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# Online stakeholder interaction of some airlines in the light of Situational Crisis Communication Theory

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**Abstract.** The purpose of this paper is to explore the participation of main actors in Facebook. The engagement shows different degrees of participation that directly affect the brand image and reputation. This research applies Situational Crisis Communication Theory (SCCT) to interaction in the social media. It provides possibilities for decision makers to monitor diverse messages online, understand stakeholder concerns and reply to them adequately, which is especially important in crisis situations. Seven airline organizations were selected for a comparative analysis concerning their online discussions. The verified Facebook and Twitter accounts of those airlines were investigated, the status updates of the airlines and comments issued by other users during 2009-2016 collected along the replies and comments issued by the airlines themselves. The main methods are sentiment analysis, categorization of the messages into four categories and counting.

**Keywords:** Situational Crisis Communication Theory; Stakeholder theory; Airlines; Sentiment Analysis; Facebook; Twitter.

## 1 Introduction

Nowadays all large organizations have established own verified accounts on all major social media platforms to gain attention for their brands and activities, because customers and other stakeholders are reachable through them. Organizations need to protect their reputational assets among stakeholders. They can publish new products or services, information about organizational changes and other news through their social media accounts. The globally accessible platforms such as Facebook, LinkedIn and Twitter have attracted hundreds of millions of users, making the communication through them vitally important to society and business.

This paper explores the Situational Crisis Communication Theory (SCCT) with the observed communication behaviors of some airlines in Facebook and Twitter. SCCT deals especially with crisis situations. Particularly in them, negative word-of-mouth disseminates virally in social media [9] which may lead to damages in organizational image and harm the reputation. The literature on social media shows that also scholars have begun to explore the multiple voices of stakeholders [1,7,12], including custom-

ers, Facebook account owners, crew, authorities and so on. Organizations have become more visible online attracting different voices and clearly being scrutinized by the public and governing organizations [10].

This paper reviews the interactions on the verified Facebook and Twitter accounts of seven airlines and investigates how these seven airlines performed in their customer interactions as exhibited by their Facebook and Twitter account behavior. The hypotheses are: organization in crisis communicates more/less with the stakeholders' activities; organization in crisis experiences more negative sentiment from stakeholders than before. The contribution of this paper is to test SCCT theory in online crisis situation, and questions whether the theory should be enhanced towards the social media activities of organizations.

## 2 Situational crisis communication theory

Social media is important due to the billions of user profiles hosted by them and their potential to disseminate information to the general public and specific stakeholder groups [2]. Thus, organizations establish verified (official) accounts at major social media sites to post information online and engage stakeholders [7]. The immediate online sharing can enhance brand loyalty. However, negative publicity ("social media rage") can unexpectedly trigger organizational crises [13] and financial ramifications for the involved organizations which may even lead to bankruptcy.

It is noticeable that researchers increasingly scrutinize changes of public opinion towards organizations that experience crises [4,8]. To illustrate methods of responses in crisis situations, organizations are beginning to seek ways to enhance brand protection and prevent losses in reputation. Because of the complexity of crises, multiple response strategies may be required. Coombs [5] developed the Situational Crisis Communication Theory (SCCT) referring mainly to blogs and web sites as the main discussion venues in Internet, in addition to traditional mass media and direct contacts. Since coining it, SCCT has been applied to several organizational crises, such as the Amazon crisis in 2009 [3], and to the love Parade crisis in Germany in 2010 [11]. Fig. 1 [6] presents the major concepts and their relationships in SCCT. In the center there are the crisis responsibility and organizational reputation. These are related with the emotions towards the organization (arrow C), crisis history (the timeline of the current crisis and earlier crises, arrows B1-B2), and prior relationship reputation (how the organization was perceived earlier, arrows B3-B4). Crisis response strategies are employed to mitigate the harm to reputation of the organization among the stakeholders and calm negative emotions. They are related with crisis responsibility (arrow F1) and organizational reputation (arrow F2) and they affect the emotions (arrow F3) among the stakeholders and their behavioral intentions towards the organization (arrow E). The latter are also directly influenced by the perceived reputation (arrow D)

In most situations the theory encourages an active response strategy in interactions with the stakeholders, "dealing" with the crisis rather than "denying" the crisis. The theory suggests three crisis categories and different crisis response strategies based on the crisis category, including deny, diminish, rebuild, or perform reputation repair by

apology [3]. According to Coombs [6] categories are victim cluster, accidental cluster and preventable cluster.

