Aalto University
School of Business

Capital Budgeting (22E12000)

Post-Completion Auditing

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Content

PCA and capital investment process

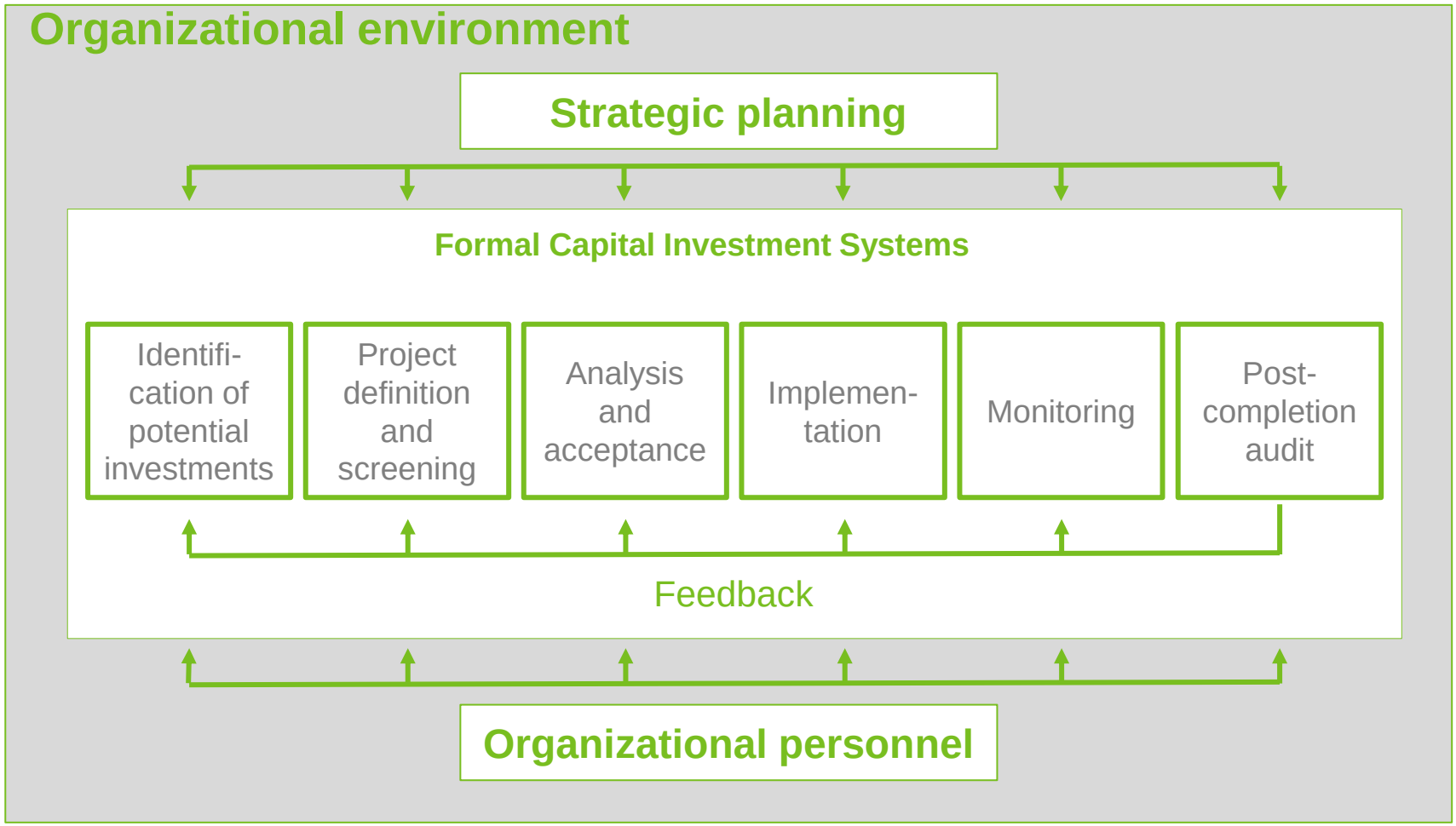
- Definition
- Managerial uses

PCA and organizational learning

- Organizational learning impacts of PCA
- Crucial aspects to consider when designing an OL conducive PCA system
- Favourable environment for PCA
- How to conduct PCA in practice

