

## EXPLORING NEGATIVE WORD-OF-MOUTH IN ICT ENTERPRISES USING Q-TECHNIQUE

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### Abstract

*The impact of a negative word-of-mouth message on corporate reputations is extremely rapid and far-reaching. The purpose of this study aims to explore the impact of negative word-of-mouth on ICT (Information and Communication Technology) corporate reputation and the importance of the impact. Literature analysis and focus group were employed in the research so as to establish the dimensions of negative word-of-mouth and declarative sentences. Secondly, after interviewing 34 experts, the Q-technique was adopted to categorize representative declarative sentences, and then a questionnaire was developed based on the representative declarative sentences. A total of 481 questionnaires were collected from the Internet. The findings of this study indicated that there were 47 declarative sentences of negative word-of-mouth messages producing different levels of impact on corporate reputations that can be used as a basis for ICT enterprises' risk management; and that there were four types of consumer negative word-of-mouth messages influencing ICT corporate reputation that can be used as a reference to develop marketing programs in accordance with various customers' needs. The contribution of research findings can be a useful reference for business management warning, development of crisis management system, reputation strategy setting, and marketing planning.*

**Keywords:** *ICT Enterprise, Reputation, Negative Word-of-Mouth, Q-technique, Q-sort, intangible capital, internet marketing*

## INTRODUCTION

Word-of-Mouth (WOM) is a critical variable that affects corporate reputation (Roberts & Dowling, 2002). As the popularity of the internet grows, consumers are able to expand the collection of product or service experiences from other consumers, or have opportunities to offer recommendations relating to personal consumption. This electronic word-of-mouth (eWOM) affects consumer behaviour (Hennig-Thurau et al., 2004). Wherein, negative WOM that reveals unfavourable information concerning products or services affects enterprises' operation and development significantly (Verhagen, Nauta, & Feldberg, 2013).

Previous researches on negative WOM and corporate reputation can generally be categorized in two research approaches: causality and competitive benefit. A few examples of research regarding causality are: Lee et al. (2008) pointed out that negative WOM can be developed into unfavourable consumer attitudes; Bambauer-sachse and Mangold (2011) suggested that negative online-WOM affects trademark assessment negatively. Furthermore, there are: Henning-Thurau and Walsh (2003) investigated the impact of negative WOM in the online context; and Verhagen, Nauta, and Feldberg (2013) researched on negative online WOM. In respect of competitive benefit of the latter, Kotha et al. (2001) suggested that for consumers, reputation reduced uncertainty but increased marketing effectiveness, customer satisfaction, and customer base. Lee and Roh (2012) point out that negative WOM obviously produces impact on market-based performance but not on accounting-based performance. These researches suggest that negative WOM is the key factor in the research of corporate reputation (Walsh et al., 2009; Tischer & Hildebrandt, 2013).

The definition of negative WOM refers to negative experiences and personal opinions on goods, services and organization, formulated after the consumption process (Lee & Song, 2010; Verhagen, Nauta, & Feldberg, 2013). Negative WOM can be categorized as credence qualities of service, which is associated with customer loyalty directly (Walsh et al., 2009). Though the general research on the impact of negative WOM on corporate has come to some certain results and conclusions, relatively little research attention so far has been devoted to a consideration of WOM research from the subjects of technological products or services, for example, those ICT products which feature mobile vehicle like laptop, tablet computer, smart phone, and wearable mobile product. In fact, the impacts of negative WOM are greater than that of positive WOM, particularly on experiential products (Park & Lee, 2009; Ferguson & Johnston, 2011), and the unfavourable impacts on corporate are actually greater than positive benefit (Chang, 2013). Hence, the research questions to be addressed are: What are the possible negative WOM that affect ICT corporate reputation following customers' consumption of technological products and services? What are their priority rankings? Therefore, this study

attempts to explore the connotation and importance of negative WOM that influences ICT corporate reputation. In terms of research contributions, the results obtained from this study can serve as a reference for corporate governance and risk management.

## THEORETICAL BACKGROUND

The competitive benefit that WOM contributes to corporate derives from “halo effect”. Based on the effect, enterprises with good credit increase corporate reputation and promote corporate brand value in the market through the pursuit of production, brand and environmental action (Lee & Roh, 2012). Thus, the short-term benefit of WOM impact goes beyond intangible capitals such as human capital and social capital (Wang, 2013). In terms of resource-based perspective, with rare, unique and irreplaceable intangible asset, a corporate may create competitive advantage (Barney, 2000). When WOM becomes an intangible asset, a corporate with exceptional credit and reputation will be superior to other competitors for long time; thereby, the corporate may lead to a good financial performance through competitive benefit acquirement (Lee & Roh, 2012).

