Appendix 1.

Interviews Form

Evaluation of a Knowledge Management (KM) Model For Construction Projects

A. Background and General Information

Name:

Address:

Date of Interview:

Position:

Experiences in KM:

B.Knowledge Management

1. What do you understand by the term KM?

2. What is the stimulus/reason for practicing KM?

3. What activities are important in KM?

4. What are the results and outcomes required from the implementation of KM?

5. Are there any other issues that you would like to mention regarding KM?

C. Model Evaluation

I would be grateful for your comments on the following KM model with regards to criteria such as ease of understanding and use, comprehensiveness, applicability, feasibility, structure, etc.

This model is designed to help firms taking the first step into KM or those trying to improve their existing system, by providing a general guide for construction organizations to identify what knowledge is available and important to their organizations and where it is found, what stages and activities can be followed to develop and apply a successful KMS, what tools and services can be provided by an effective and efficient KMS, how users can benefit from the KMS, and what challenges and factors can be faced throughout the implementation and application of a KMS. This model can be considered as a general guide for construction organizations, while more specific details will be left to be decided by the organizations to support their special characteristics.

The main components of the KM model developed in the research are shown in Figure 1, where more details and descriptions of the components will be provided in the following sections.

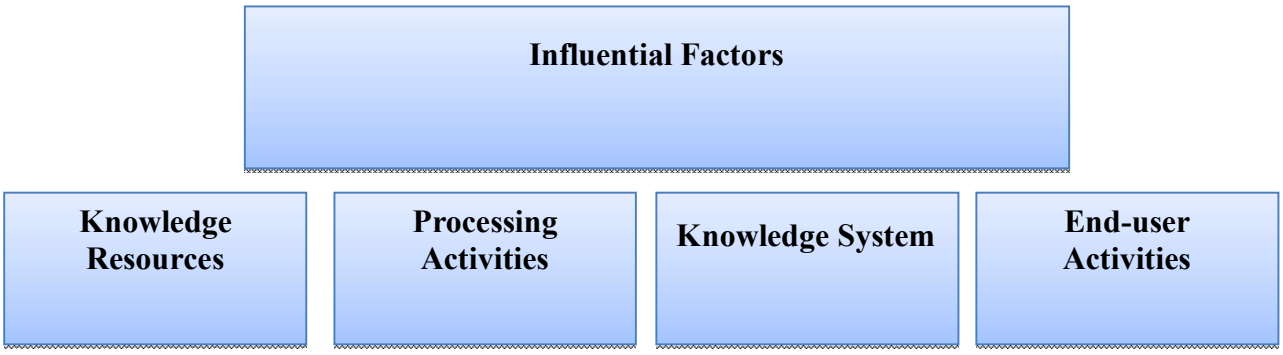


Figure 1 Components of the proposed KM model for construction projects.

1. Knowledge Resources

Many different types of knowledge are available inside and outside the organization to design and implement the KMS and to be captured and shared by the implemented system. The success of a KMS depends largely on the way in which an organization identifies the important knowledge resources available.

(The details and descriptions of the KM model depend on the updated version that was developed at the stage of sending the letters to the participants).

Appendix 2.

Questionnaire Survey

Appendix 2.1 Questionnaire Survey:-

SURVEY ON KNOWLEDGE MANAGEMENT (KM)

IN CONSTRUCTION COMPANTES

INTRODUCTION

Knowledge management (KM) is process that help organization to create organize , store , use and share and expertise necessary for activities such as problem solving , dynamic learning , strategic planning and decision making . **Knowledge Management system** refer to a type of it – based information system developed to include information , documents , knowledge , experience and perception of employees through e- messaging , e -chatting and other tools . The aim of survey is to capture the initiatives for KM and investigate the critical success factor for implementing knowledge management in construction industry. You are kindly requested to participate in survey. This will not take you more than 15 minutes to complete.

This survey is not aiming to capture any commercially sensitive information. Nevertheless, all information will be treated as strictly confidential with full anonymity to participating organization

INSTRUCTION

This questionnaire ask for your opinion about KM in general and also KM system in your organization

The answer will depend on your own judgment that comes from your experience in this domain

Note : If you don't know or are unsure of how to response . Please leave box plank.

Note : If your company does not practice knowledge management system please go to section 4

SECTION 1: GENERAL INFORMATION

This section seeks general information about and your company. This information is used only to analyze the results of submitted questionnaires. It will be treated as strictly confidential.