Key takeaways

Capital Investment Process (Northcott, 1992)



Control Phases in Capital Budgeting Process

Pre-decision control → Monitoring → PCA

Pre-decision control takes place before the final investment decision

To be ensured:

- Strategic fit
- Budget fit
- Appropriateness ensured:
  - Need (expansion, replacement, rationalization, mandatory)
  - Financial targets (NPV, IRR, Payback)
  - Non-financial aspects; Risk analysis
- Organization understands the projects and is committed
- Resources available

Formal approval process

Monitoring (i.e. Implementation phase control)

- Following up cost budget, scheduling, and technical specifications
- To see that they are progressing according to plan
- Before commissioning (i.e., completion of the project)
- Still too early to estimate cash inflows

Post-Completion Auditing (or Post-Auditing) definition (Huikku, 2007)

PCA is a *formal review* of a completed investment project fulfilling the following criteria:

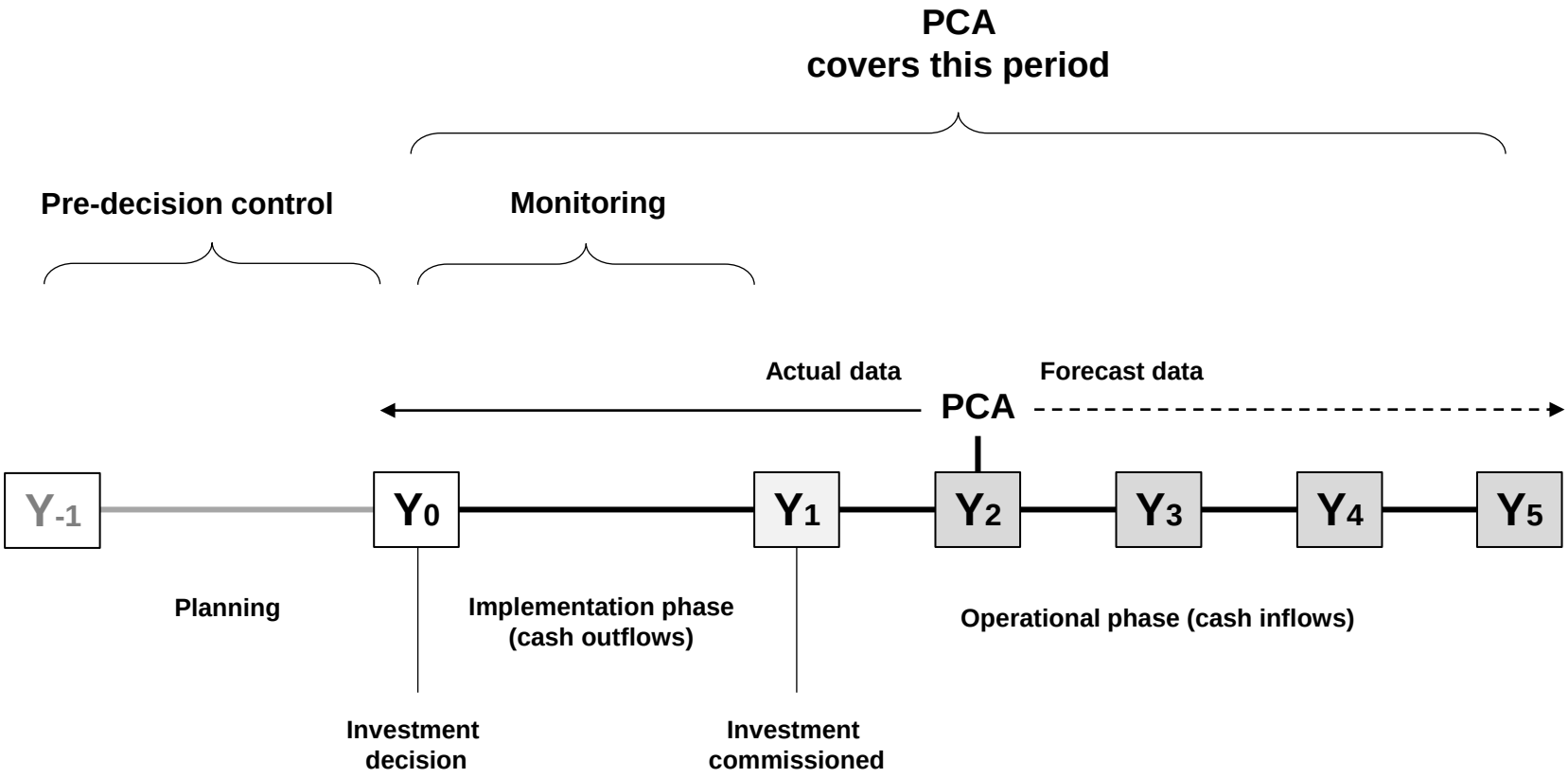
It takes place after an investment has been completed and has begun to generate cash flows (or savings)

