

Knowledge Dissemination of Word-of-Mouth Research: Citation Analysis and Social Network Analysis

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In the past 40 years, there have been many studies related to word of mouth; however, no reviews of the word-of-mouth literatures have been found. This study integrates the methods of citation analysis and social network analysis to explore the citation of word-of-mouth papers and further validates the knowledge dissemination of word-of-mouth studies. The results of the research reveal that the three papers – Richins (1983), Brown and Reingen (1987) and Herr, Kardes and Kim

(1991) – were in more centralized positions in the citation network. As core papers in the word-of-mouth field, they play critical roles in knowledge. These research findings allow researchers to access studies related to the word-of-mouth field from the past 40 years, and dissemination of word-of-mouth knowledge helps researchers' control over future research directions and the overall knowledge contribution of the word-of-mouth field.

Introduction

The academic contributions of research mainly include two aspects: one is knowledge creation and the other is knowledge dissemination (Parasuraman 2003). The purposes of research papers are to provide new knowledge and contribute to academia or real-life cases. For example, a marketing person can acquire unique views from certain word-of-mouth papers and apply them to actual marketing; also, general scholars often cite interesting or insightful papers in their studies or manage other related or unrelated studies according to the literature they read. Thus, after a research paper is published, the knowledge will be dis-

seminated to academics of other disciplines. Critically, practitioners can apply certain knowledge and findings to their corporate practices. Academics can manage corporate study, develop theories and publish their research findings. This is the cycle of knowledge generation and dissemination. Thus, academic papers are based on continuous knowledge generation and dissemination. The cycle allows academics to grow and mature (Phillips and Phillips 1998).

The word-of-mouth field has developed over 40 years, with many research papers published in marketing-related periodicals (e.g., Duhan *et al.* 1997; Godes and Mayzlin 2004; Richins 1983). The number of papers published in academic pe-

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riodicals has also increased year after year. Nevertheless, in the past literature, no formal research has explored knowledge dissemination of word-of-mouth, and only rare studies have been conducted on citation analysis of word-of-mouth papers. The periodicals of other fields frequently citing word-of-mouth papers and paper citations among researchers of the word-of-mouth field raise very interesting and important issues for word-of-mouth researchers and practitioners, since they could thus understand the application of word-of-mouth studies to directing future research. The exploration of this research could completely describe word-of-mouth field studies over the past 40 years, supplement the gap in literature and reflect on the contributions of word-of-mouth studies.

This research had three purposes: 1) to use citation analysis to explore the citation of word-of-mouth papers and the sequence of citations; 2) based on the Social Science Citation Index (SSCI) and the Science Citation Index (SCI) value, to analyze periodicals citing the highest number of WOM papers; 3) using social network analysis to explore paper citation among word-of-mouth researchers. We wanted to report the results and discussion of citation analysis and social network analysis of word-of-mouth papers of the past 40 years. Through the analytical results, we hoped to provide researchers with access to the development and knowledge diffusion of word-of-mouth research papers of the past 40 years, which would be of considerable help to researchers' future research directions and overall knowledge contributions. The research methods adopted are described in detail and the research results are discussed at the end of the paper.

Literature review

Word-of-mouth research issues are extremely broad, such as word-of-mouth advertising issues (e.g., Hogan, Lemon and Libai 2004), word-of-mouth communication issues (e.g., Godes and Mayzlin 2004), and electronic word-of-mouth issues (e.g., Bickart and Schindler 2002; Dellarocas 2003). This research will review the most commonly cited word-of-mouth papers in the past through the view of knowledge dissemination.

Most cited word-of-mouth research before the 1970s

The word-of-mouth papers most cited in early times primarily explored issues related to advertising and innovations. Dichter (1966) conducted in-depth interviews of 255 consumers in 24 localities of the U.S. and explored consumers' psychological aspects for communicating by word-of-mouth. Dichter also applied the research findings to the advertising of products. Engel, Kegerreis and Blackwell (1969) interviewed 249 customers on the first day of the opening of a new automobile diagnosis centre in Columbus, Ohio, U.S. and tracked the post-trial behaviour of these first-time users to confirm the innovators' word-of-mouth communication. The research results also showed that the innovators tended to inquire about opinions of new things and voluntarily communicated news related to innovations.

In addition, Sheth (1971) believed that word-of-mouth played an important role in the diffusion of innovations. The targets discussed in previous literature were mostly products with high risk (Rogers 1962). This meant that word-of-mouth was less important for products of less radical or low-risk innovations. However, he explored stainless steel blades, which were regarded as low-risk products. He interviewed over 900 users and confirmed that word-of-mouth also played an important role in the diffusion of low-risk products. Dodson and Muller (1978) validated the product diffusion process model developed by previous studies (e.g. Nerlove and Arrow 1962; Bass 1969) and integrated several theories and models from economics and marketing to develop a general diffusion model. Since the model included advertising, word-of-mouth and repurchasing efficacy, it revealed more effects.

