamma is then zero.
- ☞ If all pairs are concordant, "like" relationships will result in correct classification of all pairs.
- ☞ Guessing randomly will classify only half of the pairs correctly. In this situation, the value of Gamma is 1.
- ☞ If two variables are independent, the value of Gamma is zero.
- ☞ A Gamma of zero does not necessarily mean independence. (if the table is two by two, though a Gamma of zero does mean that the variables are independent).(5)

7.1.3.4 Choice of Kendall Coefficient of Concordance (W)

In addition to chi-square and Gamma it was considered by the researcher necessary to reconfirm conclusions reached on the degree of accord (or accordance) within the population interviewed. One non-parametric statistic test for such assessment is the Kendell coefficient of concordance (W). A "high or significant value of (W) may be interpreted (to mean) that ..... . Judges are applying ..... the same standard in ranking the objects under study" {Siegel, 1956: 237}

The Kendall test is available for use in relation to two or more variables in the same set of cases (i.e. responses). It judges the concordance in rankings for pairs of observations and , after making allowance for "ties", computes W, which is a composite measure of the overall concordance present in the rankings.

Kendall's W is appropriate in the present instance, as it is a nonparametric test designed for use on ordinal data. When computed, values of W range from 0 (indicating no agreement at all) to 1 (indicating total agreement).

7.1.3.5 Level of Significance

The criteria which will determine acceptance (confirmation) and /or the rejection (no confirmation) of each Hypothesis is a combination of the significance level which is set at 0.05 for the chi-square, Gamma and Kendall coefficient of concordance (W) test results.

7.1.3.6 Choice of Data Tested are Details of Statistical Testing

After consultation with the researcher's supervisor it was agreed that the sample size of each individual group was not large enough to analyse separately and hence statistics testing would be restricted to the total population of the 102 individuals interviewed. Full details of statistical testing results are given in a separate report, summaries of test results are prepared where applicable in the form of tables.

7.2 Testing Of Hypothesis One: Arabisation

7.2.1 Hypothesis Content

Hypothesis one is formulated to test the impact on the development of nationals resulting from the use of English as a main and a second language of administration in the work place where those nationals are using computer technology. The Hypothesis assumes that:

"There is a negative impact on the development of professional Arab nationals on the use of computer technology resulting from the use of English as a main and a second language of administration".

7.2.2 Statistics Used are References to Main Survey Questionnaire

Statistics used to test the Hypotheses together with other relevant details are given below:

☞ Test Statistics

Summaries are prepared and given as tables.

☞ Interview questionnaire together with interviewees responses relating to Hypothesis one are given in chapter six and in the following section, results of statistical testing is provided.

7.2.3 Analysis of Chi-square and Gamma

Hypothesis one is clearly not supported by the data resulting from testing of question no. 3. Test results for the chi-square are Gamma are given in table 1 are 2:

Table 7.1: Chi-Square Test Results Hypothesis One

Situation	Chi-square	D.F.	Significance
3 - 1	37.796	2	0.000
3 - 2	64.617	2	0.000
3 - 3	37.796	2	0.000
3 - 4	64.617	2	0.000

Table 7.2 - Gamma Test results Hypothesis One

Compared Pairs	Gamma Value			
	3 - 1	3 - 2	3 - 3	3 - 4
3-1 : 3-2, 3, 4	Ø	-.63072	0.76183	0.94141
3-2 : 3-3, 3-4		Ø	-.86707	-.51832
3-3 : 3-4			Ø	0.78452

Three of the four sub-questions within question three are highly correlated with one another as indicated by the Gamma statistics and each negatively relates to sub-questions 3 - 2 "English as a second language".

Based on table 7-1 the observed significance level is less than .00005. The low probability indicates that it's quite unlikely that the development of nationals on the use of computer and the use of English as a main and second language of administration are independent.

7.2.4 Analysis of Kendall Coefficient of Concordance (W)

Test results of Kendall coefficient of concordance statistical group responses to all situation questions in Hypothesis one are:

	Kendall's W	*Chi-square*	*Significance*
All respondents - Hypothesis One	0.0804	22.1768	0.0001

There seems to be very little accord within responses for this group. On that basis, W amounted to only 0.08, suggesting little uniformity within the collected responses from the group. This result re-confirms findings of the chi-square and Gamma tests.

7.2.5 Results are Implications

Results of statistical testing as discussed above lead to the conclusion that the Hypothesis as formulated cannot be accepted as it is not supported by the information derived from:

☞ The significance levels of chi-square tests of sub-items within this question; and

☞ The level of non-parametric correlation of the relevant questions related to the Hypothesis as reflected by the Gamma coefficient.

The implication of the statistical testing is that the impact of using English as a main and a second language of administration is not all negative. Judging from the frequencies by which the sub-questions are answered it seems to the researcher that the use of English has more positive impact than expected. This is more so when it comes to the use of English as a second language in technical documentation, where the number of cases observed within question categories far exceeded the number of expected cases.

7.2.6 Conclusion

In conclusion Hypothesis one cannot be accepted as formulated.

7.3 TESTING OF HYPOTHESIS TWO - ARABISATION

7.3.1 Hypothesis Content

Hypothesis two is formulated to test the relationship between the language of the operating and application systems and true transfer of technology.

Hypothesis two proposes that transfer of technology in the real sense can only be achieved when the technology is communicated in their own Arabic language.

Hypothesis one assumes that:

"True transfer of technology can only be achieved when the people who acquire the technology can use it in their own language and there is a strong relationship between the language of the operating and application systems and true transfer of technology".

7.3.2 Statistics Used and References to Main Survey Questionnaire

Statistics used to test the Hypothesis together with other relevant details are given below.

☞ Test Statistics

☞ Interview questionnaire - these questions were developed to collect the interviewees responses relating to Hypothesis two as follows:

Question	*Rows*	*Columns*
4	8	3
5	4	3
6-1	2	5
6-2	2	5

Descriptive analysis of interviewees responses is given in chapter six. In the following section analysis and results of statistical testing are provided.

7.3.3 Analysis of chi-square and Gamma

Hypothesis two was answered differentially. Common trends in answering the sub-questions as shown in the chi-square test results of table 7.3 indicate that the significance level in almost all the sub-questions is extremely low which means that there is no strong relationship between true transfer of technology and the language of the operating and application systems.

Sub-questions 4-1 to 4-4 are highly positively interrelated as reflected by their Gamma and positively related to similar sub-questions 5-1 and 5-3. Most of these questions show significantly differential response across the categories of "Great Extent", "Limited Extent", and "Not At All" as reflected by their statistical results.

Hence, the frequencies of responses to sub-question 4-1 to 4-7 indicate "limited extent" of the effects of the lack of Arabic as a factor in limiting the expansion of computerised accounting and auditing in Arabic. There was even less effect of the factors included in sub-questions 5-1 to 5-4 tending towards "not at all" . Better results, to a limited extent, were achieved in sub-question 6-1 to 6-2 where a higher rate of accord was achieved in terms of the strong positive relationship between level of impact on the future recruitment of I.T Arab professionals and arabising software.

7.3.4 Analysis of Kendall Coefficient of Concordance (W)

Test results of the Kendall coefficient of concordance statistic related group responses to all situations within Hypothesis two.

	Kendall's W	*Chi-square*	*Significance*
All respondents - Hypothesis Two	0.4772	35.7933	0.0019

The above results indicate a reasonable degree of concordance within the group as reflected by the (W) value of 0.4772.

7.3.5 Results and Implications

Results of the statistical testing as exhibited in the analysis does not support the preposition that there is a strong relationship between the language of the operating and application systems and true transfer of technology. Clearly the frequencies of responses to questions 4, 5 and 6 demonstrated a trend and uniformity in responses to this question. Question 4 results exhibited that there was strong relationship between the expansion of computerised accounting/auditing in systems in Arabic and the various constraints listed in the question.

Responses to question 5 demonstrated yet another example of the uniformity with which question 4 was answered and clearly showed that the lack of Arabic operating and application systems had to a limited extent (Insofar as Hypothesis two) is concerned a "Limited Extent" to "Not At All" which indicated that the respondents were not convinced that a strong relationship existed.

Frequencies in question 6 tended towards the "very positive" to "positive" when it came to assessing the relationship between arabised software and the recruitment of I.T Arab professionals.

7.3.6 Conclusion

Because of the high interrelationships between responses to the three questions testing Hypothesis two (as reflected by their paired Gammas), and the tendency of these responses to reflect "Limited Effects" of the operating and application systems on technology transfer, there certainly is no evidence of a strong relationship as implied by Hypothesis two. Therefore Hypothesis two cannot be confirmed as formulated.

Table 7.3 - Chi-square Test Results Hypothesis Two

Situation	Chi-square	D.F.	Significance
Question Number 4			
4.1	17.438	2	0.000
4.2	5.453	2	0.065
4.3	22.750	2	0.000
4.4	19.122	2	0.000
4.5	11.041	2	0.004
4.6	46.938	2	0.000
4.7	8.313	2	0.016
4.8	Ignored - invalid		
Question Number 5			
5.1	7.809	2	0.020
5.2	39.372	2	0.000
5.3	12.775	2	0.002
5.4	9.159	2	0.010
Question Number 6 - 1			
6.1.1	14.611	3	0.002
6.1.2	59.957	3	0.000
Question Number 6 - 2			
6.2.1	18.719	3	0.000
6.2.2	21.895	2	0.000

Table 7.4 - Gamma Test Results - Hypothesis Two

Compared Pairs		Gamma Value
From	To	
4 - 1	4 - 2	0.66022
4 - 1	4 - 3	0.52153
4 - 1	4 - 4	0.36408
4 - 1	4 - 5	-0.10799
4 - 1	4 - 6	0.00212
4 - 1	4 - 7	0.07640
4 - 1	4 - 8	-1.0000
4 - 1	5 - 1	0.36964
4 - 1	5 - 2	-0.17043
4 - 1	5 - 3	0.12088
4 - 1	5 - 4	0.16178
4 - 1	6-1-1	-0.17136
4 - 1	6-1-2	0.30056
4 - 1	6-2-1	-0.03949
4 - 1	6-2-2	0.13781
4 - 2	4 - 3	0.75258
4 - 2	4 - 4	0.27724
4 - 2	4 - 5	-0.06681
4 - 2	4 - 6	0.02967
4 - 2	4 - 7	0.15381
4 - 2	4 - 8	-1.000
4 - 2	5 - 1	0.42785
4 - 2	5 - 2	-0.26046
4 - 2	5 - 3	0.02415
4 - 2	5 - 4	-0.09456
4 - 2	6-1-1	-0.01820
4 - 2	6-1-2	0.27544
4 - 2	6-2-1	0.04615
4 - 2	6-2-2	0.24907

Table 7.4 - Gamma Test Results - Hypothesis Two

Compared Pairs		Gamma Value
From	To	
4 - 3	4 - 4	0.22444
4 - 3	4 - 5	0.02373
4 - 3	4 - 6	0.22586
4 - 3	4 - 7	0.05452
4 - 3	4 - 8	-0.40000
4 - 3	5 - 1	0.34916
4 - 3	5 - 2	-0.51491
4 - 3	5 - 3	-0.28682
4 - 3	5 - 4	0.09222
4 - 3	6-1-1	-0.03963
4 - 3	6-1-2	0.32591
4 - 3	6-2-1	-0.15254
4 - 3	6-2-2	0.38662
4 - 4	4 - 5	0.05556
4 - 4	4 - 6	0.09429
4 - 4	4 - 7	-0.01446
4 - 4	4 - 8	-1.0000
4 - 4	5 - 1	-0.28403
4 - 4	5 - 2	-0.61417
4 - 4	5 - 3	-0.63949
4 - 4	5 - 4	-0.67702
4 - 4	6-1-1	-0.10622
4 - 4	6-1-2	0.41389
4 - 4	6-2-1	0.09554
4 - 4	6-2-2	0.01277

Table 7.4 - Gamma Test Results - Hypothesis Two

Compared Pairs		Gamma Value
From	To	
4 - 5	4 - 6	0.45394
4 - 5	4 - 7	0.51940
4 - 5	4 - 8	-1.00000
4 - 5	5 - 1	-0.19640
4 - 5	5 - 2	-0.06742
4 - 5	5 - 3	-0.02083
4 - 5	5 - 4	0.25666
4 - 5	6-1-1	-0.03406
4 - 5	6-1-2	-0.40930
4 - 5	6-2-1	0.23173
4 - 5	6-2-2	0.20163
4 - 6	4 - 7	0.94134
4 - 6	4 - 8	1.0000
4 - 6	5 - 1	-0.01558
4 - 6	5 - 2	-0.16955
4 - 6	5 - 3	0.18960
4 - 6	5 - 4	0.32657
4 - 6	6-1-1	0.28435
4 - 6	6-1-2	-0.38383
4 - 6	6-2-1	0.46228
4 - 6	6-2-2	-0.71163

Table 7.4 - Gamma Test Results - Hypothesis Two

Compared Pairs		Gamma Value
From	To	
4 - 7	4 - 8	1.00000
4 - 7	5 - 1	-0.03867
4 - 7	5 - 2	-0.13158
4 - 7	5 - 3	0.25668
4 - 7	5 - 4	0.41121
4 - 7	6-1-1	-0.10333
4 - 7	6-1-2	-0.53305
4 - 7	6-2-1	0.38516
4 - 7	6-2-2	-0.35198
4 - 8	5 - 1	-1.0000
4 - 8	5 - 2	0.0000
4 - 8	5 - 3	-1.0000
4 - 8	5 - 4	-1.0000
4 - 8	6-1-1	-0.55556
4 - 8	6-1-2	0.66667
4 - 8	6-2-1	-0.60000
4 - 8	6-2-2	0.00000
5 - 1	5 - 2	0.83631
5 - 1	5 - 3	0.83252
5 - 1	5 - 4	0.80313
5 - 1	6-1-1	0.20548
5 - 1	6-1-2	0.12364
5 - 1	6-2-1	0.16963
5 - 1	6-2-2	0.36502

Table 7.4 - Gamma Test Results - Hypothesis Two

Compared Pairs		Gamma Value
From	To	
5 - 2	5 - 3	0.89587
5 - 2	5 - 4	0.58848
5 - 2	6-1-1	0.19677
5 - 2	6-1-2	-0.94118
5 - 2	6-2-1	0.50976
5 - 2	6-2-2	0.34202
5 - 3	5 - 4	0.81232
5 - 3	6-1-1	0.23488
5 - 3	6-1-2	-0.16061
5 - 3	6-2-1	0.57113
5 - 3	6-2-2	0.34731
5 - 4	6-1-1	0.34298
5 - 4	6-1-2	-0.24580
5 - 4	6-2-1	0.49354
5 - 4	6-2-2	-0.3049
6-1-1	6-1-2	0.07669
6-1-1	6-2-1	0.92982
6-1-1	6-2-2	-0.60116
6-1-2	6-2-1	-0.21852
6-1-2	6-2-2	0.91791

7.4 Testing Of Hypothesis Three: Arabisation

7.4.1 Hypothesis Content

Hypothesis three is formulated to test the relationship proposed to exist between the availability of technically skilled professional Arab nationals and the recruitment of non-Arab expatriates to run most of the activities associated with computer hardware , software and reporting. The implication here is that arabisation of jobs cannot be successfully achieved under non-Arab expatriate managed information technology departments. The Hypothesis assume that:

"There is a relationship between the availability of technically skilled professional Arab nationals and the recruitment of non-Arab expatriates to run most of the activities connected with computer hardware, software and reporting" .

7.4.2 Statistics Used and References to Main Survey Questionnaire

Statistics used to test the Hypothesis together with other relevant details are given below:

☞ Test Statistics

Summaries of the test results are prepared in the form of tables.

☞ Interview questionnaire

Two questions were developed to collect the interviewees responses relating to Hypothesis three , the responses to these questions constituted the following rows and columns:

Question	*Rows*	*Columns*
7	6	3
8	6	2

Descriptive analysis of interviewees responses is given in chapter six. In the following section analysis and results of statistical testing is provided.

7.4.3 Analysis of Chi-square and Gamma

The testing of Hypothesis three resulted in chi-square statistics very similar to the previous two Hypotheses. Sub-questions 7.1, 7.2 and 7.4 were positively interrelated as reflected by their chi-square statistics and the levels of significance. Most of the sub-questions as expressed by the number of frequencies showed significantly differential responses tending throughout towards "Limited Extent" and "Not At All". The low probability as shown in table 7.5 indicate that it is unlikely that the recruitment of non-Arab expatriates would affect the availability of software.

It should be noted that the observed significance level depended on the degrees of freedom for the value of the chi-square statistic. It has been shown that when there is only one degree of freedom (as is the case with question 8) associated with the chi-square test, unless the sample is quite large (which is not the case in this instance), the computed X^2 is systematically overstated because of the discrete nature of the data.

Sub-questions 8.1 to 8.6 are designed as "Yes", "No" types of questions to test the differences among six variables to identify the barriers to using bilingual computerised systems. The resultant frequencies demonstrated that not all barriers listed are considered to be valid by the respondents and that there is no strong relationship between using bilingual computerised systems and the lack of I.T professional Arab nationals, cost of software, awareness of availability of bilingual systems and general management understanding. Therefore, the relationship between the availability of technically skilled professional Arab nationals and the recruitment of non-Arab expatriates to run most of the activities connected with computer hardware, software and reporting was not fully supported by the Gamma tests as shown in table 7.6 provided dsimilar results to those provided by chi-square and thus this conclusion was also reached through the Gamma statistics.

7.4.4 Analysis of Kendall Coefficient of Concordance (W)

Test results of the Kendall coefficient of concordance statistics for the group responses to all situations in Hypothesis 3, the responses to these questions constituted the following rows and columns:

	Kendall's W	*Chi-square*	*Significance*
All respondents- Hypothesis three	1.0000	44.0000	0.000

As stated earlier in paragraph 7.1.3.4, the Kendall test is available for use in relation to two or more variables for the same set of cases (i.e. responses). The above results showed that there was total agreement among the respondents with regard to their perception of the relationship between the availability of technically skilled professional Arab nationals and the recruitment of non-Arabs. Hence, the Gamma statistics, along with the above Kendall did not support Hypothesis three.

7.4.5 Results and Implications

Statistical test results as shown did not support the Hypothesis that "there is a relationship between the availability of technically skilled professional Arab nationals and recruitment of non-Arab expatriates". The implication which can be derived from the test results is that almost all those who responded to the questionnaire are literate in I.T. and have reasonably good command of English and therefore are able to relate to the question. Bias is another factor which must be considered as a contributor to the answers as some of the respondents are non Arabs who may have inadvertently responded to the questionnaire using their own self reference criteria and implicit biases.

7.4.6 Conclusion

There is no strong evidence to support the relationship as implied in Hypothesis three and therefore, Hypothesis three cannot be accepted as formulated.