Reporting is at least partly focused on comparing the pre-investment estimates of an investment project with actual figures/achievements after completion

Systematic, regular, and instructions exist

This definition rules out e.g., monitoring of ongoing capital investment projects, informal investment control and routine reporting

Control Phases in Capital Budgeting Process



Adoption / Non-adoption of PCA (Huikku, 2007)

Most large companies in the USA and UK conduct PCAs (e.g., Clarke et al., 2015; Lefley 2016, 2019)

In Finland 20 out of the 30 largest manufacturing companies conduct PCA at least to some extent (Huikku, 2011)

Non-adoption among the large companies seems to be related to

- Perceived scarcity of major capital expenditures
- Alternative means to achieve some of the PCA benefits

Managerial Uses of Post-completion Auditing (Huikku, 2008)

Organizational learning (OL) related benefits major benefits from PCA, and Enhancing OL is the primary purpose for conducting it

Accountability-related issues: measuring performance of an investment project, and enhancing the integrity of investment appraisals also common objectives of PCA

PCA's role in **controlling current investments** minor (late timing and alternate control mechanisms)

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Post-completion auditing and Organizational learning

Organizational Learning

”It is a process that involves the sharing of knowledge, beliefs or assumptions among individuals within an organization, and is influences by a broader set of social, political or structural elements” (Marquardt and Reynolds, 1994)

Single-loop vs Double-loop learning (Argyris & Schön, 1978)

Huber (1991): Knowledge acquisition, information distribution and interpretation, and organizational memory

Senge (2006): Learning organization is a company that facilitates the learning of its members and continuously transforms itself

Discussion

Think individually (5 minutes)

-What kinds of mistakes can de done in capital investment?

-Give an example of a failure investment

PCA & Organizational Learning

- PCA has the potential to aid a company to avoid previous mistakes and to systematically identify successful processes that can be repeated

- PCA's role: Facilitates generating and conveying feedback on experiences for development of capital investment

OL Impacts of PCA (1/2) (Huikku, 2008)

- By analysing our mistakes and flaws with the aid of PCA we can generate valuable feedback
- **Feedback for future projects**

"I would say that the value added from PCA comes from transferring learning for future investments. Just to measure what happened does not give you anything. But when we learn and transfer the knowledge. That is the point." (CFO Company A)

  - Insights for planning and implementation phases (App. 3A)
  - Enhanced accuracy of key components in investment calculations (App. 3B)

OL Impacts of PCA (2/2) (Huikku, 2008)

- **Feedback for capital investment process development**
  - Updated and redefined processes
  - Triggers changes for investment manual

"This year we have improved our [investment] processes based on feedback obtained in PCA. We have changed forms, documentation, and processes. I think that these kinds of benefits will more or less disappear when the process finds its optimal form." (Group manager of manufacturing, Company C)