In consumer research, the research of Walsh et al. (2009) has proved that customer satisfaction and customer trust contribute customer-based corporate reputation; subsequently, corporate reputation gains the causality model of customer loyalty and WOM. In terms of corporate, relatively, Musteen, Datta, and Kemmerer (2010) believe that, from a perspective of corporate governance, corporate reputation can be realized through signalling theory. Signalling theory indicates a corporate uses their representative signal to demonstrate the corporate’s immovable belief and what action to be taken and to communicate that corporate’s information in respect of related business intention and operation ability (Porter, 1980). “Reputation”, in short, can be seen as an outcome deriving from this signal process. Customers or stakeholders in market judge their target corporate’s reputation according to the signal property of that corporate so as to make their purchase decision. In fact, this signal property must be observable (Deutsch & Ross, 2003) and it must be a precise indicator which is good enough to reflect the quality and quantity of corporate’s decision-making and capabilities to operation and management, as well as capabilities of important resource arrangement. This is also why research on the connotation of every negative WOM that affects corporate reputation is necessary prior to making a corporation prominent, and serves as a reference for building sustainable management of the corporation. Signalling theory can also interpret the important feature of information transmission in this brisk, active Internet era. Obviously, Resource-Based View regards WOM as the intangible capital for an enterprise to use in creating competitive advantage.

## WORD-OF-MOUTH DIMENSIONS

Negative WOM is extremely important in this internet age. Ferguson and Johnston (2011) proposed that the dissatisfaction of a customer will lead to their engaging in the behaviour of voicing complaints, exiting transaction relationships, remaining loyal or engaging in negative WOM. According to Caruana and Ewing (2010), corporate reputation, quality, and value influence online loyalty. Hennig-Thurau et al. (2004) investigated the motives of consumers' eWOM behaviour using two conditions: platform visit frequency and comment writing, and obtained five factors as a result: concern for other consumers, extraversion/positive self-enhancement, social benefits, economic incentives, and advice seeking. Verhagen, Nauta, and Feldberg (2013) proposed that negative online-WOM negatively influences re-patronage intentions; negative online-WOM positively influences switching intentions. Srinivasan et al. (2002) has pointed out that there are seven positive factors which influence online loyalty, i.e., customization, contact interactivity, cultivation, care, community, choice, and character. Lee and Roh (2012) examine a company based on a perspective of corporate performance; they believe that corporate reputation consists of overall reputation, quality of products/services, social responsibility, and innovativeness. The abovementioned research studied WOM from various perspectives, such as customer service, consumer behaviour and organizational performance, and obtained the finding that WOM is a critical variable in the management of a business.

To conclude the connotation of negative WOM concerning ICT products that includes consideration of the abovementioned research results of negative WOM as well as the importance of ICT products in the age of electronic ecommerce, we may summarize it in three main dimensions: function, structure, and connotation (Chang, 2014). The dimension of function is closely related to customers' desired value, determining product value in market. Product structure and its configuration are associated with product style, the latest fad, and operation interfaces, all of which may be attractive factors stimulating customers to buy the product. Product connotation means the product quality such as material or texture. After service will be a remedial means to improve customer satisfaction once one of those three dimensions (function, structure, and connotation) is faked, otherwise, it will result in negative WOM. The summarization of these three dimensions is similar to the dimension taxonomy of Caruana & Ewing (2010) and Lee & Roh (2013). The negative WOM dimensions of this study obtained: function (product effectiveness and product function), structure (configuration and product desired value), and connotation (product risk and after service). Operational definitions are shown in the Table 1.

Table 1: The definition of negative WOM Dimensions

Dimension	Operational definition
Configuration	Refers to product appearance, style, fashion trend, colours
Product effectiveness	Refers to product effectiveness including efficiency, computing rate, power saving, heat dissipation, muting, reliability, capacity.
Function	Refers to the product which may provide user with benefit and innovation.
Desired value	Refers to product's quality, stability, durability, and brand which are equal to product value.
Product risk	Refers to the risk that consumers take when purchasing the product, including product safety, advertising authenticity, and consumer's perceived risk.
After service	Refers to the service given to consumers who purchased product, including maintenance, renewal, and expandability.

