

Transaction Cost Leveling to Reduce Incumbent's Difficulty in Innovation: A Heuristic Approach through Critical Review

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The Idea in Brief

- Incumbent's difficulty – Extant frameworks attempt to identify disruptive, architectural or discontinuous innovation – the problem is one of will and resource allocation rather than competence (Christensen, et al. 1996, 1997, 2003; Henderson & Clark, 1990)
- We propose an alternative approach, based on TCE, to reduce incumbent's difficulty (in creating the will)
- We define transaction cost levelling (TCL) as the process of minimising the difference in transaction costs between different innovation-options available to a firm
- Depressed transaction cost reference --> Differential TC
- Five postulates

Motivation

- The central theme of disruptive innovation is Innovator's dilemma
- Williamson (1981): Power theories have overshadowed efficiency theories
- Teece 2010: Argues for complementing power and efficiency theories
- Gap in research literature

Importance

- Better understanding of the phenomenon
- Creating innovative capability in firms
- Fostering intrapreneurship
- Public policy to stimulate innovation

Structure of the paper

- Ongoing research, gap and alternative approach
- The phenomenon of Incumbent's difficulty
- Transaction Cost Economics (TCE)
- TCE applied to innovation - five postulates
- Discussions, Scope for further research, Conclusion
- References

The phenomenon - Incumbent's difficulty

- Abernathy and Utterback (1978) - incremental Vs radical
- Foster (1986) - attacker's adv; need to cannibalize
- Tushman and Anderson (1986) - competence-enhancing / competence-destroying, locus of innovation
- Henderson and Clark (1990) - architectural innovation
- Bower & Christensen (1995) - disruption, perf. trajectory
- Christensen, et al. (1996, 1997, 2000, 2003)
- Low-end, new market, high-end disruptions

Incumbent's difficulty is the
common thread
connecting
low-market / new-market / high-
market
disruptive, architectural,
competence-destroying, or
radical innovations

Transaction Cost Economics

- Commons - Coase – Hayek – Williamson - North
- Critical dimensions - frequency, uncertainty, asset specificity (Williamson, 1979, 1981) - we consider mainly uncertainty and asset specificity - repetitive transactions
- Asset specificity --> ex-post dependency, holdup, opportunistic behaviour (North, 1996)
- Asset specificity - site, physical, temporal, human assets
- Contractual hazards through weak property rights, undisclosed quality issues, information asymmetries etc.

Transaction Cost Economics (contd.)

- Williamson's behavioural assumptions: human beings are subject to
 - Bounded rationality
 - Opportunism
- Langlois (1992): dynamic nature of transaction costs
 - TC arises from technological or organizational changes
 - TC reduces with time and stability

TCE dimensions of Incumbent's difficulty

- Filtering out of information related to the emerging tech (Henderson & Clark, 1990), increasing uncertainties
- Opportunist behavior by customers layer by layer (Bower & Christensen, 1995)
- Bounded rationality of the managers of the established company who were intendedly rational when they listened to their customers (Christensen & Bower, 1996), but bounded by their channels, filters and strategies (Henderson & Clark, 1990) in processing information and taking decisions
- Uncertainties related to the new technology and the appropriability of benefits (Teece, 1986)
- New asset specificities, unclear property rights, information asymmetries (Teece, 1986)

Five Postulates

Postulate 1: Transaction cost attributes associated with the building blocks of innovation create transaction cost differentials between the incumbent's innovation options

Postulate 2: Incumbent's preference to sustaining innovation leaves disruptive innovation an attractive option to new entrants indifferent to transaction costs

Postulate 3: Incumbent pursuing low transaction cost avoids investing in the pre-paradigmatic phase of a disruptive innovation and finds it hard to own a dominant design

Five Postulates (contd.)

Postulate 4: Declining transaction costs confer subsequent advantage to the new entrant

Postulate 5: Mainstream markets switch to disruptive innovation when their transaction costs related to such innovation fall to levels comparable to that of existing art

Postulate 1: Transaction cost attributes associated with the building blocks of innovation create transaction cost differentials between the incumbent's innovation options.

