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The Strategic Role of ICT within the Turkish Construction Industry

Study Context

- Focused on investigating the current strategic role of ICT in the Turkish Construction Industry
 - *Conducted as a 2nd phase of a research which began in 2002 in order to define an ICT roadmap for the Turkish Construction Industry.*
 - *Also supported by Istanbul Technical University, Department of Civil Engineering.*

Study Context

■ Turkish Construction Industry

- Construction is one of the two key industries in Turkey (the other being Tourism).
 - Overall industrial capacity has grown **45%** in last two years.
 - More than **1,350,000** people are employed within the Turkish construction industry (**6%** of overall employment).
 - Turkish Contractors and Consultants are working in **63 countries**, most of which are in **West/Central Asia, Middle East and Africa** (**20%** of export income of Turkey is through products and services related to construction).
 - Volume of trade for overseas works (related to construction) has been from 1970 **\$85 Billion** until 2007, and **\$15 Billion** will be added in 2007.

Study Context

- In investigating the current strategic role of ICT in the Turkish Construction Industry...
- study explores issues relating to:
 - *role of ICT strategy.*
 - *reasoning behind investments in ICT.*
 - *role of ICT in recruitment.*
 - *structure of ICT department.*
 - *Barriers/success factors to successful & efficient implementation and management of ICT.*
 - *role of ICT in different phases and for different aspects of construction lifecycle.*

Methodology

- Following comprehensive literature review.
- Semi structured interviews conducted with 21 major contractors and consulting organisations in Turkish AEC industry
- Focused around questionnaire.
- Interviews conducted generally with ICT directors/managers of each organisation.
- Results cross-checked/validated by interviewers and the interviewee.

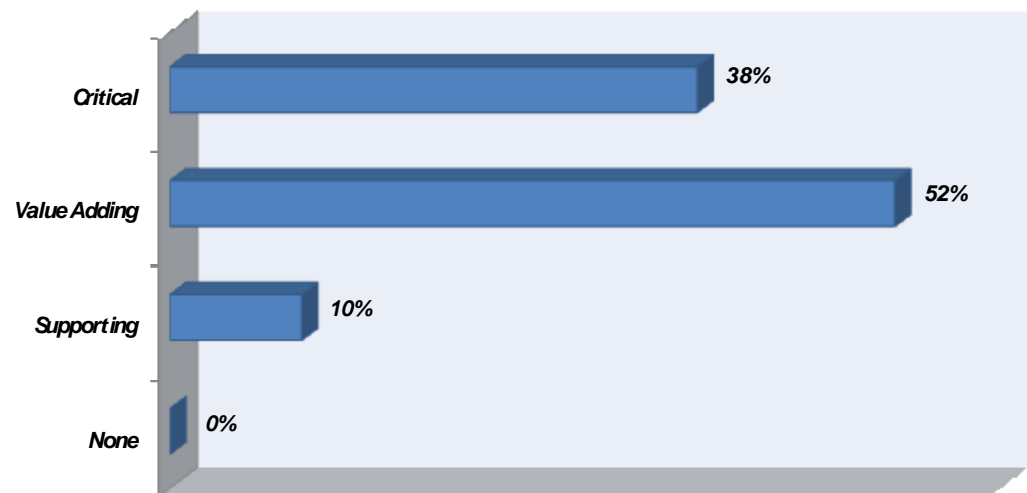
Organisation	Contact Person	Position
<i>Guris Insaat</i>	Handan YUCEL	IT Manager
<i>KC Group Yapı</i>	Bedir AKSAN	IT Manager
<i>Tepe Insaat</i>	Ferhat BOLUKBAS	IT Manager
<i>Nurol Holding</i>	Emine ONGUN	IT Manager
<i>Metis Insaat</i>	Secimer TEZ	MIS Manager
<i>MNG Holding</i>	Murat KASABOGLU	IT Manager
<i>Akfen Holding</i>	Sinan OZKAN	IT Manager
<i>Mesa Mesken Sanayi</i>	Semra CANKIRILI	IT Manager
<i>Gama Holding</i>	Mehmet BESEN	IT Manager
<i>Akturk Yapı Endustrisi</i>	Timucin DIKMEN	IT Supervisor
<i>Koray Yapı Endustrisi</i>	Dr. Vehbi TOSUN	IT Manager
<i>Tekfen Insaat</i>	Cem AKTAS	IT Manager
<i>Eston Yapı</i>	Kutay SEYYALIOGLU	Planning Engineer
<i>Sinpas Yapı Endustrisi</i>	Taner AKKAS	ERP Specialist
<i>Alarko Taahhut Grubu</i>	Osman ISHAKOGLU	Planning Manager
<i>STFA Insaat Grubu</i>	Ali AVCAR	System Administrator
<i>Soyak Holding</i>	Murat TANATAR	IT Coordinator
<i>Yüksel Proje</i>	Sükrü BAYKAN	IT Manager
<i>Limak Holding</i>	Ersun GULBAS	IT Manager
<i>Dolsar Muhendislik</i>	Ali Onur KUYUCAK	Head of IT Division
<i>Borova Yapı Endustrisi</i>	Murat YAMAN	IT Manager

Study Findings

Role of ICT Strategy

■ Achieving strategic competitive advantage?