## METHODOLOGY

### Q technique

Q-technique is a method used in study of human subjectivity (Chang, 2012; Dennis & Goldberg, 1996). Q-technique is also a qualitative and quantitative research method that defines interviewees' attitude through their own statements or point of views (Dennis & Goldberg, 1996). Through declarative sentences sequencing conducted by experts, Q-technique was adopted in this study in order to obtain the priority of importance level of impact on negative WOM on ICT corporate reputation. The procedures of Q-technique are as follows:

#### ***(1) Establishment of Q opinion population:***

- Literature analysis and population draft: Reviewed literature with the purpose of obtaining negative WOM dimensions and their operational definition, and arranged 42 declarative sentences of negative WOM. Subsequently, these declarative sentences were used to derive keywords for text mining; collecting various declarative sentences of customers' negative WOM on products and services from the internet, or writing declarative sentences from case examples. A total of 98 declarative sentences were formed as the Q opinion population.
- Focus Group: In the first meeting, 29 experts from a certain Small-and-Medium Enterprises consultants association, 4 scholars, and 6 mid-level ICT managing supervisors participated in the discussion on the issue related to the impact of negative WOM on ICT corporate reputation. Precursory questions were built up in this study to guide experts thinking thoroughly (Barbosa et al., 1998) with an open style interview requiring all experts to reply as specific and clear as

possible. Finally, the data was organized to form declarative sentences. The results of experts consulting and literature analysis contributed to 158 declarative sentences in total, making up Q opinion population.

(2) Random Q sample: Based on the sample design of single-layer structure (Kerlinger, 1973), 10~12 declarative sentences that can sufficiently reflect negative WOM in each dimension were selected. A total of 47 declarative sentences were selected to form a Q sample.

(3) Carrying out a flat sequence: In the second meeting, 16 people from managerial levels and 5 executives in the ICT enterprises, 7 experts from the academic sector and 6 consultants evaluated and categorized declarative sentences of Q population; all declarative sentences were individually put in a Q categorization table with the format of 3-6-8-10-8-6-3.

(4) Correcting Questionnaire: The expert team not only completed the Q categorization task, but also corrected the draft questionnaire developed from the 47 declarative sentences, which also served as a basis for exploring attitudes and finding characteristics of various factors.

(5) Q-technique data analysis: All data are coded after categorization by experts. Each level score +4 will get 9 scores and +3 will get 8 scores and so as do until to -4 to get 1 score. The purpose of this analysis is to gain a Q categorization table that will demonstrate the distribution of the strength of each negative WOM that impacts ICT corporate reputation, and the priority of each declarative sentence.

## Investigation

- Questionnaire development: The purpose is to understand respondents' background and to explain factors characteristics through the data obtained by factor analysis (Dennis & Goldberg, 1996; Chang, 2012). The draft of questionnaire fully incorporates with literature analysis result, operational definition, and declarative sentences connotation of experts of focus groups. Each question of the questionnaire is ranked with five scores as the most important and one score as the least important. The contents of questionnaire consisted of six dimensions including Configuration (eight questions), Product Effectiveness (eight questions), Function (eight questions), Desired Value (eight questions), Product Risk (seven questions), and After Service (eight questions).

•Data collection and analysis: The questionnaire survey is conducted through Internet and respondents who have same URL eliminated for a total of 481 valid questionnaires collected with 189 (39.29%) male respondents and 292 (60.71%) female ones. For the test of reliability and validity, the initial draft is conducted on content validity by experts of focus groups, to assure that the content of the questionnaire will completely replicate specific connotation. Secondly, Cronbach's  $\alpha$  is used to test reliability in order to inspect the internal consistency among respondents. The overall reliability value Cronbach's  $\alpha$  is 0.95, which is equal to excellent standard; and furthermore Bartlett's Sphericity Test is carried out to check if all dimensions are closed to multivariate normality. KMO (Kaiser Meyer Olkin) also is performed to get the result of Approx. Chi-Square 4715.51(df=480) which reaches a level of significance, indicating that there are common factors between correlation matrixes of the population, so factor analysis is suitable to be conducted. The use of factor analysis is to create customers' types and factor attitude of negative WOM that impact on ICT corporate reputation.

## RESULTS & DISCUSSION

### Q-technique from experts

The result of Q-technique used by experts shows in Figure 1. For instance, the impact ranks "the most serious" level are E37 and E33; the impact ranks "very serious" level are E34, B14 and D32. This result, when compared to the research conducted by Park & Lee (2009) and Ferguson & Johnston (2011), can better reveal the connotation of negative WOM and the importance levels that affect ICT enterprises. Although the impact ranks "less serious" level produces weak effect on corporate reputation, in accordance with Walsh et al. (2009), negative WOM still influences some variables such as trust, customer satisfaction, corporate reputation, and customer loyalty, producing a certain degree of effect.