In the area of industrial markets, Martilla (1971) indicated that industrial marketing persons did not value advertising and other impersonal communications. The main reasons for their attitudes were that in marketing for industrial markets, the application of communication and diffusion theory was not examined. Whether word-of-mouth communication suitable for consumer product purchasing could be applied to industrial markets was uncertain. He therefore investigated 106 firms using interviews and written questionnaires regarding their actual purchasing of paper. The re-

search showed that in industrial markets, word-of-mouth communication in the firms revealed significant influences in the later period of purchasing. In addition, compared with other buying influences, opinion leaders in the firms were more likely to expose themselves through impersonal information.

Most cited word-of-mouth research of the 1980s

Marketing academics in the 1970s emphasized the importance of consumers' satisfaction and rare studies existed on consumers' dissatisfaction reaction. Richins (1983) used in-depth interviews and open-ended questionnaire surveys to explore the correlation between the possible reactions of consumers to dissatisfying experiences and defined consumer variables for dissatisfaction reactions. The research validated that the nature of dissatisfaction, consumers' attributions of blame for their dissatisfaction and perceptions of the complaint situation were connected to dissatisfaction reactions. The relationship could be applied to a range of product classes and the research findings in this paper thereafter became the most cited literature in studies related to word-of-mouth.

Mahajan, Muller and Kerin (1984) proposed a model to explain the influence of negative word-of-mouth in new product diffusion processes, since general diffusion theory assumed that "individuals' use experience of products is communicated by positive word-of-mouth." However, in fact, the content of word-of-mouth could be positive, negative or neutral; the force of negative word-of-mouth could even be more than positive word-of-mouth. The author also used university students' movie watching experience as an example to test the model. The research showed that negative word-of-mouth played a dominant role in product diffusion theory.

In addition, Brown and Reingen (1987) indicated that a close relationship existed between word-of-mouth communication and interpersonal networks. They used the view of interpersonal networks to examine the roles of relationship intensity and homogeneity in word-of-mouth processes. The research found that weak ties in an interpersonal network had a critical connecting function. In the broader social system, information can be connected to different sub-communities in socie-

ty through weak ties. Compared with weak ties, when strong ties between communicators and receivers or two parties were homogeneous, the word-of-mouth process was more enlivened. In addition, compared with information through weak ties, information through strong ties was more influential and more often used as the information sources of the related products.

Most cited word-of-mouth research after 1990

Past studies related to communication showed that communicators' traits (such as similarity, credibility and trustworthiness) could influence word-of-mouth communication. Herr, Kardes and Kim (1991) pointed out that information vividness would apparently influence the effects of word-of-mouth. Thus, they used two experiments to explore the mediation of WOM effects on persuasion and confirmed other possible moderating variables. They found that the influences of word-of-mouth communication and information with specific properties on product assessments actually existed. The result of the first experiment showed that face-to-face word-of-mouth communication was more convincing than print communication. The result of the second experiment showed that although a powerful word-of-mouth effect could be confirmed, it could be reduced or eliminated by the impression of target brands or extremely powerful negative messages.

Blodgett, Granbois and Walters (1993) believed that the negative word-of-mouth behaviour of consumers' complaints and the possibility of re-buying were related to consumers' perceived justice. They investigated employees of two universities (a Midwestern university and a university in the mid-South) through questionnaires. They collected 201 total samples and managed the analysis through a model constructed by LISREL. The research results pointed to the importance of customer service and customer satisfaction. Particularly, the costs of maintaining satisfied existing consumers were lower than those of developing new clients.

Ellison and Fudenberg (1995) used the original word-of-mouth communication model to validate the relationship between word-of-mouth communication and social learning. The research found that word-of-mouth communication could lead

to effective social learning. When communication media were completely restricted, social learning was the most effective method.

Method

Selection of papers

This research treated the word-of-mouth research papers published in social science and science periodicals before 2004 and focused on SSCI and SCI periodicals. There are two main reasons for this approach. First, the significance of literature citation was examined. The newly published papers might reveal less significant citation in a certain group. Second, the consistency of paper quality was examined. Thousands of periodicals in the social science and science literature exist, and their quality might vary. The quality of papers published in SSCI and SCI periodicals was affirmed and many institutions treated the papers published in these periodicals as the criteria for assessing researchers' published papers.

The selection of word-of-mouth research papers was based on electronic and manual searching and the researcher attempted a complete search for word-of-mouth research papers. This research used three databases (ABI/INFORM, Web of Science and EBSCO) to search for papers related to word-of-mouth studies. The search was conducted in January and February 2006 and was restricted to papers with "word-of-mouth or WOM" in their titles, because word-of-mouth is probably the most central topic covered in those papers. This searching method has been generally used in studies of other fields (e.g., Moore *et al.* 2005; Zou 2005). Although this kind of restriction might eliminate or exclude some papers, it ensures that the papers searched were actually about a study related to the word-of-mouth field. After electronic searching and manual confirmation of the relationship between the papers and the academic study of word-of-mouth, 114 papers were finally confirmed.