- Teece, 1986: Building blocks of innovation
 - Appropriability regime
 - Dominant design paradigm
 - Complementary assets
- Over time, TC gets depressed, creating a TC reference level and hence a TC differential between options

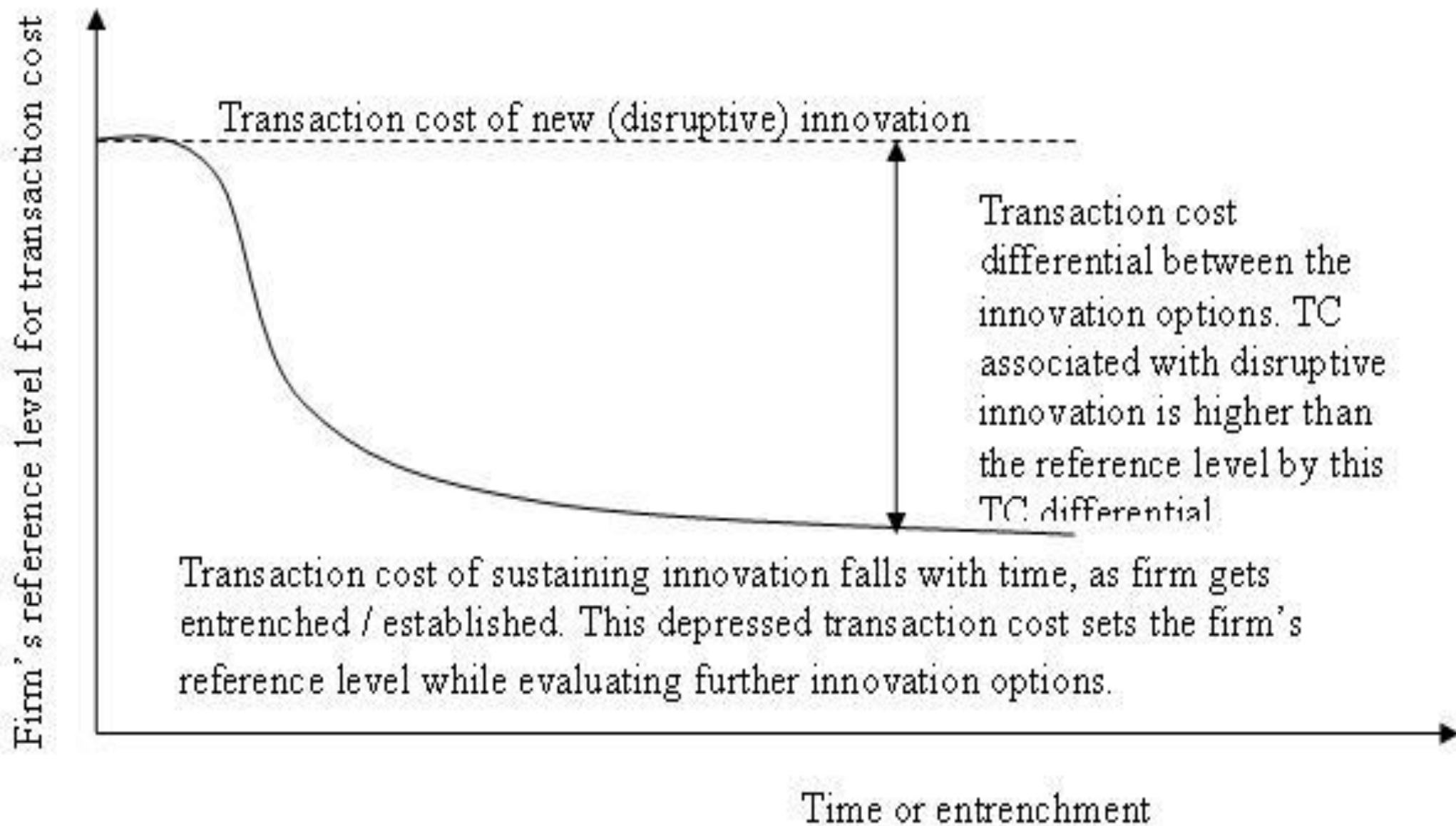


Fig 1. Firm's reference level for transaction cost reduces over time creating a transaction cost differential between innovation options

