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Exploring Information Acquiring and Information Sharing Behavior of Youth Participants Before and After Umbrella Movement

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Abstract

Despite the central role of interactivity in the online media, the available literature provides conflicting findings. A stream of research supports the view that increased levels of interactivity in a web environment are positively related to effective advertising results such as formation of positive attitude toward the brand and increased pre-purchase intentions. However, another stream of studies posits that enhanced levels of interactivity are associated with negative effects on the online communication process such as limited process of the provided information. Therefore, the purpose of this study is to shed light in the above discrepancies and clarify the role of interactivity on online advertising effectiveness. The paper synthesizes the emerging Internet related and marketing literature in an effort to understand the way interactivity impacts advertising effectiveness for low involvement products. An experimental study is employed aiming at examining the influence of various interactivity levels (high, medium, low) on website effectiveness expressed the attitude towards the website, intention to revisit the website and pre-purchase behavior.

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Introduction

Background

The unprecedented occupy protest "Umbrella Movement"[1] broke out in 2014 has been marked as the biggest social movement in post-handover era of Hong Kong. Triggered by the a decision of National People's Congress Standing Committee on Hong Kong 2017 election framework, the movement started from 28 Sep 2014 with law professor Benny Tai's announcement of "Occupy Central" [1-3], leading to the occupy action in Admiralty, Mong Kok, Causeway Bay, and some other districts in Hong Kong. Ten of thousands of people occupied major commercial zones, blocking roads and setting up camps for residence, in pursuit of the political goal: "universal suffrage and real democracy".

According to the poll conducted between 20 and 23 October 2014, by Public Opinion Programme of the University of Hong Kong [4], around 18 % of the respondents claimed to have participated in the movement. The occupy movement lasted for 79 days and ended in 15 Dec 2014, with the final cleaning action from police on all the occupied sites [5].

The political dispute did not end with cleaning action on the occupy movement. Instead, for some occasion, it turns to a more severe way in reaction to the ruling regime of the city and even to the mainland China. A typical example is the civil unrest a year later since the end of Umbrella Movement, which has been named by some foreign media as "Fish ball Revolution" in night on 8 Feb 2016 [6].

From peaceful occupation to unrest by violence, changes in behavior among those participants over past years are phenomenal. Given the argument from some scholars that information activities are key to such kind of social action in modern world [7,8], it would be worthy to investigate the information behavior of those Umbrella Movement participants before and after participating in the movement.

[1]The term "Umbrella Movement" originates and is different from the previously-proposed occupy action, "Occupy Central with Love and Peace (in short, "Occupy Central"), which was initiated by Benny Tai and his team with the idea to occupy Central district only. However, some of the local media still adopted the term "Occupy Central' for report and analysis.

Purpose and the research questions of the study

No matter in the relatively peaceful civil disobedience action "Umbrella Movement" or the protest with violence "Fish ball Revolution", one of the key features in such movements is the involvement of young generation. Contrary to those protests in the past, young participants took the role as major actors during the Umbrella Movement in both leading and supporting levels [3]. This trend of youngster's participation in social movement is expected to be sustained in the foreseeable future, given the political dispute unsolved.

This study does not aim to investigate deeply on political issues, which already been conducted by political scientists. Instead, as inspired by the argument from Eyck [9] on the importance of dissemination of information over a political protest, the focus of the current study is placed on the pattern and change in information behavior on, and after the event.

With a closer look at the cases of Umbrella Movement and later on "Fish ball Revolution", youngster with higher political awareness and higher education level were playing the key roles in these protests. Examples include the leaders Hong Kong Federation of Students and Hong Kong Indigenous. Under this circumstance, "youth participants" here in this study would refer to undergraduates for similarity of those personal features.

This study applies the framework of Information Acquiring and Sharing from Rioux [10], which elaborates the information acquiring behavior and information sharing of individual with explanation of causal relationship between these two key concepts. With this framework, the research questions of this study include:

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1. RQ1. Is there any change in the patterns of information acquiring and information sharing behavior of those youth participants?
2. RQ2. Do the role and extent of participation in Umbrella Movement influence the change in information behavior?
3. RQ3. To what extent the Rioux's framework could be applied on the situation of post-Umbrella Movement participants, especially the claims from IA&S that sharing information could generate positive affection?

Literature Review

Information acquiring

Given the fact that both "information acquiring" and "information sharing" are under the category of "information behavior", it is rational to begin the review with conceptualization of "information behavior". Among the numerous elaborations on the term, Wilson [11, p.49] offers a concise definition of "information behavior" as "… the totality of human behavior in relation to sources and channels of information, including both active and passive information seeking, and information use…"

For the main stream of information studies, information behavior has always been referred to information seeking behavior [12], which is the purposive action for information to satisfy some goal of seeker. However, some scholars also admit that there is alternative forms of obtaining information which are non-directed, non-purposive, such as Chang's modification on browsing behavior [13-15]. Erdelez [16] demonstrates the concept of "information encountering" in which a person may find information when they are not seeking for it. Based on this concept, Erdelez also questions the use of "information seeking" to denote to all types of acquisitions for information, because the term "seeking" implies the element of active pursuit for something.