After reconfirmation, only 69 of the above papers were published in SSCI or SCI periodicals. Essentially, these papers were allocated to a study related to the word-of-mouth field. The research methods they used included qualitative research methods such as in-depth interviews and content analysis, and quantitative research methods

such as surveys and experiments. To collect the literature needed for the study completely, in addition to electronic searching, the researchers also acquired papers from domestic and international libraries, such as the British Library, through co-operative library services.

Citation analysis

There are many ways to study knowledge dissemination. However, this research decided to use citation analysis. The main reason for this choice was that mutual citation of papers in the periodicals provided concrete evidence that knowledge was generated and used. This research performed the citation analysis in February 2007 and used the ISI Web of KnowledgeSM database to search for papers that had cited the 69 word-of-mouth papers that defined the scope of this research. To capture the data of each citation paper, including authors, subjects, published periodicals, published time and the times cited, Microsoft Excel software was used to establish a database and analyze citations by arrangement and screening. The main purpose of the analysis was to understand the citation of the word-of-mouth papers and the periodicals of the fields citing the highest number of word-of-mouth papers.

Social network analysis

Social network analysis was launched as a new technique in the 1960s (Scott 1991). The focus of network analysis was to understand how the characteristics of network structure affected behaviour (Webster and Morrison 2004). Social network studies could confirm the mutual relationships among the members of a community, or information exchange and understand how knowledge diffusion functioned through networks. Social network analysis itself provided quantitative and qualitative measurements to understand further the relationships of members in a definite social network (Scott 1991). These relationships might include, for example, the strength of the friendship, influence, or patterns of communication among members of a scientific community.

This research explores a corpus of word-of-mouth literature to access and visualize the word-of-mouth research field. First, we examined the references of each word-of-mouth paper to

Table 1. Citations of the Word-of-Mouth Papers (Key to journal abbreviations appears on following page.)