1. Company name
2. Your name (optional)
3. Job title
4. Your location
5. Number of employees

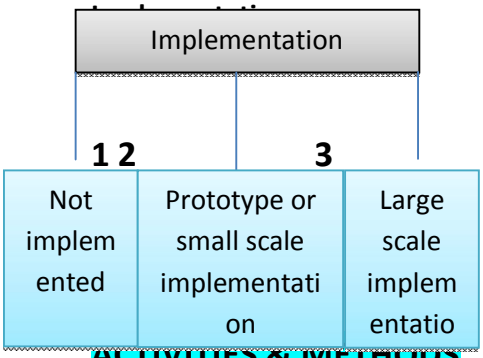
6. How do you best categories your companies

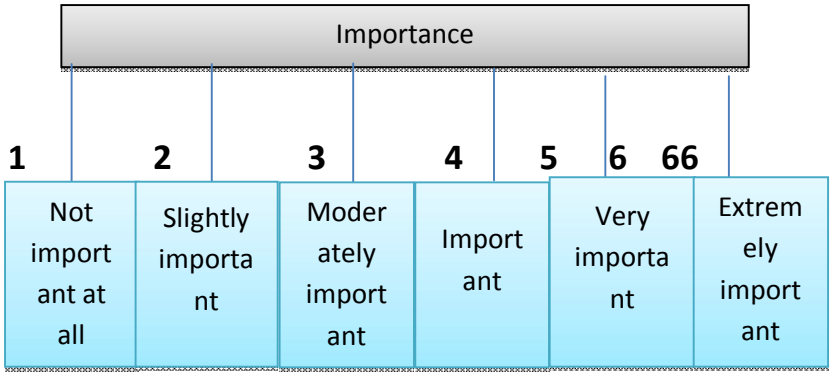
7. When did your company start implement knowledge management >year

SECTION 2 : KM ACTIVITIES , TOOLS , AND PROCEDURES

This section seeks activities procedures and tools of KM in your company

8. Which of the following KM activities and method has implemented or used in your company, and please indicate the level of importance for each activity or method successful KM implementation.





ACTIVITIES & METHODS

	IMPLEMENTATION	IMPORTANCE
A1. System Analysis	1 2 3	1 2 3 4 5 6
1. Conducting questionnaire and or interviews employees		
2. Identify business process and procedures		
3. Identifying data & knowledge available and Important for Organization.		
4. Identifying what tools appropriate for KM system		
A2. System Design	1 2 3	1 2 3 4 5 6
1. Defining aims and objectives for KM .		
2. Using KM models to represent KM activities Method, components.		
3. Preparing an action plan and guideline for KM Implementation.		
A3.System Implementation		

1. Implementation of a prototype before applying

Wide range KM system.

2. Appointing KM offices to provide training and

Support to employees.

3. Embedding KM activities into employees work

Processes.

A4. System Maintaining and Monitoring

1. Collecting feed backs from end users regarding

Improvement requirement**.**

2. Observing the differences in operation after

Implementing KM**.**

3. Monitoring the system performance and showing

Bottle necks.

4. Monitoring the environmental factor such as

Management strategy employee's culture and technological factor.

A5.system evaluation

1. Investigating business process improvement

3. Evaluating the system correctness and alignment

With design Specifications**.**

4. Evaluating the system usefulness ease of use

And application.

A6. Knowledge capturing and storing

1. Recording problem solution &experience

In electronic repository**.**

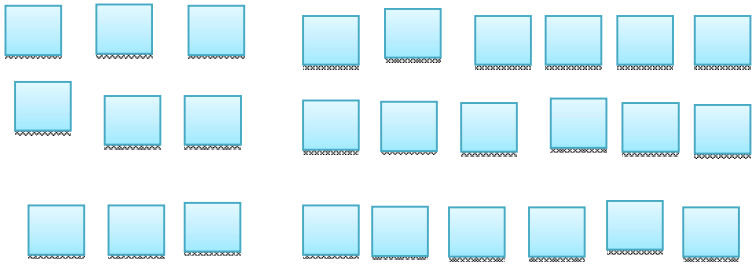
2. Referring knowledge to its sources

3. Recording new ideas and perception of experts

And engineers.

