INFORMATION TECHNOLOGY INVESTMENT EVALUATION

An Empirical Study of the Techniques adopted by Commercial Banks in Kenya

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INTRODUCTION

- IT investments have a tremendous impact on firms
- Challenge: How to justify investment into information technology (Fasheng and Teck, 2000).
  - Calculating the ROI on intangible benefits
  - Predicting direct costs of IT investments is difficult
  - There are substantial uncertainties, high risk
  - The political process of evaluation

IT investment evaluation - definition

- "the weighing up process to rationally assess the value of any acquisition of software or hardware which is expected to improve the business value of an organisation's information systems" Grembergen (2001) (pp. 3).

METHODS USED

- Technical arguments very popular
- Expected economic return
- Strategic justification

The Problem

- The productivity paradox – zero correlation between the level of investment in IT and profitability
- Inadequate analysis of potential investments
- How do Kenyan banking institutions evaluate IT investments *ex ante?*

Scope and justification

- **Scope – The banking industry**
  - The most IT intensive industry (Berger, 2003)
- Justification
  - To provide empirical information on contemporary IT project evaluation practices in Kenya.
  - To establish banking industry-wide benchmarks and best practices in IT investment evaluation that can be applied across other service industries
  - Development of evaluation approaches and techniques applicable to the Kenyan business environment

LITERATURE

Analysis of IT investments

- IT capital investments
  - "any acquisition of computer hardware, network facilities, or pre-developed software, or any "in-house" systems development project, that is expected to add to or enhance an organization's information systems capabilities and produce benefits beyond the short term" Bacon (1992) (pp. 335).
- IT investments as capital investments (Ashford, et al., 1988; Bacon (1992; Bharadwaj et al., 1999)

Analysis of IT investments contd

- Managers have often justified IT spending by exemplifying past achievements.
  - IT acquisition – improved firm performance – more IT acquisition
- the "productivity paradox" – zero correlation between the level of investment in IT and profitability (Brynjolfsson and Hitt, 1993)
  - Could it be because of poor appraisal of potential acquisition?
- Characteristics of IT investments: uncertain, interdependent and irreversible (Bardhan, et al., 2004; Xiao-lin, 2006)

LITERATURE REVIEW contd.

- Approaches to IT Investment Evaluation (Irani *et al.,*1997)
  - **The economic (financial) approach**
    - DCF methods, e.g. IRR,NPV, and ratio based techniques e.g. PP, ROI, ROA.
  - **The strategic approach**
    - Technical importance, Competitive advantage, Critical success factors, Application portfolio approach, Risk analysis, Value analysis
  - **The hybrid/ integrated approach**
    - Scenario planning and screening, Information economics, Balanced scorecard
  - **Acts of Faith**

METHODOLOGY

- Survey of 41 commercial banks in Kenya. No sampling technique used
- Questionnaire developed, tested and distributed to the Head of Information Technology in each bank.
- Questionnaire form provided 15 possible IT investment evaluation techniques and a means of indicating whether they are used or not

Response

- Response rate (so far): 25/41, i.e. 61%

Size	Total Assets (in millions)	Percentage
Large	30,001 and above	32%
Medium	6,001 - 30,000	32%
Small	6,000 and below	36%
	TOTAL	100%

- All banks surveyed have a defined process tailored for submitting and screening IT funding proposals for management consideration
- 100% of the banks involve finance and other departments when developing business cases and making decisions for IT

- 33% of banks sometimes overstate the benefits of the IT investment in order to get management support
- 50% are successful in identifying costs and benefits for potential IT projects, 11% are unsuccessful, and 39% are somewhat successful

- 56% of banks surveyed have had at least two (2) IT project failures (failure to meet initially set out objectives, stay on budget, implemented within time)
- The highest project failures occurred among small banks (41%) and least among large banks (25%).