First author	Periodical	Subject of paper	WOM times cited by academics	Times cited by other academics	Total citations
Richins (1983)	JM	Negative Word-of-Mouth by Dissatisfied Consumers: A Pilot Study	21	113	134
Herr (1991)	JCR	Effects of Word-of-Mouth and Product-Attribute Information on Persuasion: An Accessibility-Diagnosticity Perspective	11	76	87
Brown (1987)	JCR	Social Ties and Word-of-Mouth Referral Behaviour	13	60	73
Ellison (1995)	TQJE	Word-of-Mouth Communication and Social Learning	3	52	55
Dodson (1978)	MNS	Models of New Product Diffusion through Advertising and Word-of-Mouth	3	49	52
Mahajan (1984)	MNS	Introduction Strategy for New Products with Positive and Negative Word-of-Mouth	3	37	40
Martilla (1971)	JMR	Word-of-Mouth Communication in the Industrial Adoption Process	1	31	32
Dichter (1966)	HBR	How Word-of-Mouth Advertising Works	6	23	29
Blodgett (1993)	JR	The Effects of Perceived Justice on Complainants' Negative Word-of-Mouth Behaviour and Repatronage Intentions	2	26	28
Engel (1969)	JM	Word-of-Mouth Communication by the Innovator	4	21	25
Sheth (1971)	JAR	Word-of-Mouth in Low-Risk Innovations	5	19	24
Czepiel (1974)	JMR	Word-of-Mouth Processes in the Diffusion of a Major Technological Innovation	0	22	22
Money (1998)	JM	Explorations of National Culture and Word-Of-Mouth Referral Behaviour in the Purchase of Industrial Services in the United States and Japan	3	14	17
Bowman (2001)	JMR	Managing Customer-Initiated Contacts with Manufacturers: The Impact on Share of Category Requirements and Word-of-Mouth Behaviour	0	17	17
Higie (1987)	JR	Types and Amount of Word-of-Mouth Communications About Retailers	1	14	15
Holmes (1977)	JA	Product Sampling and Word Of Mouth	6	7	13
Dellarocas (2003)	MNS	The Digitization of Word-of-mouth: Promise and Challenges of Online Feedback Mechanisms	0	13	13
Bone (1995)	JBR	Word-of-Mouth Effects on Short-term and Long-term Product Judgments	2	10	12
Duhan (1997)	JAMS	Influences on Consumer Use of Word-of-Mouth Recommendation Sources	3	9	12
Soderlund (1998)	IJSIM	Customer Satisfaction and its Consequences on Customer Behaviour Revisited The Impact of Different Levels of Satisfaction on Word-of-Mouth, Feedback to the Supplier and Loyalty	1	10	11
Hartline (1996)	JBR	Employee Performance Cues in a Hotel Service Environment: Influence on Perceived Service Quality, Value, and Word-of-Mouth Intentions	2	8	10
Corcoran (1980)	MLR	Most Workers Find Jobs through Word of Mouth	0	9	9
Tapiero (1983)	EJOR	Stochastic Diffusion Models with Advertising and Word-of-Mouth Effects	0	8	8
Richins (1984)	ACR	Word of Mouth Communication as Negative Information	2	6	8
Bayus (1985)	JAR	Word of Mouth: The Indirect Effects of Marketing Efforts	3	5	8
Berger (1988)	JEBO	Word-of-Mouth Reputations in Auto Insurance Markets	0	8	8
File (1994)	TSIJ	Word-of-Mouth Effects in Professional Services Buyer Behaviour	0	8	8
Vettas (1997)	IER	On the Informational Role of Quantities: Durable Goods and Consumers' Word-of- Mouth Communication	0	6	6
Bone (1992)	ACR	Determinants of Word-of-Mouth Communications during Product Consumption	2	3	5
Dye (2000)	HBR	The Buzz on Buzz	0	5	5
Maxham III (2001)	JBR	Service Recovery's Influence on Consumer Satisfaction, Positive Word-of-Mouth, and Purchase Intentions	0	5	5
Goldenberg (2001)	ML	Talk of the Network: A Complex Systems Look at the Underlying Process of Word-of- Mouth	0	5	5
Reingen (1987)	ACR	A Word-of-Mouth Network	1	3	4
Sundaram (1998)	ACR	Word-of-Mouth Communications: A Motivational Analysis	1	3	4
Arndt (1968)	JAR	Selective Processes in Word of Mouth	0	3	3
Wilson (1989)	ACR	Some Limits on the Potency of Word-of-Mouth Information	1	2	3
Dawid (1999)	AOR	On the Dynamics of Word of Mouth Learning with and without Anticipations	0	3	3
Gremler (2001)	IJSIM	Generating Positive Word-of-Mouth Communication through Customer-Employee Relationships	1	2	3
Day (1971)	JAR	Attitude Change, Media and Word of Mouth	1	1	2
Brown (1989)	ACR	Consumer Complaining and Word of Mouth Activities - Field Evidence	0	2	2
Kennedy (1994)	ER	Word-of-Mouth Communication and Price as a Signal of Quality	0	2	2
Laczniak (2001)	JCP	Consumers' Responses to Negative Word-of-Mouth Communication: An Attributions Theory Perspective	1	1	2
Grewal (2003)	JCP	Early-Entrant Advantage, Word-of-Mouth Communication, Brand Similarity, and the Consumer Decision-Making Process	0	2	2
Derbaix (2003)	JEP	Inducing Word-of-Mouth by Eliciting Surprise - A Pilot Investigation	0	2	2
Banerjee (2004)	GEB	Word-of-Mouth Learning	0	2	2
Godes (2004)	MS	Using Online Conversations to Study Word-of-Mouth Communication	0	2	2
Archer (1994)	EJOR	A Dynamic Service Quality Cost Model with Word-of-Mouth Advertising	0	1	1
Sundaram (1999)	ACR	The Role of Brand Familiarity on the Impact of Word-of-Mouth Communication on Brand Evaluations	0	1	1
Wirtz (2002)	IJSIM	The Effects of Incentives, Deal Proneness, Satisfaction and Tie Strength on Word-of- Mouth Behaviour	0	1	1
Brooks (1958)	JM	„Word-of-Mouth“ Advertising in Selling New Product	1	0	1

Table 2. Top 10 Frequency of Word-of-Mouth Papers Cited by Other Fields

Discipline Attribution	First authors of cited papers										Total	Percentage%
	Richins (1983)	Herr (1991)	Brown (1987)	Ellison (1995)	Dodson (1978)	Mahajan (1984)	Martilla (1971)	Dichter (1966)	Blodgett (1993)	Engel (1969)		
Consumer field	46	35	27			2	1	6	4	7	128	23.06
Marketing field	16	9	13		7	12	14	7	5	11	94	16.94
Management field	12	4	8	1	17	10	6		1	1	60	10.81
Economics field	3	2	2	36	2	3			1		49	8.83
Business field	12	8	8	1	1	1	4	2	5		42	7.57
Psychology field	12	9	3				1	4	5	1	35	6.31
Service field	4	6	3				1	1	4	1	20	3.60
Social science field	4	1	3	6	2		3	1			20	3.60
Operational research field	4	2		1	9	3					19	3.42
Forecasting field	1	1	1		11	3		1			18	3.24
Retailing field	6	2	3				1		2	2	16	2.88
Electronic and computer field	3	3	1	1	2	3		1			14	2.52
Advertising field	3	2				1	1	4		1	12	2.16
Library and information field	3	1	1						1		6	1.08
Mathematics and probability field	1			3	1	1					6	1.08
Health and medicine field	1							2		1	4	0.72
Law field	2			2							4	0.72
Finance field				3							3	0.54
Other field	1	2		1		1					5	0.90
Total	134	87	73	55	52	40	32	29	28	25	555	