With this clarification from Erdelez, Rioux (2004)[17] further argues that information acquisition (information acquiring) is not identical with information search. Rather, Rioux's concept of information acquiring covers all ways or action of obtaining information, or in other words, includes both information seeking and information encountering.

Regarding the application on the subject of this research, youngsters in Hong Kong who are concerning about the political future might purposively look for specific information in some occasion. However in normal daily life, they may not always keep searching intentionally, instead they are non-purposively informed by social network tool or other sources of information. Considering this combination of purposively and non-purposively acquisition, the term "information acquiring" from Rioux [10] is suitable to be adopted in this study.

Information sharing

Obtaining something implies giving of something from some others. However, sharing of information received less attention from researchers [18-20]. Most of the well-known models in information behavior studies are investigating seeking behavior [12]. Information sharing was once a relatively unexplored part of the information behavior.

Among the fully developed models on information behavior, Krikelas [21] was one of the first researchers who proposed the concern of "Information giving" as a mirror to information gathering in this mode, in which the term "information giving" was defined as "the act of disseminating messages [which] may be communicated in written, verbal or tactile forms". Though Krikelas did not elaborate much further on the concept, he pointed out that individuals are typically both senders and receivers of information, and neither the role is independent of the other [21,12].

Another scholar who recognized similar idea of information sharing was Wilson [22]. From Wilson's first model, the existence of information exchange between people as a stage in the overall process of information seeking was recognized. Information exchange, as noted by Wilson, referring to informal transfer of information, is another major way of receiving information apart from information seeking behavior. However, Wilson also admitted that relatively little attention has been paid upon informal transfer of information among individuals [12].

Despite these findings, the phenomenon did not receive much scholarly attention, until late 1990s [11]. The situation was altered since mid-2000s, the work on information sharing and its related themes have emerged gradually. Those emerging researches could be categorized into two mainstreams according to their conceptualization: the broad concept of "collaborative information behavior, to specific analytical concept of "information sharing" [20]. For those adopt the broad interpretation of the concept, information sharing is viewed as one of the several information-related activities under the scope of "collaborative information behavior". Examples of this category include Tajia and Hansen [23], and Foster [24]. While specific conceptualization of the key term "information sharing" highlights particular aspects of the activities of information sharing, such as social information sharing and strategic information sharing from Talja (2002)[25].

No matter from the broad or specific interpretations on the phenomenon, "information sharing" seems to be the most favored term on conceptualize such kind of sharing activities [20]. With this premise, this study will adopt the definition on information sharing from Sonnenwald [26] in which the concept is denoting to a set of activities by which information is provided to others, either proactively or upon request, such that the information has an impact on another person's image of the world.

Information acquiring and sharing framework

Either information acquiring or information sharing may not be able to describe the holistic pattern of information behavior of a person. The Information acquiring and sharing framework (IA&S) is offered by Rioux [10] as a syntheses to these two parallel categories of information behaviour. Prior works by Rioux [10] and Fisher et al. [15] suggest that IA&S refers to a series of behaviors and processes in which an individual participates:

1. Cognitive stores representations of other people's information needs
2. Recalls those needs when acquiring information
3. Make association between the information that has acquired and someone s/he know who perceive to need or want this information
4. Shares this information in some way

Below as the illustration to present the details of IA&S framework[2] :

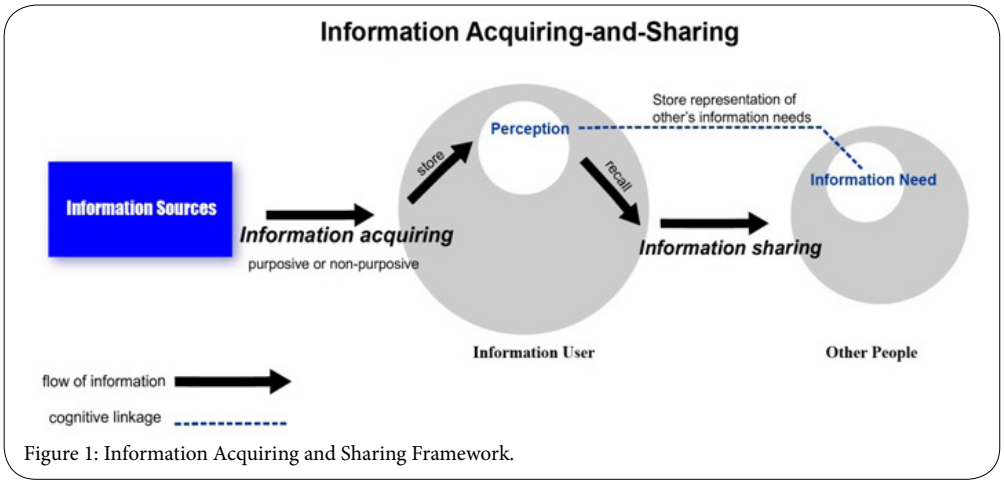

Figure 1: Information Acquiring and Sharing Framework.

