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## The Development and Application of Transaction Cost Economics in Taiwan

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**Abstract.** This study collected 89 papers related to transaction cost theory published between 1992 and 2013 from 19 journals in the Taiwan Social Sciences Citation Index database, and used bibliometrics and network analysis to examine the theory's applications and development. The results show that the theory has mostly been applied in studies on technology management, transaction information, stocks/foreign exchange/investment, business transfers, strategies, opportunistic behaviors, performance, theoretical integration, human resources, relations, knowledge management, and consumer behaviors. Of these topics, strategies had the most samples; followed by stocks/foreign exchange/investment, which accounted for 19.10% of the total; followed by relations, with 17.98%; and technology management, with 11.24%. The greatest numbers of publications were observed in 1997 and 2007. Connections between the authors appeared to be weak and cross-referencing was rare. Apparently, more time is required for the formation of a research community with strong coherence and knowledge integration capabilities.

**Keywords.** Bibliometrics, Network analysis, Transaction cost theory.

**JEL.** M10, L33, L52.

### 1. Introduction

The development of transaction cost theory can be traced back to the transaction cost economics proposed by Coase in 1937, constructed on the fundamental assumptions of "limited rationality" and "opportunistic behavior." Later, a number of studies published by Williamson since 1975 have enabled the theory to evolve into a widely known management theory that has seen applications in the research costs, communication, negotiation, consultation, contracting, supervision, control, and administration that are involved in transaction processes (Huang, Y.T., 2002; Hung, *et al.*, 2004). The magnitude of transaction costs will determine the organizational structure and management strategies an organization adopts to minimize transaction costs (Chuang, *et al.*, 2005). Thus, transaction cost theory has become the most cited theory in studies of interorganizational relationships (Geyskens, Steenkamp, & Kumar, 2006).

Among business administration researchers in Taiwan, transaction cost theory is also one of the most widely adopted organizational theories; it has been applied in areas such as strategic management, organizational theories, marketing, technology management, and international business administration. However, as the theory gradually attains maturity, its development has also slowly entered into a bottleneck. Meanwhile, a structured analysis of the theory through literature

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reviews is imperative to deconstruct the theory's status and development in Taiwan and thereby inspire future researchers.

For this reason, the present study relied on the Taiwan Social Sciences Citation Index (TSSCI) database of management journals as a source for the application of transaction cost theory in management science. The scope of the search encompassed related studies published between 1992 and 2013, from which the various links between the communities in which the theory was applied and the authors who took part in dialogue on the theory were examined, to understand the theory's application and development in management science.

### 2. Theoretical Overview

Transaction cost theory was first proposed by the British economist Coase in his 1937 article on transaction costs, in which he used "transaction" as unit of analysis. In Coase's concept, transaction costs are the costs of accurate market information and negotiations and standing contracts; for example, the costs of research, negotiations, contracting, supervision of compliance, and breach of contract. The theory is built on two fundamental assumptions: limited rationality and opportunistic behavior. Limited rationality refers to how people's capabilities are restricted in an environment full of uncertainties, and opportunistic behavior refers to how people's pursuit of self-interest can enhance the effect of information asymmetry. Thus, information asymmetry and asset specificity are common in the environment where a transaction takes place, and they can have a substantial impact on the costs of the transaction (Wang, Tai, & Wang, 2004; Fang & Fang, 2002).

In 1975, Williamson divided transaction costs into six major categories: search, information, bargaining, decision, policing, and enforcement costs. Later, in 1985, he further divided transaction costs into pretransaction and posttransaction costs; the former include contracting, negotiation, and enforcement costs, and the latter include adaptive, bargaining, construction and operational, and closing costs (Li, Ku, & Lu, 2013).

Lin (2007) inferred from related literature that the uncertainties addressed in transaction cost theory incur a sense of insecurity in the market, which becomes the source of numerous transaction cost problems. Rapid advancement in technology also increases uncertainty in research and development, escalating the pressure in collaborations with downstream vendors. For example, unpredictable situations that cannot be specified in contracts can cause one of the parties involved to pursue self-interest at the expense of the other party or parties, resulting in adverse decisions and moral hazards.