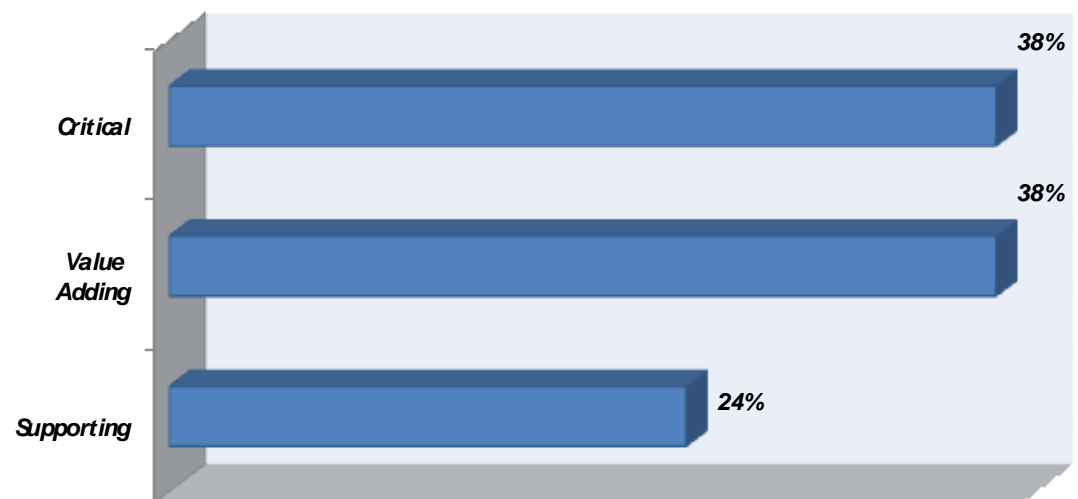
- *Majority recognised the role of ICT as value adding (52%) and critical (38%) to gain strategic competitive advantage.*
- *Only a few (10%) viewed ICT as simply a tool for supporting their business processes.*



Role of ICT Strategy

■ In context of overall business strategy?

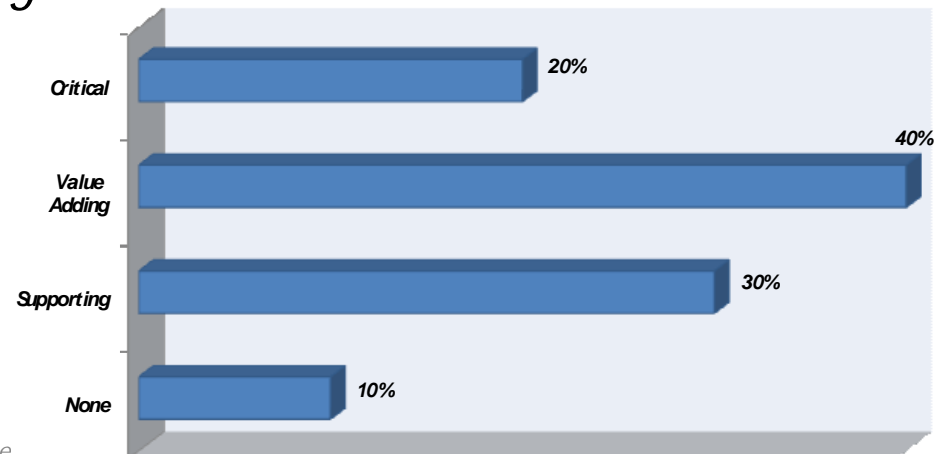
- *76% mentioned that their organisation ICT strategy is perceived as value adding or a critical part of their overall business strategy.*
- *Remaining pointed out that their ICT strategy only supports their overall business strategy.*



Role of ICT Strategy

■ Winning work?

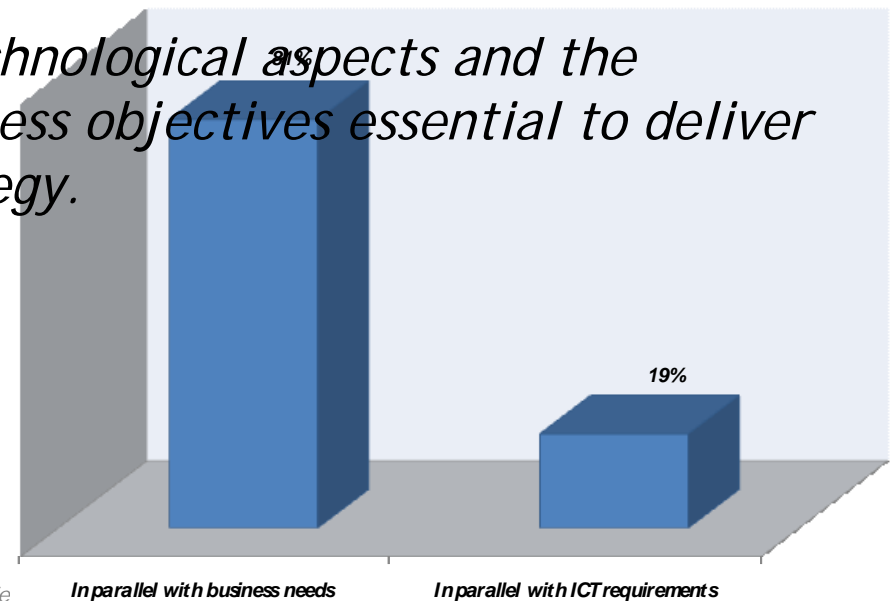
- *More than half indicated the role of ICT as value adding (40%) and critical (20%).*
- *40% believe ICT as a non-critical resource for winning work:*
 - *30% viewing ICT as a supportive tool to win work.*
 - *Remaining 10% believe ICT does not have any positive impact for winning work.*



Role of ICT Strategy

■ How organisations formulate their ICT strategy?