Postulate 2: Incumbent's preference to sustaining innovation leaves disruptive innovation an attractive option to new entrants indifferent to transaction costs

| | Known markets, new technology options | Known technology, new market options |
|-------------|--|--|
| Incumbent | Low transaction cost Firm has the will to pursue | High transaction cost Firm has very little will to pursue |
| New Entrant | High transaction cost, but firm indifferent. High competition from established players Firm may not pursue | High transaction cost, but firm indifferent. Low competition from established players. Firm may want to pursue |

Fig 2. Incumbent pursues low transaction cost options leaving high transaction cost options to new entrants.

Postulate 3: Incumbent pursuing low transaction cost avoids investing in the pre-paradigmatic phase of a disruptive innovation and finds it hard to own a dominant design

- Dominant Design Paradigm (DDP) has two phases - pre-paradigmatic and paradigmatic (Teece, 1986)
- High transaction costs are associated with the first - hence incumbent responds with sustaining innovation (Christensen, et al. 1996), shying away from investing in the first phase
- Dominant design evolves as pre-paradigmatic phase ends
- Incumbent fails to own a dominant design --> followership
- Followership is inferior to leadership in disruptive innovation (Christensen, 1997) for gaining market share

Postulate 4: Declining transaction costs confer subsequent advantage to the new entrant

- New entrants enter with a transaction cost disadvantage and hence build competitive advantage in other areas - operations, features, flexibility, customer intimacy etc.
- As transaction costs decline, the above advantage creates superiority for the entrant over the incumbent
- E.g.: Southwest Airlines carried their advantage from Texas to California and other routes, driving out competition

Postulate 5: Mainstream markets switch to disruptive innovation when their transaction costs related to such innovation fall to levels comparable to that of the existing art

- An incumbent's need to take customers along with it as it moves to a new paradigm, restricts its ability to switch
- But this is less so for customers: they will be able to switch when the TC of the new relationship becomes comparable to that of the existing one
- Christensen, et al. (2002): Successive layers of customer groups switch as a disruptive technology meets, progressively, the dimensions of functionality, reliability, speed, flexibility, and customization