Based upon Rioux's [18] earlier work on similar issue which was named as SIFFOW (Sharing Information Found For Others on the Web), IA&S is also inspired by Erdelez's notion of information encountering, in which information "bumped into" a user non-purposively and these sorts of unexpected acquisition information may benefit others' information need. Under this situation, sharing of behavior may be triggered and positive effect is likely to be resulted by sharing action.

In comparison with other information behavior models, IA&S cover two key elements of actions in which participants of Umbrella Movement were undertaken, acquiring and sharing information. The replacement of the use of term "information seeking" by "information acquiring" also resemble the actual experience of information user in political participation, in which information are automatically approached to the user by numerous ICT tools and platforms.

Emotion and information literacy

Notification on affective aspect of information behavior could be linked to pioneering work from Kuhlthau [27] on outlining the famous Information Seeking Process (ISP). One of the key contributions from Kuhlthau is the notion that a user's affective state may influence his/her information behavior, and this paradigm has been widely adopted among the studies of the kind [28]. Some other scholars go further to link up the emotion to information literacy. Matteson [29], for example, discovers that emotional intelligence is positively related to students' information literacy scores.

Again, despite the emerging researches on affective elements of information behavior, most of the works focus on information seeking phenomenon [28]. A recent article from Savolainen [30] reveals that emotions are flexible elements of information sharing in online discussion group in which emotions are associated with the comments posted on the forum in diverse types. But still, such kind of work only count for a small proportion of the whole output from the research community.

Information, politics and Umbrella Movement

Numerous works have been done on the roles of information within mass scale protests and social movements around the world. The famous "Occupy Wall Street" movement, which actually inspired the rise of Umbrella Movement, has received academic debates with focus on information-related issues [31]. The use of new media and social network tools in these protest or occupy actions has been deliberately analyzed [7,8].

In a more theoretical way, relationship between information behavior and protest could also been highlighted by a political sociology concept: *framing*. As stated by Benford and Snow [32], *framing* could be regarded as the process to share interpretation of "who should act, why and how" among participants in a protest by dissemination of information. Under this premise that information is crucial in the effectiveness of mobilization during social movement, significance of information behavior among the participants should not be neglected.

On the other hand, studies on protests in Hong Kong before the Umbrella Movement were not in lack of contributions from political scientists and sociologists. But the focuses of these researches were rather by 'regular' disciplines of political science, such as civil society and democratization [33]. Researchers such as Lau [34] and Cheung [35] provide concise analysis on political interest and features of participation of youngsters, while the aspect of information behaviour did not attract much attention.

Starting from 2015, with the end of Umbrella Movement, research outputs on the Movement emerged. Chan [36] contributed an early review on origins of Occupy Central at the time when the Movement was still in progress. Yuen [3] offered an overview on the Movement with analytical work from perspective of rule of law, highlighting the contradiction between the two opposite camps during the Movement. However, few of them deeply discussed the issues by looking at the information activities from these youth participants. Lee and Chan [37] indeed investigated the digital media activities of participants during the Movement but they did not study any change in information behavior among the participants after the Movement, nor did they narrow down the target group of study. It leads some research gap for in-depth study as regard.

Regarding the understanding of the affective issues among the participants, Li [38], Ren [39] and Zhao and Liu [40] outlined a shared feeling of "frustration" among the participants, while survey from Chan [41] revealed that "anger" was a major emotion to motivate people to join those protests. These resources serve as supplementary references to this study for ideas on building hypotheses on impact of affective status on information behaviour.

[2]This illustration is drafted by author of this paper based on Rioux's description on the framework. Original text from Rioux does not provide graphical illustration.

Hypotheses Development

With the identification on the scope of studies and research gap by reviewing preliminary works and literatures in previous section, it is possible to further elaboration the research questions, which have been determined in earlier section, and proposed hypotheses to outline the relationships between variables. Here as the hypotheses under categories by research questions.

Hypotheses related to Research Question 1 (RQ 1)

Regarding the change in information behaviour, based on the reviewed literatures and other observation, it is likely that participants, who were engaged in the information activities during the Movement, would sustain their practices. Hence, hypotheses for RQ1 are suggested as below:

H1: After the Umbrella Movement, youngsters tend to share political information more frequently.

H2: After the Umbrella Movement, youngsters tend to use Facebook more frequently in acquiring and sharing political information.

H3: After the Umbrella Movement, youngsters tend to use Whatsapp more frequently in acquiring and sharing political information.

H4: After the Umbrella Movement, young participants become reluctant in access to information sources from opposite political camp.

H5: After the Umbrella Movement, young participants tend to adopt "read-title-only" in acquiring political information.