confirm whether they cited the other 68 papers selected for this research. Since our target was to construct a network of word-of-mouth papers and the influences of specific papers, we used the citation relationships among the 69 word-of-mouth papers to construct a citation network. Second, this research used a database constructed in Microsoft Excel to develop a co-citation matrix of word-of-mouth papers. We also used network analysis software UCINET and NetDraw (Borgatti, Everett and Freeman 2002) software to manage the data and describe the strength of the relationships among the 69 papers.

In addition, centrality scores were determined for each paper. Centrality measures the visibility or prominence of actors in a network at a specific moment in time. For this analysis, centrality provides a cross-sectional look at the state of the literature as of the end of 2004. In a network containing directed ties (e.g., "cites" or "is cited by"), a distinction can be made between in-degree and

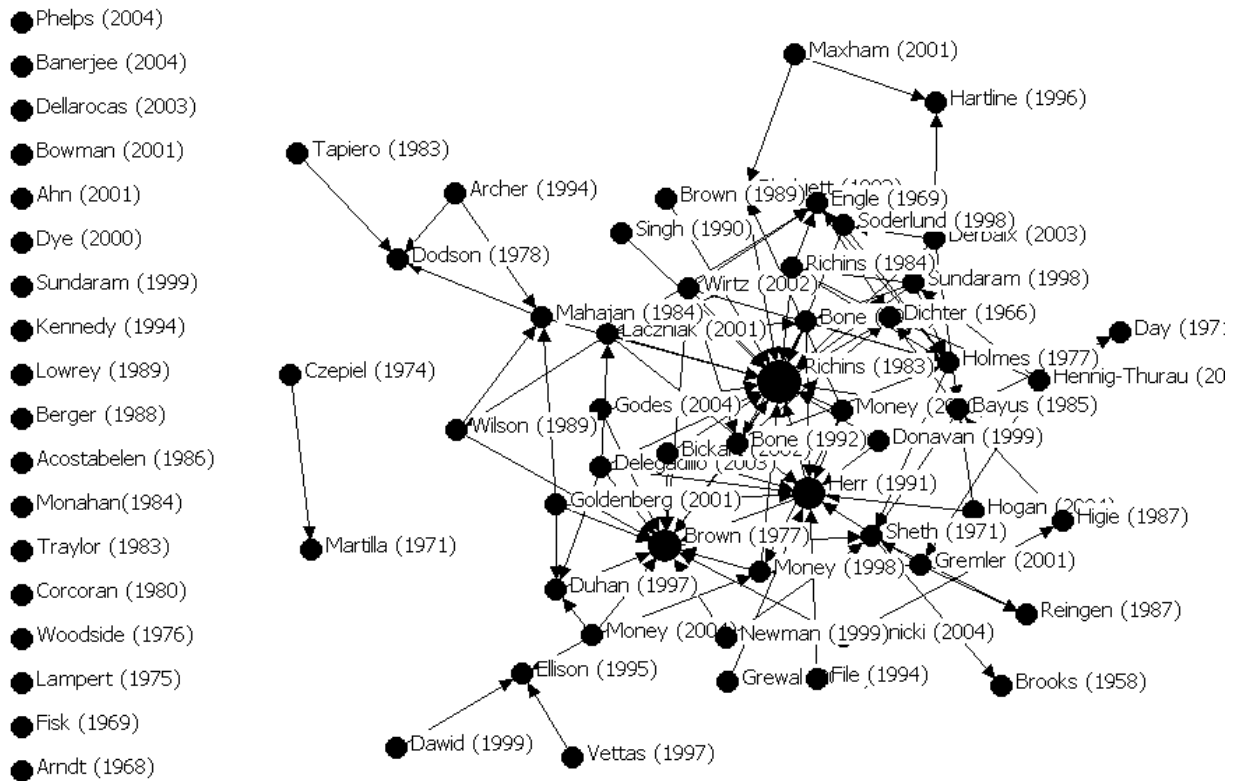
out-degree centrality. In-degree centrality measures the prominence of certain papers in terms of being cited, while out-degree centrality measures the prominence of papers in terms of citing other papers. Our analysis focused on the more prominent papers as measured through in-degree centrality—that is, those papers that are more central in terms of being cited by other papers. We calculated Freeman in-degree centrality scores for each paper by using the network analysis software package UCINET.