However, it may be more difficult to clarify the situation to the social media audiences and enhance organizational compliance in this environment [8]. Therefore, we will focus the analysis on online interaction in Facebook and Twitter, and scrutinize how actively certain Facebook and Twitter account owners engage with their stakeholders in the online environment in various crisis situations and in normal operation. The reason we select SCCT theory is because we plan to investigate whether airlines have followed advices suggested by SCCT theory. For those airlines that are not in an acute crisis, it is the question of preventive reputation maintenance, for others it is mainly active reputation maintenance and repair. Referring to Fig.1, we will concentrate on the emotions of the stakeholders, their intentions and organizational reputation development among the stakeholders. Indirectly, we will report the activities airlines exert towards the stakeholders in social media and draw conclusions about the crisis response strategies based on them.

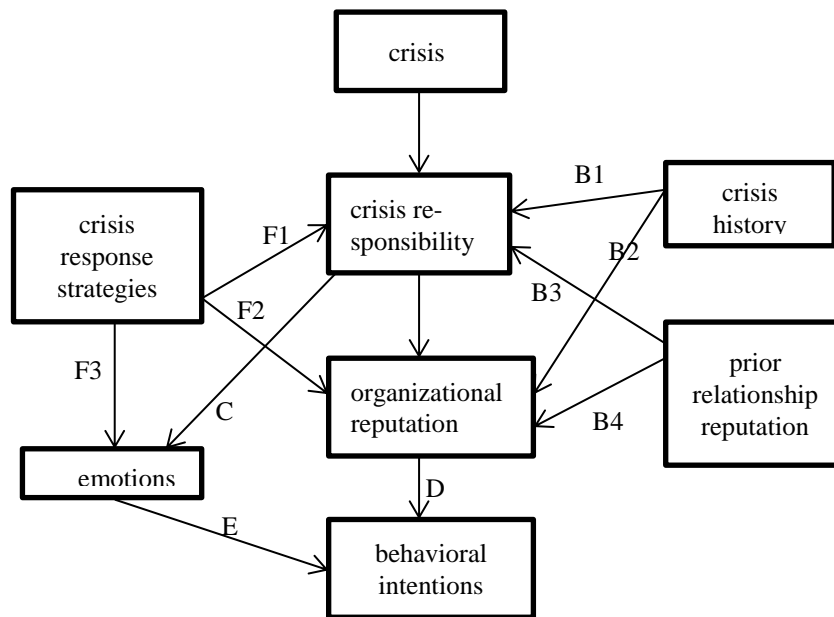


Fig. 1. SCCT central concepts and relationships (Coombs 2007b, Fig.1)

### 3 Methodology, data and findings

The data gathered relate to three airline organizations with a major or smaller crisis in 2010-2016, and data from four further airlines with no major crisis. The data was collected using Facebook graph API and Twitter REST API.

To assess the engagement of the airline companies, we analyzed their Facebook pages using the Graph API (<https://developers.facebook.com/docs/graph-api>). We collected posts, comments and replies published by the Facebook users and representatives of the companies mainly from January 1, 2015 to December 31, 2015. The airlines include: Malaysia Airlines (MA; with flights MH370 and MH17 lost in 2014 and data gathered also during 2014); United Airlines (UA) with crisis of turbulence amid probe 2015; Finnair (Fin) with a strike in Sep 2015; Norwegian Airlines (NA); Qatar Airways (QA); Singapore Airlines (SA); Cathay Pacific Airways (CA). The latter four airline companies were performing financially and otherwise well and we will seek for possible differences between them and those three above, as evidenced by their Facebook interactions with the stakeholders.