- *Majority (81%) indicated that their ICT strategy is formulated focused on their business objectives.*
- *19% indicated their ICT strategy is driven by technology.*
- *Recognised both technological aspects and the organisations' business objectives essential to deliver successful ICT strategy.*



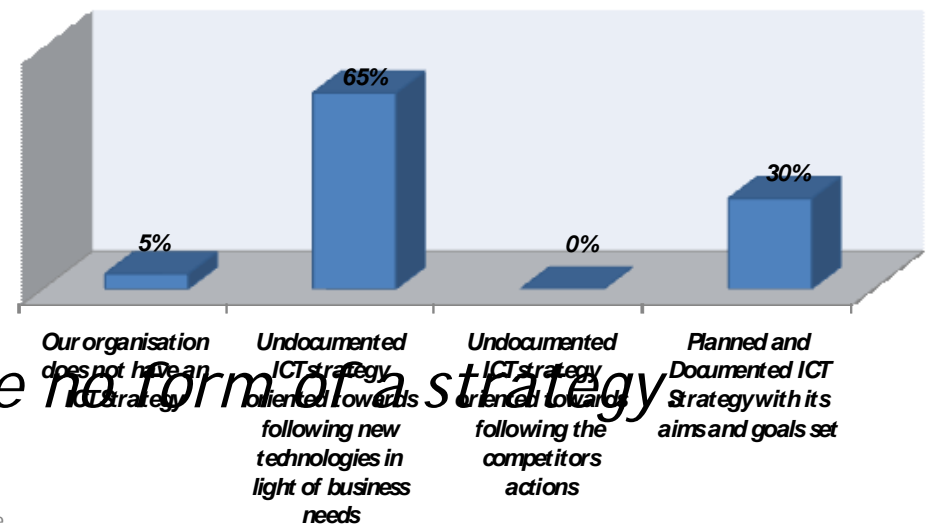
Role of ICT Strategy

■ How is ICT strategy defined?

- *Majority (65%) have no documented strategy...*
 - *ICT vision driven by technological developments/ advancements,*
 - *while making ICT investments in parallel their business (strategic) needs.*
 - *Not driven by competitors.*

- *30% mentioned having a documented strategy.*

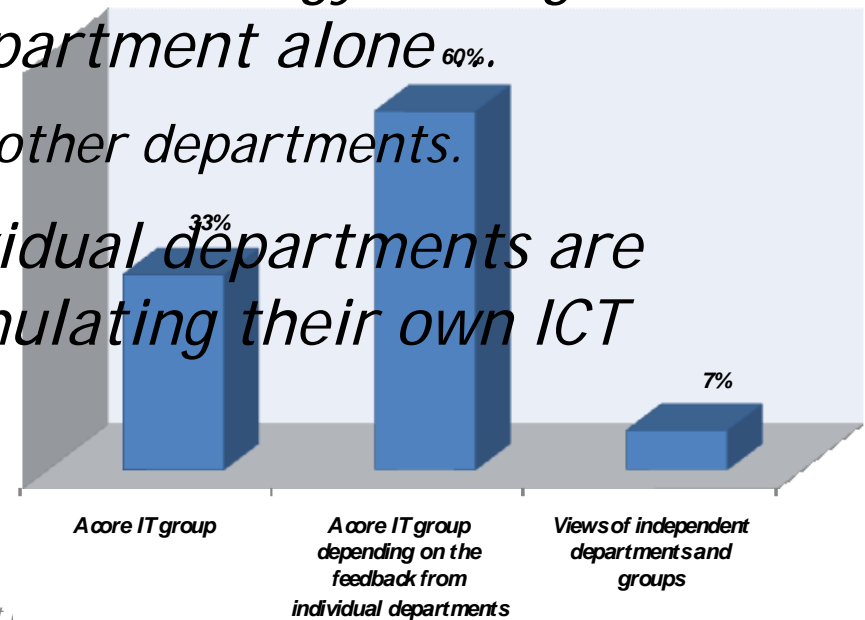
- *Remaining 5% have no form of a strategy*



Role of ICT Strategy

■ Who engages in formulating ICT strategy?

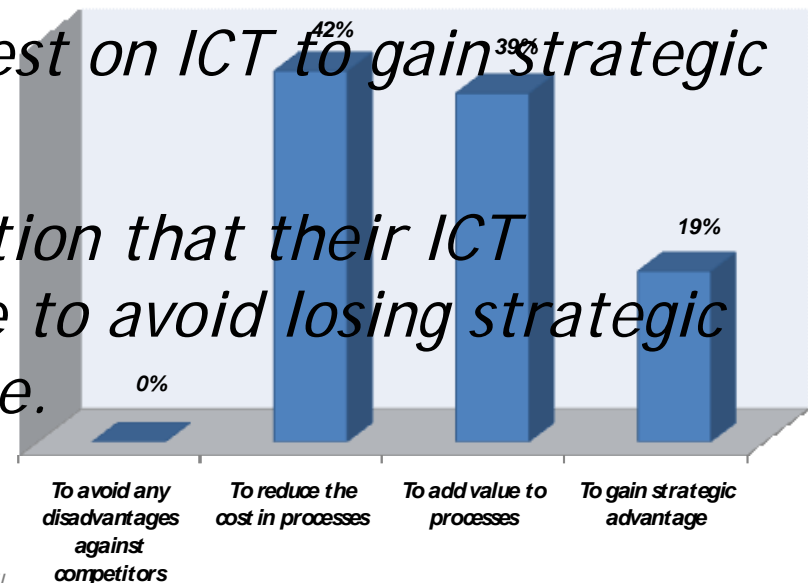
- *More than half (60%) formulate their ICT strategy through central/core ICT department ...*
 - *in order to align with the operational needs (which is dependent on the feedback from various departments).*
- *33% formulate their ICT strategy through central/core ICT department alone*
 - *without input from other departments.*
- *7% stated that individual departments are responsible for formulating their own ICT strategy.*



ICT Investment

■ Strategic reasoning behind ICT investments?