Results

There were 116 authors and co-authors of the 69 papers included in the citation network in total, an average of 1.68 authors per paper. The authorship frequency data reveal that the literature is dominated by a relatively few number of authors who mainly come from marketing backgrounds. Of the 116 authors, 9 have published more than

Table 1 – Note: ACR=Advances in Consumer Research; AOR=Annals of Operations Research; EJOR=European Journal of Operational Research; ER=Economic Record; GEB=Games and Economic Behaviour; HBR=Harvard Business Review; IER=International Economic Review; IJSIM=International Journal of Service Industry Management; JA=Journal of Advertising; JAMS=Academy of Marketing Science. Journal; JAR=Journal of Advertising Research; JBR=Journal of Business Research; JCP=Journal of Consumer Psychology; JCR=Journal of Consumer Research; JEP=Journal of Economic Psychology; JM=Journal of Marketing; JMR=Journal of Marketing Research; JR=Journal of Retailing; JEBO=Journal of Economic Behaviour & Organization; ML=Marketing Letters; MLR=Monthly Labor Review; MNS=Management Science; MS=Marketing Science; TQJE=The Quarterly Journal of Economics; TSIJ=The Service Industries Journal

Figure 1. Citation Network for the 69 Papers in the Study



Note: Each node represents an paper and the first author represents each paper. The direction of the arrows means to cite the paper. The nodes on the left are isolated papers (n = 18).

one paper as either first author or co-author. There are 5 authors who have been first author of more than one paper. Taken together, those 5 authors are listed on the by-lines of 11 of the 69 papers (16%). Richins's 1983 paper, "Negative word-of-mouth by Dissatisfied Consumers: A Pilot Study," printed in the *Journal of Marketing* despite having an important impact on the development of the concept in word-of-mouth, is the most frequently cited work in the 69 papers, being cited 134 times.

Citation analysis

Citation analysis yield descriptive findings related to both the initial sample of 69 word-of-mouth papers and the citing body of 846 papers. Of the citing papers, 88%(n=742) are cited by academics from other fields, and only 12%(n=104) referred to the mutual citation of the academics in the word-of-mouth field. The top-citing core word-of-mouth paper is Richins's 1983 paper, printed in the *Journal of Marketing* (see Table 1).

From Table 2 we see that the top 10 most cited word-of-mouth papers were mainly cited by periodicals in the consumer field and the total number

of citations was 128. Marketing periodicals had the second highest citations (94) and the third was management field periodicals (60). This result suggests that knowledge in the word-of-mouth field has been diffused to other fields and has generated new knowledge.

Social network analysis

Figure 1 presents the citation network for the 69 papers in the study. Each node represents a paper and treated the first author of each paper as the representative. There were 18 papers isolated from the rest of the citation network, which means that those papers did not cite and were not cited by any other papers in the citation network. From Figure 1, we recognize the domain visualization of mutual citation of academics in the word-of-mouth field and can visually identify the core papers (Richins 1983; Brown and Reingen 1987; Herr, Kardes and Kim 1991) in the word-of-mouth field.

The mean centrality score for the entire network is 1.5, which implies, roughly speaking, that each paper in the population was cited on average by

Table 3. Most frequently cited papers on word-of-mouth in the primary citation population

Rank	First author	Article	In-Degree Score
1	Richins (1983)	Negative Word-of-Mouth by Dissatisfied Consumers: A Pilot Study	21
2	Brown (1987)	Social Ties and Word-of-Mouth Referral Behaviour	13
3	Herr (1991)	Effects of Word-of-Mouth and Product-Attribute Information on Persuasion: An Accessibility-Diagnosticity Perspective	11
4	Holmes (1977)	Product Sampling and Word Of Mouth	6
5	Dichter (1966)	How Word-of-Mouth Advertising Works	6
6	Sheth (1971)	Word-of-Mouth in Low-Risk Innovations	5
7	Engel (1969)	Word-of-Mouth Communication by the Innovator	4
8	Ellison (1995)	Word-of-Mouth Communication and Social Learning	3
9	Dodson (1978)	Models of New Product Diffusion through Advertising and Word-of-Mouth	3
10	Mahajan (1984)	Introduction Strategy for New Products with Positive and Negative Word-of-Mouth	3
11	Money (1998)	Explorations of National Culture and Word-Of-Mouth Referral Behaviour in the Purchase of Industrial Services in the United States and Japan	3
12	Duhan (1997)	Influences on Consumer Use of Word-of-Mouth Recommendation Sources	3
13	Bayus (1985)	Word of Mouth: The Indirect Effects of Marketing Efforts	3

1.5 other papers. Highly central papers were thus considered to be those with a centrality score greater than or equal to 4 (Moore *et al.* 2005). The most prominent paper in the network is "Negative word-of-mouth by Dissatisfied Consumers: A Pilot Study," with an in-degree centrality score of 21, almost 1.6 times higher than the second most prominent paper in the network (Table 3).