Transaction cost theory is a paradigm of the new institutional economics that is gradually superseding neoclassical economics. The theory views corporations as governance structures; specifically, Coase asserts that under certain conditions, the costs of economic exchanges in the market can be higher than those for intracorporate exchanges, in which case the transaction costs are the costs of running the system that include pretransaction and posttransaction costs (Rindfleisch & Heide, 1997).

Since its inception, transaction cost theory has evolved into one of the most influential theories for the interpretation of decision-making at organizational boundaries. Although it initially did not receive much support, through continuous correction and expansion it has become a novel theory with much empirical discourse. Coase argues that the market and hierarchical organizations can be regarded as alternative governance structures, and the choices made by the market and hierarchical organizations can vary owing to their respective transaction costs (Geyskens, Steenkamp, & Kumar, 2006).

### 3. Methodology

The present study drew its samples, which were studies on the managerial applications of transaction cost theory, from 19 journals (Table 1) in the TSSCI database. The samples were collected by searching the papers that were published between 1992 and 2013, and had the term “transaction cost” in their titles, keywords, or abstracts. The contents of the Airiti Library, National Central Library, and the official websites of the journals were cross-searched, eventually resulting in 89 qualified papers. Then, bibliometrics and network analysis were applied to investigate the development of transaction cost theory.

**Table 1.** *Journals in the TSSCI Database*

Number	Journal Title
1	<i>Asia Pacific Management Review</i>
2	<i>International Journal of Information and Management Sciences</i>
3	<i>Journal of Human Resource Management</i>
4	<i>Journal of Industrial and Production Engineering</i>
5	<i>Sun Yat-Sen Management Review</i>
6	<i>Chiao Da Management Review</i>
7	<i>Journal of Technology Management</i>
8	<i>Journal of Financial Studies</i>
9	<i>Industry and Management Forum</i>
10	<i>Organization and Management</i>
11	<i>Journal of Futures and Options</i>
12	<i>Journal of Accounting Review</i>
13	<i>Journal of Information Management</i>
14	<i>Journal of e-Business</i>
15	<i>Management Review</i>
16	<i>Journal of Management &amp; Systems</i>
17	<i>Journal of Management</i>
18	<i>NTU Management Review</i>
19	<i>Review of Securities and Futures Markets</i>

#### 3.1. Bibliometrics

The sample collection method produced 93 samples, of which 89 were eventually included after irrelevant ones were excluded. The structural characteristics of the samples were as shown in Table 2, which reveals that of the 19 management journals in the TSSCI database, 12 contained papers on the applications of transactional cost theory and 7 did not (the *International Journal of Information and Management Sciences*, *Journal of Industrial and Production Engineering*, *Journal of Financial Studies*, *Industry and Management Forum*, *Journal of Futures and Options*, *Journal of Accounting Review*, and *Review of Securities and Futures Markets*). Judging from the titles of these journals, the discourse in engineering, finance, and accounting studies rarely involves transaction cost theory.

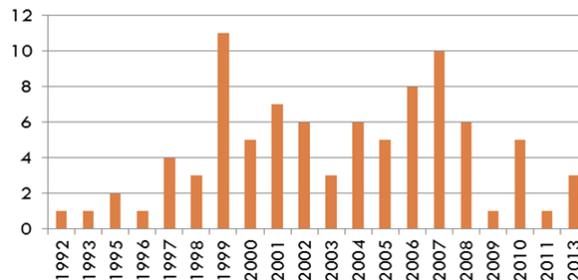
The 12 journals containing samples related to transactional cost theory were then further categorized into general management, information management, and human resources journals. The general management journals were the *Sun Yat-Sen Management Review*, *Management Review*, *Journal of Management*, *NTU Management Review*, *Journal of Management & Systems*, *Journal of Technology Management*, *Asia Pacific Management Review*, *Chiao Da Management Review*, and *Organization and Management*; the informational management journals were the *Journal of Information Management* and *Journal of e-Business*; and the human resources journal was the *Journal of Human Resource Management*. Of these journals, the *Sun Yat-Sen Management Review* contained 16 (17.98%) out of the 89 sample papers, which was the most numerous among the 12; it was followed by the *Management Review*, which contained 14 (15.73%) of the papers, and the *Journal of Management* and *Journal of Information Management*, each containing 11 (12.36%) of the papers. The *NTU Management Review* came in fifth, containing 8 (8.99%) of the papers.