Hypotheses related to Research Question 2 (RQ 2)

From literatures, such as Lee and Chan [37], more involved participants have engaged in various information activities during the Movement. Supposing this pattern is sustained, hypotheses are suggested correspondingly as:

H6: Participation has positive effect on individual's information behaviour

H7: Role of participation is positively related to frequency information sharing

H8: Days of participation is positively related to frequency of information sharing.

H9: Perceived extent of participation is positively related to frequency of information sharing

Hypotheses related to Research Question 3 (RQ 3)

One of the key findings from IA&S framework is the attribute of emotion associated with information activities, especially information sharing. Considering the features of Umbrella Movement, hypotheses are offered here:

H10: Emotion such as anger and frustration is associated with information sharing

H11: By information sharing, participants could reduce the level of negative affection.

Method

Subjects

The respondents targeted for this study were undergraduate students who study at public universities in Hong Kong. Data analyzed below were derived from a survey with which was conducted during March and April 2016, approximately a year later on since the end of Umbrella Movement. Respondents were the university students from three public universities, including the University of Hong Kong, the Chinese University of Hong Kong, and Lingnan University.

Data collection

This sampling method was designed as a result of the constraint in approaching to the target respondents. As the goal of the research is to study the information behavior pattern of youth people who once participated in Umbrella Movement, but those participants are now scattered around this city. Also, Umbrella Movement was after all an illegal protest for its occupying actions. Difficulty was expected to be high on finding those target respondents without certain connection by third party or institution. Based on the assumption that those who study politics, law and other social sciences are concerning about the political debate and social issues, and they are likely to be the participants of Umbrella Movement, author of this paper approached to the facilitators of those courses and got permission from them to conduct survey by questionnaire on their students.

Depending on the attitudes and preference of course facilitators, the delivery of the questionnaires were in two ways, printed form and online version. For the way with printed form, questionnaire were distributed to students directly during the class and collected in person. While for those facilitators who preferred online version, due to the consideration about timing, hyperlinks to the online questionnaire were provided to students, inviting them to complete the online questionnaire at home.

Results

Descriptive statistics of subjects

Finally, 131 filled questionnaires were collected either through online platform or by printed format. Altogether 124 questionnaires were completed, and all of the respondents were between 18 to 25 years old. Out of these valid respondents, 93 out of them did participate in Umbrella Movement in some extent and pattern. These responses were used in the analysis. Table 1 shows the basic demographic distribution of the respondents.

Except for the demographic session, most of the options for responses were measured on a five-point Likert scale. For special parts such as selection on the role of participation in Umbrella Movement, multiple answers are allowed, while these sets of data have been converted into a measurable and comparable rank, and this arrangement will further been described in following part.

Characteristics	Number of Respondents	Percentage
Gender		
Male	60	48.4
Female	64	51.6
Age		
18 - 20 years	67	54
21 - 23 years	51	41
24 - 25 years	3	2
Missing data	3	2
Participation		
Yes	93	75
No	31	25
Status during Umbrella Movement		
Secondary school students	34	27.4
University students	85	68.5
Employed	1	8
Self-study	3	2.4
Others	1	8

Table 1: Distribution of Respondents According to the Demographic Characteristics.

Findings associated with Research Question 1

Changes in patterns of information behaviors among the participants are mainly examined in three themes: the frequency of sharing, preference over sources and platforms on sharing and acquiring information, and the abilities to justify information. For the first one, change of frequency of information sharing is testified by verification on Hypothesis H1. As shown in Table 2, by the questionnaire results generated from those participants (n=93), mean of score of frequency of sharing information before the Umbrella Movement as 3.76[3], (SD=1.00), while after the Movement the score was turned to 3.51, (SD=0.94). This finding supports the Hypothesis H1 and signifies an increase in frequency of information sharing among the participants after the Movement.

Variable	M	Mdn	SD
Frequency of sharing (before)	3.76	4.00	1.00
Frequency of sharing (after)	3.51	4.00	0.94
(Asymp. Sig. = .008; Effect size = 0.273)			

Table 2: Frequency of Sharing Political Information by Participants Before and After the Umbrella Movement by Wilcoxon Signed Rank Test.
Note. N=93

Hypothesis H2 and H3 were determined for investigation on change in preference over sources for acquiring information and sharing information, with focus on the uses of Facebook and Whatsapp. Table 3 shows a comparison of mean scores on sources for acquiring information and platform for sharing information among participants (n=93), before and after the Movement (Appendix 1). From the results, though relationship between acquiring information through Facebook before and after the Movement was not statistical significant (Asymp. Sig.=.943), the mean scores (M=1.62, SD=0.78 to 0.79), were the highest rankings in using among all other sources. Also, for sharing information by Facebook, mean score changed from 2.81 (SD=1.11) before the movement, to 2.43 (SD=1.11) after the movement. With these results, H2 is supported and it implies that Facebook is the most popular sources and sharing platform for the participants.

[3]The lower the value, the higher ranking of frequency.