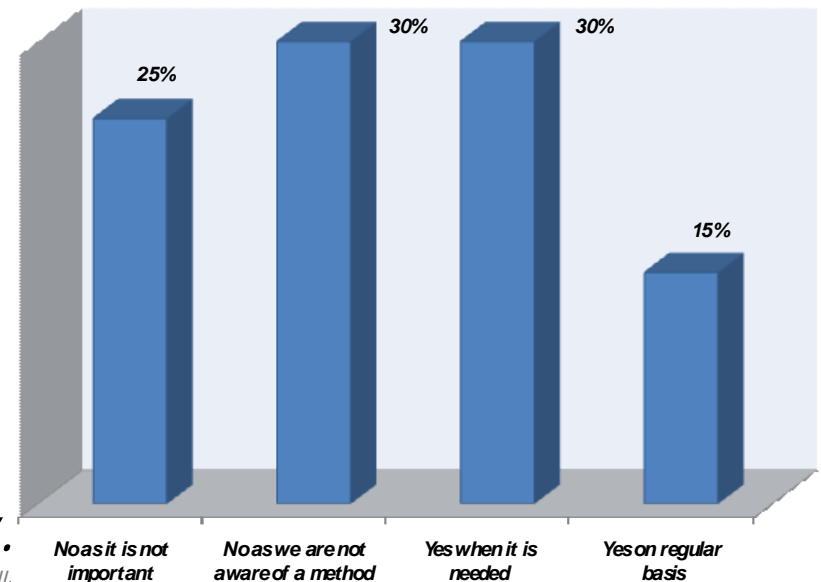
- *42% invest in ICT to reduce the cost of the processes.*
- *39% indicated that ICT investments are made to add value to the current form of processes.*
- *Only 19% actually invest on ICT to gain strategic advantage.*
- *In contrast, no indication that their ICT investments are made to avoid losing strategic competitive advantage.*



ICT Investment

■ Measuring ROI of their ICT expenditures?

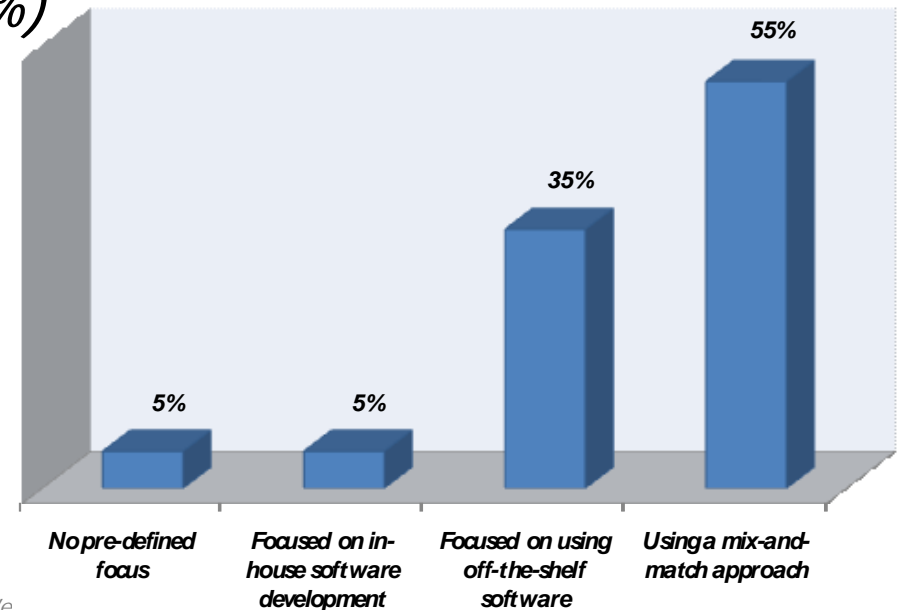
- *45% measure ROI ...*
 - *only a limited number (15%) undertake this regularly,*
 - *while 30% calculate when needed.*
- *30% expressed not calculating ROI as they do not have a reliable method for ROI calculation for ICT investments in construction.*
- *A quarter do not perceive ROI an important indicator for determining their ICT investment policy.*



ICT Investment

■ Focus of investments on ICT development?