We also gathered all tweets we could from their verified Twitter accounts in April 2016 and June 2016. The upper limit Twitter enforces is 3200 tweets per account. For some airlines we could retrieve tweets sent by them since 2009, for the most active ones we could not retrieve even all tweets issued during 2015. Of the almost 40000 tweets collected roughly 25000 are replies to stakeholders, mostly to passengers. We also collected the tweets to which the replies were sent. So we could analyze the time it took to reply and the sentiment of the tweet replied to by the airline and the reply. Table 1 is based on data gathered from the seven verified Facebook accounts. It contains the number of posts by each airline, number of comments and replies from the stakeholders, and number of replies of the airlines to the comments. The identified stakeholder types were mainly airline customers who have relevant questions to the organization, and (the representatives of) the airline organizations in Facebook. The interactions happened mostly in form of answering to questioning, apology making to complaints, and greetings encountered by greetings.

Airlines	MA March 2014	MA 2015	UA 2015	Fin 2015	NA 2015	QA 2015	SA 2015	CA 2015
Statuses	25	92	54	81	75	114	57	87
Comments	3155	8900	14046	1704	2961	13726	562	851
Replies (customers)	539	4034	10502	289	649	2541	147	63
Replies (account owner)	1	1059	3649	81	106	340	103	12

**Table 1.** Owner performance based on the contrastive result of comments and replies versus account owner replies, Facebook accounts

Table 1 shows that most of airline organizations actively engage in the dialogue with relevant stakeholders in Facebook. In order to test the SCCT theory, we performed a content analysis and divided the replies into four different types: Acknowledgements or greetings in various situations (A); Answers to services or booking-related questions (B); Redirecting people to other client services or websites (C); and Apology making (D).

Type	MA March 2014	MA 2015	UA 2015	Fin 2015	NA 2015	QA 2015	SA 2015	CA 2015
A	1	453	712	6	15	48	75	3
B	0	438	1394	45	74	68	16	8
C	1	52	831	25	18	279	13	0
D	0	293	790	14	23	54	4	1

**Table 2.** Content analysis of the replies from the verified Facebook accounts of the airlines

The mapping of the messages into one category was performed based on the major information content conveyed, although in some cases the message could have been placed into several categories. For example on December 19, 2015 MA replied: "Hi Elizabeth, we're sorry for letting you down with our services. May we recommend that you drop us a formal feedback/complaint at customer@malaysiaairlines.com so that our Customer Care team could look into this issue better? Thank you." This was considered to belong to category D, but it could be also categorized into C.

Concerning the Malaysia Airline case, the March 2014 data from Facebook was collected immediately after the MH370 was lost. The collection started from 7<sup>th</sup> March 2014 and lasted to 26<sup>th</sup> April 2014. The bad performance of the MA in Facebook is evidenced by the fact that there was only one reply from the verified account owner of MA towards customers. The situation has improved in 2015, as evidenced by the hundreds of replies and apologies issued by MA mainly towards its customers.

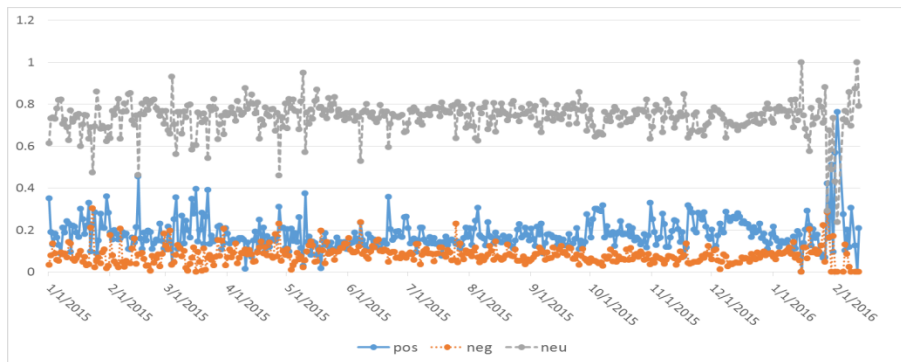
The ownership changes of MA are also worth noticing, Khazanah National Berhad (sovereign wealth fund of the government of Malaysia) which is the majority shareholder of MA begins to compensate the minority shareholders and purchase remaining ownership to renationalize the organization in August 2014. MAS (Malaysia Airlines System) was ceased operations on 31<sup>st</sup> August 2015, MAB (Malaysia Airlines Berhad) was launched to rebrand with reduced working employees and routes adjusting on 1<sup>st</sup> September 2015. This could be the trigger event of the attitude changes on the performance of MA Facebook verified account.