➢ **PCA is likely relevant for process development mainly during the first rounds after its adoption.**

Aspects of PCA Design 1/2 (Huikku, 2011)
(Organizational Learning Perspective)

KNOWLEDGE ACQUISITION	Proposed PCA design
• Selection of projects	-All major projects -Repetitive projects
• Timing	-When settled state achieved -Once vs multiple times
• Persons conducting PCA	-Self-assessment -External parties
• Responsibility for PCA system	-Centralised (headquarters)

Aspects of PCA Design 2/2 (Huikku, 2011) (Organizational Learning Perspective)

INFORMATION DISTRIBUTION & INTERPRETATION	**Proposed PCA design**
• Content of PCA report	-Detailed comparisons of ex ante and ex post calculations -Comments on the achievement of objectives -Lesson learned section
• Communication of results – Presentation forum – Dissemination of final PCA reports	 -Interactive forum -Extensive dissemination
ORGANIZATIONAL MEMORY	
• Archiving/filing of PCA reports	-Database exists -Easy access to database

Favourable environment for PCA

Critical mass (enough investments)

- Especially repetitive and complex investments

Decentralized, global organization

Top management support

- Organizational learning
- Not for detecting failures for blaming purposes

Open organizational culture

How to conduct PCA in practice
Structure of an PCA report (Example)

CONTENTS:

- Background and description of the investment
- Objectives of the investment
- Cost follow-up
- Main steps of the project
- Comparison between planned and actual outcome
- Future outlook for the project
- Experiences and organizational learning
- Summary
- Appendixes

Wrap Up

- Learning outcomes / Key takeaways
  - Feedback PCA can provide for OL purposes
  - Aspects to consider in designing an OL conducive PCA system
  - Under which circumstances it is appropriate to conduct PCA

Appendix 1A.
Lecturer and PCA: Working Experience

Sanitec
Sanitec Corporation

- Leading European multi-brand group that designs, manufactures and markets bathroom ceramics, bath and shower products as well as bathroom furniture
- Net sales amounted to EUR 1000 million, 10,000 employees, and 30 production plants were situated in Europe
- Repeated mistakes in capital investment projects in new projects
- As a Group Business Controller, I was in charge of designing and implementing PCA system for the corporation.
- In addition, later as the Divisional CFO I conducted various PCAs

