

Supplementary data

Factors influencing the adoption of information and communication technology in public building construction projects: insights from Mekelle city



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Questionnaires and interview protocols

1.1. Questionnaire

Questionnaire Request

Dear Sir/Madam,

We, Teklay Berhe, Zeru Tariku, and Gebrehiwet Teklemariam, are conducting research entitled “Factors Influencing the Adoption of Information and Communication Technology in Public Building Construction Projects: Insights from Mekelle City”.

We believe your experience and educational background will greatly contribute to the success of our study. So, it’s with great respect that we are asking you to fill out this questionnaire. The researchers assure you that the research data will be used solely for academic purposes and will be treated with strict confidentiality; particular mention of names will not be required anywhere.

If you have any questions or comments, you can contact as by the following address;

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Thank you for your participation!!!



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A. General Information

1. About the Respondent: Please choose and tick (√) the boxes;

1.1 Please indicate your level of education:

Diploma B.Sc. M.Sc. Ph.D. Else, Verify _____

1.2 Please indicate your current position in this organization:

General Manager Project manager IT Manager Engineer Client Representative

Other _____

1.3 Your work experience in construction project works: < 5 years 5–10 years > 10 years

2. About your organization: Please choose and tick (√) the boxes;

2.1 Organization Name (Optional) _____

2.2 Please indicate which contracting party you are. Contractor Consultant Client Contractor

2.3 How long has your company been participating in construction projects and related works?

< 5 years 5–10 years > 10 years

3. About the ICT general: Please choose and tick (√) the boxes;

3.1 Does your organization own and use computers for its operations? Yes No

If yes, please indicate where computers can be accessed in your organization.

Company Offices only Project Sites only Both Company Offices and Project Sites

B. ICT Platforms and Their Extent of Usage

(1) Please indicate the ICT platforms/hardware items available for use in your project/company during the construction project implementation. Please tick (√), to the following Likert scale:

Rank Level	Never	Sometime	Often	Always
Likert Point	1	2	3	4

No	ICT platform	1	2	3	4
1	Desktop computers				
2	Laptops				
3	Pocket PCs				
4	Personal Digital Assistants (PDAs),				
5	Digital Cameras				
6	Multimedia projectors				
7	Handheld computers/Tablet PCs				
8	Mobile phones				
	(If any other, specify)				

(2) Please indicate the frequency of use of these ICT platforms for the indicated functions in your project/company during the construction project implementation. Please tick (√), to the following Likert scale:

Rank Level	Never	Sometime	Often	Always
Likert Point	1	2	3	4

No.	ICT application	Available software	1	2	3	4
1	Project planning and scheduling: Work schedules and resource management	Primavera				
		Microsoft project				
		Power project				
		If any other, specify,				
2	Making project drawings: Conceptual design, sketches, detailed designs, modeling, and visualization	ArchiCAD				
		AutoCAD				
		Revit				
		If any other, specify,				
3	General project administration: Bookkeeping, record keeping, presentations, preparation of payrolls and reports	Microsoft Office PowerPoint				
		Microsoft Office Word				
		Microsoft Office Excel				
		Microsoft Office Access				
		Spread sheets				
		If any other, specify,				
4	Project cost control: cash flow charts, budgeting, estimating, costing, accounting, Financial management, cost calculations, and procurement procedures	Esti-mate				
		Resource cost sheet				
		Master bill				
		If any other, specify,				
5	General communication	E-mail service				
		Internet (Skype, Telegram, Twitter)				
		Teleconferencing				
		Mobile phones				
		If any other, specify,				

C. Factors Affecting the Use of ICT in Your Organization

(1) Which one of the following factors best describes the factors affecting the use of ICT in your organization? Please tick (√), to the following Likert scale:

Rank Level	Never	Sometime	Often	Always
Likert Point	1	2	3	4

No	General Factors	No	Specific Factors	1	2	3	4
1	Human Factors	1	Deficiency of commitment by the firm's management towards ICT				
		2	Deficiency of staff with appropriate skills and knowledge in ICT				
		3	Inadequate ICT content in construction education				
		4	Inadequate knowledge about the return on ICT investment				
		5	Satisfaction with the existing method of working				
		6	Fear of job losses /making professionals redundant.				
		7	Deficiency of time available to learn				
		8	Deficiency of training				
2	Technical Factors	9	Problem of ICT integration in the organization				
		10	Security concerns/privacy fears				
		11	Access to a relatively cheap workforce				
		12	Software and hardware reliability problems				
3	Financial Factors	13	Cost of training professionals in ICT				
		14	Limited benefits return on investment in ICT.				
		15	High cost of employing ICT professionals				
		16	Budget constraint for ICT investment				
4	Legal Factors	17	Deficiency of legal support for the use of ICT				
		18	Risks for liability/obligations				
		19	Security implications of ICT transactions				
5	Environmental Factors	20	Deficiency of adequate jobs in the market				
		21	The majority of clients are not interested in the firm's ICT base.				
			(If any other, specify)				

*1.2. Interview*Interview
Request

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We believe your experience and educational background will greatly contribute to the success of our study. So, it’s with great respect that we are asking you to fill out this questionnaire. The researchers assure you that the research data will be used solely for academic purposes and will be treated with strict confidentiality. So, it’s with great respect that we want to contact you to know about your practice in ICT because of your extensive experience and outstanding reputation in your field. The questions that demand your answer are listed below.

Thank you for your anticipation!!!

i. General Information: Please tell me the following questions

- Your Profession _____
- Your Experience in construction _____
- Type of organization _____
- Your Role in the organization _____
- Interview duration _____ date _____

ii. Interview questions: Please feel free to answer the following open-ended questions.

(1) As an engineer/contractor/client officer, what do you think are the factors affecting the use of ICT in Public Building Construction Projects?

(2) What are the mechanisms that are used to overcome the factors?

(3) From your experience on ICT usage, when and how to use ICT in any construction Project lifecycle stages?

(4) From your experience on ICT usage, what would you recommend for other contracting parties to use ICT?