Classification	Appraisal technique
GUT FEELING (Act of Faith)	
ECONOMIC APPROACHES (ratio based)	1. Payback period 2. Return on Investment (ROI) 3. Cost Benefit Analysis (CBA)
(discounting techniques)	4. Net Present Value (NPV) 5. Internal rate of Return (IRR)
STRATEGIC APPROACHES	6. Technical importance (operational functionality) 7. Competitive advantage 8. Critical success factors 9. SWOT analysis 10. Application portfolio approach 11. Risk analysis 12. Value analysis
INTEGRATED APPROACHES	13. Scenario planning and screening 14. Information economics 15. Balanced scorecard

Survey Results

- Usage of given IT Investment Evaluation Approach (popularity)

Classification	% of institutions using the approach
Economic Approaches	**30%**
Strategic Approaches	**49%**
Integrated Approaches	**18%**
Gut feeling	**3%**

- All responding institutions use multiple techniques
- This is indicative of the inadequacy of one approach to justify IT investments. Kaplan (1986) view the adoption of this hybrid strategy as a means of enabling a firm to acquire technology that might have been rejected if only one approach was adopted.

Financial Approaches

Classification	Appraisal technique	% of banks using it
(ratio based)	Cost Benefit Analysis (CBA)	92
	Payback period	64
	Return on Investment (ROI)	64
(discounting techniques)	Net Present Value (NPV)	8
	Internal rate of Return (IRR)	4

Observations on Economic Approaches

- CBA most popular, followed by PP and ROI
- 100% used at least one ratio-based technique, while only 8% used at least one discounted technique
- Discounting techniques found to be complex, as cited in literature as
  - Future cash flows are difficult to determine for NPV, and rate of return compute for IRR

- Small banks focus more on financial approaches than on strategic or integrated approaches

Strategic Approaches

Appraisal technique	% of banks using it
Technical importance	92
Risk analysis	76
Competitive advantage	60
Critical success factors	56
SWOT analysis	44
Value analysis	28
Application portfolio approach	32

Observations on Strategic Approaches

- Most used: Technical capabilities and Risk Analysis
- Least used: value analysis and application portfolio
- Strategic approaches are being used by a higher percentage of medium-sized (40%) banks, as compared to large (30%) and small (28%) banks.

- Medium-sized and small banks are more concerned about competition than large banks.
  - Quest to match the level of service
- Risk analysis is least used by small banks (55%), and high priority in large banks (100%)

Integrated Approaches

Appraisal technique	% of banks using it
Balanced Scorecard	76
Information Economics	28
Scenario Planning and Screening	20

Observations on Integrated Approaches

- Most popular – balanced scorecard
- Integrated approaches are being used by a significantly higher percentage of large (46%) banks, as compared to small (23%) and medium-sized (31%) banks
- Balanced scorecard used by all large banks

Act of faith

Appraisal technique	% of banks using it
Gut feeling	3%

Of the banks that have applied gut instinct when making decisions, 67% are small banks. 0% of large banks have used this 'technique'

Managerial Implications

- The use of multiple techniques reduces the risk of project failure
- IT project failures could be attributed to the lack of diversity of IT investment evaluation techniques adopted.
  - Alshawi *et al*. (2003) argues that the use of financial techniques tends to cause managers to focus on direct cost of the investment, ignoring indirect costs that have far reaching consequences for companies, e.g., the loss of revenue due to insufficiently trained employees.

- Adopting a strategic approach ensures that the IT acquisition is aligned to the overall business strategy, thus improving performance in the long run. To apply strategic approaches, there needs to be an existing IT strategy in which future investments have been forecasted and planned for (Leek, 1997; Cumps, Viaene and Dedene, 2006).

- Caution for medium-sized banks: There's a danger of focusing on external factors (competition) during evaluation, which may distract attention from important internal factors like organisational 'fit' and firm performance

- The limited adoption of integrated approaches may be attributed to their complexity

Challenges to academics

- To develop techniques for IT investment evaluation
- Simplify sophisticated models so they can be easily understood and used in the industry