Appendix 1B.
Lecturer and PCA: Academia

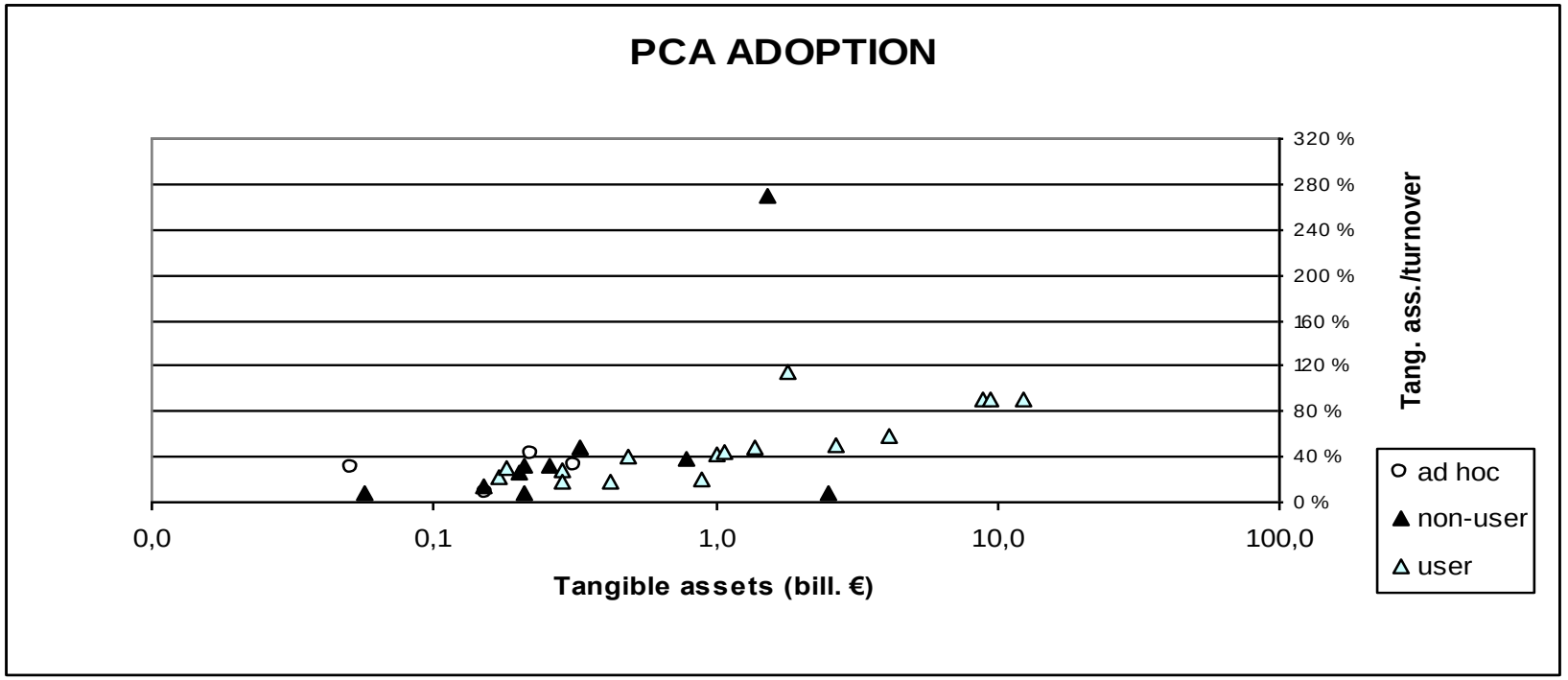
- Theme of the licentiate thesis (1993 – 2001)
- Theme of the doctoral thesis (2003 – 2009)
- Several scientific articles
- Book chapters (in Capital Budgeting Valuation; Wileys and Son & in ForestBioFacts)
- Managerial articles
- Corporate consulting
- Executive education

Appendix 2A.
PCA adopters in Finland (Huikku, 2011)

Table 2. PCA adoption per industry sector

Industry sector	PCA adopters	Ad hoc adopters	Non-adopters	Total no.
Metal	4	0	4	8
Forest	4	0	1	5
Food processing	3	0	1	4
Chemical & Plastics	2	1	0	3
Energy	1	0	1	2
Building material	1	1	0	2
Telecom/Electronics	0	1	1	2
Diversified	0	0	2	2
Others	1	1	0	2
Total	16 (53%)	4 (13%)	10 (34%)	30

Appendix 2B.
PCA Adoption rate seems to be associated with the combination of absolute and relative (% of turnover) capital intensity (Finland)



Appendix 3A.
OL impacts (Huikku, 2008)

The managers refer frequently to PCA's usefulness in providing valuable feedback on managing implementation and start-up:

PCA aids our resource planning. We can better estimate how much resources [money, human resources and time] are required to reach the targets (vice president of operations and sourcing, company 4).

We can transfer experiences about technical operations and suppliers to the next projects (senior vice president, investments, company 1).

This kind of feedback helps us to run the [coming] projects more effectively (director of technical development, company 3).

Appendix 3B.
OL impacts (Huikku, 2008)

The following quotes illustrate what kinds of specific benefits the companies have derived from PCA. **The enhanced accuracy of key components** in investment calculations was typically mentioned as a major benefit:

To enhance realism via organizational learning, yes. When we have more similar cases, bad or good, we are in a better position to use our experience for making more accurate investment proposals (vice president of production, company 12).

Managers have a better understanding about the potential payback of the projects (senior vice president, investments, company 1).

By obtaining concrete evidence about achievability of our targets, the realism of the future calculations is increased (vice president of operations and sourcing, company 4).