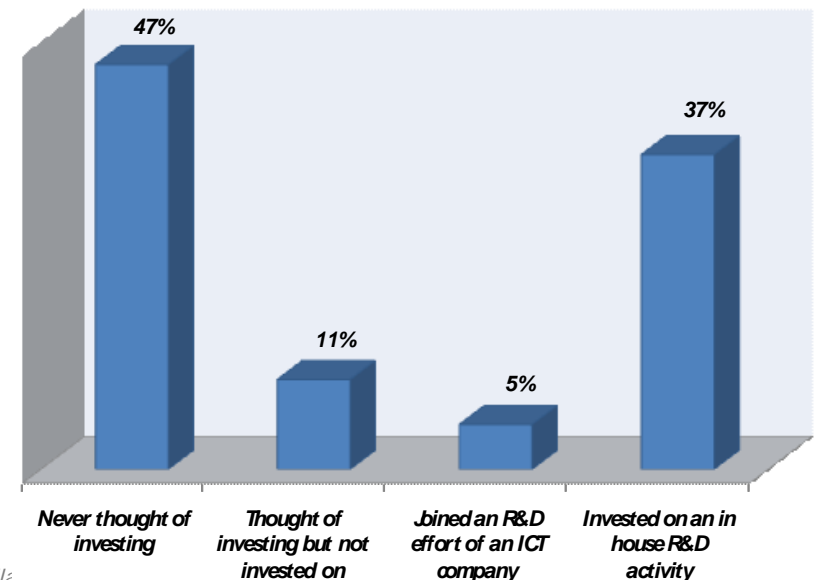
- *5% indicated that their focus is on developing in-house software and IS.*
- *35% only outsource software development ...*
 - *and no R&D is carried out within the organisation.*
- *More than half (55%) stated that they implement a mix-and-match approach.*



ICT Investment - ICT related R&D

■ Focus on R&D activities?

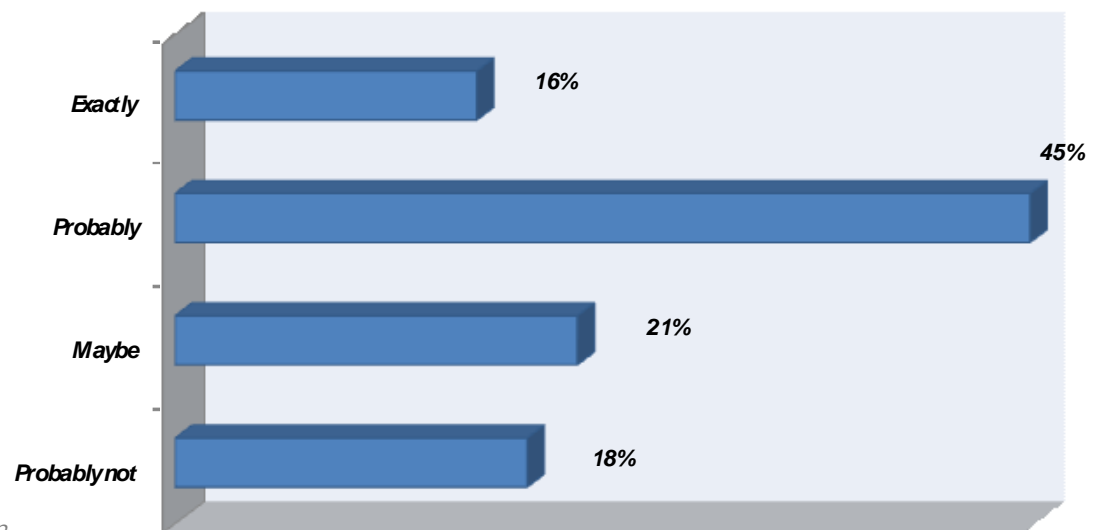
- 47% have never thought of investing on R&D.
- 48% have considered investing on R&D efforts ...
 - but only 37% actually perceive R&D a part of their organisational vision.
- Small percentage (5%) joined an R&D effort initiated by an ICT organisation.



ICT Investment - ICT related R&D

■ Willingness to participate national or European research?

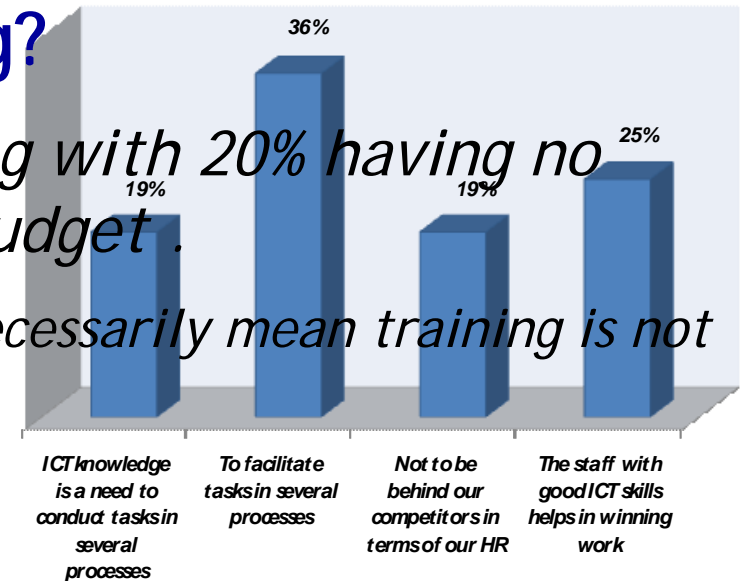
- *61% indicated their organisation may be interested in getting involved ICT-related research.*
- *Remaining 39% have not interest in engaging in such research and do not perceive it as an important activity.*