Variable	M	Mdn	SD
Acquiring - Facebook (before)	1.62	1.00	0.78
Acquiring - Facebook (after)	1.62	1.00	0.79
(Asymp. Sig. = 0.943)			
Sharing - Facebook (before)	2.81	3.00	1.11
Sharing - Facebook (after)	2.43	2.00	1.11
(Asymp. Sig. = .004 ; Effect size = 0.297)			

Table 3: Use of Facebook byParticipants Before and After the Umbrella Movement by Wilcoxon Signed Rank Test.
Note. N=93

Variable	M	Mdn	SD
Sharing - Facebook (before)	2.81	3.00	1.11
Sharing - Facebook (after)	2.43	2.00	1.11
(Asymp. Sig. = 0.004; Effect size =0.297)			
Sharing - Twitter (before)	4.83	5.00	0.50
Sharing - Twitter (after)	4.80	5.00	0.60
(Asymp. Sig. = 0.524)			
Sharing - Youtube (before)	4.04	4.00	0.99
Sharing - Youtube (after)	3.83	4.00	1.14
(Asymp. Sig. = 0.034; Effect size =0.220)			
Sharing - Whatsapp (before)	3.46	4.00	1.03
Sharing - Whatsapp (after)	3.14	3.00	1.13
(Asymp. Sig. = 0.002; Effect size =0.325)			
Sharing - Telephone (before)	4.17	4.00	0.84
Sharing - Telephone (after)	4.05	4.00	0.96
(Asymp. Sig. = 0.255)			
Sharing - Email (before)	4.41	5.00	0.74
Sharing - Email (after)	4.20	4.00	0.98
(Asymp. Sig. = 0.034; Effect size =0.220)			

Appendix 1: Comparison on preference on platform for sharing information, before and after the movement.
Note. N=93.

While for H3, results (see Table 4) show that there is a drop in using Whatsapp for acquiring information from 2.45 of mean score (SD=0.90) to 2.84 (SD=1.06) after the movement. Though the frequency in using Whatsapp was increased from 3.46 mean score (SD=1.03) before the Movement to 3.14 (SD=1.13) after the movement, H3 is after all not fully support by the data.

Variable	M	Mdn	SD
Acquiring - Whatsapp (before)	2.45	3.00	0.90
Acquiring - Whatsapp (after)	2.84	3.00	1.06
(Asymp. Sig. = .000 ; Effect size = 0.392)			
Sharing - Whatsapp (before)	3.46	4.00	1.03
Sharing - Whatsapp (after)	3.14	3.00	1.13
(Asymp. Sig. = .002 ; Effect size = 0.325)			

Table 4: Use of Whatsapp by Participants, Before and After the Umbrella Movement.
Note. N=93

Apart from the findings associated with H2 and H3, certain parts of other finding are noteworthy as well. From the results (Appendix 2), it is noted that the using of TV and newspaper for acquiring information was recorded a reduction in frequency. For use of acquiring information by TV, it decreased from 2.20 of mean score (SD=0.96) before the Movement, to 2.65 (SD=1.06) after the Movement. And for newspaper, it's using frequency for acquiring information decreased from mean score 2.56 (SD=1.04) before the Movement to 2.82 (SD=1.11) after the Movement.

Variable	M	Mdn	SD
Acquiring through Facebook (before)	1.62	1.00	0.78
Acquiring through Facebook (after)	1.62	1.00	0.78
(Asymp. Sig. = 0.943)			
Acquiring through Twitter (before)	4.77	5.00	0.53
Acquiring through Twitter (after)	4.82	5.00	0.51
(Asymp. Sig. = 0.248)			
Acquiring through Youtube (before)	2.95	3.00	1.08
Acquiring through Youtube (after)	2.78	3.00	0.93
(Asymp. Sig. = 0.135)			
Acquiring through Whatsapp (before)	2.45	3.00	0.90
Acquiring through Whatsapp (after)	2.84	3.00	1.06
(Asymp. Sig. = 0.000; Effect size =0.392)			
Acquiring through telephone (before)	3.89	4.00	0.85
Acquiring through telephone (after)	3.91	4.00	0.97
(Asymp. Sig. = 0.620)			
Acquiring through email (before)	4.26	4.00	0.81
Acquiring through email (after)	4.11	4.00	0.98
(Asymp. Sig. = 0.120)			
Acquiring through website (before)	2.40	2.00	1.13
Acquiring through website (after)	2.46	2.00	1.18
(Asymp. Sig. = 0.720)			
Acquiring through TV (before)	2.20	2.00	0.96
Acquiring through TV (after)	2.65	2.00	1.06
(Asymp. Sig. = 0.000; Effect size =0.383)			
Acquiring through newspaper (before)	2.56	2.00	1.04
Acquiring through newspaper (after)	2.82	3.00	1.11
(Asymp. Sig. = 0.018; Effect size =0.245)			

Appendix 2: Comparison on preference on sources for acquiring information, before and after the movement.
Note. N=93.