Table 7.5- Chi-square Test Results Hypothesis Three

Situation	Chi-square	D.F.	Significance
7.1	39.228	2	0.0000
7.2	39.465	2	0.0000
7.3	0.970	2	0.6160
7.4	33.879	2	0.0000
8.1	1.440	1 *	0.230
8.2	16.980	1 *	0.000
8.3	18.375	1 *	0.000
8.4	14.735	1 *	0.000
8.5	5.760	1 *	0.016
8.6	6.313	1 *	0.012

* Yes, No type questions

Table 7.6 - Gamma Test Results - Hypothesis Three

Compared Pairs		Gamma Value
From	To	
7 - 2	7 - 3	0.469321
7 - 2	7 - 4	0.49431
7 - 2	7 - 5	0.55724
7 - 2	7 - 6	Not computed
7 - 2	8 - 1	0.21950
7 - 2	8 - 2	0.37500
7 - 2	8 - 3	0.17920
7 - 2	8 - 4	0.06528
7 - 2	8 - 5	0.29936
7 - 2	8 - 6	0.58209
7 - 3	7 - 4	0.61713
7 - 3	7 - 5	0.78172
7 - 3	7 - 6	Not computed
7 - 3	8 - 1	-0.21455
7 - 3	8 - 2	0.20478
7 - 3	8 - 3	0.50702
7 - 3	8 - 4	0.04808
7 - 3	8 - 5	0.00194
7 - 3	8 - 6	0.15176

Table 7.6 - Gamma Test Results - Hypothesis Three

Compared Pairs		Gamma Value
From	To	
7 - 4	7 - 5	0.59192
7 - 4	7 - 6	Not computed
7 - 4	8 - 1	-0.49772
7 - 4	8 - 2	0.44675
7 - 4	8 - 3	0.19760
7 - 4	8 - 4	0.34328
7 - 4	8 - 5	0.47153
7 - 4	8 - 6	0.38693
7 - 5	7 - 6	Not computed
7 - 5	8 - 1	-.64750
7 - 5	8 - 2	0.08000
7 - 5	8 - 3	0.37201
7 - 5	8 - 4	0.30442
7 - 5	8 - 5	-.02010
7 - 5	8 - 6	-.08316
7 - 6	8 - 1	Not computed
7 - 6	8 - 2	Not computed
7 - 6	8 - 3	"
7 - 6	8 - 4	"
7 - 6	8 - 5	"
7 - 6	8 - 6	"

Table 7.6 - Gamma Test Results - Hypothesis Three

Compared Pairs		Gamma Value
From	To	
8 - 1	8 - 2	0.01097
8 - 1	8 - 3	-0.26582
8 - 1	8 - 4	0.53140
8 - 1	8 - 5	0.24783
8 - 1	8 - 6	0.46429
8 - 2	8 - 3	-.20541
8 - 2	8 - 4	.14150
8 - 2	8 - 5	.12951
8 - 2	8 - 6	.59475
8 - 3	8 - 4	*.14434*
8 - 3	8 - 5	.02152
8 - 3	8 - 6	.09395
8 - 4	8 - 5	.87645
8 - 4	8 - 6	.85393
8 - 5	8 - 6	.75171

7.5 Testing Of Hypothesis Four : Transfer Of Technology

7.5.1 Hypothesis Content

Hypothesis four is formulated to test the level of impact on the development of professional Arab nationals resulting from the recruitment of non-Arabs. The implied relationship here is that the use of non-Arab I.T professional may hinder the development and growth of professional Arab nationals. Accordingly Hypothesis four states that:

"There is a negative impact on the development and growth of professional Arab nationals resulting from the recruitment and use of non-Arabs in the workplace on jobs dealing with computerisation and accounting".

7.5.2 Statistics Used and References to Main Survey Questionnaire

Statistics used to test the Hypothesis together with other relevant details are given below:

☞ Test Statistics

Summaries of the test results are prepared in the form of tables.

☞ Interview questionnaire

Two questions were developed to collect the interviewees responses relating to Hypothesis four, the responses to these questions constituted the following rows and columns:

Question	*Rows*	*Columns*
9	4	3
10 *	5	2

* Questions are designed to record "Yes" and./or "No" answers.

Descriptive analysis of interviewees responses were given in chapter six. In the following section analyse and results of statistical testing is provided.

7.5.3 Analysis of Chi-square and Gamma

Hypothesis four demonstrated that sub-questions 9.2 to 9.4 were strongly related to one another supporting the perception by the respondents that there is "No Impact" on the personal development and job opportunities for Arab nationals in I.T. resulting from the employment of non-Arabs. The frequencies of the three sub-questions were very close to each other which supported their independence, while a smaller chi-square values were achieved as expected in an environment where the variables are independent. Sub question 9.1 however do not conform to the pattern of responses exhibited in sub-questions 9.2 to 9.4. It would appear from the analysis that a strong negative relationship existed between the personal development and job opportunities for Arab nationals in I.T and the use of Asians in jobs relating to computerisation, accounting and auditing. In the view of the researcher this answer may be influenced by biases of the respondents to Asian employees.

Question 10 addresses the long term strategy regarding the replacement of non-Arab expatriates and the respondents organisation program to transfer skills to Arab nationals on the use of computer technology relating to jobs in accounting and auditing. The question was designed as a "Yes" and/or "No" answer to a series of propositions and/or recommendations. The frequencies of responses to the sub-questions are uniform and the chi-square values and significance are consistent except for sub question 10.4 where no strong relationship existed as experienced in other sub-questions. Accordingly a smaller chi-square value and a larger level of significance was achieved across all respondents.

Gamma test results of question 9 showed that there were more "Like" pairs of cases than "Unlike" - which means that there is a positive relationship between the sub-questions. This was clearly demonstrated in the Gamma results for sub-questions 9.1 to 9.4 where all the subquestions were highly positively correlated within one another. Similarly question 10 sub-questions exhibited similar but at a lesser scale of accord.

7.5.4 Analysis of Kendall Coefficient of Concordance

Test results of the Kendall coefficient of concordance statistics for the group responses to all situations in Hypothesis four were as follows:

	Kendall's W	*Chi-square*	*Significance*
All respondents - Hypothesis four	.7708	98.6649	0.0000

The above results showed that there was a high level of accord among the respondents with regard to their perception of impact negative and/or positive toward the development and growth of professional Arab nationals resulting from the recruitment and use of non-Arabs in the workplace on jobs dealing with computerisation and accounting.

7.5.5 Results and Implications

Statistical test results did not support the Hypothesis that "There is a negative impact on the development and growth of professional Arab nationals resulting from the recruitment and use of non-Arabs in the workplace on jobs dealing with computerisation and accounting". The implications of the statistical testing was that while the majority of respondents to sub-questions 9.2 to 9.4 perceived that there is "No Impact" resulting from the use of non-Arabic professionals particularly Europeans, North Americans other nationalities (other than Asians) on the development and job opportunities relating to computerisations accounting and auditing for Arab nationals in I.T.

This perception is based on the understanding that those non-Arabic professionals are there to transfer technology and expertise to Arab nationals. It is interesting to note that those respondents who rated the impact as "Negative Impact" are Arab nationals which seems to create a perception gap between those who claim to provide the expertise and those who supposed to receive it. It is a matter of practice in the region to hire expatriates on a term contract basis. However, there is no clause in the contract stipulating the training of Arab nationals and in some jobs it is difficult for expatriates to provide on the job training without sacrificing the expatriates own level of job efficiency and performance.

7.5.6 Conclusion

Hypothesis four cannot be supported as formulated and therefore cannot be accepted.

Table 7.7- Chi-square Test Results Hypothesis Four

Situation	Chi-square	D.F.	Significance
9.1	47.824	2	0.0000
9.2	25.820	2	0.0000
9.3	24.143	2	0.000
9.4	21.171	2	0.0000
10.1	18.375	1 *	0.000
10.2	12.042	1 *	0.001
10.3	28.582	1 *	0.000
10.4	3.176	1 *	0.075
10.5	13.235	1 *	0.000

* Yes, No type questions

Table 7.8 - Gamma Test Results - Hypothesis Four

Compared Pairs		Gamma Value
From	To	
9 - 1	9 - 2	0.76023
9 - 1	9 - 3	0.76435
9 - 1	9 - 4	0.73986
9 - 1	10 - 1	-0.35668
9 - 1	10 - 2	0.72973
9 - 1	10 - 3	-0.31387
9 - 1	10 - 4	0.49008
9 - 1	10 - 5	1.0000
9 - 2	9 - 3	1.00000
9 - 2	9 - 4	0.67300
9 - 2	10 - 1	-0.07411
9 - 2	10 - 2	0.07265
9 - 2	10 - 3	-0.27051
9 - 2	10 - 4	-0.27051
9 - 2	10 - 5	-0.75000
9 - 3	9 - 4	0.67234
9 - 3	10 - 1	-0.08734
9 - 3	10 - 2	0.06160
9 - 3	10 - 3	-0.23866
9 - 3	10 - 4	0.18107
9 - 3	10 - 5	-0.75000

Table 7.8 - Gamma Test Results - Hypothesis Four

Compared Pairs		Gamma Value
From	To	
9 - 4	10 - 1	0.18819
9 - 4	10 - 2	0.14379
9 - 4	10 - 3	-0.01840
9 - 4	10 - 4	0.72747
9 - 4	10 - 5	Not computed
10 - 1	10 - 2	0.14695
10 - 1	10 - 3	0.50673
10 - 1	10 - 4	0.45626
10 - 1	10 - 5	Not computed
10 - 2	10 - 3	0.59036
10 - 2	10 - 4	0.36515
10 - 2	10 - 5	1.00000
10 - 3	10 - 4	0.56868
10 - 3	10 - 5	-1.00000
10 - 4	10 - 5	1.0000

7.6 Testing Of Hypothesis Five: Transfer Of Technology

7.6.1 Hypothesis Content

Hypothesis five is formulated to test the level of impact on the true transfer of technology resulting from lack of statement of direction. The Hypothesis proposes that there is a negative relationship between transfer of technology and lack of direction on the use of technology. The Hypothesis assumes that:

"There is a negative impact on the true transfer of computer technology resulting from lack of statement of direction".

7.6.2 Statistics Used and References to Main Survey Questionnaire

Statistics used to test the Hypothesis together with other relevant detailed are given below:

☞ Test Statistics

Summaries of the test results are prepared in the form of tables.

☞ Interview questionnaire

The three questions which were developed to collect the interviewees responses relating to Hypothesis five consisted of:

Question	*Rows*	*Columns*
11	5	3
12	4	3
13	4	3

Descriptive analyses of interviewees responses is given in chapter six. In the following section analyses and results of statistical testing are provided.

7.6.3 Analysis of Chi-square and Gamma

Hypothesis five was clearly supported by the chi-square and Gamma test results given in table 7.9 and 7.10. sub-questions in question 11, 12 and 13 were highly positively correlated with one another as reflected by the chi-square results and Gamma statistics. The three questions in Hypothesis five indicated "Negative Impact" resulting from lack of statement of direction on the transfer of technology within the context of Hypothesis five.

7.6.4 Analysis of Kendall coefficient of concordance

Test results of the Kendall coefficient of concordance statistic for the group responses to all situations in Hypothesis five was as follows:

	Kendall's W	*Chi-square*	*Significance*
All respondents to Hypothesis five	.0530	62.3267	0.0000

The above positive results showed that the low probability under Hypothesis five associated with the value of (W) would enable us to accept that the respondents' rankings were related to each other and to conclude that there was consensus among the respondents that "There was a negative impact on the true transfer of computer technology resulting from lack of statement of direction".

7.6.5 Results and Implications

It appears that there was a strong interrelationship among the sub-questions which suggested that there was a strong consensus in the perception of "Impact" on the transfer of computer technology. The majority of respondents in the three questions (11, 12 and 13) considered that there was a major impact resulting from the various factors listed. Chi-square, Gamma and Kendall coefficients of concordance test results supported the Hypothesis that "There is a negative impact on the true transfer of technology resulting from lack of statement of direction ".

Sub-questions 11-2, 12-1, 12-2, 13-1 and 13-2 were positively correlated with one another and the frequencies of answers for these questions indicated "Major Impact" resulting from lack of statement of direction in contrast to answers in Hypothesis four where the test of non-Arab expatriates is shown as a "Positive Impact". The responses relating to the use of expatriates and Arab nationals in Hypothesis five as perceived by the respondents in the view of the researcher are more realistic than those exhibited earlier. This is primarily attributed to the wording of questions 11, 12 and 14 where objectivity of answers by the respondents was clearly encouraged.

7.6.6 Conclusion

Hypothesis five is accepted as formulated.

Table 7.9- Chi-square Test Results Hypothesis Five

Situation	Chi-square	D.F.	Significance
11.1	36.059	2	.0000
11.2	43.059	2	.0000
11.3	56.574	2	.0000
11.4	19.824	2	.0000
11.5	21.140	2	.0000
12.1	16.294	2	0.000
12.2	21.412	2	0.000
12.3	11.118	2	0.004
12.4	59.294	2	0.000
13.1	81.706	2	0.000
13.2	44.882	2	0.000
13.3	13.235	2	0.001
13.4	48.851	2	0.000

Table 7.10 - Gamma Test Results - Hypothesis Five

Compared Pairs		Gamma Value
From	To	
11 - 1	11 - 2	0.15121
11 - 1	11 - 3	0.59600
11 - 1	11 - 4	0.19501
11 - 1	11 - 5	0.65851
11 - 1	12 - 1	0.43069
11 - 1	12 - 2	0.11927
11 - 1	12 - 3	0.12987
11 - 1	12 - 4	0.45665
11 - 1	13 - 1	0.25755
11 - 1	13 - 2	0.12763
11 - 1	13 - 3	0.57382
11 - 1	13 - 4	0.01742
11 - 2	11 - 3	0.44344
11 - 2	11 - 4	0.64804
11 - 2	11 - 5	0.33570
11 - 2	12 - 1	-0.20095
11 - 2	12 - 2	0.20276
11 - 2	12 - 3	0.46905
11 - 2	12 - 4	0.36821
11 - 2	13 - 1	0.30632
11 - 2	13 - 2	0.16059
11 - 2	13 - 3	0.12958
11 - 2	13 - 4	0.44059

Table 7.10 - Gamma Test Results - Hypothesis Five

Compared Pairs		Gamma Value
From	To	
11 - 3	11 - 4	0.78723
11 - 3	11 - 5	0.36314
11 - 3	12 - 1	-0.0728
11 - 3	12 - 2	0.26715
11 - 3	12 - 3	0.28079
11 - 3	12 - 4	0.53976
11 - 3	13 - 1	0.14368
11 - 3	13 - 2	0.13962
11 - 3	13 - 3	0.19623
11 - 3	13 - 4	0.31450
11 - 5	12 - 1	0.64197
11 - 5	12 - 2	0.44281
11 - 5	12 - 3	0.55730
11 - 5	12 - 4	0.53604
11 - 5	13 - 1	0.78864
11 - 5	13 - 2	0.49481
11 - 5	13 - 3	0.42373
11 - 5	13 - 4	0.58055
12 - 1	12 - 2	0.30482
12 - 1	12 - 3	0.15809
12 - 1	12 - 4	0.45871
12 - 1	13 - 1	0.73333
12 - 1	13 - 2	0.53708
12 - 1	13 - 3	0.61535
12 - 1	13 - 4	0.51042

Table 7.10 - Gamma Test Results - Hypothesis Five

Compared Pairs		Gamma Value
From	To	
12 - 2	12 - 3	0.69626
12 - 2	12 - 4	0.69142
12 - 2	13 - 1	0.6645
12 - 2	13 - 2	0.82823
12 - 2	13 - 3	0.36832
12 - 2	13 - 4	0.69623
12 - 3	12 - 4	0.95238
12 - 3	13 - 1	0.84108
12 - 3	13 - 2	0.60628
12 - 3	13 - 3	0.37109
12 - 3	13 - 4	0.80230
13 - 1	13 - 2	0.92308
13 - 1	13 - 3	0.59033
13 - 1	13 - 4	0.95110
13 - 2	13 - 3	0.54695
13 - 2	13 - 4	0.83480
13 - 3	13 - 4	0.24834

7.7 Testing Of Hypothesis Six: Transfer Of Technology

7.7.1 Hypothesis Content

Hypothesis six is formulated to measure the relationship between the acquisition of hardware, software and consultancy and the need to develop the Arab national skills to use them. The Hypothesis implicitly proposes that there is a positive relationship between the need to develop the Arab national skills and the acquisition of hardware, software and consultancy. The Hypothesis assumes that:

"There is a relationship between the acquisition of hardware, software skills required and consultancy and the need to develop the Arab national skills to use them".

7.7.2 Statistics Used and References to Main Survey Questionnaire

Statistics used to test the Hypothesis together with other relevant details are given as below:

☞ Test Statistics

Summaries of the test results are prepared in the form of tables .

☞ Interview questionnaire

One question was developed to collect the interviewees responses relating to Hypothesis six and consisted of the following data:

Question	*Rows*	*Columns*
1	7	5

Descriptive analysis of interviewees responses is given in chapter six. In the following section analysis and results of statistical testing is provided.

7.7.3 Analysis of Chi-square and Gamma

Chi-square and Gamma test results supported the Hypothesis that "There is a relationship between the acquisition of hardware, software skills required and consultancy and the need to develop the Arab national skills to use them". Practically all sub-questions were highly positively correlated with one another as supported by the Gamma test results. They showed uniformity in response across the categories of "Very Positive" and "Positive" as reflected by high sign of X^2. Based on the test results given in tables 7.11 and 7.12 it can be concluded that the Hypothesis is accepted (confirmed).

7.7.4 Analysis of Kendall coefficient of concordance

Test results of the Kendall coefficient of concordance statistics for the group responses to all situations in Hypothesis six is as follows:

	Kendall's W	*Chi-square*	*Significance*
All respondents to Hypothesis six	.0281	17.0213	.0092

Positive Gamma means that there were more "Like" pairs cases than "Unlike" pairs which means that there was positive relationship between the sub-questions. The low probability under Hypothesis six associated with the value of (W) lead us to conclude that there was consensus among the respondents that "There is a relationship between the acquisition of hardware, software skills required and consultancy and the need to develop the Arab national skills to use them".

7.7.5 Results and Implications

Statistical test results indicate that there was concordance and strong interrelationships among the sub-questions to suggest that the perception of relationship by the respondents was positively correlated which is sufficient evidence to support the Hypothesis as formulated.

7.7.6 Conclusion

Hypothesis six is supported by the chi-square, Gamma and Kendall (W) and therefore it is accepted as formulated.

Table 7.11- Chi-square Test Results Hypothesis Six

Situation	Chi-square	D.F.	Significance
14.1	56.574	4	.0000
14.2	69.545	4	.0000
14.3	31.624	4	.0000
14.4	58.851	4	.0000
14.5	85.745	4	.0000
14.6	69.471	4	.0000
14.7	91.137	4	.0000

Table 7.12 - Gamma Test Results - Hypothesis Six

Compared Pairs		Gamma Value
From	To	
14 - 1	14 - 2	0.89503
14 - 1	14 - 3	0.59273
14 - 1	14 - 4	0.65572
14 - 1	14 - 5	0.67568
14 - 1	14 - 6	0.56774
14 - 1	14 - 7	0.52751
14 - 2	14 - 3	0.83178
14 - 2	14 - 4	0.85472
14 - 2	14 - 5	0.75798
14 - 2	14 - 6	0.56320
14 - 2	14 - 7	0.70467
14 - 3	14 - 4	0.98467
14 - 3	14 - 5	0.75710
14 - 3	14 - 6	0.58460
14 - 3	14 - 7	0.72898
14 - 4	14 - 5	0.90374
14 - 4	14 - 6	0.68682
14 - 4	14 - 7	0.86689
14 - 5	14 - 6	0.83409
14 - 5	14 - 7	0.92908
14 - 6	14 - 7	0.97241

7.8 Testing Of Hypothesis Seven: Computer Training

7.8.1 Hypothesis Content

Hypothesis seven is formulated to test the relationship between external computer training, internal computer training and the development of Arab nationals in areas relating to accounting, auditing and computer.