The financial reports of MA in the web indicate that the company made more losses in 2014 than in 2015. The current estimates tell that the company will be profitable again by 2017. The other 6 companies in the sample were profitable in 2015.

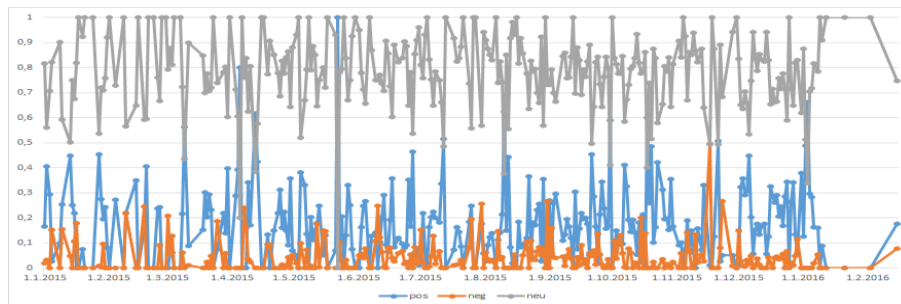
United Airlines had a turbulent period 2015, but still the company was profitable in 2015 while exhibiting a strong Facebook engagement with customers. Finnair had labor force strike in May 2015. It shows active engagement towards its customers throughout the year.

We performed a sentiment analysis on the collected Facebook and Twitter data, recording positive/negative/neutral sentiment score of the whole comment (pos/neg/neu). The range of all scores is [0,1]. A comment might include several sentences. In this case the score of each sentence is calculated separately in a similar format. In Fig. 2 there is a graph for the entire comment set gathered from UA Facebook account in 2015. Most comments are mainly neutral and positive sentiment

overwhelms during most days the negative sentiment. In Fig. 3 there is a similar analysis performed for the Finnair posts and comments. The peak of negative message at the end of Nov. 2015 requires further study. Table 3 lists number of tweets sent by the seven airlines year by year, percentage of replies, average response time to show the comparison. In Fig.4, there is the sentiment analysis on tweets that were replied to by Cathaypacific Airline.



**Fig. 2.** Sentiment analysis on Facebook comments, 2015 full year average, United Airlines



**Fig. 3.** Sentiment analysis on Facebook comments, 2015 full year average, Finnair

Year	Airline															
	MA	UA	Fin	Fhelp	Fsuom	NA	QA	SA	CA	CA_ZA	CA_CA	CA_UK	CA_IN	CA_AU	CA_US	
2008			11.10.				29.4.		22.10.							
2009	17.1.									14.10.	91	9	9	9	4.5.	
2010						19.8.				2	16	237	67	67	45	3
2011		4.3.						17.2.		1	113	151	24	24	126	
2012				2.4.						3	269	292	114	114	390	
2013						422				9	130	795	132	132	556	129
2014						872				1	83	425	24	248	639	907
2015	464		2019	993	676		1372		2558	136	359	709	709	637	1866	
2016	3884	6438	1780	2225	435	6451	2843	3221	1096	137	163	351	351	212	478	
Collected	4348	6438	3799	3218	2405	6451	4215	3221	3670	884	2513	2780	1654	2614	3383	
Replies, %	93 %	99 %	69 %	95 %	46 %	94 %	75 %	95 %	84 %	8 %	28 %	51 %	12 %	49 %	55 %	
Replied %	61 %	93 %	87 %	1 %	0 %	92 %	100 %	91 %	81 %	46 %	58 %	68 %	63 %	74 %	77 %	
Med. resp	9h30'	0h16'	3h05'			1h10'	7h10'	0h22'	7h15'	15h	4h 10'	6h40'	6h 30'	5h40'	2h45'	
Avg. resp	10h12'	1h20'	6h38'			2h47'	7h51'	1h21'	8h57'	12h21'	7h 42'	9h17'	8h 05'	7h49'	6h23'	
Statuses	26700	598000	11100	9166	2405	26300	27500	27600	16300	887	2519	2786	1669	2614	5944	