ICT Investment - Training

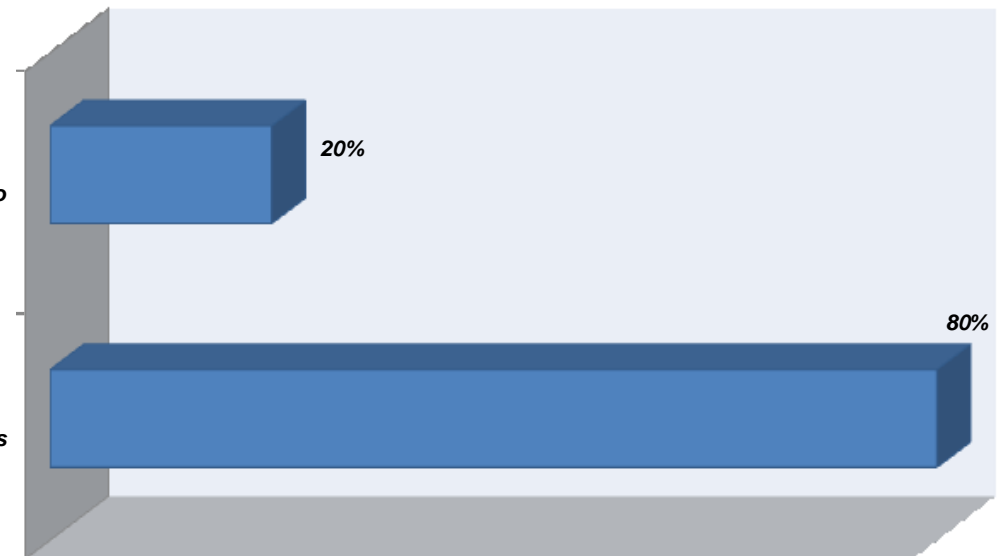
Investing in ICT training?

- 80% invest on ICT training with 20% having no dedicated ICT training budget.
- however, this does not necessarily mean training is not provided.



Reasoning to invest?

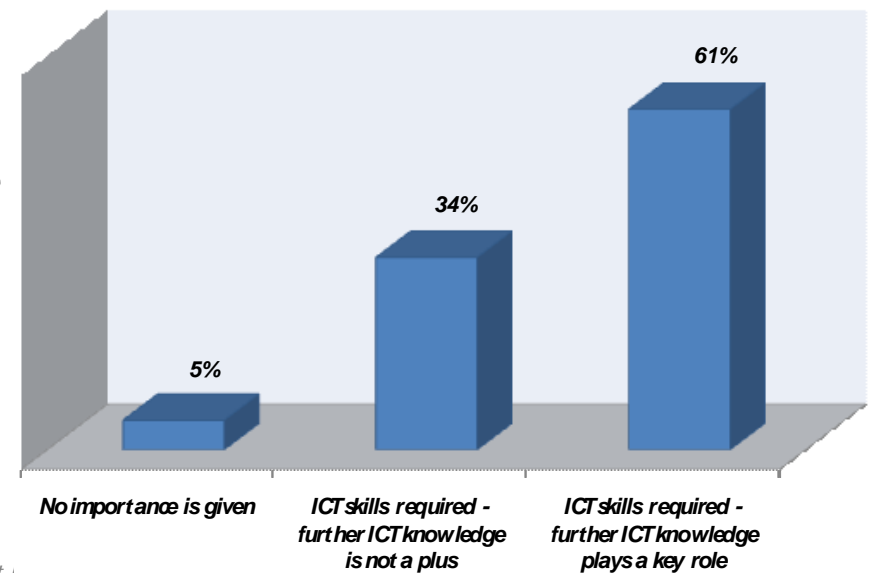
- 36% recognise processes.
- 25% mentioned
- 19% indicated
- 19% provide training tasks in their k



Role of ICT in Recruitment

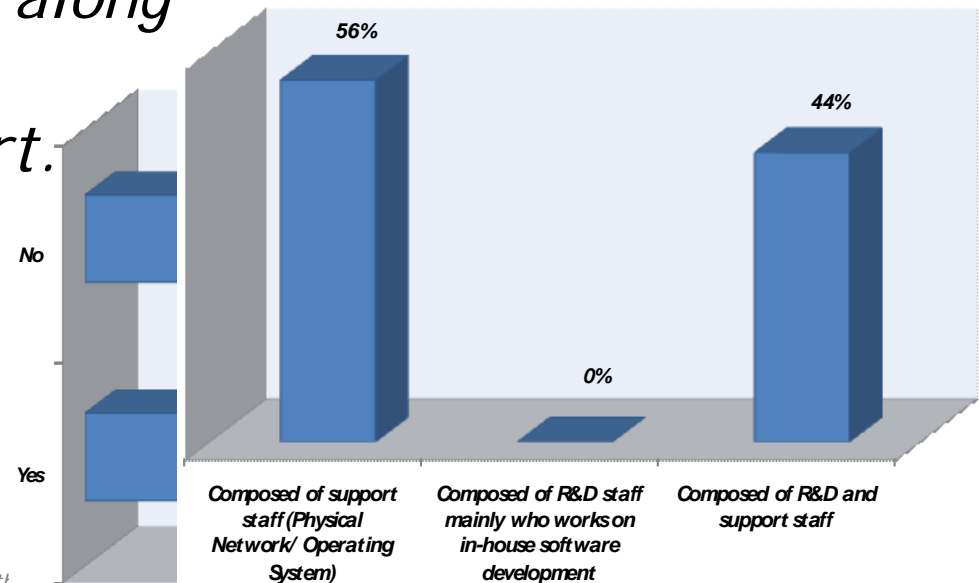
■ ICT knowledge in recruitment?