The Hypothesis implicitly proposes that there is a relationship between the acquisition of external training and/or internal development of training and the development of Arab nationals. The Hypothesis therefore assumes that:

"There is a strong relationship between the acquisition of external training in computer and information technology and the development of Arab human resources on the use of technology".

7.8.2 Statistics Used and References to Main Survey Questionnaire

Statistics used to test the Hypothesis together with other relevant details are given as below:

☞ Test Statistics

Summaries of the test results are prepared in the form of tables.

☞ Interview questionnaire

Two questions were developed in three parts each. The first two parts of the questions were designed to identify the type of training language it is acquired in. Part three was designed to measure the relationship between training and the development of Arab nationals. Interviewees responses relating to Hypothesis seven were collected using two questions which were composed of:

Question	*Rows*	*Columns*
15 - 3	7	5
16 - 3	7	5

Descriptive analysis of interviewees responses is given in chapter six. In the following section analysis and results of statistical testing is provided.

7.8.3 Analysis of Chi-square and Gamma

Chi-square and Gamma test results as shown in tables 7.13 and 7.14 supported the Hypothesis that "There is a strong relationship between the acquisition of external training or internal development of Arab human resources on the use of technology". Chi-square and Gamma tests showed a very strong relationship between the external and internal training and the development of Arab nationals. This strong relationship was confirmed by the positive interrelationship between the sub-questions in 15-3 and 16-3. Most of these sub-questions showed differential response across the categories of "Very Positive" to "Positive" because of the high interrelationships between responses to the two sub-question 15-3 and 16-3 testing Hypothesis seven as reflected by their Gamma. It can therefore be concluded that there was strong evidence to support the Hypothesis that "There is a strong relationship between the acquisition of external training or internal development of training in computer and information technology and the development of Arab human resources on the use of technology".

7.8.4 Analysis of Kendall coefficient of concordance

Test results of the Kendall coefficient of concordance statistics for the group responses to all situations in Hypothesis seven was as follows:

	Kendall's W	*Chi-square*	*Significance*
All respondents to Hypothesis seven			
- Question 15-3	.0736	20.7674	.0020
- Question 16-3	.1872	25.836	.0002

Gamma test result indicate that there was a strong positive relationship between the acquisition of external training or internal training and the development of Arab human resources on the use of computer technology. The test result supports the Hypothesis to be "True" as the level of consensus among the respondents is very high.

7.8.5 Results and Implications

Statistical test results confirm that Hypothesis seven is perceived by the respondent to be confirmed. It implies that training does make a difference whether externally bought and or internally developed. The high level of accord suggested that organisations in the private and public sector should consider training as a one of the important vehicles to the development of computer skills for their nationals. Of course this would have to be in addition to the job training to be provided by the non-Arab expatriates.

7.8.6 Conclusion

Hypothesis seven is strongly supported by the statistical testing and therefore it is accepted as formulated.

Table 7.13 - Chi-square Test Results Hypothesis Seven

Situation	Chi-square	D.F.	Significance
15.3.1	20.764	2	.0000
15.3.2	14.254	1	.0000
15.3.3	36.936	2	.0000
15.3.4	58.842	2	.0000
15.3.5	26.741	1	.0000
15.3.6	28.737	2	.0000
15.3.7	42.473	2	.0000
16.3.1	4.568	1	.033
16.3.2	0.806	1	.369
16.3.3	20.138	2	.000
16.3.4	36.765	2	.000
16.3.5	21.318	2	.000
16.3.6	24.703	2	.000
16.3.7	6.095	1	.014

Table 7.14 - Gamma Test Results - Hypothesis Seven

Compared Pairs From	Compared Pairs To	Gamma Value
15 - 1 - 1	15 - 1 - 2	0.83851
15 - 1 - 1	15 - 2 - 1	0.85714
15 - 2 - 1	15 - 2 - 2	1.00000
15 - 2 - 1	15 - 2 - 3	0.90728
15 - 2 - 1	15 - 2 - 4	0.94754
15 - 2 - 1	15 - 2 - 5	0.68421
15 - 2 - 1	15 - 2 - 6	0.62500
15 - 2 - 1	15 - 2 - 7	0.83122
15 - 2 - 1	15 - 2 - 8	0.41176
15 - 2 - 1	15 - 3 - 1	0.65217
15 - 2 - 1	15 - 3 - 2	-0.05882
15 - 2 - 1	15 - 3 - 3	0.50000
15 - 2 - 1	15 - 3 - 4	0.63636
15 - 2 - 1	15 - 3 - 5	1.00000
15 - 2 - 1	15 - 3 - 6	-0.15789
15 - 2 - 1	15 - 3 - 7	0.28571
16 - 3 - 1	16 - 3 - 2	0.98529
16 - 3 - 1	16 - 3 - 3	0.25000
16 - 3 - 1	16 - 3 - 4	0.10000
16 - 3 - 1	16 - 3 - 5	0.51724
16 - 3 - 1	16 - 3 - 6	0.20000
16 - 3 - 1	16 - 3 - 7	1.00000

Table 7.14 - Gamma Test Results - Hypothesis Seven

Compared Pairs		Gamma Value
From	To	
16 - 3 - 2	16 - 3 - 3	0.08108
16 - 3 - 2	16 - 3 - 4	0.12821
16 - 3 - 2	16 - 3 - 5	0.27173
16 - 3 - 2	16 - 3 - 6	-0.14286
16 - 3 - 2	16 - 3 - 7	0.88462
16 - 3 - 3	16 - 3 - 4	0.50000
16 - 3 - 3	16 - 3 - 5	0.71429
16 - 3 - 3	16 - 3 - 6	0.59259
16 - 3 - 3	16 - 3 - 7	0.11628
16 - 3 - 4	16 - 3 - 5	0.69565
16 - 3 - 4	16 - 3 - 6	1.00000
16 - 3 - 4	16 - 3 - 7	0.05376
16 - 3 - 5	16 - 3 - 6	1.00000
16 - 3 - 5	16 - 3 - 7	0.68235
16 - 3 - 6	16 - 3 - 7	0.60000

7.9 Testing Of Hypothesis Eight: Computer Training

7.9.1 Hypothesis Content

Hypothesis eight suggests that there is a relationship between training nationals, introduction of computer technology and the support provided by the business community and educational institutions. It investigates whether members of the business community and educational institutions support and promote computer technology through direct involvement. It also attempts to measure the level of impact of those courses have on the development of Arab nationals. Therefore, the Hypothesis assumes that:

"There is a strong relationship between the level of training and introduction of computer technology and the support of the business community and educational institutions".

7.9.2 Statistics Used and References to Main Survey Questionnaire

Statistics used to test the Hypothesis together with other relevant details are given as below:

☞ Test Statistics

Summaries of the test results are prepared in the form of tables.

☞ Interview questionnaire

Two questions were developed to collect the interviewees responses relating to Hypothesis eight, the responses to these questions constituted the following rows and columns:

Question	*Rows*	*Columns*
17 *	5	2
18	14	5

* Yes, no type of questions

Descriptive analysis of interviewees responses is given in chapter six. In the following section analysis and results of statistical testing is provided.

7.9.3 Analysis of Chi-square and Gamma

Analysis of chi-square and Gamma test results as shown in tables 7.15 and 7.16 revealed that there was a positive correlation between the sub-questions in question 18. The low significance level exhibited in almost all the sub-questions lead us to conclude that a strong relationship existed between I.T courses offered by the business community and the development of Arab nationals in accounting and auditing. Almost all responses to the sub-questions relating to the testing of Hypothesis eight were positively correlated. This is reflected by their paired Gammas and the tendency of these responses to reflect the level of impact "Very Positive" to "Positive" of the courses offered by the business community and educational institutions. This would provide sufficient evidence that a strong relationship existed as stipulated in Hypothesis eight.

Question 17 was designed as an investigative "Yes" and or "No" type of question. The frequencies of responses in sub-questions 17-1 and 17-5 demonstrated that negative correlation existed with the other sub-questions. As they tended towards the "No" answer to the Question whether their organisation supported and promoted computer technology through direct involvement. The two sub questions registered higher chi-square value and significance level when compared to the other sub-questions in question 17. However it was shown that when there is only one degree of freedom associated with the chi-square test, unless the sample is quite large, the computed x^2 is systematically overstated because of the discrete nature of the data.

Overall results of question 18 supported the Hypothesis that a strong relationship existed between the level of training and the introduction of computer technology and the support of business community and educational institutions. Two exceptions to this conclusion were noted from the "No" negative answers provided by the respondents in sub questions 17-1 and 17-5 whereby the majority of responents stated that they do not consider university's faculty members and industrial and commercial concerns are like the rest of the business community when it comes to giving their level of support to computer education.

7.9.4 Analysis of Kendall coefficient of concordance

Test results of the Kendall coefficient of concordance statistics for the group responses to all situations in Hypothesis eight were as follows:

	Kendall's W	*Chi-square*	*Significance*
All respondents to Hypothesis eight	.2190	19.7143	.3491

There were differences in the way the two questions (17 and 18) were calculated and there were cases where the expected frequencies were less than 5 giving low chi-square test results which made the above results less reliable. However, on the strength of test results in question 17 it was possible to confirm that there was a positive relationship (impact) between the courses offered by the business community and the development of Arab nationals in accounting and auditing.

7.9.5 Results and Implications

Test results of chi-square and Gamma supported the Hypothesis that there was a strong positive relationship between the level of training and introduction of computer technology and the support of the business community and educational institutions. However there was strong evidence to suggest that much less support was provided at the university faculty members and the industrial and commercial concerns. This situation would pose a serious concern to those involved in the development and training of Arab nationals. Kendall's results were insignificant and therefore ignored.

7.9.6 Conclusion

The overall statistical test results supported the Hypothesis that "There is a strong relationship between the level of training and introduction of computer technology and the support of the business community and educational institutions". Therefore it was concluded that the Hypothesis is accepted as formulated.

Table 7.15 - Chi-square Test Results Hypothesis Eight

Situation	Chi-square	D.F.	Significance
17.1	24.000	1	.000
17.2	3.375	1	.066
17.3	4.546	1	.033
17.4	.000	1	1.000
17.5	49.587	2	.000
18.1	35.034	2	.000
18.2	10.759	2	.005
18.3	4.345	2	.114
18.4	46.828	2	.000
18.5	34.207	2	.000
18.6	19.140	2	.000
18.7	32.395	2	.000
18.8	88.067	2	.000
18.9	43.978	2	.000
18.10	43.775	2	.000
18.11	10.259	2	.006
18.12	20.265	2	.000
18.13	62.571	2	.000

Table 7.16 - Gamma Test Results - Hypothesis Eight

Compared Pairs		Gamma Value
From	To	
18 - 1	18 - 2	0.78880
18 - 1	18 - 3	0.40494
18 - 1	18 - 4	0.51875
18 - 1	18 - 5	0.45038
18 - 1	18 - 6	0.81607
18 - 1	18 - 7	0.37343
18 - 1	18 - 8	0.54286
18 - 1	18 - 9	0.23494
18 - 1	18 - 10	0.40446
18 - 1	18 - 11	0.54934
18 - 1	18 - 12	0.56115
18 - 1	18 - 13	0.60833
18 - 1	18 - 14	1.0000
18 - 2	18 - 3	0.76581
18 - 2	18 - 4	0.33893
18 - 2	18 - 5	0.62112
18 - 2	18 - 6	0.45892
18 - 2	18 - 7	0.61781
18 - 2	18 - 8	0.67403
18 - 2	18 - 9	0.09873
18 - 2	18 - 10	0.26790
18 - 2	18 - 11	0.45894
18 - 2	18 - 12	0.66879
18 - 2	18 - 13	0.82218
18 - 2	18 - 14	1.00000

Table 7.16 - Gamma Test Results - Hypothesis Eight

Compared Pairs		Gamma Value
From	To	
18 - 3	18 - 4	0.74606
18 - 3	18 - 5	0.61655
18 - 3	18 - 6	0.26478
18 - 3	18 - 7	0.54539
18 - 3	18 - 8	0.50748
18 - 3	18 - 9	0.31209
18 - 3	18 - 10	0.38436
18 - 3	18 - 11	0.58411
18 - 3	18 - 12	0.56119
18 - 3	18 - 13	0.64417
18 - 3	18 - 14	1.00000
18 - 4	18 - 5	0.74281
18 - 4	18 - 6	0.64677
18 - 4	18 - 7	0.62314
18 - 4	18 - 8	0.53418
18 - 4	18 - 9	0.88688
18 - 4	18 - 10	0.72500
18 - 4	18 - 11	0.74074
18 - 4	18 - 12	0.17248
18 - 4	18 - 13	0.39623
18 - 4	18 - 14	1.00000
18 - 5	18 - 6	0.55092
18 - 5	18 - 7	0.94183
18 - 5	18 - 8	0.22222
18 - 5	18 - 9	0.69958
18 - 5	18 - 10	0.30530
18 - 5	18 - 11	0.92095
18 - 5	18 - 12	0.82247
18 - 5	18 - 13	0.39535
18 - 5	18 - 14	1.00000

Table 7.16 - Gamma Test Results - Hypothesis Eight

Compared Pairs		Gamma Value
From	To	
18 - 6	18 - 7	0.61494
18 - 6	18 - 8	0.40897
18 - 6	18 - 9	0.60000
18 - 6	18 - 10	0.26514
18 - 6	18 - 11	0.66484
18 - 6	18 - 12	0.32953
18 - 6	18 - 13	0.69756
18 - 6	18 - 14	1.00000
18 - 7	18 - 8	0.42381
18 - 7	18 - 9	0.52598
18 - 7	18 - 10	0.30821
18 - 7	18 - 11	0.71449
18 - 7	18 - 12	0.74856
18 - 7	18 - 13	0.66507
18 - 7	18 - 14	1.00000

Table 7.16 - Gamma Test Results - Hypothesis Eight

Compared Pairs		Gamma Value
From	To	
18 - 8	18 - 9	0.62971
18 - 8	18 - 10	0.95229
18 - 8	18 - 11	0.24299
18 - 8	18 - 12	0.46389
18 - 8	18 - 13	0.90657
18 - 8	18 - 14	1.00000
18 - 9	18 - 10	0.68871
18 - 9	18 - 11	0.85228
18 - 9	18 - 12	0.15075
18 - 9	18 - 13	0.53253
18 - 9	18 - 14	1.00000
18 - 10	18 - 11	0.35523
18 - 10	18 - 12	0.31723
18 - 10	18 - 13	0.53458
18 - 10	18 - 14	1.00000
18 - 11	18 - 12	0.60612
18 - 11	18 - 13	0.56870
18 - 11	18 - 14	1.00000
18 - 12	18 - 13	0.35714
18 - 12	18 - 14	1.00000
18 - 13	18 - 14	1.00000

7.10 CONCLUSION

The following is a summary of the test results to determine whether the Hypotheses as formulated are (confirmed) and/or (not confirmed).

NO	HYPOTHESIS	STATISTICS USED	CONCLUSION
	HYPOTHESES RELATING TO ARABISATION		
H1	There is a negative impact on ht development of Professional Arab National on the use of computer technology resulting from the use of English as a main and a second language of administration.	Chi-square, Gamma and Kendall's (W)	Not confirmed
H2	True transfer of technology can only be achieved when the people who acquire the technology can use in their own language therefore, there is a strong relationship between the language of the operating and application systems and true transfer of technology.	Chi-square, Gamma and Kendall's (W)	Not confirmed
H3	There is a relationship between the availability of technically skilled Professional Arab Nationals and the recruitment of Non-Arab expatriates to run most of the activities connected with computer hardware, software and reporting.	Chi-square, Gamma and Kendall's (W)	Not confirmed
	HYPOTHESES RELATING TO TRANSFER OF TECHNOLOGY		
H4	There is a negative impact on the development and growth of Professional Arab Nationals resulting from the recruitment and use of Non-Arabs in the workplace on jobs dealing with computerisation and accounting.	Chi-square, Gamma and Kendall's (W)	Not confirmed
H5	There is a negative impact on the true transfer of computer technology resulting from lack of statement of direction.	Chi-square, Gamma and Kendall's (W)	Confirmed

NO	HYPOTHESIS	STATISTICS USED	CONCLUSION
	HYPOTHESES RELATING TO COMPUTER TRAINING		
H6	There is a relationship between the acquisition of hardware, software skills required and consultancy and the need to develop the Arab National skills to use them.	Chi-square, Gamma and Kendall's (W)	Confirmed
H7	There is a strong relationship between the acquisition of external training or internal development of training in computer and information technology and the development of Arab human resources on the use of technology.	Chi-square, Gamma and Kendall's (W)	Confirmed
H8	There is a strong relationship between the level of training an introduction of computer technology and the support of the business community and educational institutions.	Chi-square, Gamma and Kendall's (W)	Confirmed

Conclusions derived from statistical testing of hypothesis on Arabisation seems to suggest:

- That while Arabisation is an aim for some the majority of interviewees did not agree with the hypotheses that the use of English is a hindrance to the development of Arab nationals on the use of computer technology. English language in the view of the researcher continues to be a universal language of science and technology;
- That transfer of technology can be achieved in the language of the providers and not necessarily the recipients. Of course Arabisation would facilitate access and use of technology to a greater proportion of the population;
- That the impact of hiring non-Arabs with the availability of skilled professional Arab nationals could not be substantiated.

Conclusions derived from the statistical testing of hypotheses relating to the transfer of technology seem to suggest:

- That the use of non-Arabs in jobs dealing with computerisation and accounting is not a prohibiting factor to the development and growth of professional Arab nationals;
- That the lack of statement of direction by governments and the private sector do have a negative impact on the transfer of expertise and know-how to Arab nationals.

Conclusions derived from the statistical testing of hypotheses relating to training seems to support the hypotheses that there is a positive relationship between training internal and external, and the development of Arab national skills to use computer technology.

It should be noted that high proportion of sample tested was biased to non-Arabs. Accordingly non-Arab respondents may have inadvertently responded to the questionnaire using their own self reference criteria and implicit biases.