The abilities to justify information are examined by hypotheses H4 and H5. Surprisingly, respondents demonstrated afair abilities on using information sources from politically opposite camp, as the mean score of it increased from 3.03 (SD=0.87) to 2.80 (SD=0.94)[4], given the data is statistical significant (Asymp. Sig. = .013; Effect side = 0.257), as Table 5 shown. This is against Hypothesis H4 in which the participants were supposed to be reluctant to access the opposite sources. H4 is then rejected.

Also, from findings, those participants have shown an improved ability on acquiring information in details in which the extent of "read-title-only" was reduced. Mean score of "read-title-only" has reached 3.57 (SD=0.83)[5] after the Movement from 3.28 (SD=0.83) before, implying that participants were more willing to absorb every piece of information and news in details.

Variable	M	Mdn	SD
Sources of Opposite view (before)	3.03	3.00	0.87
Sources of Opposite view (after)	2.80	3.00	0.94
(Asymp. Sig. = .013 ; Effect size = 0.257)			
Read title only (before)	3.28	3.00	0.83
Read title only (after)	3.57	4.00	0.83
(Asymp. Sig. = .000 ; Effect size = 0.392)			

Table 5: Scores of Using Sources from Opposite Camp and the Frequency of "read-title-only", Before and After the Umbrella Movement.
Note. N=93.

Another insight which should be noted is the relationship between the preference on platform for acquiring information and preference on platform for information sharing. Results reveal that participants' frequency on using a platform of acquiring information was positively related to the frequency on using the same platform to share information. Table 6 displays the correlation between the frequency of acquiring information and sharing information by the same information platform. Most of the results as shown are above .4 in correlation level, signifying that a person tend to use the same platform to acquire and share information.

Findings associated with Research Question 2

"Participation" is rather an abstract and complicated concept and should not be interpreted in single value. Several indicators are used to measure the extent of participation in the Umbrella Movement, including the role of participants, days of participation and respondents' self-perceived extent in participation.

However, the first thing has to be verified is whether participation itself, regardless of the extent, would influence information behaviour. To test the significance between such kind of overall participation and various information behaviours, Mann-Whitney U test was adopted, and the results are shown in Table 7 as below.

Results from Table 7 demonstrate relationship between overall participation and various information activities. A person's participation in Umbrella Movement was slightly positively related to his/her activities on acquiring and sharing information through the major platforms of communication including Facebook, Youtube and Whatsapp. Among them, the relationship with Sharing by Facebook is more impressive in which the effect size increased from .281 (Asymp. Sig.= .281) before, to .474 (Asymp. Sig.= .000) after the Movement, showing a medium level of significance. Also the overall participation is positively related to the frequency of sharing information from effect side of .378 (Asymp. Sig. = .000) before, to .431 (Asymp. Sig.= .000) after the Movement. To a large extent Hypothesis H6 is supported by the results demonstrated.

Regarding the role during the Umbrella Movement, more than one answer was allowed to take for respondents in the questionnaire, due to the possibility of multiple roles for a participant. The options provided for respondents to describe their roles were designed in certain extent in sequential order, in which the lowest extent role

[4]The lower the number value, the more frequent in using politically opposite sources.

[5]The higher the number value, the lower the tendency to read title only in acquiring political information.

Spearman's rho on variables after the Umbrella Movement	Sig. (2-tailed)	Correlation Coefficient
Acquiring - Facebook (after) vs Sharing – Facebook (after)	.000	.538
Acquiring - Twitter (after) vs Sharing –Twitter (after)	.000	.611
Acquiring - Youtube (after) vs Sharing –Youtube (after)	.000	.469
Acquiring –Whatsapp (after) vs Sharing –Whatsapp(after)	.000	.710
Acquiring –Telephone (after) vs Sharing –Telephone(after)	.000	.544
Acquiring –Email (after) vs Sharing –Email(after)	.000	.664

Table 6: Spearman's Rho Correlation between Frequency of Acquiring Information and Sharing Information on Same Platform, After the Umbrella Movement.
Note. N=93.

Variable	Z	Asymp. Sig. (2-tailed)	Effect size
Acquiring - Facebook (before)	-2.594	.009	0.232
Acquiring - Youtube (before)	-2.240	.025	0.2
Acquiring - Whatsapp (before)	-3.113	.002	0.278
Sharing - Facebook (before)	-3.144	.002	0.281
Sharing - Youtube (before)	-2.221	.026	0.199
Sharing - Whatsapp (before)	-2.511	.012	0.225
Frequency of sharing (before)	-4.221	.000	0.378
Acquiring - Facebook (after)	-2.053	.040	0.184
Acquiring - Youtube (after)	-1.356	.175	Nil
Acquiring - Whatsapp (after)	-2.947	.003	0.264
Sharing - Facebook (after)	-5.298	.000	0.474
Sharing - Youtube (after)	-2.620	.009	0.234
Sharing - Whatsapp (after)	-3.203	.001	0.286
Frequency of sharing (after)	-4.814	.000	0.431

Table 7: Mann-Whitney U Test for Overall Participation and Various Information Activities.
Note. N=124, including both participants and non-participants.

as "Static participation", and then "Promotion for the Movement", "Assistance in activities", "Frontier defense", and the role in highest extent of participation as "Leading". For conciseness in analysis, those respondents who filled more than one role in questionnaire, only the one with highest extent was counted for analysis.