Discussions, scope for further research

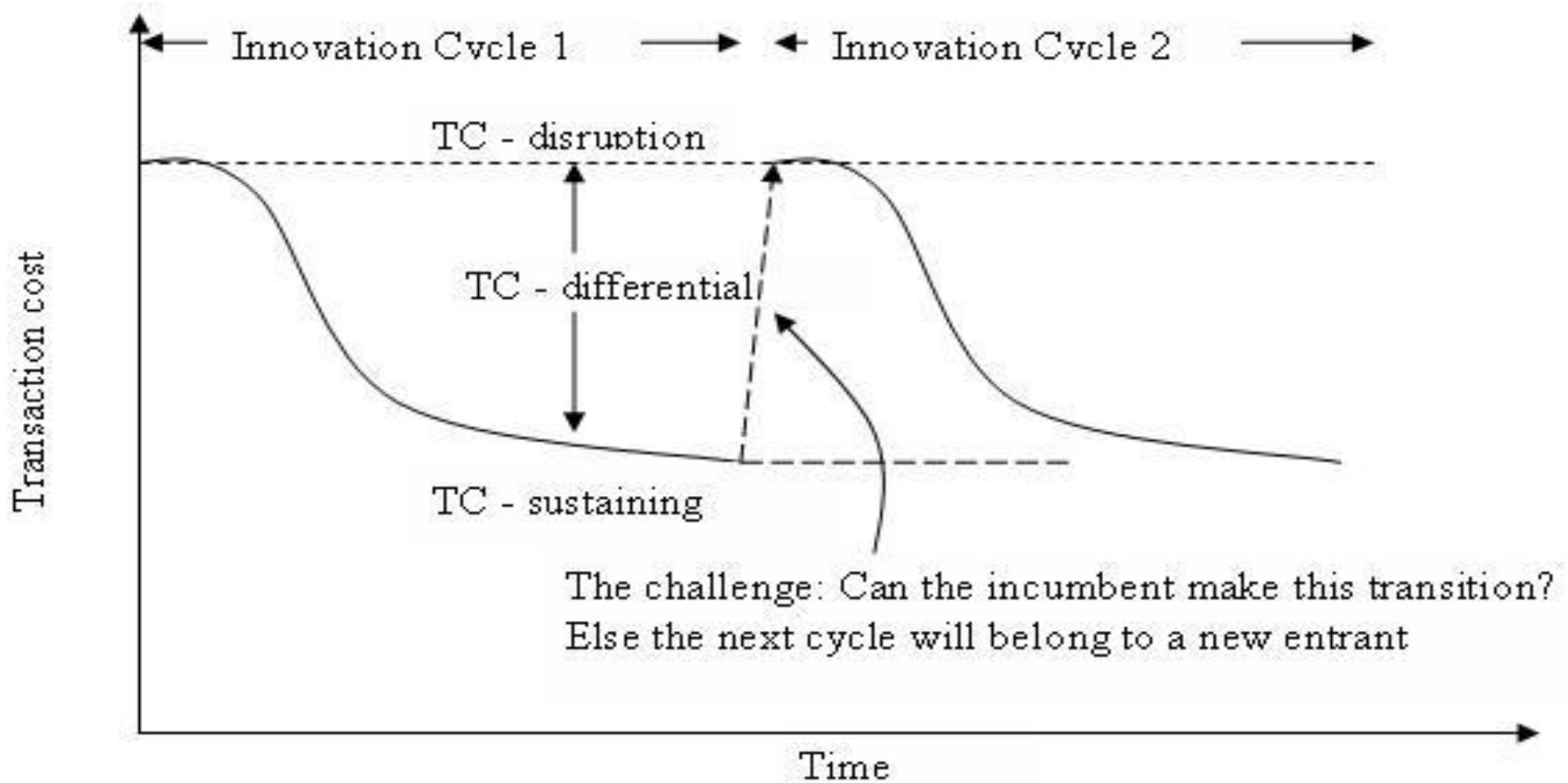


Fig 3. Transaction costs related to innovation cycles

Challenges - opportunities for research

- Effecting the transition
 - Keep differential low - Internal and external actions
 - Account for the differential

- Two TC regimes concurrently for a certain period
 - Standalone external organization
 - Acquisitions (Avoid post-acquisition integration)

Achieving Transaction Cost Leveling

Raise the reference level (TC-Sustaining) and simultaneously lower TC-Disruptive, so that differential is reduced

A low TC-sustaining is like a cohesive force, preventing reconfiguration, while a low TC-disruptive is like an adhesive force enabling reconfiguration

Former favours integration, and the latter disintegration

For ease of reconfiguration (innovation), firms must stay close to the integration - disintegration equilibrium, i.e. they should avoid too much of integration and disintegration - appropriate level of outsourcing, agile networks, diversity in customer base..

Achieving Transaction Cost Leveling

- Pro-active exploration (tiger teams of Electronic Arts) to take an early dip in future technology options
- Ambidexterity as a dynamic capability -O'Reilly & Tushman, 2008
- Institutional arrangements, public policy, industry initiatives
- Incubators, science and technology parks

Conclusion

- This paper has introduced the concept of transaction cost levelling (TCL) as an alternative or complementary approach to reduce the incumbent's difficulty in innovation and has proposed several postulates.
- It has provided useful insights for business units, industry, institutions and government to understand why incumbents face certain difficulties in achieving innovations of a breakthrough nature.
- Scope exists for further research on how to realise transaction cost levelling and to seek empirical evidence.