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**Table 2. Structural Characteristics of the Sample Papers**

Serial	Discipline	Journal title	No. of papers	Percentage
1	General Management	<i>Sun Yat-Sen Management Review</i>	16	17.98%
2	General Management	<i>Management Review</i>	14	15.73%
3	General Management	<i>Journal of Management</i>	11	12.36%
4	Information Management	<i>Journal of Information Management</i>	11	12.36%
5	General Management	<i>NTU Management Review</i>	8	8.99%
6	General Management	<i>Journal of Management &amp; Systems</i>	7	7.87%
7	General Management	<i>Journal of Technology Management</i>	6	6.74%
8	General Management	<i>Asia Pacific Management Review</i>	5	5.62%
9	Information Management	<i>Journal of e-Business</i>	4	4.49%
10	General Management	<i>Chiao Da Management Review</i>	3	3.37%
11	Human Resources	<i>Journal of Human Resource Management</i>	3	3.37%
12	General Management	<i>Organization and Management</i>	1	1.12%
Total			89	100.00%

According to Figure 1, which shows the numbers of papers involving the transaction cost theory published between 1992 and 2013, 1999 had the greatest number of samples (11 samples; 12.36%), followed by 2007 (10 samples; 11.24%), and 2006 (8 samples; 8.99%). Although the numbers seem have declined in the past 5 years, a sample from 2013 focused on mergers, acquisitions, market efficiency, and a reflection on relevant theories, which may be of use to researchers who are interested in transaction cost theory.



**Figure 1. Number of Papers Published Each Year**

The present study divided the 89 sample papers into 12 categories according to their specific topics (Table 3): technology management, transaction information, stocks/foreign exchange/investment, business transfers, strategies, opportunistic behaviors, performance, theoretical integration, human resources, relations, knowledge management, and consumer behaviors. Of these 12 categories, strategies contained the most samples, constituting 25.81% of the total; followed by stocks/foreign exchange/investment, which constituted 19.10%; then by relations, at 17.98%; and then by technology management, at 11.24%.

**Table 3. Categorization of Sample Papers**

Specific Topics	No. of Papers	Percentage
Strategies	23	25.84%
Stocks/foreign exchange/investment	17	19.10%
Relations	16	17.98%
Technology management	10	11.24%
Theoretical integrations	5	5.62%
Consumer behaviors	5	5.62%
Business transfers	3	3.37%
Human resources	3	3.37%
Knowledge management	3	3.37%
Performance	2	2.25%
Transaction information	1	1.12%
Opportunistic behaviors	1	1.12%
Total	89	100.00%

This study found that among the sample papers, cross-referencing was rare, and the most-cited paper was cited only three times. Most of the sample papers cited foreign sources, and few cited domestic ones.

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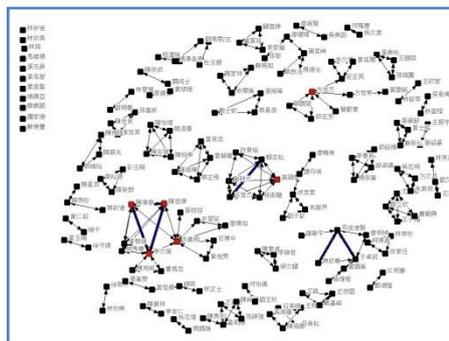
**Table 4.** Number of Times Each Sample Paper Was Cited