Appendix 4.
Other means to manage capital investment knowledge (OL aspect) (Huikku, 2007)

- Experienced persons within the organization connected to new investments
- Utilizing central expertise in the HQs or division
- Going through documentation of the earlier projects
- Discussing with the persons involved in prior projects
- Relying on external suppliers
- Relying on external consultants

Appendix 5. "Non-PCA" ways to evaluate completed investments (Huikku, 2007)

	Way of evaluation	Accomplishment
1.	Capacity utilization	Follow-up of production volume
2.	Other key figures, production	Follow-up of yield, productivity, cost per unit
3.	Sales	Follow-up of sales volume and value
4.	Profit center follow-up	Routine follow-up (e.g. weekly, monthly) of profit centers, big investments as profit centers of their own
5.	Other ways of control	Monitoring of investment projects, profitability analysis per product/product group, contacts with investment sites, presentations and conversations in different forums, transparency (target vs. actual)

Appendix 6A.

Aspects diminishing/increasing room for data manipulation in self-assessment based PCA (Huikku and Lukka, 2016) (1/2)

ASPECTS DIMINISHING MANIPULATON	ASPECTS INCREASING MANIPULATION
PCA project/process-specific characteristics	
Low level of asymmetric information	High level of asymmetric information
Well-performing project	Underperforming project
Major size of an investment (a lot of attention paid)	Minor size of an investment (only little attention paid)
Adequate documentation of ex-ante appraisal material	Inadequate documentation of ex-ante appraisal material
Investment appraisal proposers are aware of coming PCA	Investment appraisal proposers are not aware of coming PCA
Strictly defined template for PCA report	No/loose template for PCA report
PCA conducted multiple times per project	PCA conducted only once per project
Measurability/verifiability of PCA data	
High transparency of achieved objectives	Ambiguous transparency of achieved objectives
High focus on actual figures in ex-post calculations	High focus on updated ex-post calculations
Low focus on textual part of a PCA report	High focus on textual part of a PCA report
Close relation between strategic and PCA figures	Ambiguous relation between strategic and PCA figures
Appropriate other means to control investment projects	Inappropriate other means to control investment projects

Appendix 6B.

Aspects diminishing/increasing room for data manipulation in self-assessment based PCA (Huikku and Lukka, 2016) (2/2)

ASPECTS DIMINISHING MANIPULATON	ASPECTS INCREASING MANIPULATION
Collectivity in constructing PCA reports	
High business area involvement in constructing PCA reports	No business area involvement in constructing PCA reports
High group level involvement in constructing PCA reports	No group level involvement in constructing PCA reports
Well-functioning interactive forum for PCA reviews	Lack of interactive forum for PCA reviews
High role of external experts in estimating strategic prices and volumes	Low role of external experts in estimating strategic prices and volumes
High level of segregation of duties in providing data	Low level of segregation of duties in providing data
High involvement of controllers in providing data	Low involvement of controllers in providing data
Responsibility/controllability	
Low personal responsibility for the negative outcome	High personal responsibility for the negative outcome
Low controllability to factors leading to underperformance	High controllability to factors leading to underperformance

Appendix 6C. Conclusions about the reliability of self-assessment based PCA (Huikku & Lukka, 2016)

Self-assessment based PCA reports are not necessarily unreliable

- Collective process makes reports more “objective”
- A lot of other factors affecting (“ensuring”) the reliability
- Case-specific factors may play a major role

Clear need to modify CIMA’s definition of PCA

Not necessarily required:

“…an objective and independent assessment…”

Appendix 7. References about PCA

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Appendix 8. Master theses about PCA at Aalto Accounting Department

- Heikkilä, L. (2024) A Path to Enriched Organizational Learning via Post-completion Auditing in R&D Investments: A Constructive Study.
- Honkala, T. (2022) Enhancing organizational learning by applying post-completion auditing methods to a construction company's cost control.
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- Kari, T. (2011) Strategisten investointien ei-rahamääräisten hyötyjen toteaminen investointien jälkitarkkailuvaiheessa
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