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CHAPTER VII

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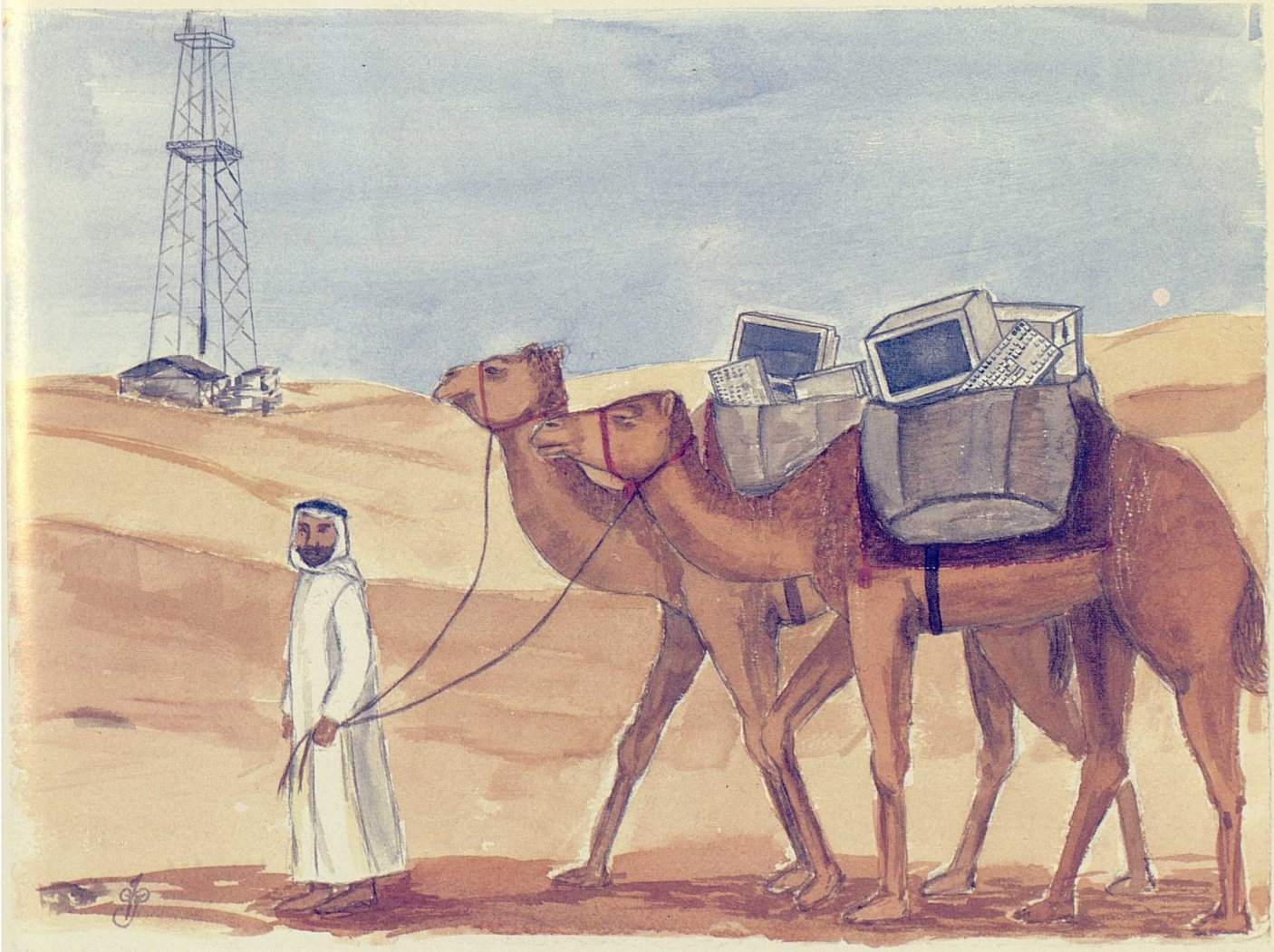
The Impact of Computer Technology on Accounting and Auditing in the Middle East with Special Emphasis on Arabisation, Transfer of Technology and Training



Chapter 8

Summary of Conclusions, Recommendations and Areas for Further Research

CHAPTER VIII

SUMMARY, CONCLUSIONS, RECOMMENDATIONS AND AREAS FOR FURTHER RESEARCH

8.1 Introduction

This final chapter of the dissertation summarises the reasons for undertaking this study, the methodology used and the results obtained and its implications for future research.

Many dramatic changes have taken place since the invention of the first computer and its introduction in the Middle East. A variety of forces occurrences and conditions have brought on these changes. some of these factors are:

- Advances in computer technology and its impact on the workplace in terms of skills requirements.
- Economical, cultural and social changes in the Middle East particularly those related to increase in revenues from oil, influx of large number of expatriate workers into the region and its social impact on the fabric of the society in the Middle East.
- Governments determination to improve the well being of its people through improved education with the aim of achieving self sufficiency in skills particularly those related to information technology.
- Private business role in acquiring the new computer technology and in training their employees thus resulting in an increase in demand for technically skilled and computer literate employees.
- Users' attitudes towards the computer technology have also been changing, partly as a result of the increase in the number of managers who are now in senior positions and who are professionally trained and who have been exposed to information technology.

- Suppliers' attitudes towards arabisation of software, training and transfer of skills to the people of the region is improving as more suppliers are now. Working towards Arabic and billingual software to suit the region.

However, many problems remain unresolved where solutions and improved approaches by the users and suppliers of the information technology will need to be developed.

Also the new information technological advances have brought about their own skills requirement problems. The need to obtain diverse professional skills on the use of computer systems is more apparent now than ever before.

8.2 Summary of the Study

8.2.1 Summary of the methodology

The stated objective of the research was to deal with two distinct problems relating to computer technology. The first was that of existence of such technology in the Middle East. The second was concerned with the appropriate level of its introduction of the region. Both of these issues in the view of the Researcher have been successfully dealt with.

The specific objectives of this research were as follows:

a) to review the status of computer technology in the Middle East;

b) to outline the inadequacies of the current practice by businesses, governments, auditing firms and educational institutions; and

c) to discuss the implications of such technology on the region as a whole and its impact on issues such as Arabisation, transfer of skills and training.

To accomplish the desired objectives of the research, a research methodology was used and included a historical analysis and literature search and pilot study and analysis of the survey which included computer technology users, providers and consultants. The study focused on the key variables namely introducing the technology and its impact, computer hardware, computer software Arabisation and training and skills transfer. A phased approach to the collection of data was deployed with a view to measure in real terms the impact of the computer technology. The phased approach included.

Phase One - Available Literature

Other studies cited in the literature have been reviewed for relevance and historical analysis of the evaluation of computer technology and the stages of its development have been prepared. As shown in Chapter 1 to 4

Phase Two - Pilot Study

Pilot Study was carried out to achieve an indepth knowledge on information requirement analysis for each member of the research environment. It also assisted in clarify some of the ambiguities surrounding some of the questions and the relevance of others. This added knowledge assisted in the modification of the structured questionnaire given in Appendix 1 to 4.

Phase Three - The Structured Questionnaire

A structured questionnaire was developed to measure the impact of computer technology on accounting and auditing in the Gulf States which are the most affluent countries in the Middle East. All data collected by means of questionnaire on the basis of standard case questionnaire have been analysed using a computer program to measure what impact the computer technology had on four distinct groups.

The research questionnaire was mailed to 1355 organisations in the Middle East. The questionnaire sample was divided into four distinct groups namely:

	Number Approached	Responded
- Computer hardware and software users	849	47
- Audit firms	162	10
- Colleges and Universities	32	8
- Computer hardware and software suppliers	312	29
	1,355	94

The level of response achieved was 6.94% of organisations surveyed or 94 organisation.

Phase Four - Interviewing Through Research Interview Questionnaire

A structured Interview Questionnaire was developed subsequent to the researchers analysis of data collected in Phase Three. Phase four Research Interview Questionnaire. As given in Appendix 5 was designed to measure the severity of impact of the following specific areas:

- Arabisation
- Transfer of Technology
- Computer Training

It was considered critical to the completion of the research that such interview questionnaire be developed and for such information to be collected to validate finding and conclusions derived from the four part structured questionnaire given in Appendices 1 to 4 and to test the research hypotheses.

8.2.2 Summary of the Overall Results of Descriptive Analysis of Data Collected in Phase Three

- This section will deal with a summary of the overall results of the study, which are applicable to the four key groups analysed in the study namely, the computer hardware and software users, audit firms, colleges and universities and computer hardware and software suppliers.

- The issues addressed in this section are common issues facing al users and suppliers of computer hardware and software dealing with Arabised software. Transfer of skills and training of personnel on the use of computer technology.

- 83.% of organisations responded stated that their main and second language of administration is English. In addition the majority of users of computer systems in these organisations are Non-Arabs. There is a very strong cause and effect relationship here with regard to the domination of English language use in business and government and the use of expatriate Non-Arab staff.

- Most organisations surveyed in the region are facing a highly volatile environment concerning information technology and expatriate workforce. To achieve a better utilisation of the people of the region the countries of the region are now setting up government agencies to monitor the training of nationals and the integration of those nationals into the work force including the gradual nationalisation of jobs.

- Transfer of skills can only be achieved when it is made as part of a deliberate and national policy through education, training and clear employment policy on hiring of expatriates where job offers to expatriates must be linked to successfully training nationals within a specified time frame and on acquiring new skills and the use of those skills at work. This is more apparent in the area of information technology where software needs to be Arabised and or made billingual so as to enable nationals to use the software in their own language.

- Self sufficiency in computer skills lowers dependency on technical expatriate workforce and increases the changes for introducing, developing improved software in Arabic. It would also allow them to use their scarce human resources efficiently in order to satisfy their countries' information technology requirements.

- In section 8.3 specific conclusions and recommendations derived from the descriptive analysis phase one of data collected are presented.

8.2.3 Summary of the Overall Results - Descriptive Analysis of Data Collected in Phase Three

- This section will deal with a summary of the overall results of the interviews carried out in phase two which are inclusive of the four groups in the study, namely the computer hardware and software users, audit firms, colleges and universities and computer hardware and software suppliers.

- The interviewees responses to the various situations in the interview questionnaires reflecting their understanding, and perception of what arabisation, transfer of skills and training mean to each from his own perspectives.

- While 50% of the respondents believing that English (as opposed to Arabic) as a main language of administration would have a negative impact, the overwhelming majority believed that there is a positive impact resulting from the use of English as a second language of administration, as a language used in technical and user documentation.

- The majority of respondents did not consider that hardware constrains, cost of Arabic accounting systems relative to English systems, and lack of regulations of the audit profession to be a limiting factor to the expansion of computerised accounting/auditing systems in Arabic. However lack of Arabic compilers and Arabic data base management systems were considered to be a limiting factors.

- More than half of the respondents agree that the lack of Arabic operating and application systems is not a disadvantage to their organisations and or a limiting factor to the recruitment of staff.

- Most respondents working for organisation planning to Arabise software believed that there will be a positive impact on the recruitment of I T Arab professionals resulting from arabisation ,however, they also believed that the recruitment of non-Arab expatriates do not affect the availability of Arabised software .

- In the view of the majority of respondents there is no impact on the job opportunities for Arab nationals in I T resulting from the presence of non Arabs of European, north Americans and other nationalities than Asians, While the majority believe that their organisation should have a long term strategy to utilise the non-Arab expatriates to train Arab nationals and to transfer the skills to them.

- The Overwhelming majority of respondents believed that lack of clear statement on direction of the use of I. T, unclear definition of I.T skills required and the lack of quality software in Arabic to be a major factor in limiting the transfer of skills combined with a number of other factors such as lack of clear policy on the recruitment of Arabs and non-Arabs, and the availability of a limited number of Arabic speaking professional trainers.

- Computer training whether externally bought and or internally developed is considered by the overwhelming majority of the respondents to have a positive impact on the development of Arab nationals particularly in disciplines related to accounting, auditing and computers.

- The majority of respondents did not believe that their organisations support and or promote computer technology through direct involvement with universities faculty members and or industrial and commercial concerns, however much support is provided when dealing with professional organisations such as computer consultants, suppliers and sometimes audit firms.

8.3 Conclusions and Recommendations of the Study - Descriptive Analysis Phase Three

8.3.1 Computer hardware and software users

8.3.1.1 Introduction

The key role played by the user in shaping up the requirement for computer technology is as critical as those of the providers of the technology because the two are intertwind in their needs. This section will provide conclusions and recommendations relevant to the users of computer technology in accounting and business.

8.3.1.2 Application Systems and Users

- The majority of computer application systems users are Non-Arabs. The reason for hiring Non-Arab expatriates is the lack of available skilled nationals and Arab expatriates. Therefore there is a need to develop the required skills in running and managing computer application systems by nationals and Arab expatriate users.

- The majority of respondents (70%) mainly expatriates do not consider the lack of Arabic Application systems to be a major disadvantage. This is may be so far expatriates. Non-Arabs however, there is a need to develop Arabic application systems to suit the requirements of the region.

8.3.1.3 Arabisation

- There is a need to enhance the level of demand for Arabised software by users.and train Arab staff on the use of software and to attract new staff to be trained on the use of computers and software.

- There is a need to motivate suppliers to offer Arabised operating systems, application systems and Arabised database management systems as well as billingual systems in general.

- There is a need to develop Arabic Standardisation of character sets for Arabic applications and multilingual applications development.

- There is a need to improve the quality of technical computer accounting terms in Arabic and the computer terms in general and to prepare a unified source for reference to users.

8.3.1.4 Hardware

- There is a need to educate users on issues of relevance to their hardware selection including the decision making process to downsize a hardware particularly is the light of new advancement in file server technology and the miniturisation of microprocessors, memory and increases storage capacity and the high cost of maintenance of existing hardware.

8.3.1.5 Use of Consultants

- There is a need to develop a criteria to assess the selection and work of consultants by the users including the level of competence expected and quality of services to be provided in connection with hardware and software selection, implementation support and training.

8.3.1.6 Training on the use of information technology

- There is a need to improve the quality of in-house training in applications systems, spreadsheet and graphics.

- There is a need to improve the quality of training provided by external consultants including the contents of the training manual material and instructions.

8.3.1.7 Overall Assessment on the ease of use and implementation of accounting systems

There is need to improve the quality of customised software from outside sources in terms of providing a clearly defined system specifications, properly written user manual and expertly performed systems testing.

8.3.2 Audit Firms

8.3.2.1 Composition of Audit Firms

- Big six firms are well established in the region and represent the majority of firms practicing, auditing and consulting .

- There is a need to establish reciprocal arrangement for professional co-operation and professional development between the local firms and international firms.

- There is a need to develop audit guidelines and procedures peculiar to the region and in line with international accounting standards.

- There is a need to promote change and to develop the profession to deal with accountability, interaction between accountants and the business community and to reduce the expectation gap that currently exists.

- There is a need to improve the current accounting educational training offered by colleges and universities.

- There is a need to escalate the process of qualifying Arab accountants and to transfer the skills to the region.

8.3.2.2. Audit Clients

- Audit work a part from government and oil industry is generated from three main groups, namely; wholesale/retail, contracting and banking.

- There is an expectation gap - clients, have vague understanding of the duties and responsibilities of the external auditor and the work undertaken by the external auditor,

- There is confusion over who is responsible for different aspects of preparing and providing financial reports and there is an expectation gap regarding performance reporting and operational auditing.

- There is certain level of dissatisfaction with the quality of information provided in the external auditor's report.

- There is a need to improve the image of the external auditor in the region and to remove the expectation gap that corrently exist through an awareness programme for the clients to give them complete understanding of the role of the external auditor and the type of information to be provided to clients by him.

8.3.2.3 Audit Staff

- Majority of audit firms employ qualified staff of upto 20 and 40% of the firms surveyed have qualified staff of upto 50.

- 80% of firms with audit staff who use computer technology very regularly are audit firms with staff of upto 20 which leads to the conclusion that smaller firms are also heavy users of the computer technology. There is a need however to diversify the type of training offered to staff.

- Most firms use computer technology because of its perceived benefits in terms of improved quality of services rendered and better time management. There is a need to increase the use of technology by audit firms.

8.3.2.4 Computer Applications used

The most successful use of computer applications within the external audit profession has been in the area of accounting including time ledger/billing, accounts receivable word processing, spreadsheet, graphics and financial modelling.

- Use of EDP audit applications is considered to be very common 90% of the users are (Audit Firms). There is a need to use Computer Aided Audit Techniques (CAAT).

- Use of English language as application language is higher than Arabic. This is so because of audit clients systems are English, audit staff are Non-Arab expatriates and lack of billingual software availability. There is a need to promote audit in Arabic and to upgrade audit staff knowledge of computers in Arabic

8.3.2.5 Staff Training

- There is a need for audit firms to maintain a certain level of skills and knowledge particularly in the field of information technology to enable them to meet their professional obligations.

- Most audit firms provide training to their staff more frequently than they used to, at least once a year. Therefore there is a need to continue increasing the frequency of training.

- English language is used as main language of training. Therefore there is a need to use Arabic in all aspects of computer training as it is the language of the people of the region.

- Professional training offered by international firms is more extensive than smaller firms. One international firm is providing training leading to transfer of skills through offering professional designations such as the CPA, CISA and CIA in the region. Therefore there is a need to improve training offered by smaller firms.

- There is an indication of strong commitment to training by audit firms in the region.

- The most common applications used in training are automated accounting and auditing, EDP auditing, spreadsheet and graphics. There is a need to diversify and motivate staff to take more training on other aspects of the technology such as office automation.

- Smaller firms consider the cost of training to be prohibitive and accordingly less training than international firms is provided to their staff. There is a need to make minimum training mandatory to all firms.

- Majority of audit firms claim to have knowledge transfer to their clients' personnel through training. However, there is a need to increase the ratio of nationals and Arab expatriate workers who are to be trained

- Most internal training is designed to deal with computer training of particular interest to the firm such as computer audit methodology. There is a need to diversify training into all aspects of computerised auditing and accounting.

8.3.2.6 Computer Consultancy provided to clients

- Majority of audit firms provide assistance to their clients and the assessment of needs for computerisation, including strategy systems specifications and definition of requirements. There is a need for quality control over the work of consultants.

- A major obstacle facing clients is the lack of skilled personnel to make proper use of information technology. There is a need to advise clients to train staff more frequently than before.

- Some clients do not have a strategy to implement information technology and in some cases acquire the software and hardware on an arbitrary basis without assistance from professionals who are more familiar with the technology. There is a need to educate the clients on the advantages of using professional consultants.

8.3.2.7 Clients Training

- Growth in the use of personal computers by clients made a positive impact on the clients' of thinking and training requirements.

- Increased use of computers in training encouraged the potential use of electronic mail and other office automation application.

- Training of nationals is now considered to be an area of importance by clients and audit firms alike as a vehicle to ensure the successful transfer of skills. There is a need to encourage all businesses to hire and train nationals.

8.3.2.8 Sources of Training

- Internal training is the preferred mode of training by clients .

- External training is perceived to be a very high level quality training as most clients prefer to receive final reports on the assessment of testing of their employees for their records and for charting a new training programmes.

- The majority of training on the use of computers is provided by the computer hardware and software suppliers, computer consultants and external auditors.

- External auditors are considered to be the main source of training on courses dealing with computerised accounting and auditing.

8.3.3 Colleges and Universities

8.3.3.1 Overall Assessment of responses by country

- Some universities in the region have no clear vision of the role of universities in the fulfillment of the regions' skilled manpower requirements.

- There is a need to properly define a strategic plan to chart the direction for the universities on the programmes to be introduced with emphasis on science and technology.

- There is a need to properly define the role of expatriate professors and their contribution to skills transfer and that priority for hiring should be given to those who are willing to train nationals to take over their functions within a specific period of time.

- There is a need to develop a rigid quality control over instructional material and delivery methods.

8.3.3.2 Policies and guidelines concerning computer utilisation

- The majority of organisations responded have a written policies and guidelines dealing with the utilisation of computers in education, however integration of computer related learning have been very slow.

- There is a need to teach the principles of computerised accounting information systems and to lesson the use of "off - the shelf" low quality software package as the main tools of learning.

- There is a need to develop a very concise and informed approach to the acquisition of hardware and software.

- There is a need to have budgets and to allot funds on a project by project basis to enable users in education to implement their plans and to introduce the technology into the classroom.