4. Attaching pictures, video, and text files to clarify

Knowledge content**.**



A7.Knowledge Reusing and sharing

1. Using internet to share and transfer knowledge.

2. Using sharing tools to find required knowledge.

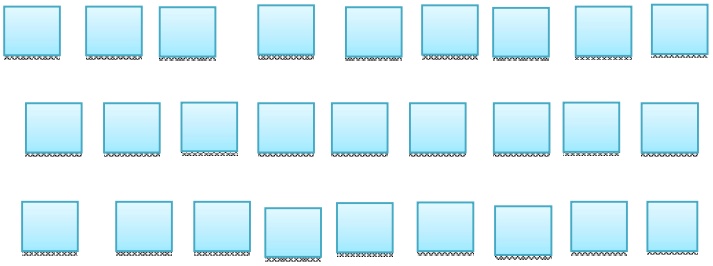
3. Showing contact details and experience of employees.

A8.Knowldge reviewing and approving

1. Using internet to publish and edit knowledge
2. Reviewing knowledge contents by experts or Knowledge team

3. Classifying knowledge to facilitate knowledge

Searching function.



A9.Using database to create data

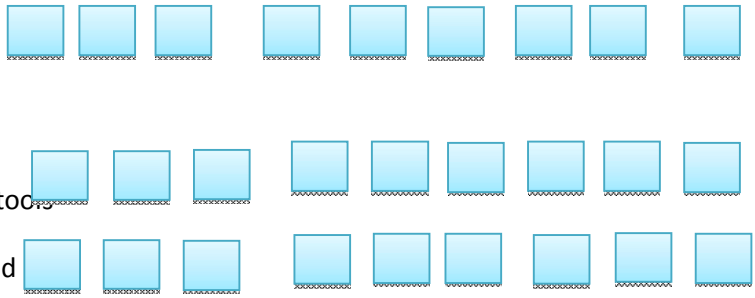
1. Capturing data and information of projects

In electronic repository.

2. Using data mining, data analysis, and reporting tools

3. Recording knowledge and information concluded

By using previous tools.



A10. System tools

1. User manual and help desk.

2. Data minting, analysis and reporting.

3. Document management.

4. Photo and/ or video management.

5. Training and support.

6. Knowledge searching.

7. Knowledge Map.

8. Yellow pages and/or contact details..

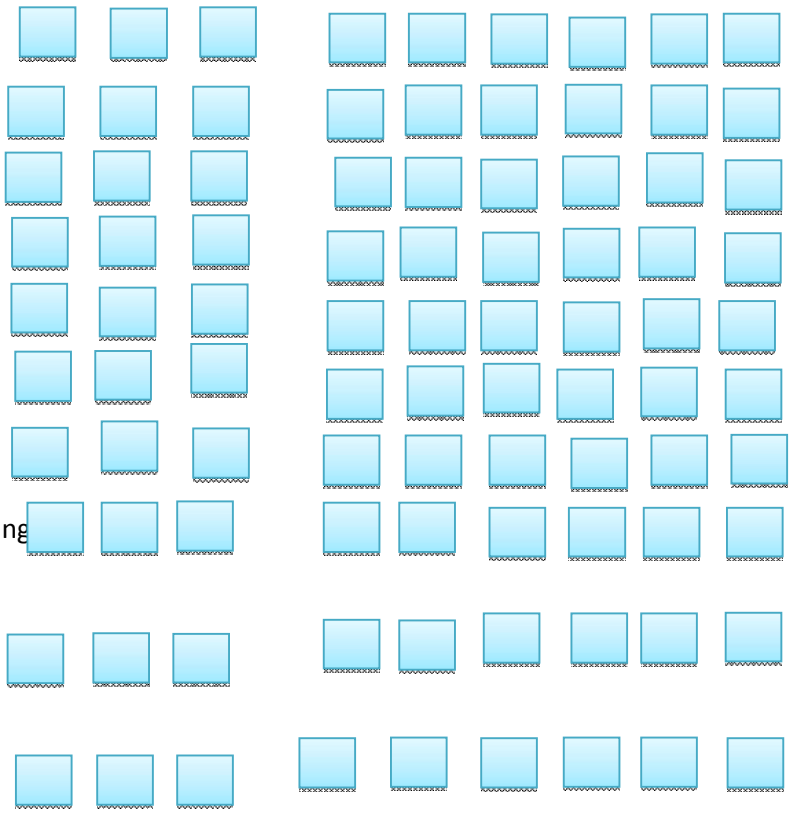
9. Subscribing and/or internet password interning

To define authority level

10. E-meeting, messaging, chatting, discussion

Board, forum.