- *61% indicated high level of ICT knowledge plays an important role for improving employment opportunities.*
- *34% mentioned only certain level of ICT knowledge is required - necessary to complete their tasks.*
- *5% mentioned no importance given to level of ICT knowledge in recruitment.*



Structure of ICT Department

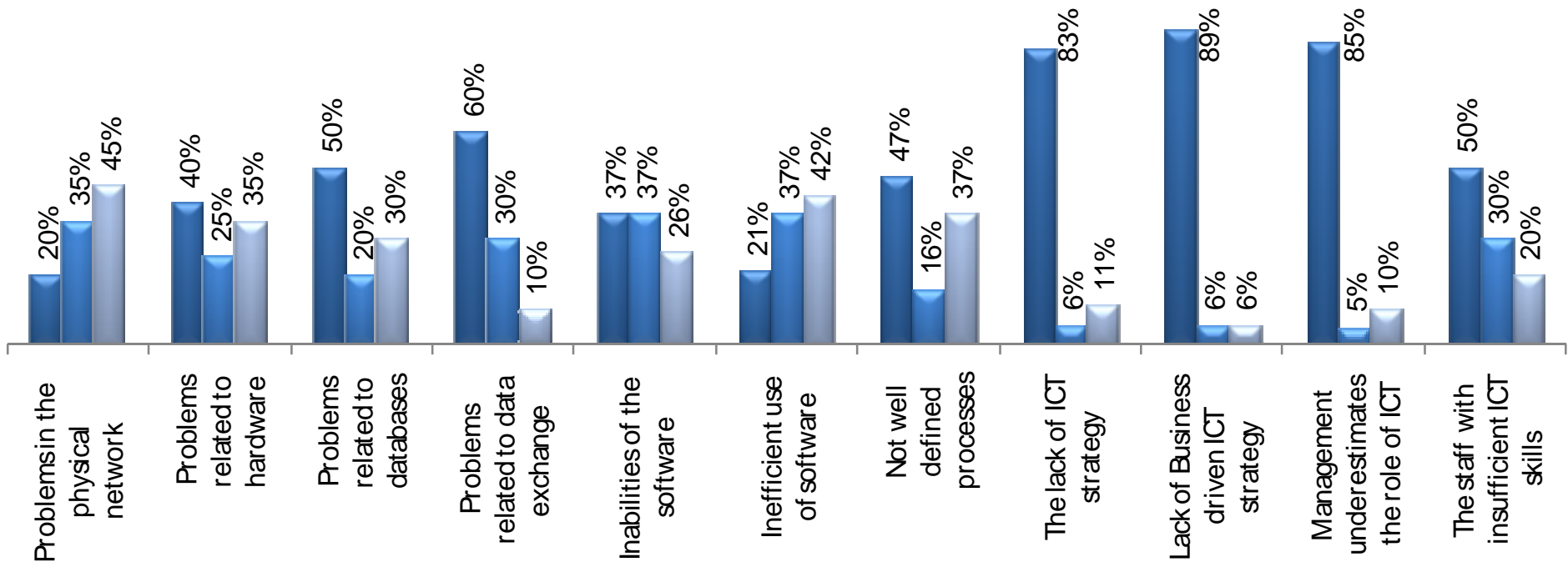
- *86% have an ICT department, while 14% do not have any department dedicated to ICT.*
- *56% of ICT departments consist of only support staff,*
- *Remaining 44% staff responsible for strategy development, systems implementation along with providing technical support.*



Barriers

■ Possible barriers preventing efficient implementation and management of ICT?

- Not a barrier
- A barrier but does not have a direct effect on business processes
- A barrier and have a direct effect on business processes



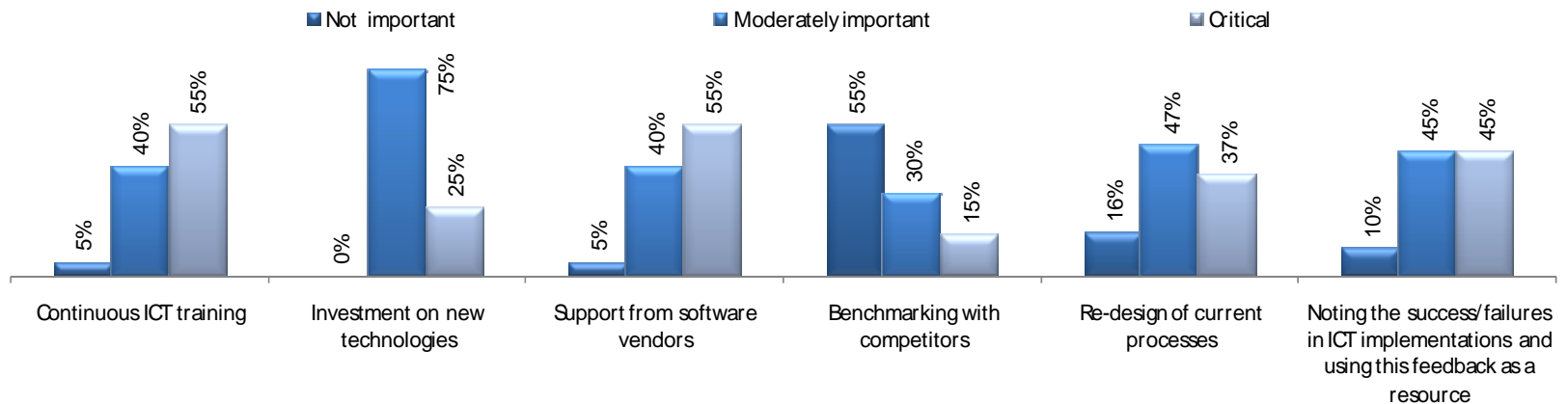
Barriers

■ Factors to efficient implementation and management of IS/IT?