8.3.3.3 Implementing computer - based system and or curricula

- The majority of educational institutions have a specific time table for implementing computer based systems/curricula.

- There is an improved level of responsiveness to the introduction of computers into schools by governments in the region.

8.3.3.4 Factors impacting on the introduction of computer education

- A major obstacle is how the budget to acquire hardware and software is organised and in some cases how funds for disbursement is allocated.

- There is a need to develop a country wide computer educational programme.

- There is a need to properly develop computer educational programme contents, hardware and software requirements.

- There is a need to create more awareness amongst students to raise their level of interest in computer education.

- There is a need to provide support at the ministry of education level on providing direction for the selection of hardware and software in form of a criteria.

8.3.3.5 Responsibility for computer education

- The majority of decisions concerning computer education is made by a committee.

- There is a need to introduce more complex computer courses to increase the level of knowledge among the students.

- There is a need to develop a specialised computer education disciplines within the educational system and to improve the decision making process at the government and educational committee level.

8.3.3.6 Level of support for computer technology and automation

- The current level of support for computer technology by the faculty members is high, it is however, there is a need to establish a programme to enhanced students computer learning and teaching.

8.3.3.7 Computer Literacy

- The current level of computer literacy at the educational institutions is very high. It is unclear whether this knowledge has actually being used in the educational institutions.

- There is a need to further improve the level of computer literacy to elevate instructors to information managers and designers of learning programs.

8.3.3.8 Instructional applications

- Majority of organisations stated that they use computers as a subject of instruction however, there is a need to integrate computer with curriculum.

- There is a need to encourage local and international software houses to provide more appropriate software to meet the region's needs and to provide the necessary intellectual property protection through copyrights and software piracy laws.

8.3.3.9 Type of Computer Courses

- There is a need to introduce more advance computer audit business applications such as CAAT.

- There is a need to continuously upgrade the quality of courses offered such as database, spreadsheets, word processing, graphics and to upgrade the packages used by the educational institutions.

8.3.3.10 Level of motivation to introduce computer technology

- The majority of educational institutions surveyed consider that computer technology education is a matter of great importance to the future of their people and should be included as a national policy because education plays a crucial role in the economical development of the region and that self sufficiency in professionals specialising in computer technology would lower the prospects for foreign recruit .

8.3.3.11 Role of the Ministry of Education

- There is a need to develop guideline on the acquisition of hardware and software by the ministry and the orderly development of computer applications.

- There is a need to properly segregate funds for introducing information technology into education.

- There is a need for an overall strategic plans to cover all the major aspects of computers education and particularly those dealing with accounting and business application.

8.3.4 Computer Hardware and Software Suppliers

8.3.4.1 Supply of Hardware

- There is a need to educate users on downsizing as it is becoming a cost effective and economical way for the users to proceed with their computer acquisition strategy.

8.3.4.2 Supply of software

- There is a need for further development of billingual accounting and business appliocations software packages.

- There is a need to introduce and enforce new laws against software piracy and copyright violations on an intra Arab wide basis.

- There is a need to develop common Arab standard terms to be used for computers including the development of standardised character sets.

8.3.4.3 Professional advice on computerisation

- There is a need to develop minimum professional advisory standards and level of competence by computer consultants to ensure public safety.

8.3.4.4. Supply of Training and sources of training

- Majority of training is provided by computer hardware and software suppliers in English therefore there is a need to develop computer training packages in Arabic to suit the Arab users of computer technology and to encourage software developers to develop the required software in Arabic.

8.4 Conclusions and recommendations of the study - descriptive analysis of data collected phase Three

8.4.1 Arabisation

- The use of English as a technical language is much favoured by the majority of respondents, therefore, there is a need to improv the technical Arab ic terms in I.T.

- There is a need to encourage suppliers to Arabise software including databases, operating and application systems.

- There is a need to correlate the recruitment of Arab staff with the development of software and in utilising the expertise of expatriates to advance the development of Arab national in the field of I.T.

8.4.2 Transfer Of Skills

- There is a need to incorporate as a condition in the terms of employment in the expatriate contract that training of Arab nationals in I.T. is provided in a phased approach and wihtin a given time frame

- There is a need to develop a statement of direction on the use of I.T. and on the transfer and use of technology by Arab nationals.

- There is a need to improve senior management understanding of I.T. and to improve the quality of software in Arabic as well as the quality of training provided to Arab nationals on the use of I.T.

- There is a need to improve the planning and implementation of I.T. in terms of people, technology and processes.

8.4.3 Training

- There is a need to link training to the requirements o staff and to increase training in Arabic. This would help in accelerating the process of Arabisation and transfer of skills.

8.5 Conclusions and Recommendations of the Study Relating to Statistical Testing of Hypotheses

Some of the Hypotheses that proposes strong relationships between Arabisation, transfer of skills and training may have had their effects mediated by the relative presence of Arabised software applications and as such software applications "come into their own" in this part of the world, such relationships may become much stronger.

Statistical testing results of Hypothesis one H1 suggests that there is a need to closely look at the potential positive impact of using arabised software by Arab nationals, since there obviously seemed to be no negative impact of using such packages in the English language. For example, further research might look at:

- Does the Arab national learn the package faster if arabised?
- Does the Arab national tap the potential power of the software to a greater degree if arabised?
- Is there a greater tendency for an Arab national to use a package that is arabised? For example, MS access over paradox?

There is an apparent connection between the findings for Hypotheses H3 and H4, both not being confirmed. For example, H4, if there is no negative impact on the development and growth of professional Arab nationals ..... and , H3, there tends to be no relationship between the availability of skilled professional Arab nationals ..... what might this mean is that the use of non-Arab expatriate does not constitute a hindrance to the development of Arab nationals.

There is also a connection between Hypotheses H3 and H5 which raised a number of questions. For example, if "statement of direction (by Government/private firms)" did occur in that non-Arab and Arab expats had the availability of databases, spreadsheets, etc. in either or both languages, how would this affect Hypothesis 3, i.e. would it increase the availability of more Arab nationals? or would it confirm Hypothesis 3?

Other factors may have also come into play to influence the outcome of the conclusions reached here including:

- Lack of strategic planning by governments on the type of educational courses universities and colleges must offer to satisfy the region's requirements.
- Most nationals are encouraged to obtain a university education by their respective government. Unfortunately, they do not emphasise the type of education an individual should get and there is no strong emphasis on auditing, accounting and computer education.
- In the absence of competition for jobs amongst nationals, an educational degree is considered merely as a vehicle by nationals to get the generous financial rewards normally associated with a job in the government.
- Perception by government and private sector of the role of expatriates may have been distorted when it comes to professional development and training. For example expatriates are considered as experts and therefore training in most cases is not offered as part of their package.

8.6 Recommendations for Further Research

Based on the finding of this research a number of topics have been identified to be worthy of consideration for future research:

Arabisation

A research should be initiated to tackle all the issues relating to Arabisation of software. Such study should identify the critical success factors needed for Arabising software, the motivational aspects of the computer software developer and rules and regulations required for the prevention of software piracy.

Arabic Standards and Computer Terms

Research is required to investigate the possibility of developing a unified source for Arabic computer standards and computer terms including a comparative analysis of the various terms currently in use.

Computers in Education in the Middle East

A research into the use of computers in education is required. Such study should examine the current practices including the identification and assessment of the use of technology in educational institutions, Computer learning methods, general computer literacy and special educational programs should be provided by the computer industry to familiarise the end-users with their application software and hardware and to improve computer literacy in the educational institutions.

Computer hardware and software acquisition and use - a user perspective in the Middle East

Research is required for improving the way computer hardware and software is acquired and used in the Middle East particular emphasis should be on the criteria to be used for acquisition and the procedural aspects of the acquisition including the use of computer consultants Choice of application software, and the development of in-house application software, pros and cons of methods used.

Management information System development and use in government in the Middle East

Research is required into the development of computer based management information systems in governments in the Middle East. The research should explore and extend our knowledge into ways governments are currently utilising or planning to utilise M.I.S including the acquisition of hardware, software, development of software in-house, acquisition of software from computer suppliers, budgeting and funding constraints, compatibility with other government department applications systems, capability of M.I.S in government and performance reporting.

8.7 Concluding Comments

The Middle East with its accumulated wealth should be able to afford the best software, hardware and expertise money can buy but what the Middle East cannot afford as a nation is to rely on foreign technology and foreign expatriate workers to run it for them. Investment in human resources is the best investment the Middle East can make to ensure that computer technology transfer can successfully take place through proper training and education to enable the countries of the Middle East to operate the technology in its own language and with its own human resources.

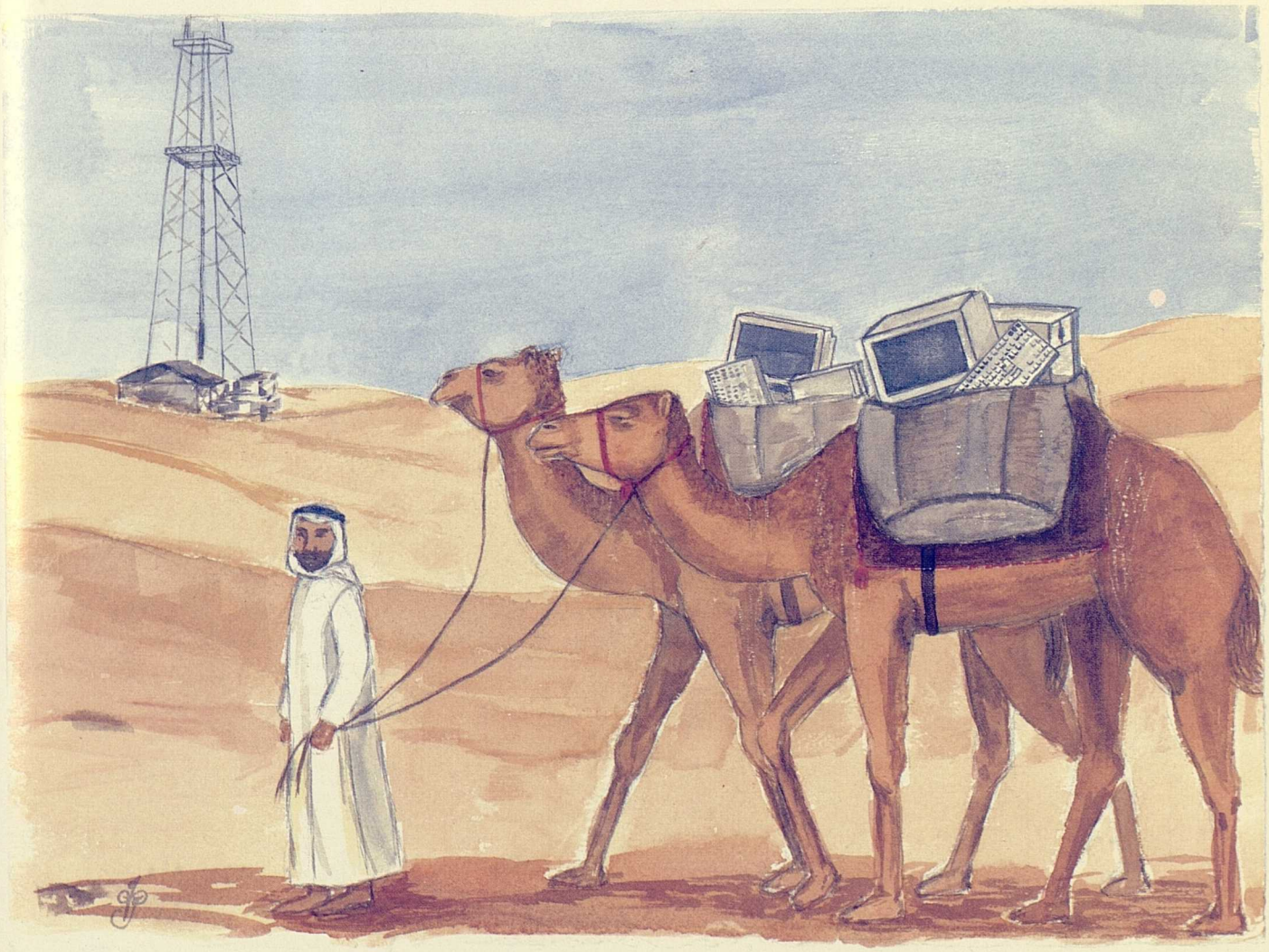
Middle East Government must develop a clear sense of direction on the type of education their nationals in general should have with particular emphasis on auditing, accounting and computer disciplines to suit the requirements of their own countries.

Transfer of technology and arabisation cannot be achieved without the proper utilisation in a pragmatic fashion of expatriates by government and private sector who should ensure that training of nationals is made mandatory requirement of expatriate's job contracts.

Nationals should be directed, influenced and encouraged to seek educational disciplines which are in high demand in their respective countries such as auditing, accounting and computer specialisation. Scholarship should only be awarded to those with the right aptitude for learning.

CITY University
BUSINESS SCHOOL

The Impact of Computer Technology on Accounting and Auditing in the Middle East with Special Emphasis on Arabisation, Transfer of Technology and Training



APPENDICES

Georges M Selim, MCom, PhD, FIIA
Deputy Dean

CITY University
BUSINESS SCHOOL

Frobisher Crescent
Barbican Centre
London EC2Y 8HB

Telephone 071-920 0111
Fax 071-588 2756

Dear Mr

It is with great pleasure that I write this brief note to give you some background information on the City University Business School -London, England and to introduce you to one of our PhD students and finally to ask you to participate in his research survey which I am confident you will find both interesting and useful.

The City University

The City University had its beginnings in 1884 as the Northampton Polytechnic Institute and grew to become a full University in 1966. The University prides itself on its emphasis on the practical and vocational and has the highest post-graduate rate of employment in the United Kingdom.

The Business School

The City University Business School is one of the largest in the UK and is geographically well placed near to the heartland of the country's commercial activity. It therefore has well developed links with all aspects of the City of London.

With its undergraduate degree courses and graduate independent study program, City University Business School educates the future employees of business concerns in the City, elsewhere in Britain and abroad. A recent UGC survey placed the City University Business School near the top of UK business schools for research excellence. In addition, City University Business School specialists have frequently been consulted by City and other institutions for advice and solutions to a wide range of management and financial problems.

The PhD Candidate

Mr Sami Ali, a partner with Ernst & Young in Abu Dhabi has over the last two years been studying the impact of Computer Technology on the Accounting and Auditing Profession in the Middle East. His research survey focusses on four key players, namely:

(a) Computer Hardware and Software Users
(b) Auditing Profession
(c) Colleges and Universities
(d) Computer Hardware and Software Suppliers.

I enclose a copy of the Research Survey relevant to your business for you to complete and return at your earliest convenient time. The survey has been pilot tested and should not take more than 30 minutes to complete.

Your response to this research survey would be extremely valuable and would contribute to the success of my student in attaining his PhD.

I would like to take this opportunity to thank you in advance for your participation.

Yours sincerely

Dr Georges Selim
Deputy Dean

Georges M Selim, MCom, PhD, FIIA
Deputy Dean

CITY University
BUSINESS SCHOOL

Frobisher Crescent
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London EC2Y 8HB

Telephone 071-920 0111
Fax 071-588 2756

Dear Mr

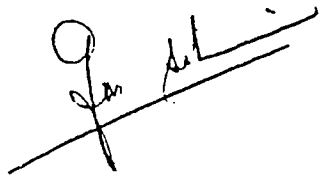
I recently wrote to you requesting your support in completing and returning a research survey on 'The Impact of Computer Technology on the Accounting and Auditing Profession in the Middle East.'

If you have already responded by sending your completed Research Survey, then please accept our sincere thanks.

If not, please accept this note as a reminder together with a copy of the Research Survey for you to complete and return as soon as possible.

Your response to this request would be extremely valuable and would contribute to the success of my student to attain his PhD.

Yours sincerely



Dr Georges Selim
Deputy Dean

APPENDIX 1
PHASE III

RESEARCH QUESTIONNAIRE COMPUTER HARDWARE AND SOFTWARE USERS

THE IMPACT OF COMPUTER TECHNOLOGY ON ACCOUNTING AND AUDITING IN THE MIDDLE EAST WITH SPECIAL EMPHASIS ON ARABISATION, TRANSFER OF TECHNOLOGY AND TRAINING

RESEARCH QUESTIONNAIRE

PART (A)

COMPUTER HARDWARE AND SOFTWARE USERS

PLEASE RETURN TO: Sami A H Ali
C/o P O Box 136
Abu Dhabi
United Arab Emirates

A COMPUTER HARDWARE AND SOFTWARE USERS

PART 1 - GENERAL INFORMATION

A1 Please give your organisation's full name and address:

Name _____
P O Box _____
City _____
Country _____

A2 Please enter the name, position and telephone number of the person completing this questionnaire, in case queries need to be discussed later:

Name _____
Position _____
Phone no. _____

A3 Tick the box or boxes which best describe your organisation in general terms:

Government agency	☐	Computer supplier	☐
Educational establishment	☐	Auditing profession	☐
Pan-Arab or international agency	☐	Other business activity	☐

A4 If you have indicated "other business activity" for question A3, please indicate which of the classifications below best describes your business:

Oil industry	☐	Contracting	☐	Financial services	☐
Manufacturing	☐	Transport	☐	Other	☐
Retailing	☐	Leisure	☐		

A5 Is your organisation part of a multi-national concern? YES ☐ NO ☐

A6 What is the main written language of administration:

ENGLISH ☐ ARABIC ☐ OTHER (SPECIFY) _____

A7 If a second language is used regularly for administrative purposes, please identify which:

ENGLISH ☐ ARABIC ☐ OTHER (SPECIFY) _____

A8 In which year was a mainframe or mini-computer first installed by your organisation? | 1 | 9 | | |

A9 In which year was a micro-computer first installed in your organisation, including those for word processing? | 1 | 9 | | |

A10 What is the total number of staff, who are permanently employed by your organisation? | | | | |

A11 Please show in percentage terms the composition of workforce by nationality %

(a) Locals/Gulf nationals

(b) Arabs from other parts of the Middle East

(c) Asians (Pakistanis, Indians)

(d) Europeans

(e) North Americans

(f) Other nationalities

A12 What is the total number of users of all computer systems (a user is defined as a person who regularly accesses the system or receives reports from it)? | | | | |

A13 Of these users, give the approximate percentage of these:

- whose first language is Arabic _____ %

- who cannot read or write Arabic _____ %

A14 In which year did your organisation install its first computer general ledger system? | 1 | 9 | | |

A15 What is the annual turnover of your organisation expressed in monetary terms (thousands)? | | | | | | | |

PART 2 - APPLICATION SYSTEMS USERS

A16 Give the approximate numbers of persons within your organisation who use the application systems regularly as part of their normal duties:

		No. of staff	% Arabic speaking
(a)	Computer specialists (eg. programmers)	☐☐☐	☐☐ %
(b)	Departmental heads and senior executives	☐☐☐	☐☐ %
(c)	Clerical staff (other than specialist data input staff)	☐☐☐	☐☐ %
(d)	Non-clerical staff (eg. salespersons, engineers)	☐☐☐	☐☐ %
(e)	Data input and data control staff	☐☐☐	☐☐ %
(f)	Others : please specify : _____	☐☐☐	☐☐ %

A17 If non-Arabic application systems are used by staff whose first language is Arabic, please answer the following questions:

Do you consider that the lack of Arabic systems:

		YES	NO
(a)	a major disadvantage to your organisation's use of modern technology?	☐	☐
(b)	a limiting factor in the recruitment of staff?	☐	☐
(c)	a limiting factor on the extent to which your organisation can automate data processing functions?	☐	☐
(d)	a limiting factor on the speed with which your organisation can introduce new systems?	☐	☐
(e)	presents few operational difficulties?	☐	☐

Note : You may answer one, several or all of these questions.