11. Decision support system and or intelligent.

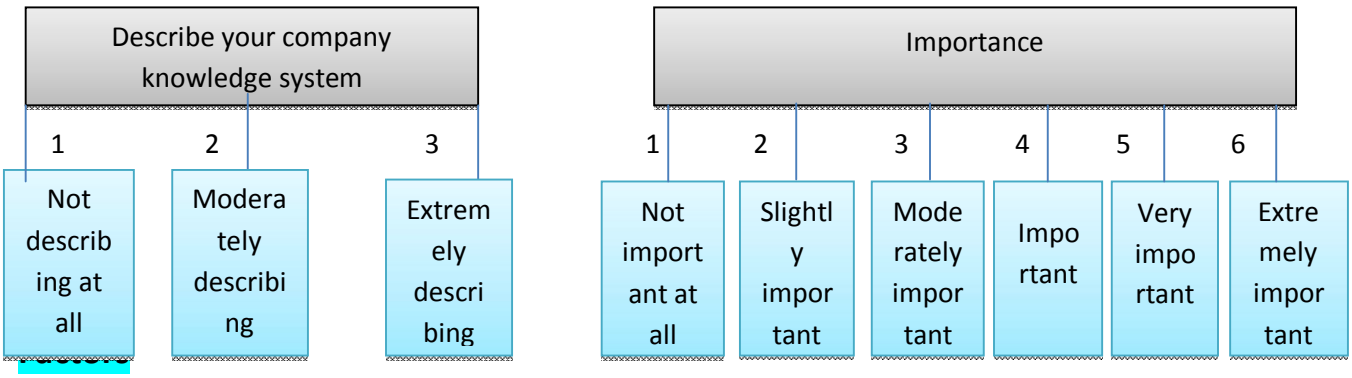


Section 3: critical success factor

This section seek your perception on the importance of factor for successful KM in your company

9. Which of the following statement can be used to describe the KMS in your company? Decide

The level of importance for each statement for successful KMS in general. Please use this scale



Describing knowledgeimportance

System in your company

1 2 3 1 2 3 4 5 6

F1.CULTURE

1. Culture that values knowledge seeking And problem solving.


2. Providing time to employees to perform Knowledge related activates.


3. Updating employees and other user About change in KMS.


4. Building up awareness and training On use of kms.


F2.MANAGMENT LEADER SHIP AND SUPPORT

1. Management establishes the necessary Condition for KM.


2. Leader encourage and support knowledg Creation, sharing and use.


3. Knowledge managers constantly search for newApproaches to KM.


4. Development of a km strategy which Clear objectives and goals.


5. Sufficient financial resources for Building up Technological system.


F3.INFORMATION TECHNOLOGY


1. Matching the kms with km objectives

And users' needs.

2. Utilization of internet and internet.

3. Ease of use of the technology.

4. Protection knowledge from unauthorized

5. Exposure or being stolen.

6. 5. Ability of system to capture and store

Tacit knowledge.

6. Appropriate categorization and

Updating of knowledge.

7. Application of technological tools.

F4.MEASUREMENT

1. Measurement benefits per unit

of investment.

2. Mentoring the system performance

and showing bottle neck.

3. Developing indicator for measurement of KM.

F5 ORGANIZATION INFRASTRUCTURE

1. Appointing of km leader and /or km team or work.
2. Ensure of sufficient human resource to

Support km initiatives.

3. Specifying activities, tasks and process

For performing km.

4. Specifying roles and responsibilities

for performing km tasks

5. Recruiting and hiring of employees to

fill knowledge gaps

F6 DRIVERS FOR KM

1. Building up and maintaining employee
2. Sharing employees expertise and perce
3. Identifying internal and or time to solv

Problem in projects.

4. Enhancing work quality of projects
5. Reducing cost and /or to solve

Problem in project.

6. Providing competitive advantages to

The company.

7. Helping senior engineers and manage

to avoid Many problems cause

8. Presenting accurate and timely

Knowledge to Facilitate decision making.

9. Providing an effective tool to train

Junior engineer.