Thank you!

Partial Bibliography

- Abernathy, W.J. & Utterback, J.M. (1978). Patterns of industrial innovation. *Technology Review*, 80(7), 40-47.
- Bower, J.L. & Christensen, C.M. (1995). Disruptive technologies: Catching the wave. *Harvard Business Review*, 71(1), 43-53.
- Christensen, C.M. & Bower, J.L. (1996). Customer power, strategic investment, and the failure of leading firms. *Strategic Management Journal*, 17, 197-218.
- Christensen, C.M. (1997). *The Innovators Dilemma.. When New Technologies Cause Great Firms to Fail*. Boston, MA: Harvard Business School Press.
- Christensen, C.M. & Overdorf, M. (2000). Meeting the challenge of disruptive innovation. *Harvard Business Review*, 78(2), 67-76.
- Christensen, C. M., Craig, T., & Hart, S. (2001), *The Great Disruption*. *Foreign Affairs*, 80(2), 80-95.

- Christensen, C.M., Verlinden, M. & Westerman, G. (2002). Disruption, disintegration and the dissipation of differentiability. *Industrial and Corporate Change*, 11(5), 955-993.
- Christensen, C.M. and Raynor, M.E. (2003). *The Innovators Solution.. Creating and Sustaining Successful Growth*. Boston, MA: Harvard Business School Press.
- Coase, R.H. (1937). The nature of the firm. *Economica*, New Series, 4(16), 386-405.
- Commons, J.R. (1934). *Institutional Economics*. Madison: University of Wisconsin Press.
- Dujarric, R. & Hagi, A. (2009). Capitalizing on innovation: The case of Japan. Working paper # 09-114, Harvard Business School.
- Fine, C. H. & Whitney, D.E. (1996). Is the make-buy decision process a core competence? Working paper #140-96, Sloan School of Management, 3875-96.

- Foster, R.N. (1986). *Innovation: The attackers advantage*. New York: Summit Books.
- Hayek, F. (1945). The use of knowledge in society. *American Economic Review*. 35(4), 519-530.
- Henderson, R.M. & Clark, K.B. (1990). Architectural innovation: The reconfiguration of existing product technologies and the failure of established firms. *Administrative Science Quarterly*, 35, 9-30
- Hill, C.W.L. (1995). National institutional structures, transaction cost economizing and competitive advantage: The case of Japan. *Organization Science*, 6(1), 119-131.
- Langlois, R.N. (1992). Transaction cost economics in real time. *Industrial and Corporate Change*, 1(1), 99-127.
- North, D. C. (1996), "Institution, Organizations, and Market Competition," keynote address to the Sixth Conference of the International Joseph Schumpeter Society, Stockholm, 2-5 June

- Teece, D. J. (2010b). Forward Integration and Innovation: Transaction Costs and Beyond. *Journal of Retailing*, 86(3), 277-283.
- Tushman, M.L. & Anderson, P. (1986). Technological discontinuities and organizational environments. *Administrative Science Quarterly*, 31(3), 439-65.
- Williamson, O.E. (1975). *Markets and Hierarchies*. New York: The Free Press.
- Williamson, O.E. (1979). Transaction Cost Economics: The governance of contractual relations. *Journal of Law and Economics*, 22, 233-261.
- Williamson, O.E. (1981). The economics of organization: The transaction cost approach. *The American Journal of Sociology*, 87(3), 548-77.
- Williamson, O.E. (1985). *The Economic Institutions of Capitalism*. New York: The Free Press.
- Williamson, O.E. (2000). The New Institutional Economics: Taking stock, looking ahead. *Journal of Economic Literature*, XXXVIII, 595-613.
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