Spearman's Rank Correlation test was conducted for examination on relationship between such kind of role in highest extent of participation and frequency of sharing information. Results were shown as Table 8. It is found that the role in participation during the Movement is slightly positively related to the frequency of sharing information before (.289) and after the Movement (.263). Though the relationship is not too strong from statistical principle, it still reveals some sorts of possibility of casual relationship. Hypothesis H7 is partially supported by the results.

Spearman's rho		f (sharing, before)	f (sharing, after)
Role of highest extent of participation	Correlation Coefficient	.289	.263
	Sig. (2-tailed)	.006	.012

Table 8: Spearman's Rho Correlation between Role in Highest Extent of Participation and Frequency of Sharing Information (before and after the Movement).
Note. N=90.

Another assumption was held that the more the days a participant participated in the Movement, the more information activities he/she engaged in, especially for sharing information. This assumption led to the Hypothesis H8 as earlier mentioned. However, from the results as shown in Table 9, such kind of relationship is not statistically significant. Hence, Hypothesis H8 is not supported.

Spearman's rho		f (sharing, before)	f (sharing, after)
Days of participation	Correlation Coefficient	.010	-.093
	Sig. (2-tailed)	.922	.381

Table 9: Spearman's Rho Correlation between the Days of Participation in Occupied Area and Frequency of Sharing Information (before and after the Movement).
Note. N=90.

Self-perceived extent of participation was shown a stronger relationship with frequency of sharing, in which the correlation was rated as .289 before the Movement and .375 after the Movement. This could be interpreted that the more involved in participation in the Umbrella Movement by a person's self-reflection, the more frequently he/she would share information, especially after the Movement. To this, Hypothesis H9 is supported by the results.

Spearman's rho		f (sharing, before)	f (sharing, after)
Extent of participation	Correlation Coefficient	.289	.375
	Sig. (2-tailed)	.006	.000

Table 10: Spearman's Rho Correlation between the Self-perceived Extent in Participation and Frequency of Sharing Information (before and after the Movement).
Note. N=90.

Also, though not directly be clarified as an indicator under the concept of "participation", the extent of agreement on "sharing could remind goal and origin" might affect the frequency of sharing information. Though the correlation was not significant before the Movement, the correlation was rated as .347 after the Movement. This point will be discussed together in later section.

Spearman's rho		f (sharing, before)	f (sharing, after)
Motivation - Sharing as reminding Goal	Correlation Coefficient	.166	.347
	Sig. (2-tailed)	.112	.001

Table 11: Spearman's Rho Correlation between the Extent of Agreement on "Sharing could remind peers about the goal and origin" and Frequency of Sharing Information (before and after the Movement).
Note. N=93.

Findings associated with Research Question 3

As for the affective elements, questionnaires focused on three specific emotions and affective perception which were commonly expressed in some literatures [38,39,41] on describing the feeling among the participants during and after the Movement: anger, frustration and pessimist. Spearman's rho test was applied to investigate whether these three affective elements are related to frequency of sharing and the extent of sharing immediately about information.

Although the statistical result is not significant on "frustration", the findings revealed that "anger" and "pessimist" were slightly positively related to frequency of sharing after the Movement and the immediateness on sharing information, as the correlation on "anger" was rated as .244 with frequency of sharing and .262 with immediateness while "pessimist" was rated as .215 with frequency of sharing and .207 with immediateness on sharing information (see Table 12). This to some extent implies that people who are occupied by emotions of anger and pessimist slightly tend to share information more frequently and more immediately. Hypothesis H10is partially supported by results.

Spearman's rho		f (sharing, after)	Immediateness on sharing information
Feeling – Anger	Correlation Coefficient	.244	.262
	Sig. (2-tailed)	.018	.011
Feeling - Frustration	Correlation Coefficient	.141	.172
	Sig. (2-tailed)	.178	.099
Feeling - Pessimist	Correlation Coefficient	.215	.207
	Sig. (2-tailed)	.039	.046

Table 12: Spearman's Rho Correlation between the Three Major Emotions Associated with Participants and Frequency of Sharing Information (after the Movement) and Immediateness on Sharing Information.
Note. N=93.

However, the argument framed by Hypothesis H11 is not endorsed by the results. As the means of Likert on "sharing information could release frustration" and "sharing information could ease anger" were rated as 3.39 and 3.44[6] correspondingly, the majority of the participants do not agree on the point that sharing information could ease the feeling from anger or frustration. It implies that the sharing information activities are not directly motivated by the aims about reducing these two negative emotions.