10. Enhancing relation and coordination

With customer, Partners and suppliers.

11. Encouraging continuous improvement

and/or new Product and services .

12. Reducing rework and save time of

Solving repeated problem.

F7 . SPECIFICATION OF KM SYSTEM

1. The knowledge system easy to use .
2. It is easy for users to find useful

Information for Problem solving.

3. The system collects knowledge that

Important for organization.

4. The system ignores knowledge that is

not important For the organization.

5. The system facilitate knowledge shari
6. Between company's employees.
7. The system maintains good

Relationship with Customer and other partners.

8. The role of knowledge team worker

Is very important.

F8. KM barriers and challenges

1. The nature of construction projects (e.g. nc pe

Work, no standard procedure, pressure to complete on

Schedule, changing employee's different phase).

2. Lack of organization culture for knowledge

Creation and sharing (e.g. build trust among employees

Establish time and place for km transfer provide).

3. Lack of structured procedure and process

to implemented km.

4. Lack the adoption of well formulated

km strategies and implementation plane .

5. Lack of knowledge manager or team to

Implement KM strategy.

6. Lack of awareness of the importance of

KM organization.

7. Lack of training and support.

8. Lack of technology and techniques for

km capture and sharing

9. Lack of leader ship support

10. Lack of recourse in team of a budget,

Staff, and it infrastructure.

11. Employee resistance to share knowledge

12. Lack of post-projects reviews and

Project documentation.

10. To what extent do you consider your company knowledge management effort to

besuccessful?

11.To what extent do you consider the KM activities and critical success factor?

PresentedEelier to successful indescribing thosewhich are

Crucialfor km adoption in construction industry.

SECTION 4: FOR NON-KNOWLEDGE MANAGEMENT ADOPTERS

12. why do you not practise KM in your company (you may tick more than one answer) .

☐ Lack Of Time ☐ Have Never Hard

☐ Lack Of Financial Resources ☐ Don't Understand

☐ Top Management Does Not Support ☐ Unsure Of Its Potential Benefits

☐ Not Need ☐ Not Interested

13. Do You Plan To Implement Km In The Future.

Feedback

14. If you're interested to be contacted for follow up short interviews, please tick this box. ☐

15.if your company is intersted in participating in the research case study ,please tick this box . ☐

16. If your require summary of the fuinding of this survey, please tick this box. ☐

17. if you ticked any of the feedback question ,please enter your email address and or contact details . ☐

Other comment

(Please Use The Space Provided To Reflect On How To Improve Km In Construction Industry)

THANK YOU VERY MUCH FOR YOUR VALUABLE TIME AND CONTRIBUTION TO THIS SURVEY.

ALL RESPONSES WILL BE TREATED ANONYMOUSLY.

Appendix 2.3 Part of the Sudan Construction Companies Sample

Not available in the digital version of this thesis.

Appendix 2.4 Sample of Invitation Message

Survey on Knowledge Management (KM)

Dear Sir/Madam

I am a MSC student at the Sudan University. My work is centered on investigating Knowledge Management (KM) application in Construction Companies. The following survey is a very important part of my MSC research project.

It will be greatly appreciated if you help to forward the following message to at least one of the employees in your company who may have interests in databases, information systems, computer networks and/or research and development projects so as to participate in this survey.

Thank you very much for your support.

Dear Sir/Madam,

Re: Survey on Knowledge Management (KM) in Construction Companies.

Iam conducting a research about Knowledge Management (KM) practices in construction. KMSs refer to a type of IT-based information systems developed to include information, documents, procedures, experiences and knowledge of employees, and to facilitate collaboration of employees through tools such as e-messaging, e-chatting and e-meeting.

I am seeking the opinion of a group of experts in computer systems, such as you, to assess the importance of a set of factors which are provided in the questionnaire. You do not need to have a formal knowledge management programme in your organization to answer these questions - many of the practices listed in the survey may be parts of other programmes and systems you have, for example, database, information system, etc.

I would appreciate your participation to complete the questionnaire which will not take more than 15 minutes from your time. Your response is very important for the success of the research, which in turn could be helpful to many construction companies which are trying to apply KM.

All survey responses will be treated confidentially and used only for research purposes. Your information will be coded and will remain confidential. If you have questions at any time about the survey, you may contact me by email address.