Path of development of word-of-mouth research

From the citation of the 69 word-of-mouth papers in this research, we could generally recognize the developing route of word-of-mouth studies. Figure 2 shows that the development of word-of-mouth studies was mainly based on papers by Brooks (1958) and Dichter (1966). These two papers explored the issue of word-of-mouth advertising. The research directions of three different branches developed from these two papers. The first branch aimed to study message communication of word-of-mouth and developed from early face-to-face communication into electronic word-of-mouth through the Internet. The influence of word-of-mouth messages on products expanded in early times from acquaintances such as friends, colleagues and classmates to non-acquaintances. The second branch mainly explored the influences of word-of-mouth referral behaviour and word-of-mouth on product evaluations or product judgments. The third branch mainly explored the influence on products and strategies of nega-

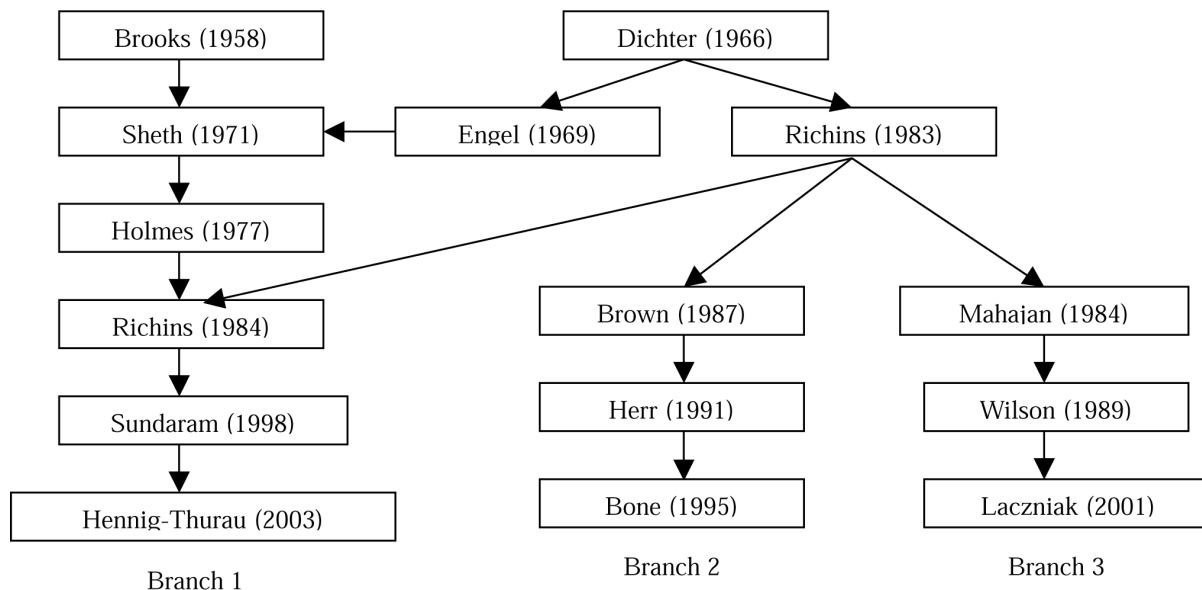
tive word-of-mouth. The papers included in each branch are shown in Figure 2.

Discussion

Our results show that a small number of papers dominate the word-of-mouth literature. While the average paper centrality score is 1.5, there are 13 papers with twice this average centrality score. The most prominent paper - the 1983 by Richins - has a centrality score of almost 14 times the average. Rather than the citation structure reflecting a high degree of interconnectivity among the papers and the development of range of perspectives, scholars are citing and relying on this one paper as the main authority in the field.

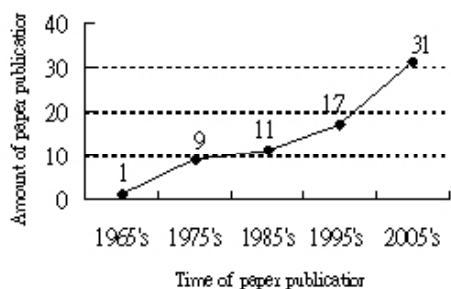
This paper finds that the most cited word-of-mouth papers were published earlier (i.e., before 1995). Is word of mouth a dying domain of research? After further discussion with word-of-mouth related researchers, we find the following. Firstly, according to the samples used in this research, we recognize that the number of word-of-mouth papers has been increasing, as shown in Figure 3. This demonstrates that word-of-mouth studies are still valued within academia. Secondly, more recently, word-of-mouth papers have come to be cited less frequently. The reason for this might be that, in recent years, the field has developed rapidly (through the Internet and word-of-mouth communication devices, such as wireless technologies). We did not find a con-

Figure 2. Main Path of the Development of Literature on Word-of-Mouth Research



Note: Boxes show the first author of each paper and the arrows represent the developing route of word-of-mouth

Figure 3. Trend of the Publication of Word-of-Mouth Papers



sensus among the differing schools of thought. Thirdly, the citation frequency of the papers is influenced by various factors, such as self-citation, the number of pages in the papers, the order of the periodical contents, reading frequency, etc. (Hudson 2007). Another critical factor is the innovation or importance of the viewpoint of the article. For instance, Richins (1983) suggested that the concept of negative word of mouth was closely related to consumer behaviour and marketing. Thus, the relevant research finding is frequently cited by researchers in a related field (see Table 2). Recent papers are cited less often and the reason might be that they lack an innovative construct or theory.