A18 Have the following factors, in your view, limited the expansion of computer accounting systems in Arabic:

		Major	Minor	None
(a)	Hardware constraints	____	____	____
(b)	Lack of Arabic compilers	____	____	____
(c)	Lack of Arabic database management systems	____	____	____
(d)	Cost of Arabic systems relative to English systems	____	____	____
(e)	Lack of demand by users	____	____	____
(f)	Lack of trained Arabic staff	____	____	____
(g)	Other factors : please specify :			

_____ _____ _____ _____
_____ _____ _____ _____
_____ _____ _____ _____
_____ _____ _____ _____
_____ _____ _____ _____

A19 Does your organisation use any bilingual systems? YES ☐ NO ☐

If so, please specify the application and the languages of operation:

Application	Language
_____	_____
_____	_____
_____	_____
_____	_____

A20 If your organisation does not use bilingual systems, please indicate the reasons:

		YES	NO
(a)	cost of software	☐	☐
(b)	hardware unable to operate bilingually	☐	☐
(c)	unaware that bilingual systems are available or possible	☐	☐
(d)	no need for bilingual systems	☐	☐

A21 If Arabic systems are used, please answer the following questions:

		GOOD	ACCEPTABLE	POOR
(a)	What is the quality of technical accounting terms in Arabic? Are they in your view clearly descriptive of the activity or merely a translation from the English term?	☐	☐	☐
(b)	What is the general quality of the non-technical Arabic language? Is the language used descriptive enough?	☐	☐	☐

Additional comments on the quality of Arabic used:

_____

_____

_____

_____

PART 3 - COMPUTER HARDWARE

		YES	NO
A22	Do you have an in-house computer?	☐	☐

If yes, give the make and model of the in-house computer. This includes mainframe, mini-computers and micros.

_____

_____

_____

A23	Do you use a computer bureau service?	☐	☐
A24	Do you use any subscriber service (eg. Reuters)?	☐	☐
A25	How many megabytes of on-line data storage do you have?	☐☐☐☐☐	
A26	How many visual display screens are there in total?	☐☐☐☐☐	

		YES	NO
A27	Are there telecommunication links between the computer centre and remote locations?	☐	☐
	If so, how many remote locations are there?	☐☐	
A28	In what year was the main computer installed?	1 9 ☐ ☐	

A29 What language is the operating system : ENGLISH ☐

OTHER (SPECIFY) _____

A30 Please categorise your main computer : MAINFRAME ☐

MINI-COMPUTER ☐

MICRO-COMPUTER(S) ☐

A31 How many micro-computers are there, in addition to your main equipment? ☐☐

Of these, how many are used solely for word processing? ☐☐

A32 How many word processors are used in addition to your main computer equipment? ☐☐

PART 4 - APPLICATION SOFTWARE

A33 Please give information on the applications which run on your organisation's main computer system (main computer may be one or a combination of the following mainframe (M), mini-computer (MIC), micro-computer (MC) and personal computer (PC)), the language of operation and whether the system was bought or developed in-house:

Application (tick the box which best describes your current application)		WAS SYSTEM BOUGHT		Language of operation			Specify type of computer*
		YES	NO	ENGLISH	ARABIC	OTHER	
(a)	General ledger	☐	☐	☐	☐	☐	☐
(b)	Management accounting reports	☐	☐	☐	☐	☐	☐
(c)	Budgeting	☐	☐	☐	☐	☐	☐
(d)	Accounts payable	☐	☐	☐	☐	☐	☐
(e)	Invoicing and sales analysis	☐	☐	☐	☐	☐	☐
(f)	Accounts receivable	☐	☐	☐	☐	☐	☐
(g)	Stock records	☐	☐	☐	☐	☐	☐
(h)	Stock control, including recording	☐	☐	☐	☐	☐	☐
(i)	Production planning	☐	☐	☐	☐	☐	☐
(j)	Production control	☐	☐	☐	☐	☐	☐

Application (tick the box which best describes your current application)		WAS SYSTEM BOUGHT YES	WAS SYSTEM BOUGHT NO	Language of operation ENGLISH	Language of operation ARABIC	Language of operation OTHER	Specify type of computer*
(k)	Reservation systems (eg. hotels)	☐	☐	☐	☐	☐	☐
(l)	Payroll	☐	☐	☐	☐	☐	☐
(m)	Personnel information	☐	☐	☐	☐	☐	☐
(n)	Fixed asset register	☐	☐	☐	☐	☐	☐
(o)	Depreciation accounting	☐	☐	☐	☐	☐	☐
(p)	Fleet control (eg. vehicles, ships, aircraft)	☐	☐	☐	☐	☐	☐
(q)	Word processing	☐	☐	☐	☐	☐	☐
(r)	Telex	☐	☐	☐	☐	☐	☐
(s)	Internal mail	☐	☐	☐	☐	☐	☐
(t)	Spreadsheet	☐	☐	☐	☐	☐	☐
(u)	Other office automation products	☐	☐	☐	☐	☐	☐

Note : * Mainframe = MF
Mini-computer = MC
Micro-computer = MIC
Personal computer = PC

A34 Other applications (give details):

_____
_____
_____
_____

A35 Please give details of the applications which run on equipment other than your main computer system, the language of operation and whether the system was bought as a package:

Application (tick the box which best describes your current application)	WAS SYSTEM BOUGHT YES	WAS SYSTEM BOUGHT NO	Language of operation ENGLISH	Language of operation ARABIC	Language of operation OTHER
(a) Word processing	☐	☐	☐	☐	☐
(b) Spreadsheet	☐	☐	☐	☐	☐
(c) _____	☐	☐	☐	☐	☐
(d) _____	☐	☐	☐	☐	☐
(e) _____	☐	☐	☐	☐	☐
(f) _____	☐	☐	☐	☐	☐
(g) _____	☐	☐	☐	☐	☐

A36 Has your organisation used any program development tools which function in Arabic? YES ☐ NO ☐

A37 Please give name of supplier and of the product(s) and a brief description of them:

	Code
_____	☐
_____	☐
_____	☐
_____	☐
_____	☐
_____	☐

Codes: 1 = Compiler; 2 = Database management system;
3 = Other

A38 Please identify whether there are new computer systems under development or planned in the near future?

_____

_____

_____

_____

PART 5 - TRAINING

A39 Do you get professional advice on computerisation? If so, what type of advice do you provide?

(a) Assessment of needs for computerisation ☐

(b) Selection of hardware ☐

(c) Selection of software ☐

(d) Implementation assistance ☐

A40 Do you provide training to your staff on the use of computer technology? If so in what area of expertise?

			Language	
		Yes	English	Arabic
(a)	General accounting	☐	☐	☐
(b)	Spreadsheet & graphics	☐	☐	☐
(c)	Financial modelling	☐	☐	☐
(d)	Database	☐	☐	☐
(e)	Accounting systems and procedures	☐	☐	☐
(f)	Data processing	☐	☐	☐
(g)	Word processing	☐	☐	☐
(h)	Electronic mail	☐	☐	☐
(i)	Other office automation applications (specify)	☐	☐	☐

A41 According to your experience can you identify where advice on computer training in the following areas comes from?

		Internal	Bought-in
(a)	General accounting		
(b)	Spreadsheet & graphics		
(c)	Financial modelling		
(d)	Database		
(e)	Accounting systems and procedures		
(f)	Data processing		
(g)	Word processing		
(h)	Electronic mail		
(i)	Other office automation applications (specify)		

A42 If professional advice is brought in can you specify where from?

(a) external auditors ☐

(b) hardware/software vendors ☐

(c) computer consultants ☐

(d) university/colleges ☐

(e) other ☐

A43 What is your overall assessment on the ease of use and in implementing computer accounting systems:

		Good	Acceptable	Poor	None used
(a)	Written definition of user requirements	___	___	___	___
(b)	Systems specification prepared by the supplier or computer department	___	___	___	___
(c)	Quality of programs delivered for acceptance testing by the user	___	___	___	___
(d)	Quantity of program errors after the system(s) became operational	___	___	___	
(e)	Training	___	___	___	___
(f)	Quality of operating instructions	___	___	___	___

A44 In general, are executives satisfied with the systems installed

Yes	No
___	___

If no, please specify why?

_____

_____

_____

PLEASE RETURN TO: Sami A H Ali
c/o P O Box 136
ABU DHABI
United Arab Emirates

APPENDIX 2
PHASE III

RESEARCH QUESTIONNAIRE AUDITING PROFESSION

THE IMPACT OF COMPUTER TECHNOLOGY ON ACCOUNTING AND AUDITING IN THE MIDDLE EAST WITH SPECIAL EMPHASIS ON ARABISATION, TRANSFER OF TECHNOLOGY AND TRAINING

RESEARCH QUESTIONNAIRE

PART (B)

COMPUTER HARDWARE AND SOFTWARE USERS

PLEASE RETURN TO: Sami A H Ali
C/o P O Box 136
Abu Dhabi
United Arab Emirates

B THE AUDITING PROFESSION

PART 1 - GENERAL INFORMATION

B1 Please give your organisation's full name and address:

Name _____
P O Box _____
City _____
Country _____

B2 Please enter the name, position and telephone number of the person completing this questionnaire, in case queries need to be discussed later:

Name _____
Position _____
Phone no. _____

B3 What is the main written language of administration:

ENGLISH ☐ ARABIC ☐ OTHER (SPECIFY) _____

B4 If a second language is used regularly for administrative purposes, please identify which:

ENGLISH ☐ ARABIC ☐ OTHER (SPECIFY) _____

B5 What is the total number of users of all computer systems (a user is defined as a person who regularly accesses the system or receives reports from it)? ☐☐☐☐

B6 Of these users, give the approximate percentage of these:

(a) whose first language is Arabic _____ %

(b) who cannot read or write Arabic _____ %

B7 Please give information that best describes your firm's position within the auditing profession.

		Yes	No
(a)	Local auditing firm	☐	☐
(b)	Local auditing firm with international affiliation(s)	☐	☐
(c)	International auditing firm	☐	☐

Other please specify

_____

_____

_____

PART 2 - SCOPE OF ACTIVITIES

B8 Please identify the business category(ies) in percentage terms that best describes your clients' businesses:

		%
(a)	Government agencies	☐
(b)	Oil industry	☐
(c)	Manufacturing	☐
(d)	Contracting	☐
(e)	Insurance	☐
(f)	Transport	☐
(g)	Banking/financial services	☐
(h)	Wholesale/retail trade	☐
(i)	Education	☐
(j)	Medical/legal services	☐
(k)	Information technology (Hardware/software manufacturers)	☐
(l)	Hotel & tourism/leisure	☐
(m)	Mining	☐
(n)	Construction	☐
(o)	Other - specify	☐

B9 Please enter the number of qualified accountants (qualified means a member of a recognised accounting or auditing institute)

(a)	Fewer than 10	☐
(b)	11 - 20	☐
(c)	21 - 30	☐
(d)	31 - 50	☐
(e)	51 or more	☐

B10 Please enter the number of accounting and auditing staff in your firm who use computer technology very regularly

(a) Fewer than 10 ☐

(b) 11 - 20 ☐

(c) 21 - 30 ☐

(d) 31 - 50 ☐

(e) 51 or more ☐

B11 Please show in percentage terms the composition of workforce by nationality %

(a) Locals/Gulf nationals

(b) Arabs from other parts of the Middle East

(c) Asians (Pakistanis, Indians)

(d) Europeans

(e) North Americans

(f) Other nationalities

B12 Please enter the number of other staff members in your firm who use information and computer technology very regularly

(a) Fewer than 10 ☐

(b) 1 - 20 ☐

(c) 21 - 30 ☐

(d) 31 - 50 ☐

(e) 51 or more ☐

B13 Please indicate the type of application and computer uses in your organisation:

		Yes	Language: English	Language: Arabic
(a)	Accounting	☐	☐	☐
(b)	EDP audit	☐	☐	☐
(c)	Financial modelling systems	☐	☐	☐
(d)	Spreadsheets and graphics	☐	☐	☐
(e)	Time ledger	☐	☐	☐
(f)	Billing and accounts receivable	☐	☐	☐
(g)	Word processing	☐	☐	☐

B14 What is the annual cost of computer training provided to your qualified accounting staff as a percentage of turnover? Also please specify frequency and type of training as given below. ☐ %

	Language used: English	Language used: Arabic	Frequency: Once a year	Frequency: Twice a year	Frequency: Other	Not applicable
a) Accounting and auditing	☐	☐	☐	☐	☐	☐
b) EDP auditing	☐	☐	☐	☐	☐	☐
c) Financial modelling	☐	☐	☐	☐	☐	☐
d) Spreadsheet & graphics	☐	☐	☐	☐	☐	☐
e) Computer assisted audit techniques	☐	☐	☐	☐	☐	☐
f) Word processing	☐	☐	☐	☐	☐	☐
g) Other applications	☐	☐	☐	☐	☐	☐

PART 3 - TRAINING

B15 What sources of computer training are used to train your staff?

(a) Internal training courses ☐

(b) External training courses ☐
Specify :

- Specialised computer training seminars ☐
- Professional associations ☐
- Hardware / software manufacturers presentations ☐
- Universities and other academic bodies ☐
- Other (specify) _____ ☐

B16 Do you provide advice to your clients on computerisation? If so, what type of advice do you provide?

(a) Assessment of needs for computerisation ☐

(b) Selection of hardware ☐

(c) Selection of software ☐

(d) Implementation assistance ☐

B17 Do you provide training to your clients on the use of computer technology? If so in what area of expertise?

		Yes	Language: English	Language: Arabic
(a)	General accounting	☐	☐	☐
(b)	Spreadsheet & graphics	☐	☐	☐
(c)	Financial modelling	☐	☐	☐
(d)	Database	☐	☐	☐
(e)	Accounting systems and procedures	☐	☐	☐
(f)	Data processing	☐	☐	☐
(g)	Word processing	☐	☐	☐
(h)	Electronic mail	☐	☐	☐
(i)	Other office automation applications (specify)	☐	☐	☐

		Internal	Bought in
B18	According to your experience can you identify where the client advice on computer training comes from?	☐	☐

B19 If client's advice is bought in can you specify where from?

(a) external auditors ☐

(b) hardware/software vendors ☐

(c) computer consultants ☐

(d) other ☐

PART 3 - FURTHER COMMENTS

B20 Should you have further comments or information which you feel would be useful to this survey, please use the space below.

RETURN TO: Sami A H Ali
c/o P O Box 136
Abu Dhabi
United Arab Emirates

APPENDIX 3
PHASE III

RESEARCH QUESTIONNAIRE COLLEGES AND UNIVERSITIES

THE IMPACT OF COMPUTER TECHNOLOGY ON ACCOUNTING AND AUDITING IN THE MIDDLE EAST WITH SPECIAL EMPHASIS ON ARABISATION, TRANSFER OF TECHNOLOGY AND TRAINING

RESEARCH QUESTIONNAIRE

PART (C)

COMPUTER HARDWARE AND SOFTWARE USERS

PLEASE RETURN TO: Sami A H Ali
C/o P O Box 136
Abu Dhabi
United Arab Emirates

C UNIVERSITIES AND EDUCATIONAL ESTABLISHMENTS

PART 1 - GENERAL INFORMATION

C1 Please give your university/college's full name and address:

Name _____
P O Box _____
City _____
Country _____

C2 Please enter the name, position and telephone number of the person completing this questionnaire, in case queries need to be discussed later:

Name _____
Position _____
Phone no. _____

C3 What is the main lecturing language of your institution:

ENGLISH ☐ ARABIC ☐ OTHER (SPECIFY) _____

C4 If a second language is used regularly for lecturing purposes, please identify which:

ENGLISH ☐ ARABIC ☐ OTHER (SPECIFY) _____

C5 What is the total number of users of all computer systems (a user is defined as a person who regularly accesses the system or receives reports from it)? ☐☐☐☐

C6 Of these users, give the approximate percentage of these:

(a) whose first language is Arabic _____ %

(b) who cannot read or write Arabic _____ %

C7 In which year was a mainframe or mini-computer first installed by your institution? 1 9 ☐ ☐

C8 In which year was a micro-computer first installed in your institution, including those for word processing? 1 9 ☐ ☐

PART 2 - COMPUTER RELATED POLICIES

C9 Does your institution have written policies or guidelines concerning computer utilisation?

(a) Yes ☐

(b) No ☐

C10 If yes, which of the following areas do your university policies cover? Check all that apply:

(a) Integration of computer-related learning objectives into the existing curriculum
(b) Sharing equipment
(c) Purchasing of computer software
(d) Development of computer software
(e) Standardisation of hardware and software
(f) Instructors inservicing on computer applications
(g) Loaning or renting computers to students or staff
(h) Recreational use of computers
(i) Recovery of lost or damaged hardware/software
(j) Other _____

C11 Does your institution have specific timetables (eg. a three-year plan) for implementing computer-based systems and/or curricula?

(a) Yes ☐

(b) No ☐

C12 What factors have delayed or hampered your university's progress into computer education? Check all that apply:

(a) Lack of clear statement of direction from the Ministry of Education ☐

(b) How university/institution budgets are organised ☐

(c) Need for more university/institution planning ☐

(d) Active opposition from professors ☐

(e) Lack of student interest ☐

(f) Lack of trained personnel ☐

(g) Lack of quality software ☐

(h) Lack of adequate hardware ☐

(i) Other _____

C13 Does your institution have an assigned computer co-ordinator or designated person who is responsible for computer use in instruction?

(a) Yes ☐

(b) No ☐

C14 In your institution who is responsible for each of the following activities? Please check all that apply.

	Committee	Ministry of Education Represent.	Dean of Univer./ College	Assistant Dean	Computer Specialist
(a) Deciding what computer-related skills and knowledge are to be learned by students					
(b) Determining computer-related course offerings					
(c) Establishing budgets for computer-related projects					
(d) Planning staff training					
(e) Implementing staff training programs					
(f) Evaluating and selecting computer hardware					
(g) Evaluating and selecting computer software					
(h) Assigning computer use					
(i) Evaluating student benefits from computer-related programs					
(j) Special computer projects					

PART 3 - SCOPE OF ACTIVITIES

C15 Please provide information where appropriate on the faculties and/or departments within the University identifying where possible if specialised computing courses are part of the curriculum. (Specialised computer education means to offer a Diploma or a Bachelor of Science degree in computer science.)

	Faculty / department	Number of courses	Computing education included?	
		Number	Yes	No
(a)	Accounting			
(b)	Business administration			
(c)	Economics			
(d)	Political Science			
(e) *	Computing			
(f)	Other departments			

* If computing science is not a special department or faculty, please specify under which of the above it is included.

C16 Please give the University population in terms of faculty staff and students within each department.