2.5 Sample of Follow-up Invitation Message

Dear Sir/Madam

I have sent you before a message to participate in a questionnaire investigating your opinion about the importance of KM practices, methods and tools. To date, the response to my survey is inadequate. It will be greatly appreciated if you participate in the questionnaire provided in the link below and/or help to forward the below message to some employees in construction companies whose jobs are related to or may require them to use information and computer systems, so as to participate in this survey. Your participation is very important to my research.

Thank you very much for your support.

Survey on Knowledge Management (KM)

Dear Sir/Madam,

Re: Survey on Knowledge Management (KM) in Construction Companies.

I am a MSC student at the Sudan University. I am conducting a research about Knowledge Management (KM) practices in construction. KMSs refer to a type of

information systems developed to include information, documents, procedures, experiences and knowledge of employees.

I am seeking the opinion of a group of experts in **computer systems**, such as you, whose jobs are related to or may require them to use information and computer systems, to assess the importance of a set of factors which are provided in the questionnaire.

I would appreciate your participation to complete the questionnaire which will not take more than 15 minutes from your time. All survey responses will be treated confidentially and used only for research purposes.

Thank you very much for your time and support.

Yours sincerely,

Nazick Ahmed

Scale: A1

Case Processing Summary

		N	%
Cases	Valid	24	88.9
	Excluded	3	11.1
	Total	27	100.0

Reliability Statistics

Cronbach's Alpha	N of Items
.834	4

Item Statistics

	Mean	Std. Deviation	N
A1.1	4.0417	.77903	24
A1.2	5.1667	.91683	24
A1.3	5.2917	.62409	24
A1.4	4.0417	1.08264	24

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
A1.1	14.5000	4.870	.746	.766
A1.2	13.8750	4.723	.625	.811
A1.3	13.7500	5.935	.565	.838
A1.4	15.0000	3.565	.806	.722

Scale Statistics

Mean	Variance	Std. Deviation	N of Items
19.0417	8.042	2.83579	4

Scale: A2

Case Processing Summary

		N	%
Cases	Valid	25	92.6
	Excluded[a]	2	7.4
	Total	27	100.0

Reliability Statistics

Cronbach's Alpha	N of Items
.865	3

Item Statistics

	Mean	Std. Deviation	N
A2.1	4.0000	1.35401	25
A2.2	4.4400	1.44568	25
A2.3	3.9600	1.51327	25

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
A2.1	8.4000	8.500	.649	.889
A2.2	7.9600	6.123	.932	.653
A2.3	8.4400	6.257	.808	.748

Scale Statistics

Mean	Variance	Std. Deviation	N of Items
12.4000	14.667	3.82971	3

Scale: F1

Case Processing Summary

		N	%
Cases	Valid	27	100.0
	Excluded[a]	0	.0
	Total	27	100.0

Reliability Statistics

Cronbach's Alpha	N of Items
.779	5

Item Statistics

	Mean	Std. Deviation	N
F1.1	4.5185	1.12217	27
F1.2	4.7407	.76423	27
F1.3	4.7407	.81300	27
F1.4	4.5556	.84732	27
F1.5	4.8519	.84863	27

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
F1.1	18.8889	7.103	.410	.796
F1.2	18.6667	8.308	.440	.785
F1.3	18.6667	8.538	.682	.821
F1.4	18.8519	7.208	.649	.704
F1.5	18.5556	7.564	.480	.785

Scale Statistics

Mean	Variance	Std. Deviation	N of Items
23.4074	10.866	3.29633	5

Scale: F2

Case Processing Summary

		N	%
Cases	Valid	24	88.9
	Excluded[a]	3	11.1
	Total	27	100.0

Reliability Statistics

Cronbach's Alpha	N of Items
.841	5

Item Statistics

	Mean	Std. Deviation	N
F2.1	4.5833	1.38051	24
F2.2	4.3750	1.17260	24
F2.3	4.1250	1.26190	24
F2.4	5.2083	1.38247	24
F2.5	5.1667	1.49638	24

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
F2.1	18.8750	22.984	.652	[illegible]
F2.2	19.0833	24.688	.687	[illegible]
F2.3	19.3333	24.318	.634	[illegible]
F2.4	18.2500	23.065	.643	[illegible]
F2.5	18.2917	22.388	.642	[illegible]

Scale Statistics

Mean	Variance	Std. Deviation	N of Items
23.4583	26.172	5.01420	5