Figure 1. Negative WOM of ICT products (Q-technique)

									C21. Inconvenient to use
									D30. Colour output distortion
									D29. Sound output distortion
									C19. Not friendly interface
									F47 Time consumed on maintenance
									E35. Functions inconsistent with advertising
									F40. Imperfect operation manual
									D31. Bad brand image
									D26. Bad quality control
									B16. Poor storage capacity
									F44. Few maintenance stations
									E36. Not anticipative functions
									C17. Insufficient function
									C22. No software renewal service
									F46. Short warranty period
									B11. Poor performance in battery endurance
									E38. Poor design
									F41. Not available for home service
									C24. Insufficient compatibility
									F43. High-pressure salesmanship
									B13. Too much noise
									B10. Easy to get heated
									A6. A uncomfortable texture
									A8. Poor line design
									F42. Longer time to wait for arrival of products
									F45. Seller's delivery delay
									C20. Not easy to operate
									E39. Product recall
									E34. Easy to cut and harm users
									A4. Poor colours options
									A1. Poor appearance design
									C18. Less built-in software
									C23. Insufficient expandability
									B15. A bad Internet connection
									D27. High Price
									D25. Bad quality
									B14. Low reliability
									E37. Explosion possibility
									A7. Old fashion
									A2 Traditional style
									A3. Poor visual effect
									A5. Non-biodegradable materials
									D28. Insufficient Cases and accessories
									B12. A bad system running
									B9. Too great a power consumption
									D32. A knockoff brand
									E33. Inclusive of hazardous substances
									Least serious
									Not really serious
									Not serious
									Less serious
									Normal
									quite serious
									Serious
									Very serious
									Most serious
									-4
									-3
									-2
									-1
									0
									+1
									+2
									+3
									+4



## Factor analysis

Principal Component Factor Analysis is used to extract common factors so as to determine customer types with Varimax Rotation method. Subsequently, four factors are generated and the accumulated percentage of explained variation is 66.16% shown in Table 2.

Table 2: Factors load chart on negative WOM of ICT products

n=481

Items	Factor 1	Factor 2	Factor 3	Factor 4
32	0.881	-0.010	-0.083	0.113
22	0.825	0.205	0.045	0.362
42	0.793	0.357	0.113	0.278
45	0.793	0.277	0.116	0.089
33	0.781	-0.007	-0.214	0.144
44	0.779	0.363	0.091	-0.002
18	0.773	0.203	-0.054	0.122
10	0.737	0.209	-0.069	-0.012
25	0.729	0.445	0.041	0.305
34	0.725	0.183	0.039	0.339
14	0.714	0.386	0.056	0.193
37	0.701	0.227	0.392	-0.024
36	0.685	0.489	0.236	0.121
3	0.678	-0.042	0.172	-0.164
40	0.675	0.503	0.033	0.344
29	0.635	0.605	0.151	0.105
16	0.600	0.422	0.036	0.022
26	0.591	0.355	0.036	0.475
46	0.572	0.309	0.129	0.488
35	0.537	0.469	0.134	0.361
17	0.525	0.099	0.294	0.321
31	0.522	0.516	0.243	-0.028
39	0.475	0.435	0.309	0.182
19	0.380	0.785	0.014	0.199
23	0.380	0.785	0.014	0.199
28	0.181	0.743	0.281	0.075
24	0.293	0.728	0.082	0.394
21	0.275	0.727	0.071	0.398
6	0.193	0.669	-0.087	0.020
9	0.416	0.650	0.029	0.231
30	0.597	0.601	0.137	0.121
8	0.562	0.598	0.209	0.215
7	0.415	0.551	0.413	-0.026
20	0.423	0.539	0.064	0.222
13	0.246	0.538	0.343	0.344
38	-0.277	0.491	0.388	0.025
1	0.173	-0.059	0.870	0.197
2	0.173	-0.059	0.870	0.198
41	0.191	0.411	0.648	-0.187
4	-0.089	0.089	0.599	-0.016
43	-0.2148	0.1860	0.496	0.455
11	0.016	0.425	0.067	0.804
12	0.288	0.041	0.001	0.794
47	0.061	0.465	0.322	0.651
15	0.336	0.596	0.065	0.619

Naming of the factors: Factor 1 is named “Service-centric” as all questions in Factor 1 are related to service issues; Factor 2 is named “Performance priority” emphasizing the importance of product effectiveness; Factor 3 is “Fashion style” because of product configuration concern; questions in Factor 4 are in respect of product desired value so the name for Factor 4 was “Value-worthy”. Factor 1 and Factor 2 dominate the most of distribution of questions.