	Faculty / department	Faculty and staff	Student population
(a)	University as a whole		
(b)	Accounting		
(c)	Business administration		
(d)	Economics		
(e)	Political Science		
(f)	Computing		
(g)	Other departments - specify		

C17 Please show the composition of faculty and staff in percentage terms by nationality

		%
(a)	Locals/Gulf states nationals	
(b)	Arabs from other parts of the Middle East	
(c)	Asians (Pakistanis and Indians)	
(d)	Europeans	
(e)	North Americans	
(f)	Others	

C18 Please state the level of support given to the introduction of computer technology and automation by the faculty members of the University as a whole.

		Very supportive	Less supportive	Not supportive	Indifferent
(a)	Dean / Chairman	☐	☐	☐	☐
(b)	Professors	☐	☐	☐	☐
(c)	Assistant Professors	☐	☐	☐	☐
(d)	Teachers / Tutors	☐	☐	☐	☐

C19 Please specify the hours of instruction relating to computer technology education. (Computer technology education includes all subjects related to information technology from basic programing, system design, computer engineering, data and word processing and office automation.

Year offered	Mandatory hours	Optional hours
1	☐	☐
2	☐	☐
3	☐	☐
4	☐	☐

PART 4 - INSTRUCTOR INSERVICE AND TRAINING

C20 What percentage of your instructors are computer literate? (Know-how to operate a computer and are familiar with a range of educational software). Please check one.

(a)	0%	(d)	21 - 30%	(g)	51 - 60%	(j)	81 - 90%
(b)	1 - 10%	(e)	31 - 40%	(h)	61 - 70%	(k)	91 - 100%
(c)	11 - 20%	(f)	41 - 50%	(i)	71 - 80%		

C21 What percentage of your instructors are actively using the computer with curriculum (eg. word processing in English or simulations in Science). Please check one.

(a)	0%	(d)	21 - 30%	(g)	51 - 60%	(j)	81 - 90%
(b)	1 - 10%	(e)	31 - 40%	(h)	61 - 70%	(k)	91 - 100%
(c)	11 - 20%	(f)	41 - 50%	(i)	71 - 80%		

C22 Which of the following instructional applications of computers are covered by inservice programs offered to teachers in your district? Check all that apply.

(a) Use of computers in teaching and learning (drill and practice, tutorial, simulations, etc.)

(b) Computer as a subject of instruction (computer science/studies courses)

(c) Computer as a student tool (word processing, data analysis, guidance, etc.)

(d) Computer as instructor's aid

(e) None

C23 Please identify the type of courses offered in terms of their business applications such as:

	Related	Not related	Not offered
(a) Basic programming	☐	☐	☐
(b) Advanced programming	☐	☐	☐
(c) System design	☐	☐	☐
(d) Computerised financial accounting systems	☐	☐	☐
(e) Financial modelling	☐	☐	☐
(f) Computerised banking techniques	☐	☐	☐
(g) Computerised planning models	☐	☐	☐
(h) Database	☐	☐	☐
(i) Spreadsheet	☐	☐	☐
(j) Word processing	☐	☐	☐
(k) Computer Assisted Audit Techniques (CAAT)	☐	☐	☐
(l) Computer Aided Design (CAD)	☐	☐	☐
(m) Office automation concepts	☐	☐	☐

C24 Does your institution promote computer technology through direct involvement of the business community. This may involve the invitation of professional guests and visiting experts in computing to lecture at the University on computing:

	Yes	No
(a) Other universities' faculty members	☐	☐
(b) Computer consultants	☐	☐
(c) Hardware and software manufacturers, agents and distributors	☐	☐
(d) Accounting and auditing firms	☐	☐
(e) Industrial and commercial concerns	☐	☐

C25 Please identify if computer technology education is considered as part of a national program to increase the level of expertise/ awareness and to keep up with a changing world and explain the university motivation in introducing computing technology. Please answer yes or no to the following questions:

		Yes	No
(a)	Consider computer technology education as a national policy supported and funded by the Government with a long term view	☐	☐
(b)	Education in computer technology is needed to complement other study subjects and to increase the level of knowledge	☐	☐
(c)	Education in computer technology is optional but necessary for graduation	☐	☐

C26 When was the computer technology first introduced as part of the University curriculum?

		Yes	No
(a)	Less than a year ago	☐	☐
(b)	Within the last two years	☐	☐
(c)	Within the last four years	☐	☐
(d)	Five years ago	☐	☐
(e)	More than five years ago (specify the year)	☐	☐
(f)	Not yet introduced	☐	☐

C27 What is the language of instruction for the computer technology courses:

(a)	Arabic	☐
(b)	English	☐
(c)	Arabic / English (multilingual)	☐
(d)	Other	☐

C28 What is the level of emphasis on computer business education by the University?

(a) Major ☐

(b) Minor ☐

(c) None ☐

	Yes	No
C29 Do students get hands on experience? If yes, are they given tutorials on how to use computers and software?	☐	☐
	☐	☐

PART 5 - OPTIONS FOR MINISTRY OF EDUCATION LEADERSHIP IN COMPUTER TECHNOLOGY

C30 The Ministry of Education could provide leadership in computer technology in a variety of ways. What is your institution's perception of the Ministry's role in the support of computers in education? Please check all that apply:

(a) Leave it totally open to educational institution to purchase hardware and software and to train teachers. The Ministry could provide the monetary support but would not direct or guide software and hardware purchasing.

(b) The Ministry could play the role of interventionists, targeting specific software purchasing and development and financially support ONE hardware vendor.

(c) The Ministry could specify standards for computer hardware that would enable at least two computer vendors to supply provincially purchased computers to school districts.

(d) The Ministry could identify priority areas for software purchase and development based on curriculum needs. Ministry curriculum committees would incorporate the priority areas into their curriculum development work. In this way computer applications would be integrated directly into the curriculum.

(e) Other approaches - please comment:

_____

_____

_____

_____

PART 6 - FURTHER COMMENTS

C31 Should you have further comments or information which you feel would be useful to this survey, please use the space below.

RETURN TO: Sami A H Ali
c/o P O Box 136
Abu Dhabi
United Arab Emirates

APPENDIX 4
PHASE III

RESEACH QUESTIONNAIRE COMPUTER HARDWARE AND SOFTWARE SUPPLIERS

THE IMPACT OF COMPUTER TECHNOLOGY ON ACCOUNTING AND AUDITING IN THE MIDDLE EAST WITH SPECIAL EMPHASIS ON ARABISATION, TRANSFER OF TECHNOLOGY AND TRAINING

RESEARCH QUESTIONNAIRE

PART (D)

COMPUTER HARDWARE AND SOFTWARE USERS

PLEASE RETURN TO: Sami A H Ali
C/o P O Box 136
Abu Dhabi
United Arab Emirates

D COMPUTER HARDWARE AND SOFTWARE SUPPLIERS

PART 1 - GENERAL INFORMATION

D1 Please give your organisation's full name and address:

Name _____

P O Box _____

City _____

Country _____

D2 Please enter the name, position and telephone number of the person completing this questionnaire, in case queries need to be discussed later:

Name _____

Position _____

Phone no. _____

D3 Is your organisation part of a multinational concern? YES ☐

NO ☐

D4 What is the main written language of administration:

ENGLISH ☐ ARABIC ☐ OTHER (SPECIFY) _____

D5 If a second language is used regularly for administrative purposes, please identify which:

ENGLISH ☐ ARABIC ☐ OTHER (SPECIFY) _____

D6 What is the total number of staff, including labourers, who are permanently employed by your organisation? ☐☐☐☐

D7 Please show in percentage terms the composition of workforce by nationality %

(a) Locals/Gulf nationals

(b) Arabs from other parts of the Middle East

(c) Asians (Pakistanis, Indians)

(d) Europeans

(e) North Americans

(f) Other nationalities

D8 What is the total number of users of all computer systems in your organisation (a user is defined as a person who regularly accesses the system or receives reports from it)? [ ][ ][ ][ ]

D9 Of these users, give the approximate percentage of these:

(a) whose first language is Arabic _____ %

(b) who cannot read or write Arabic _____ %

D10 In which year was a mainframe or mini-computer first installed by your organisation for its own use? [1][9][ ][ ]

D11 In which year was a micro-computer first installed in your organisation for its own use, including those for word processing? [1][9][ ][ ]

D12 In which year did your organisation install its first computer general ledger system? [1][9][ ][ ]

D13 What is the annual turnover of your organisation expressed in monetary terms (thousands)? [ ][ ][ ][ ][ ][ ][ ]

PART 2 - SCOPE OF ACTIVITIES

D14 Please indicate the scope of your company's activities:

		Yes	No
D15	Supplier of computer hardware	_____	_____
D16	Supplier of computer maintenance services	_____	_____
D17	Developer of computer software (ie. with design and programming in-house)	_____	_____

D18 Supplier of sub-contracted computer software (ie. with design and programming carried out by sub-contractors or independent software houses) _____ _____

D19 Providers of training services _____ _____

D20 If your company supplies hardware, please state the name of manufacturer and types of hardware which your company represents.

D21 Mainframe computers _____ _____

D22 Mini-computers _____ _____

D23 Micro-computers _____ _____

D24 Other specialised computers _____ _____

D25 If your answer to D26 is yes, give details:

_____

_____

_____

_____

_____

PART 3 - APPLICATION SOFTWARE

D26 Which of the following application software packages can your company offer? (Please tick under the appropriate heading for English and/or Arabic packages specifying package names)

Application (tick the box which best describes your current application)		WAS SYSTEM DEVELOPED IN-HOUSE		Language of operation			Specify type of computer*
		YES	NO	ENGLISH	ARABIC	OTHER	
(a)	General ledger	☐	☐	☐	☐	☐	☐
(b)	Management accounting reports	☐	☐	☐	☐	☐	☐
(c)	Budgeting	☐	☐	☐	☐	☐	☐
(d)	Accounts payable	☐	☐	☐	☐	☐	☐
(e)	Invoicing and sales analysis	☐	☐	☐	☐	☐	☐
(f)	Accounts receivable	☐	☐	☐	☐	☐	☐
(g)	Stock records	☐	☐	☐	☐	☐	☐
(h)	Stock control, including recording	☐	☐	☐	☐	☐	☐

Application (tick the box which best describes your current application)		WAS SYSTEM DEVELOPED IN-HOUSE YES	NO	Language of operation ENGLISH	ARABIC	OTHER	Specify type of computer*
(i)	Production planning	☐	☐	☐	☐	☐	☐
(j)	Production control	☐	☐	☐	☐	☐	☐
(k)	Reservation systems (eg. hotels)	☐	☐	☐	☐	☐	☐
(l)	Payroll	☐	☐	☐	☐	☐	☐
(m)	Personnel information	☐	☐	☐	☐	☐	☐
(n)	Fixed asset register	☐	☐	☐	☐	☐	☐
(o)	Depreciation accounting	☐	☐	☐	☐	☐	☐
(p)	Fleet control (eg. vehicles, ships, aircraft)	☐	☐	☐	☐	☐	☐
(q)	Word processing	☐	☐	☐	☐	☐	☐
(r)	Telex	☐	☐	☐	☐	☐	☐
(s)	Internal mail	☐	☐	☐	☐	☐	☐
(t)	Spreadsheet	☐	☐	☐	☐	☐	☐
(u)	Other office automation products	☐	☐	☐	☐	☐	☐

Note : * Mainframe = MF
Mini-computer = MC
Micro-computer = MIC
Personal computer = PC

D27 Other applications (give details):

_____
_____
_____
_____

D28 Approximately, how many user sites does your company have for the accounting packages listed above? A user site can be one installation using only one of these packages. ⌊_⌋⌊_⌋⌊_⌋⌊_⌋⌊_⌋

D29 Of these user sites, how many currently use the packages in Arabic? ⌊_⌋⌊_⌋⌊_⌋⌊_⌋⌊_⌋

D30 Approximately how many of these user sites have plans to convert to Arabic packages (whether sold by your company or not)? ⌊_⌋⌊_⌋⌊_⌋⌊_⌋⌊_⌋

D31 Do you assess the demand for computer accounting systems in Arabic by Arabic users or potential users to be:

Strong ☐

Moderate ☐

Poor ☐

D32 What is the growth rate for computer accounting systems in Arabic? % ☐

	Yes	No
D33 Does your company provide tailor-made computer deisgn and programming services in Arabic?	☐	☐

PART 4 - USER TRAINING

D34 Do you provide advice to your clients on computerisation? If so, what type of advice do you provide?

(a) Assessment of needs for computerisation ☐

(b) Selection and provision of hardware ☐

(c) Selection and provision of software ☐

(d) Implementation assistance ☐

D35 Do you provide training to your clients on the use of computer technology? If so in what area of expertise?

			Language	
		Yes	English	Arabic
(a)	General accounting	☐	☐	☐
(b)	Spreadsheet & graphics	☐	☐	☐
(c)	Financial modelling	☐	☐	☐
(d)	Database	☐	☐	☐
(e)	Accounting systems and procedures	☐	☐	☐
(f)	Data processing	☐	☐	☐
(g)	Word processing	☐	☐	☐
(h)	Electronic mail	☐	☐	☐
(i)	Other office automation applications (specify)	☐	☐	☐

		Internal	Bought in
D36	According to your experience can you identify where the client advice on computer training comes from?	☐	☐

D37 If client's advice is bought in can you specify where from?

- external auditors ☐
- hardware / software vendors ☐
- computer consultants ☐
- other ☐

PART 5 - FURTHER COMMENTS

D38 Should you have further comments or information which you feel would be useful to this survey, please use the space below.

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

RETURN TO: Sami A H Ali
c/o P O Box 136
Abu Dhabi
United Arab Emirates

APPENDIX 5

RESEARCH INTERVIEW QUESTIONNAIRE
PHASE IV

THE IMPACT OF COMPUTER TECHNOLOGY ON ACCOUNTING AND AUDITING IN THE MIDDLE EAST WITH SPECIAL EMPHASIS ON ARABISATION, TRANSFER OF TECHNOLOGY AND TRAINING

RESEARCH QUESTIONAIRE

PHASE IV

FOR COMPLETION BY THE RESEARCHER THROUGH INTERVIEWS WITH

COMPUTERS HARDWARE

AND SOFTWARE USERS,

SUPPLIERS, AUDITORS

AND EDUCATIONAL

INSTITUTIONS

- Your Participation in this research and responses to this questionaire remain strictly confidential.

INTRODUCTION

This Phase III Questionnaire is prepared subsequent to the researchers' analysis of your early responses to the four part research Questionnaire given in Phase III of this research study which was completed in 1991. Phase IV Questionnaire was designed to measure the severity of impact of the following specific areas:

- ***Arabisation***: Arabisation of language of administration, operating and application software languages and training and use of Non Arab expatriates.

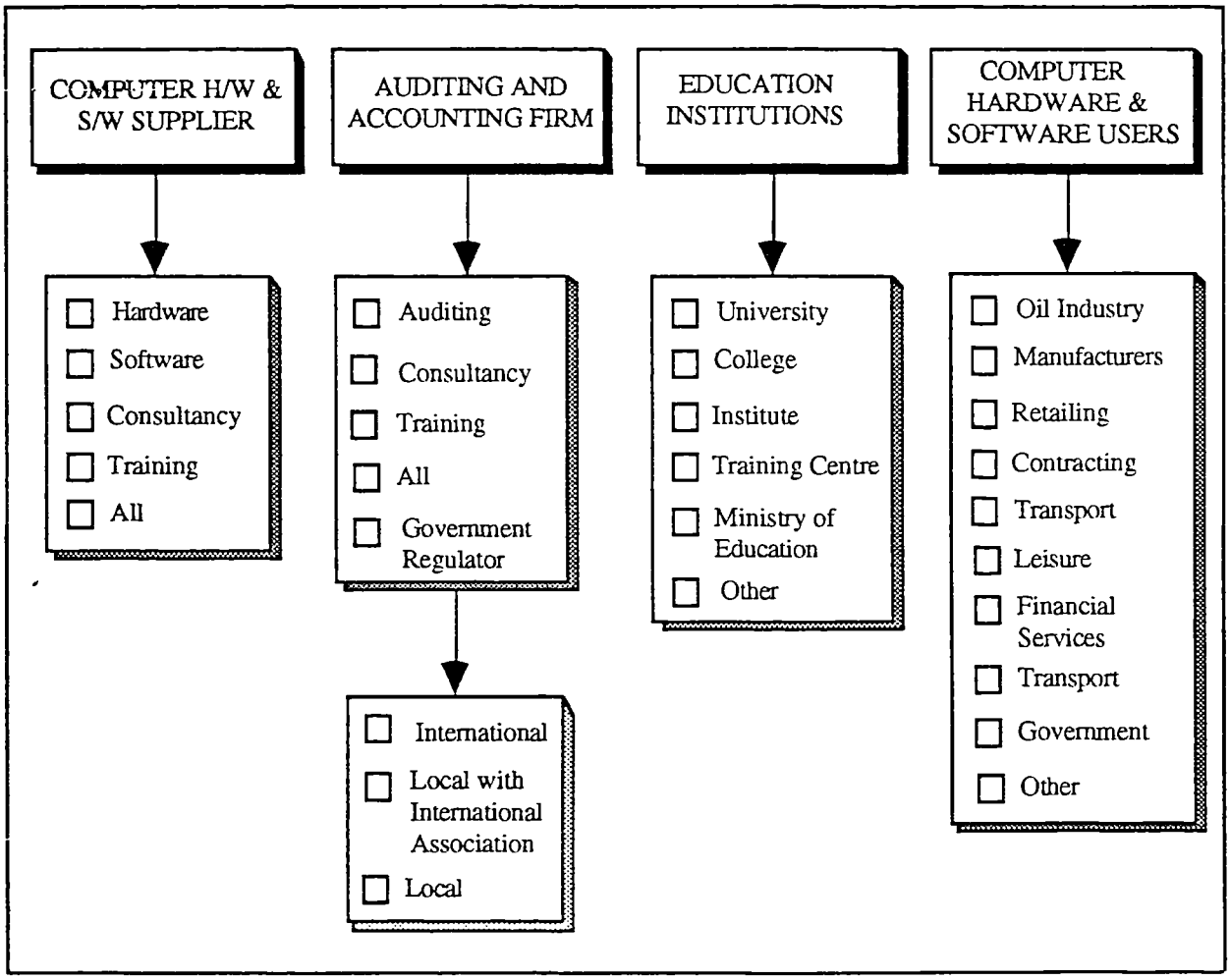
- ***Transfer of technology***: This part is relating to the acquisition of computer technology hardware, software, training and consultancy and the recruitment of Non Arab expatriates.

- ***Computer Training***: This part is dealing with the acquisition of training, use of expatriates and the level of support provided by the business community and educational institutions.