**Table 3.** Number of tweets collected from the seven airlines, percentage of replies among the collected tweets, percentage of the retrieved replied-to tweets response times

Table 3 contains the overall analysis results of the Twitter data collection. In most columns there is a date, such as 11.10 under Finnair (Fin) on the row 2008. It denotes the date when the Twitter account collected here was established. For instance, the account with the screen\_name @Finnair was established on October 11, 2009. If the date is missing from the table, it means that it was established in the year the first tweets were sent. This is the case for several Cathay Pacific subsidiary accounts. Most accounts were established in 2008-2010, although United has established it on April 2, 2011 and Singapore Airlines on February 2, 2011. The dates show when social media presence has become important for the airlines. All other accounts are verified, except @Fly\_Norwegian. From the account description and contents of the tweets one can still infer that the latter account is controlled by the Norwegian.

The bottom row named 'Statuses' tells how many Twitter status updates the airline had issued on a verified account by June 13, 2016. It tells how active the airline has been at Twitter. United has tweeted almost 600,000 tweets in total and others mostly ten to thirty thousand times. Because Twitter only allows 3,200 tweets to be collected from an account, for most airlines we could only retrieve tweets from 2015-2016. Unfortunately, we cannot thus follow development over a longer period of time, except for some Cathay Pacific subsidiaries, for which the data starts from 2009. The row 'Collected' tells how many tweets we were able to collect from the corresponding Twitter account of the airline. They show a tendency to increasing volumes. The total number of collected tweets from the accounts is roughly 51,600.

We parsed the tweet contents into a database table and marked into the records which ones were replies to earlier tweets. In total, we parsed 67 attribute values from a tweet, if available. We paid attention especially to the replies, because they especially show the interaction with the stakeholders. The row 'Replies' in Table3 indicates which percentage of the collected tweets are replies to some earlier tweets. This varies a lot between airlines and accounts. High percentage shows that the airline uses Twitter as a vehicle to interact with the stakeholders. Low percentage indicates that the airline uses the account more for informing the stakeholders. To analyze the re-



plied\_to tweets, we attempted to collect as many replied-to tweets as possible using the statuses\_lookup function of the Twitter library. The row 'Replied' tells how many replied-to tweets we could collect for the replied tweets. For instance, United had almost all tweets replies (6,392 tweets out of 6,438) in the collected data set. We could collect 93 % of the tweets to which United replied, i.e. 5,944 earlier tweets sent by other stakeholders to whom United replied. These were either directly sent to the United account @united or @united was mentioned in the tweet text alone or among other screen\_names. In the latter case Twitter forwards the tweet to those "mentioned" in the text.

The other data set containing the replied-to tweets contains roughly 30,000 tweets. Thus, we could retrieve about 57 % of the replied-to tweets in average. We did not analyze the reasons why we could not retrieve the missing 40 %. One can still see that the more recent the originally collected tweet is, the more probable it is that the replied-to tweet can be retrieved and vice versa, as the United account shows. The reasons for failing to retrieve the replied-to tweets is for further study, but obvious reason are that the user has protected his or her tweets, or the account is closed .

One aspect of the reputation of a company is related with the reaction time of the company to customer tweets or other messages, like emails, phone calls, or text messages. Because we collected the replied-to tweets, we could calculate the duration between the replied-to tweet and the subsequent reply. We consider this as the response time to the customer. There are striking differences between the average and median response times between the accounts. United and Singapore Airlines responded in tens of minutes, measured by the median response time, Norwegian responded in less than 2 hours. The average response time was still over an hour in all cases. The rest responded roughly in half a day. The data contains over 1,700 instances where the response time is between 1 and 2 days. In about 3,400 (11 %) of the cases the response time exceeds one day.

Who were the stakeholders to whom or to which the airline responded? We investigated a tiny sample of replied-to tweets and the accounts. Most tweets seemed to deal with problems the airline passengers had (luggage lost, reservation number does not work, call center is not reachable), but there were also positive tweets telling how wonderful the business class of the airline was. The replies were often requests for the customer to send a direct message to the airline, apologies for the inconvenience experienced by the passengers, or advice to call the call center. Further contents analysis is required to better understand what the issues were handled in replies. A longer tweet history should also be collected in order to understand, for instance, how a crisis influences the contents and sentiment, as well as tweet frequency.