### Factor attitude

In order to understand respondents’ factor attitude (Barbosa, et al., 1998) toward each question, Z Score is conducted for the sentences’ Factor Array. Because all questions are the transformation of those 47 declarative sentences, essentially, each factor includes a group of declarative sentences. If each question in factors shows a high factor attitude that means that question contains negative WOM with priority and high degree of importance. In Table3, For example, question 22 “No software renewal service” which belongs to Factor 1 “Service-centric”, customers categorized in Factor 1 focus on what service quality a corporate offered and the strength reaches +4, as shown in Table 3. In comparison with the research of Lee and Roh (2012) and Galbreath (2010), the result here may better demonstrate the strength of explanation for questions in the factor. In other words, by cross referencing Table 3 and Figure 1, the strength of factor attitude of each declarative sentence is revealed, which can serve as an important reference for ICT enterprises.

Table 3: Declarative sentences of Negative WOM on ICT products

Items	Factor			
	1	2	3	4
32	+4	0	0	+1
22	+4	+1	0	+2
42	+4	+2	+1	+2
45	+4	+2	+1	0
33	+4	0	-2	+1
44	+4	+2	+1	0
18	+4	+1	-1	+1
10	+3	+1	-1	0
25	+3	+2	0	+2
34	+3	+1	0	+2
14	+3	+2	+1	+1
37	+3	+1	+2	0
36	+3	+2	+1	+1
3	+3	0	+1	-1
40	+3	+2	0	+2
29	+3	+3	+1	+1
16	+3	+2	0	0

Table 3 contd..

26	+3	+2	0	+2
46	+3	+2	+1	+2
35	+3	+2	+1	+2
17	+3	0	+2	+2
31	+3	+3	+1	0
39	+3	+2	+2	+1
19	+3	+4	0	+1
23	+3	+4	0	+1
28	+3	+3	+2	0
24	+3	+3	+1	+2
21	+3	+3	+1	+2
6	+3	+3	-1	0
9	+3	+3	0	+1
30	+3	+3	+1	+1
8	+3	+3	+1	+1
7	+2	+3	+2	0
20	+2	+3	+1	+1
13	+1	+3	+2	+2
38	-2	+2	+2	0
1	+1	-1	+4	+1
2	+1	-1	+4	+1
41	+1	+2	+3	-1
4	0	+1	+3	0
43	-1	+1	+2	-2
11	0	+2	+1	+4
12	+2	0	0	+4
47	0	+2	+2	+3
15	+2	+3	+1	+3

## CONCLUSIONS

The study adopts the resource-based perspective and signalling theory, using the empirical research of the impact of negative WOM on ICT corporate reputation as access. Literature analysis, focus group, investigation and research, and Q-technique are applied in the study in order to receive a comprehensive result, which combines both qualitative and quantitative effects. The research result establishes 47 typical declarative sentences that are able to sufficiently describe how negative WOM produces impact on ICT corporate reputation, and moreover, each declarative sentence is put in priority order so as to be a useful reference for practical application. In terms of research contributions, the results obtained from this study may provide an early warning for ICT business operation, establishing crisis management mechanism for ICT enterprises; additionally, the analysis of research result obtains four types of negative WOM from clients including Service centric, Performance priority, Fashion style, and

Value-worthy, which influence ICT corporate reputation; finally, the value of factor attitude was calculated to measure different degree of influence that negative WOM produced on ICT corporate reputation; the contribution of this study can be applied for planning a strategy of reputation improvement, a product research and development, and customer type and marketing planning study.

In the aspect of practical application of research result, the declarative sentences that derive from Q-technique can be developed as a checklist according to their priority sequence, using for a basis of self-examining product's quality and service abilities. In addition, for the six dimensions of negative WOM and the factor attitude that demonstrates in questions, ICT enterprises may take their own resource ability into account and set up an extent to achievement of resource dominance abilities and WOM information application. Every project with a high achievement possibility in a short term may be applied directly to operation mechanism such as management decision making and business operation; the project that will be achieved in medium-long term can be a business developing objective or can be a guideline for establishing a scheme of corporate reputation improvement.

In terms of research limitations, the negative WOM of products is the core focus of this study, while a brand's influence on customers' ICT product purchase behaviour is not discussed in this study. Further research can be conducted on the correlation among brand, corporate reputation, and WOM; or it can be needed in this area, particularly concerning early warning mechanism that negative WOM can produce for ICT business operation, strategy planning for improving corporate reputation of ICT enterprises, and a study on Internet marketing toward different types of customers.

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