The value of word of mouth for the firms is that the consumers spread word-of-mouth messages

through their relationships (Brown, Broderick and Lee 2007), which results in a referral value for the firms (Reichheld 2003; Kumar, Petersen and Leone 2007). The result might be more useful for managers in developing countries for the following reasons. First, developing countries pay more attention to relationships (McGuinness, Campbell and Leontiades 1991). The consumers in these countries rely more on word of mouth for decision-making (e.g., Cheung, Anitsal and Anitsal 2007; Fong and Burton 2008). For instance, people in Chinese society tend to share experiences, as well as to seek and diffuse information through relationships in the family, clan and home village (the same phenomenon can be seen in countries like Kuwait and Botswana, e.g. Anwar, Al-Ansari and Abdullah 2004; Jorosi 2006). Thus, the effect of word of mouth in developing countries will be more significant. Second, compared with consumers in developed nations, those in developing countries such as China tend to seek for and respond to word-of-mouth information through the Internet (Fong and Burton 2008; Choemprayong 2006). Thus, the effect (or future development) of online word-of-mouth information is worthy of further study. Third, according to the word-of-mouth literature review, we see that there are only rare examples of this in developing countries. The reason might be that examples are not yet report-

ed, or that word of mouth in developing countries is still in its initial stages. Nevertheless, it demonstrates that developing countries can learn various methods for using word of mouth from current word-of-mouth models.

In his work on the nature of scientific knowledge, Latour (1987) refers to the power and strength of citations in constituting scientific "facts." A paper that fails to cite other papers, or is not frequently cited by them, is more vulnerable to criticism than is a paper that cites, or is cited in a supportive manner by, a large number of papers. To criticize a well-cited paper requires scholars to engage with all the other studies to which that paper is connected. Papers that are more central in the literature tend to appear more authoritative and less vulnerable to criticism than those that are more marginal. Regardless of a paper's intrinsic merits, its authority emerges through the way that it is connected to other papers in the field (e.g., Richins 1983; Brown and Reingen 1987; Herr, Kardes and Kim 1991).

This present study integrates citation analysis and social network analysis methods, showing how networks act as important context that structure the position of actors in a population and has demonstrated the continued relevance of using network methods to examine the emergence of structures of authority and influence in field. According to the paper citation network graph, we recognize the domain visualization of citation of word-of-mouth research papers. Generally, the three papers by Richins (1983), Brown and Reingen (1987) and Herr, Kardes and Kim (1991) were in more centralized positions in the citation network. These were the core papers in the word-of-mouth field and play critical roles in knowledge.

This research pointed out the research development route of word-of-mouth studies in the past 40 years according to the mutual citation of word-of-mouth papers. From this route, we generally recognize the developing direction of word-of-mouth studies: word-of-mouth communication, word-of-mouth referral behaviour and negative word-of-mouth issues. Although the development route of word-of-mouth studies generalized by the authors according to the mutual citation of word-of-mouth papers might be a subjective process, from a broad perspective, we can still discover the major directions of the word-of-mouth field that functioned as the reference for study

and benefit researches control of future research directions.

Conclusions and recommendations

The main purpose of the present work is to examine the articles, authors, and journals that have had the most impact on the development of the word-of-mouth field of research. We integrate citation analysis and social network analysis methods to explore the citation of word-of-mouth papers and the frequency of citations, and examined the core papers that play critical roles in disseminating knowledge of the word-of-mouth field. As such, the study fills an apparent gap in the word-of-mouth literature and broadens and enriches our understanding of the development of word-of-mouth research.

In addition, the current research contributes to the field by providing future research directions with potential meanings. First, it is suggested that future studies should explore why some word-of-mouth papers (e.g., Richins (1983); Brown and Reingen (1987); Herr, Kardes and Kim (1991)) are highly cited. What contents are cited? This kind of study can allow us to identify the relationships, development and sequence of word-of-mouth concepts more clearly. Additionally, because of the rapid development of IT through email, the Internet, cell phones, PDAs, text messaging, instant messaging, and blogs, communication by word of mouth has been changed. It becomes easier for individuals to share information and opinions. It is suggested that future studies could examine the influence of these new information technologies on word-of-mouth information-sharing behaviour. Lastly, electronic word of mouth has been a popular issue because of the blossoming of the Internet. However, to what extent do customers' rely on electronic word of mouth? Does it have the same effect on customers' buying decisions as the traditional word of mouth method? Further research is needed to answer these questions.

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