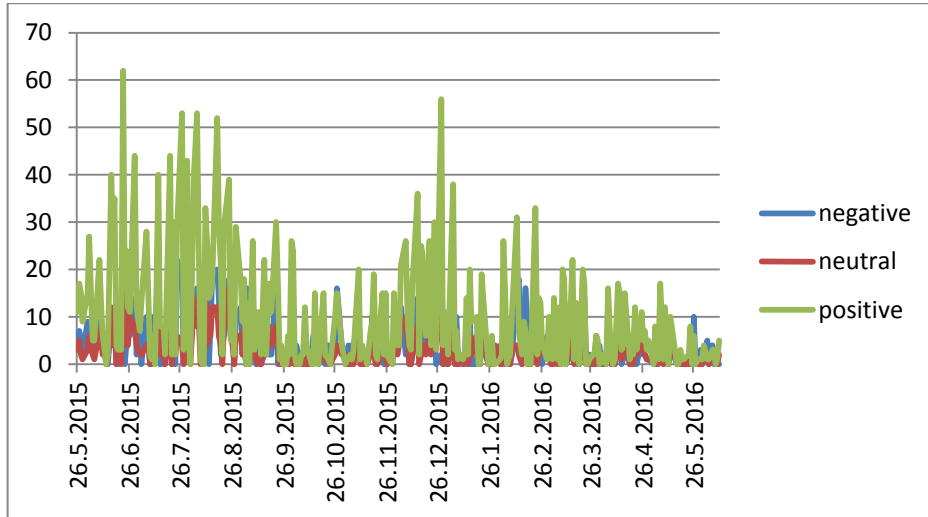


Fig. 4. Sentiment analysis on tweets that were replied to by Cathay Pacific Airline

## 4 Conclusions

The number of Facebook messages during 2015 varies among the airlines, from less than 1,000 to circa 25,000 and does not seem to correlate in any clear way with the customer base size. It requires more analysis, whether number of messages in different categories is correlated with problems in services or other kind of crises. MA evidently decided to put resources into Facebook and Twitter account handling in spite of financial losses during 2015, after the catastrophic 2014, during which it did not reply to customers.

According to our findings, the hypothesis has been accepted that organization in crisis experiences more negative sentiment from stakeholders than before, for example in January 2015, Cathay Pacific had the crisis of scales back expansion plans, blames cockpit crew dispute, in Fig. 4, the amount of negative sentiments are more than positive ones.

As mentioned before, SCCT focuses on how to react to crisis, based on causes and responsibilities [11] for crises, and in most situation, applying SCCT centers on “dealing” with the crisis rather than “denying” the crisis. We noted that supportive replies to customers concerns formed most of the owner account replies. Apology making strategies were commonly used to comfort those expressing anger and negative comments. Therefore, this research provides empirical evidence on SCCT theory that Facebook account owners try to repair reputation after crisis through appropriate apology making strategies in which support the hypothesis that organization has communicated more with stakeholders’ activities. Meanwhile, also redirecting strategies were visible that take away grounds for dissatisfaction and provide positive solutions, in the case of crisis situation, an organization’s strong engagement helps reputation repair.

SCCT theory emphasizes that key responsible actors, in the case of the airlines this relates to managers taking responsibility, efficient and effective engagement of the online dialogue, providing organizations opportunities to monitor social media and other online word-of-mouth. SCCT theory provides a reality-based guidebook when encountering different crisis situations. Applying the perspective in this study shows that airline organizations are “dealing” with the crisis, taking responsibility which may exert a profound impact on their brand images, such as by apology making. When considering SCCT theory as a whole, there are several categories: deny, diminish, and rebuild [5]. In this research, rebuild category is selected to deal with the crisis and apology making strategies is one of the major process to reputation repairing, future research could illustrate more on various perspective.

In this study, several limitations exist in the analysis and data collection. Similarly, the financial performance of each airline could get attention, because degradation in profitability could be a cause or an effect of a crisis. In the data analysis, topic modeling and text mining techniques could be utilized to decompose the content of comments and replies. These steps will be performed in the future.

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