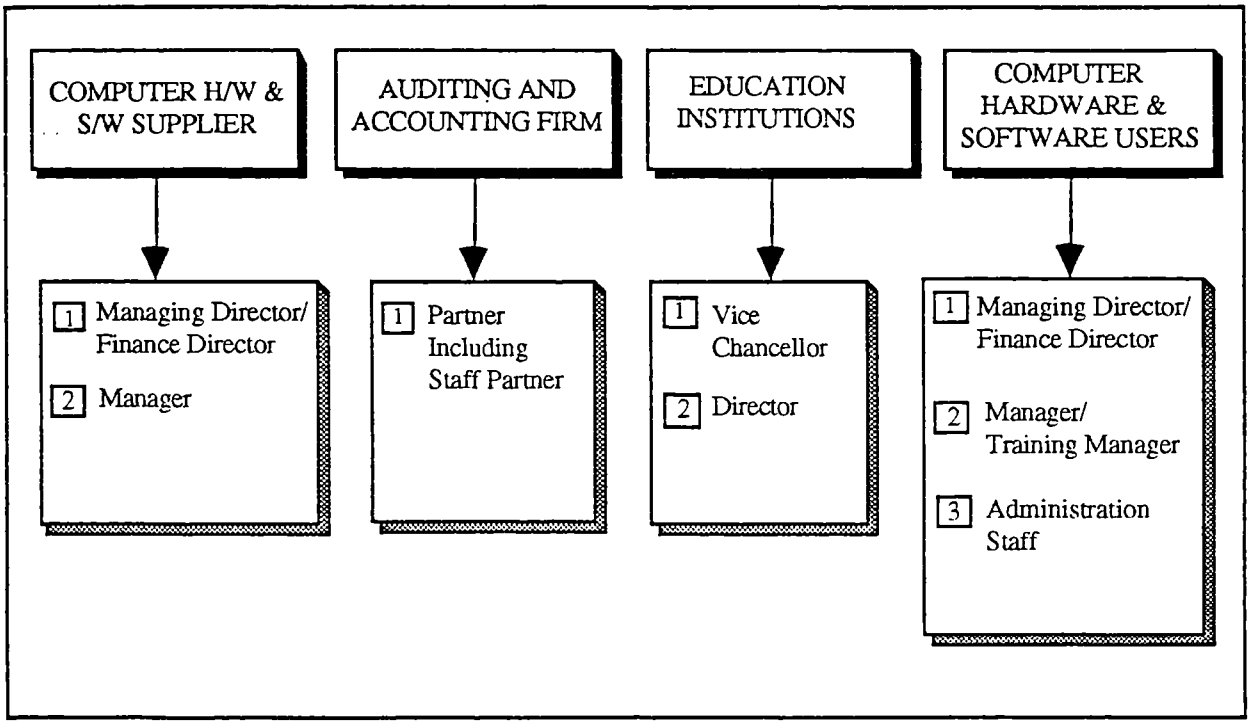
It was considered critical to the completion of this research that such questionnaire be developed and for such information to be collected as it represents the key propositions upon which this research is prepared. Therefore your participation and quick response would facilitate the successful completion of this research.

GENERAL

1 Classification of Organisations interviewed:



2 Classification of Individuals within Organisations interviewed:



ARABISATION

3 What in your view is the level of Impact on the Development of Nationals on the use of Computer Technology resulting from the use of :

	Code No.	*Positive Impact*	*Negative Impact*	*No Impact*
- *English (as opposed to Arabic) as a main Language ofAdministration*				
- *English (as opposed to Arabic) as a second Language of Administration*				
- *English use in Technical Documentation*				
- *English use in user documentation*				

H1.1

4 To what extent do the following limit the expansion of computerised accounting/auditing systems in Arabic?

	Code No.	Great Extent	Limited Extent	Not at all
a) Hardware constraints				
b) Lack of Arbic compilers				
c) Lack of Arabic database management systems				
d) Cost of Arabic Accounting systems relative to English systems				
e) Lack of demand by users				
f) Lack of regulations of the Audit profession				
g) Lack of official audit requirements				
h) Other factors: Please specify : _____ _____				

H2.1

5 To what extent is the lack of Arabic Operating and Application Systems:

Note: You may answer one, several or all of these questions.

	Code No.	Great Extent	Limited Extent	Not at all
a) a disadvantage to your organisation's use of modern technology ?				
b) a limiting factor in the recruitment of staff ?				
c) a limiting factor in the automation of business processing functions?				
d) a limiting factor on the speed of introducing new systems ?				

H2.2

ARABISATION - continued

6.1 If you are planning to Arabise your Software please state what impact in your view it will have in the future on the recruitment of IT professionals.

	Code No.	*Very Positive Impact*	*Positive*	*No Impact*	*Negative*	*Very Negative Impact*
- *I.T Arab Profesionals*		☐	☐	☐	☐	☐
- *Non-Arabic speaking I.T professionals.*		☐	☐	☐	☐	☐

6.2 If you are already using Arabised Software, please state what impact it had over the last three years on the recruitment of IT Professionals?

	Code No.	*Very Positive Impact*	*Positive*	*No Impact*	*Negative*	*Very Negative Impact*
- *I.T Arab Profesionals*		☐	☐	☐	☐	☐
- *Non-Arabic speaking I.T professionals.*		☐	☐	☐	☐	☐

H2.3

7 To what extent does the recruitment of Non-Arab Expatriates for activities connected with Computer technology in the following categories affect the availability of Arabised software:

	Code No.	*Great Extent*	*Limited Extent*	*Not at all*
a) Computer specialists (eg. systems analysis, programmers)		☐	☐	☐
b) Departmental heads and senior executives		☐	☐	☐
c) Clerical staff (other than specialist data input staff)		☐	☐	☐
d) Non-clerical staff (eg. sales persons, engineers)		☐	☐	☐
e) Data input and data control staff		☐	☐	☐
f) Others : please specify : _____		☐	☐	☐

_____

H3.1

8 In your view what are the barriers to using bilingual computerised systems.

	Code No.	*YES*	*NO*
a) Lack of I.T Professional Arab Nationals to run the bilingual system		☐	☐
b) Cost of software		☐	☐
c) Hardware limitation		☐	☐
Note: It may operate but not sufficiently functional.			
d) Unaware that bilingual systems are available or possible		☐	☐
e) No operational requirement for bilingual systems		☐	☐
f) Lack of General Management understanding		☐	☐

H3.2

TRANSFER OF TECHNOLOGY

9 What is the impact on the personal development and job opportunities for Arab Nationals in I.T resulting from the use of the following Non-Arabic professionals in jobs relating to computerisation, accounting and auditing ?

	Code No.	*Positive Impact*	*No Impact*	*Negative Impact*
a) Asians (Pakistanis, Indians)		☐	☐	☐
b) Europeans		☐	☐	☐
c) North Americans		☐	☐	☐
d) Other Nationalities		☐	☐	☐

H4.1

10 What is the long term strategy regarding the replacement of Non-Arab expatriates and your program to transfer skills to Arab Nationals on the use of computer technology in jobs relating to computerised accounting and auditing?

	Code No.	*YES*	*NO*
- *Utilising expatriates to train Arab Nationals as part of their work contract and within a specified time frame.*		☐	☐
- *Providing specialised internal training leading to a specialisation in one of the fileds of accounting and auditing.*		☐	☐
- *Providing specialised external training leading to a specialisation in one of the fields of accounting and auditing.*		☐	☐
- *Providing formal college education leading to specialisation in one of the fields of accounting and auditing.*		☐	☐
- *Other*		☐	☐

H4.2

11 Do the following factors have an impact on the transfer of computer technology relating to Accounting and Auditing in Abu Dhabi?

	Code No.	*Major Impact*	*Minor Impact*	*No Impact*
- *Lack of clear statement of direction from private and public sector enterprises on the use and transfer of technology to Arab Nationals.*		☐	☐	☐
- *Lack of trained Professional Arab Nationals in the fields of computerised accounting, auditing and computing.*		☐	☐	☐
- *Lack of Quality Software in Arabic.*		☐	☐	☐
- *Lack of adequate training to run the the Hardware provided to Arabic speaking professionals.*		☐	☐	☐
- *Lack of Senior Management Understanding.*		☐	☐	☐

H5.1

12 What is the level of impact on the use of computer technology in the fields of accounting, auditing and office Automation resulting from ?

	Code No.	*Major Impact*	*Minor Impact*	*No Impact*
- *Using Non-Arab speaking expatriates because when they leave the region so does the knowhow.*		☐	☐	☐
- *Unclear definition of what computer related skills need to be learned by Arab Nationals.*		☐	☐	☐
- *Lack of budgets for computer training.*		☐	☐	☐
- *Poor planning and implementation of training in these fields.*		☐	☐	☐

H5.2

13 What level of impact do the following factors have on the training of professional Arab Nationals in the fields of computerised accounting and auditing?

Factors	*Code No.*	*Major Impact*	*Minor Impact*	*No Impact*
- *Lack of clear policies on the recruitment and training of Arab Nationals.*		☐	☐	☐
- *Lack of clear policy on the recruitment of Arab speaking professionals.*		☐	☐	☐
- *No policy stating conditions, restrictions on the recruitments of Non-Arab expatriates.*		☐	☐	☐
- *Limited numbers of Arabic speaking professional Trainors.*		☐	☐	☐

H5.3

14 What is the level of impact of the following items on the development of Arab National skills to use computer technology in accounting, auditing and (automation or information processing).

	Code No.	*Very positive*	*Positive*	*No Impact*	*Negative*	*Very Negative*
- *Hardware to operate bilingually.*		☐	☐	☐	☐	☐
- *Bilingual operating environments (systems).*		☐	☐	☐	☐	☐
- *Arabic compilers.*		☐	☐	☐	☐	☐
- *Arabic Database Management Systems.*		☐	☐	☐	☐	☐
- *Bilingual application systems.*		☐	☐	☐	☐	☐
- *Adequacy of technical Arabic vocabulary in accounting and auditing.*		☐	☐	☐	☐	☐
- *General quality of technical documentation in Arabic.*		☐	☐	☐	☐	☐

H6.1

TRAINING

15.1 Do you acquire professional external training for your Arab Nationals on the use of computer technology in accounting and auditing?

	Code No.	*YES*	*NO*
- In Arabic		☐	☐
- In English		☐	☐

If the answer is NO please proceed to the next question # 16

15.2 What type of professional external training do you acquire?

	Code No.	*YES*	*NO*
a) General accounting		☐	☐
b) Accounting systems and procedures		☐	☐
c) Spreadsheet and graphics		☐	☐
d) Financial modelling		☐	☐
e) Database		☐	☐
f) Database processing		☐	☐
g) Office Automation		☐	☐
h) Other		☐	☐

15.3 What is the level of impact of external computer training on the development of Arab Nationals in each of the following areas:

	Code No.	*Very positive*	*Positive*	*No Impact*	*Negative*	*Very Negative*
a) General accounting		☐	☐	☐	☐	☐
b) Spreadsheet and graphics		☐	☐	☐	☐	☐
c) Financial modelling		☐	☐	☐	☐	☐
d) Database		☐	☐	☐	☐	☐
e) Accounting systems and procedures		☐	☐	☐	☐	☐
f) Data processing		☐	☐	☐	☐	☐
g) Office Automation		☐	☐	☐	☐	☐

H7.1

16.1 Do you develop internal training for your Arab Nationals on the use of computer technology in Accounting and auditing as part of a predifined plan?

Code No.	*YES*	*NO*
	☐	☐

If the answer is NO please proceed to the next question # 17

16.2 what area of internal training expertise have you developed?

	Code No.	*YES*	*NO*
a) General accounting		☐	☐
b) Accounting systems and procedures		☐	☐
c) Spreadsheet and graphics		☐	☐
d) Financial modelling		☐	☐
e) Database		☐	☐
f) Database processing		☐	☐
g) Office Automation		☐	☐
h) Other		☐	☐

16.3 What is the level of impact of internally developed training, on the Development of Arab Nationals in each of the following Areas:

	Code No.	*Very positive*	*Positive*	*No Impact*	*Negative*	*Very Negative*
a) General accounting		☐	☐	☐	☐	☐
b) Spreadsheet and graphics		☐	☐	☐	☐	☐
c) Financial modelling		☐	☐	☐	☐	☐
d) Database		☐	☐	☐	☐	☐
e) Accounting systems and procedures		☐	☐	☐	☐	☐
f) Data processing		☐	☐	☐	☐	☐
g) Office Automation		☐	☐	☐	☐	☐

H7.2

17 Does your institution support and promote computer technology through direct involvement with each of the business community sectors listed below?

	Code No.	YES	NO
a) *Universities' faculty members.*			
b) *Computer consultants.*			
c) *Hardware and software manufacturers, agents and distributors.*			
d) *Accounting and auditing firms.*			
e) *Industrial and commercial concerns.*			

H8.1

If the answer is YES please specify what type of support do you provide

18 There are many courses offered by the Business Community and Educational Institutions relating to I.T .

What is the level of impact do the follwing courses have on the development of Arab Nationals in accounting and auditing?

	Code No.	Very positive	Positive	No Impact	Negative	Very Negative
a) *Basic programming*						
b) *Advanced programming*						
c) *System design*						
d) *Computerised financial accounting systems*						
e) *Financial modelling*						
f) *Computerised banking techniques*						
g) *Computerised planning models*						
h) *Database*						
i) *Spreadsheet*						
j) *Word processing*						
k) *Computer Assisted Audit Techniques (CAATs)*						
l) *Computer Aided Design (CAD)*						
m) *Office automation concepts.*						
n) *Other: please specify:*						

H8.2

APPENDIX 6

LIST OF INTERNATIONAL PROFESSIONAL ACCOUNTING BODIES

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COUNTRY	MEMBERSHIP
Australia	Australian Society of Certified Practising Accountants The Institute of Chartered Accountants in Australia
Austria	Institut Osterreichischer Wirtschaftsprufer
Bahamas	The Bahamas Institute of Chartered Accountants
Bahrain	The Bahrain Society of Accountants & Auditors
Bangladesh	The Institute of Cost and Management Accountants of Bangladesh
	The Institute of Chartered Accountants of Bangladesh
Barbados	The Institute of Chartered Accountants of Barbados
Belguim	L'Institut des Experts Comptables Institut des Reviseurs d'Enterprises
Bolivia	Colegio de Profesionales en Ciencias Economicas de Bolivia
Botswana	The Association of Accountants in Botswana
Brazil	Instituto Brasileiro de Contadores
Canada	The Canadian Institute of Chartered Accountants Certified General Accountants Association of Canada The Society of Management Accountants of Canada
Chile	Colegio de Contadores de Chile, A.G.
Colombia	Instituto Nacional de Contadores Publicos de Colombia
Cyprus	The Institute of Certified Public Accountants of Cyprus
Denmark	Foreningen af Registrerede Revisorer Foreningen af Statsautoriserede Revisorer
Dominican Republic	Instituto de Contadores Publicos Autorizados de la Republica Dominicana
Ecuador	Federacuib Bacuibak de Contadores del Ecuador
Egypt	The Egyptian Society of Accountants and Auditors
Federal Republic of Germany	Institut der Wirtschaftsprufer Wirtschafspruferkammer
Fiji	Fiji Institute of Accountants

APPENDIX 6 - LIST OF INTERNATIONAL PROFESSIONAL ACCOUNTING BODIES

COUNTRY	MEMBERSHIP
Finland	KHT-Yhdistys Foreningen CGR
France	Compagnie Nationale des Commissaires aux Comptes Ordre des Experts Cpmptables et des Comptables Agrees
Ghana	The Institute of Chartered Accountants (Ghana)
Greece	Association of Certified Accountants and Auditors of Greece Institute of Certified Public Accountants of Greece
Hong Kong	Hong Kong Society of Accountants
Iceland	Felag Loggiltra Endurskooenda
India	The Institute of Chartered Accountants of India The Institute of Cost and Works Accountants of India
Indonesia	Indonesian Institute of Accountants
Iraq	Association of Public Accountants and Auditors
Israel	Institute of Certified Public Accountants in Israel
Italy	Consiglio Nazionale Dei Dottori Commercialisti
Jamaica	The Institute of Chartered Accountants of Jamaica
Japan	The Japanese Institute of Certified Public Accountants
Jordan	Arab Society of Certified Accountants
Kenya	Institute of Certified Public Accountants of Kenya
Korea	Korean Institute of Certified Public Accountants
Kuwait	Kuwait Auditors and Accountants Association
Lebanon	Lebanese Association of Certified Public Accountants The Middle East Society of Associated Accountants
Lesotho	Lesotho Institute of Accountants
Liberia	The Liberian Institute of Certified Public Accoutants
Libya	Libyan Certified & Public Accountants Union
Luxembourg	Ordre des Experts Comptables Luxembourgeois
Malawi	The Society of Accountants in Malawi
Malaysia	Institiut Akauntan Malaysia The Malaysian Association of Certified Public Accountants

APPENDIX 6 - LIST OF INTERNATIONAL PROFESSIONAL ACCOUNTING BODIES

COUNTRY	MEMBERSHIP
Malta	The Institute of Accountants
Mexico	Instituto Mexicano de Contadores Publicos, A.C.
Morocco	Compagnie des Experts Comptables du Maroc
Netherlands	Nederlands Institut van Register Accountants
New Zealand	New Zealand Society of Accountants
Nigeria	The Institute of Chartered Accountants of Nigeria
Norway	Norges Registrerte Revisorers Forening Norges Statsautoriserte Revisorers Forening
Pakistan	The Institute of Chartered Accountants of Pakistan Institute of Cost and Management Accountants of Pakistan
Paraguay	Colegio de Contadores del Paraguay
Philipines	Phillipine Institute of Certified Public Accountants
Poland	National Board of Chartered Accountants of Poland
Portugal	Camara Dos Revisores Oficiais de Contas
Republic of Ireland	The Institute of Certified Public Accountants in Ireland The Institute of Chartered Accountants in Ireland
Republic of Panama	Asociacion de Mujeres Contadoros de Panama Colegio de Contadores Publicos Autorizados de Panama
Sinagpore	Institute of Certified Public Accountants of Singapore
South Africa	The South African Institute of Chartered Accountants
Spain	Instituto de Censores Jurados de Cuentas de Expana
Sri Lanka	The Institute of Chartered Accountants of Sri Lanka
Swaziland	Swaziland Institute of Accountants
Sweden	Foreningen Auktoriserade Revisorer FAR
Switzerland	Swiss Institute of Certified Accountants and Tax Consultants
Syria	Association of Syrian Certified Accountants
Taiwan	National Federation of Certified Public Accountants Associations of the Republic of China

APPENDIX 6 - LIST OF INTERNATIONAL PROFESSIONAL ACCOUNTING BODIES

COUNTRY	MEMBERSHIP
Tanzania	National Board of Accountants and Auditors, Tanzania Tanzania Association of Accountants
Thailand	The Institute of Certified Accountants and Auditors of Thailand
Trinidad and Tobago	The Institute of Chartered Accountants of Trinidad and Tobago
Tunisia	Ordre des Experts Comptables et des Commissaires aux Comptes de Societes de Tunisie
Turkey	Expert Accountants' Association of Turkey
United Kingdom	The Chartered Association of Certified Accountants The Chartered Institute of Management Accountants The Chartered Institute of Public Finance and Accountancy The Institute of Chartered Accountants in England and Wales The Institute of Chartered Accountants in Ireland The Institute of Chartered Accountants of Scotland
United States of America	American Institute of Certified Public Accountants The Institute of Internal Auditors National Association of Accountants National Association of State Boards of Accountancy
Uruguay	Colegio de Doctores en Ciencias Econimicas Contadores del Uruguay
Yugoslavia	The Social Accountancy Service of Yugoslavia
Zambia	Zambia Institute of Certified Accountants
Zimbabwe	The Institute of Chartered Accountants of Zimbabwe

ASSOCIATE MEMBERS

Association of Accounting Technicians of Sri Lanka
The Institute of Accounting Technicians - Ireland
The Association of Accounting Technicians Limited (UK)