PID	Title	Number of Times
60	Yeh, K.S., Tsai, S.D., & Chow, T.K. (1993). Development strategies for strategic alliances: a transaction cost perspective. <i>Management Review</i> , 12, 99–117.	3
55	Chuang, C.M. & Fang, S.J. (2001). Choice of mode, the determinants, and the learning performance of international technology acquisition: a synthesis of transaction cost economics and a knowledge-based view. <i>Management Review</i> , 20(1), 35–64.	2
72	Wang, T.G. (1999). Factors affecting software outsourcing effectiveness: reputation, transaction attributes, social relationship, and service quality. <i>Journal of Management</i> , 16(1), 69–99.	2
4	Fang, S.J. & Tzeng, S.H. (1999). The study of the firm's participation in the R&D consortia: the types of motivation and its performances. <i>Asia Pacific Management Review</i> , 4(1), 63–77.	1
8	Huang, Y.T. (2002). A synthesis of transaction cost and organizational competence perspectives of the firms. <i>Sun Yat-Sen Management Review</i> , 10(2), 261–289.	1
10	Luo, J.D. (1997). The advantage of network organizations in Silicon Valley. <i>Sun Yat-Sen Management Review</i> , 5(2), 287–314.	1
47	Hung, K.P., Hwang, S.N., & Shih, S. (2004). Study on electronic integration and its antecedents: cases of Taiwanese semiconductor and information firms. <i>Journal of e-Business</i> , 6(1), 75–99.	1
69	Chou, H.C. & Tu, Y.C. (2005). Arbitrage efficiency tests of the TAIEX index option market. <i>Journal of Management &amp; Systems</i> , 12(3), 1–26.	1
71	Fang, S.J. (1999). Technology acquisition modes and performance—an empirical study of the electronics industry. <i>Journal of Management</i> , 16(1), 151–174.	1
91	Lee, W.R, Chao, W.C., & Chen, S.M. (2001). Critical influencing factor of entry mode of Taiwanese SMEs in Mainland China. <i>Sun Yat-Sen Management Review</i> , 9(1), 61–86.	1

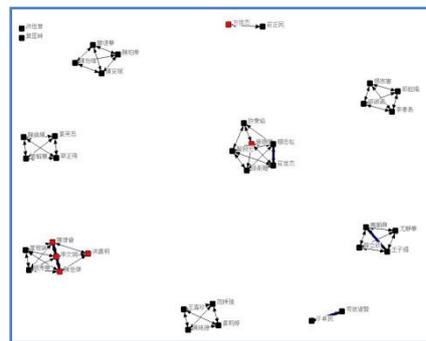
### 3.2. Network analysis

A network analysis was conducted to present the relationships between the authors of the sample papers in two-dimensional diagrams, so as to reflect the connections between the authors and the strength of these connections (Lin & Cheng, 2012).

In Figure 2, which shows the overall relationship network of the authors, the connections between clusters seem to be weak, indicating that researchers of transaction cost theory in Taiwan have yet to form a community; instead, they appear to work in teams headed by several major authors and have little connection with other teams. Figures 3 and 4 suggest that far fewer teams have more than five coauthors than have more than three coauthors, possibly because if there are many coauthors, the delegation of responsibilities, communication, and reaching a consensus becomes complicated. Figures 5 and 6 reveal that key authors and bridging authors have mostly been teams of colleagues or professors and students.



**Figure 2.** Overall Relationship Network



**Figure 3.** Teams with More than Three Coauthors

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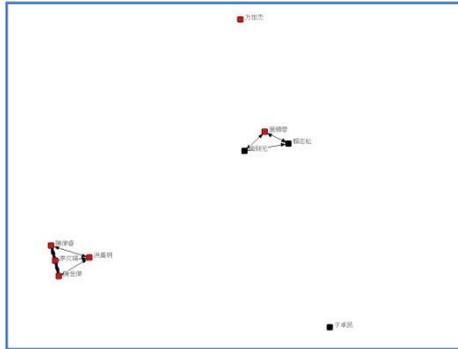