■ *Critical:*

- *continuous training on ICT (55%).*
- *support from software vendors (55%).*
- *re-design/engineering of current processes (37%)*

■ *Important:*



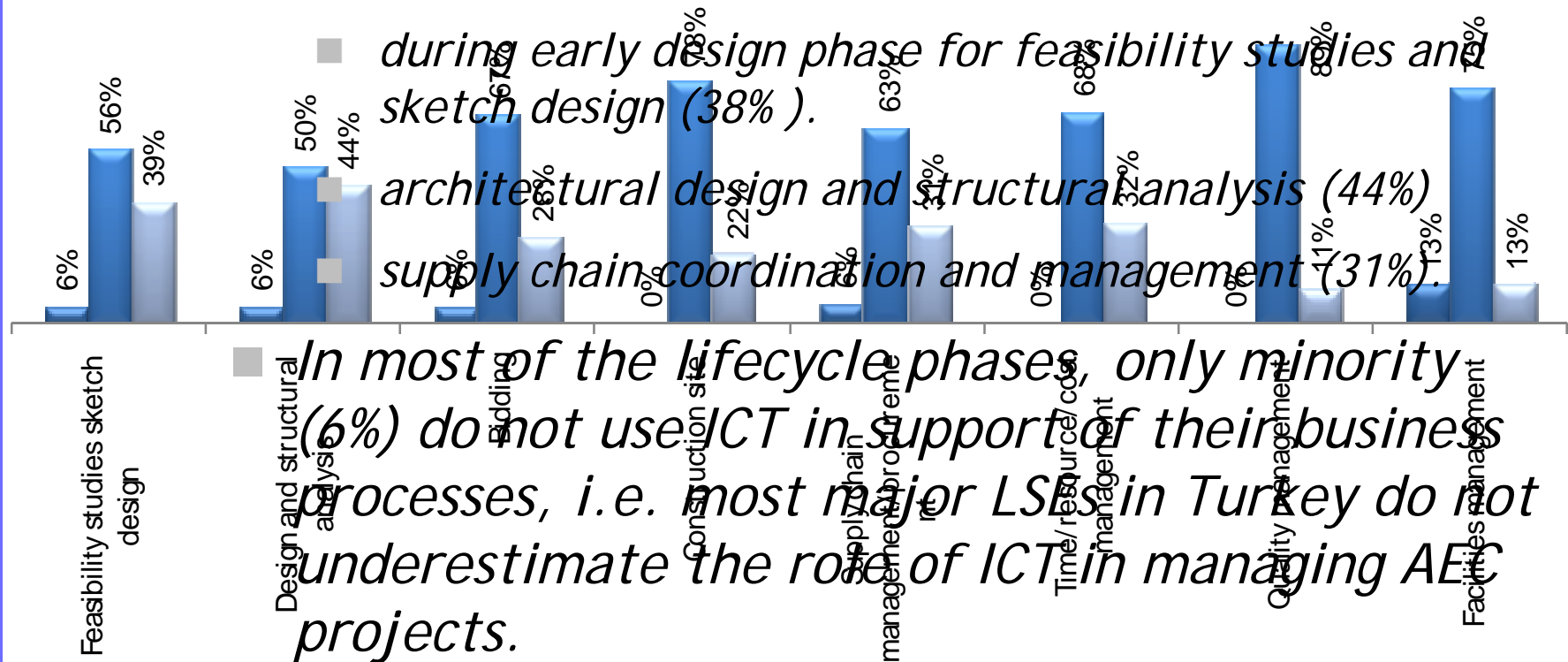
Role of ICT through the Construction Lifecycle

- Majority recognise ICT having supporting role for all lifecycle phases.

Vital: Not needed/used

Supports the process

Vital



during early design phase for feasibility studies and sketch design (38%).

architectural design and structural analysis (44%)

supply chain coordination and management (31%).

In most of the lifecycle phases, only minority (6%) do not use ICT in support of their business processes, i.e. most major LSEs in Turkey do not underestimate the role of ICT in managing AEC projects.

Conclusions

Conclusions

- Shift towards recognition of strategic importance of ICT in terms of value adding in winning work and achieving strategic competitive advantage ...
 - *however, focus of investments very much towards business process improvement.*
- Furthermore, development of a well formulated and documented ICT strategy is not common practice ...
 - *driven by business needs by focusing on technological advancements/developments,*
 - *investments of competitors are of no concern, i.e. pointing towards an internally focused nature to investment.*
- Organisational ICT strategy is being developed by a core/central ICT group/department ...
 - *still driven by operational business processes.*
 - *however, evidence that some ICT departments are influencing the ICT strategic direction of their organisation.*

Conclusions

- Although not regular activity, measuring return on ICT investment is quite evident ...
 - *further demonstrates the valuing of the critical importance of ICT investment to the business.*
- R&D is still not an important strategic activity ...
 - *although significant interest in possibly becoming involved in ICT construction related research.*
- ICT training is evidently important in terms of investment ...
 - *where a dedicated budget for ICT is not provided this does not necessarily mean training is not provided.*

Conclusions

- Main barriers predominantly technological and process related rather than associated to people and strategy.
- Critical success factors on implementing IS/IT very much aligned with barriers ...
 - *continuous training policy*
 - *learning from previous implementation efforts*
 - *re-design-engineering of currently ill-defined processes.*
- Interestingly, benchmarking against other competitor organisations was not identified as important ...
 - *further demonstrates internally focused nature of organisations in their ICT strategy and investments.*

Conclusions

- Overall, ICT is having a supporting role throughout the lifecycle of a facility/project ...
 - *however, ICT is perceived vital particularly during the design phases along with the management of time/cost and the supply chain.*
- In the main, role of ICT is valued in the management of AEC projects in Turkey.