Cloud Computing & Transaction Cost
TJTSE50 Case analysis
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1. Introduction to Cloud Computing
2. Basics of the Transaction Cost Theory
3. Cloud Computing & Transaction Cost
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References
1. Introduction to Cloud Computing

- A large-scale distributed computing paradigm
- Different?
  1. massively scalable
  2. can be encapsulated as an abstract entity
  3. driven by economies of scale
  4. the services can be dynamically configured & delivered on demand
- Popular?
  1. decrease in hardware cost, increase in computing power
  2. exponentially growing data size
  3. the wide-spread adoption of Service computing and Web 2.0
  (Foster et.al, 2008)
2. Basics of the Transaction Cost Theory

- A framework to evaluate: in-house or outsource?
  - Production vs. transaction cost
  - Internal & external transaction costs
    - IT -> transaction costs have dramatically decreased
    - But contract negotiation & regulation -> transaction costs may increase (Pei et al. 2008)
    - internal transaction cost > external transaction cost
      -> outsourcing (based on TC analysis)

- Underlying assumptions:
  - Firms seek to minimize economic transaction costs
  - Bounded rationality & opportunism
    - Information asymmetry (Auber et al. 2004)
2. Basics of the Transaction Cost Theory

- Transactions costs are determined by (Liu et al. 2008):
  1. Asset specify
  2. Uncertainty
  3. Frequency of occurrence

- IT asset specificity, IT asset uncertainty and internal IT capability -> the scope of IS outsourcing (Pei et al. 2008)
  - If low IT asset specificity and low IT asset uncertainty -> IT outsourcing should be considered?
  - If high IT asset specificity and high IT asset uncertainty -> internal production, no outsourcing?
3.1 Cloud Computing & Transaction Cost

- Cloud Providers must have extremely large and expensive datacenters equipped with perfect network infrastructure.
- **Main operation costs for Cloud providers:**
  - Costs for electricity
  - Cooling costs
  - Labour costs
  - Taxes

  (Armbrust et al., 2009)
3.2 Cloud Computing & Transaction Cost

- Cloud user (or SaaS provider) can reduce following (Transaction) costs:
  - Pay only for those services and licenses which are really used
  - Software installation and maintenance costs are lowered (version updating is easy)
  - No need to invest in hardware (datacenters etc...)
    - Risks are moved to Cloud providers
    - If bandwidth of infrastructure is not good enough there may be problems with application speed

(Armbrust et al., 2009)
4. Cases / examples

Cloud providers:
- Amazon Elastic Compute Cloud (Amazon EC2 is a web service that provides resizable compute capacity in the cloud.)
- Salesforce.com (Cloud platform for business applications)
- Google App Engine (Platform for web applications)
- Windows Azure Platform (Environment for developers to create cloud applications and services) (Armbrust et al., 2009)

Cloud applications:
- Antivirus programs from F-Secure, McAfee, Norton and Panda (Mikrobitti 1/2010)
- Google applications like Gmail, Google Calendar and Docs (www.wikipedia.org)
5. Conclusion

- Large-scale distributed computing paradigm
- Transaction costs theory is a framework to evaluate whether to produce in-house or outsource
  - IT asset specificity & IT asset uncertainty + internal IT capability -> the scope of IT outsourcing
- Cloud provider -> maintaining and hardware costs
- Cloud user -> pays only for cloud services
References

- Mikrobitti -tietotekniikan lehti 1/2010