Figure 4. Teams with More than Five Coauthors

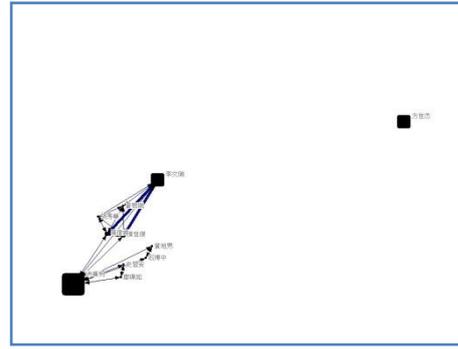


Figure 5. Key Author (Hung, K. P.)

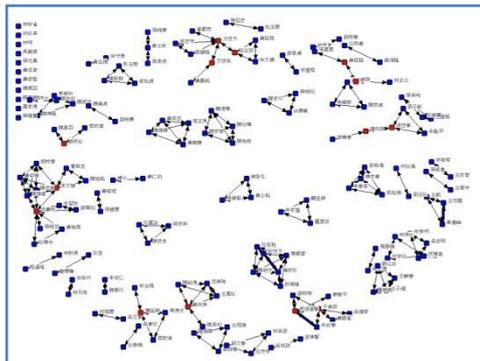


Figure 6. Bridging Authors

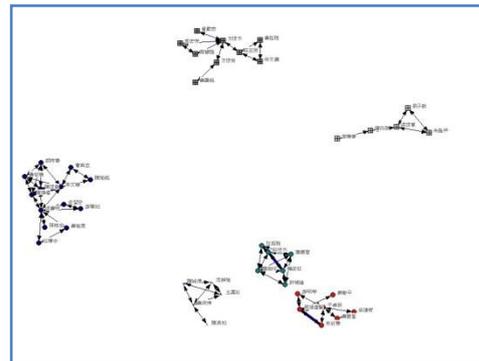


Figure 7. Subclusters with More than Five Members

## 4. Conclusion and Discussion

Studies have used the application and development of transaction cost theory in Taiwan to examine the interactions and connections between researchers. The following conclusions were drawn:

- (1) The *Sun Yat-Sen Management Review* contributed the most out of the 89 sample papers, followed in descending order by the *Management Review*, *Journal of Management*, *Journal of Information Management*, and *NTU Management Review*.
- (2) Of the topics identified by the study, strategies involved transaction cost theory the most frequently, followed in descending order by stocks/foreign exchange/investment, relations, and technology management. This indicates that researchers of transaction cost theory have been most interested by its applications in strategies, as samples of this type have been the most numerous overall.
- (3) Researchers of transaction cost theory rarely cross-reference each other. Even the most cited of the samples, “Development Strategies for Strategic Alliances: From a Transaction Cost Perspective” (Yeh, Tsai, & Chow, 1993), were only cross-referenced three times. The study also found that the authors tended to cite foreign studies more often than domestic ones, possibly because the former contained more theoretical applications and discourse. The present study was limited by the fact that it only drew its samples from domestic sources. Future studies are advised to conduct basic analyses or comparisons of foreign and domestic studies.
- (4) The results of network analysis suggest that:
  - (i) The author groups exhibited little interconnection according to the overall relationship network diagram. This demonstrates that at present, researchers of transaction cost theory have not yet formed a cohesive community; instead, they mostly work in teams headed by several major authors, and connections between the teams are almost nonexistent.

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Whether this suggests that the epistemic community in Taiwanese academia is at an immature stage of development is worthy of further investigation.

- (ii) There have been far fewer sample papers with more than five coauthors than those with more than three coauthors, possibly because when there are too many coauthors, delegation of responsibilities, communication, and reaching a consensus becomes complicated.
- (iii) Almost all key and bridging authors collaborated as teams of colleagues or professors and students, with relatively little interconnection between the teams. It would probably be conducive to academic output if interaction and collaboration between researchers were strengthened.

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