[6]The lower the value, the more extent on agreement over the statement.

Discussion

From the results generated in this study, some features of change in information behaviors with highlights on information acquiring and sharing have been figured out. This section of discussion is about to coordinate all these outstanding findings and generate a whole of the situation with explanation, before and after Umbrella Movement.

First of all, Figure 2 illustrates the interaction of information between those participants in Umbrella Movement from a macro perspective. Originally, information on political issues generated by sources, such as Facebook page of specific media, newspaper, TV and other channels, will flow to these youth participants. Starting from at least a year before the Movement, those youngsters who became participants in the Movement, had already engaged in activities of acquiring information and share those acquired information by numerous platforms. By these interactions they formed some form of virtual community [42] by common political value and interest. Also, members within this virtually community might occasionally approach to information sources from opposite camp, but these were not common scenarios.

Every single interaction between two members within this virtual community could be specifically interpreted by IA&S framework. Though a member might not necessarily remember the exact information needs of others, but framed by the virtual community of political interest, individual could still be able to build some sort of cognitive linkage and share what s/he perceived as important piece of information to others within the community. Figure 3 illustrates such clarification between micro and macro levels of analysis.

Statistical results in previous section have demonstrated certain changes in information acquiring and sharing among the participants. These changes in information behaviours again could be examined in macro and micro perspectives. Figure 4 illustrate the patterns of interaction after the Movement in macro level, in other words, the virtual community under the scenario after the Umbrella Movement.

After the Movement, as revealed in results, some information sources or media types, such as TV and newspaper, are less frequently adopted by those former-participants who are young and relatively well-educated, in activities on acquiring political information. Probably the phenomenon of reduction in use of TV channels is attributed to the biased reports on the Movement from some TV media [43,44]. On the other hand, participants are more willing to approach to sources from opposite political view. One possible explanation on it is that during Umbrella Movement, participants needed to keep a close look on the news and announcement from the counter side for planning on reaction. This practice somehow sustained even after the Movement and led to behavioral change.

More specific changes are found at the micro-level of information behavior after the Movement by IA&S framework as Figure 5 show. For the part on information acquiring, to a slight surprise, results show that those youth participants are less frequent in receiving a piece of information in "read-title-only" manners, or in other words, absorb political information in a more detailed way.

Findings have shown that those youth participants tend to prefer to use same platform to acquire and share information, perhaps due to the sense of urgency in delivery information among other members in the fast-moving environment during Umbrella Movement. And this

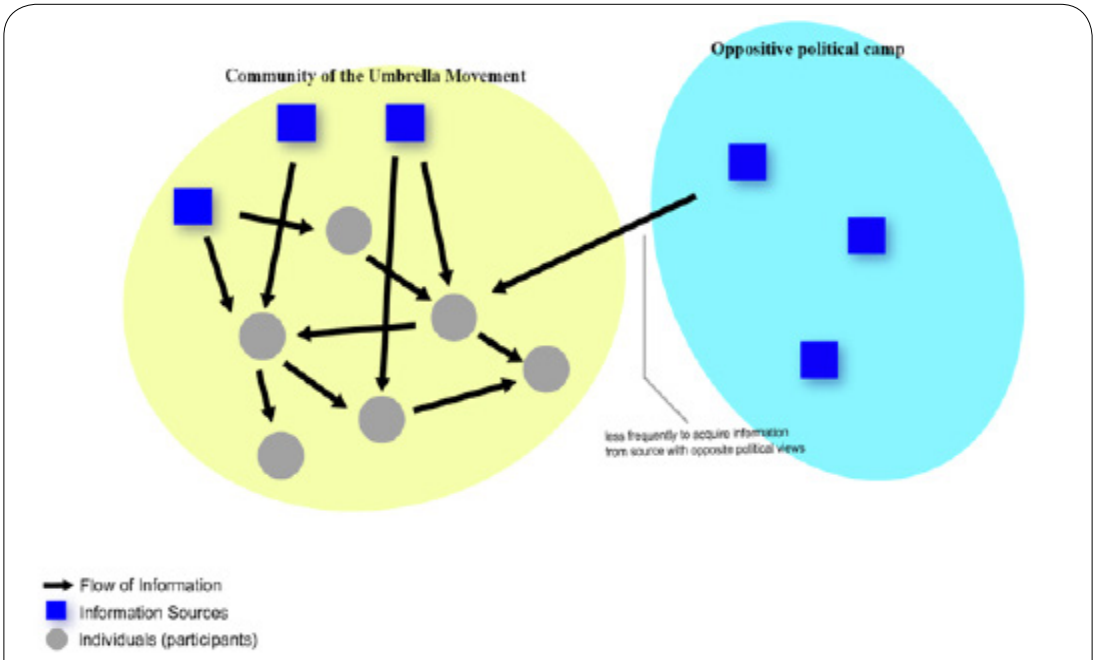

Figure 2: Information Interaction among Those Youth Participants before Umbrella Movement.

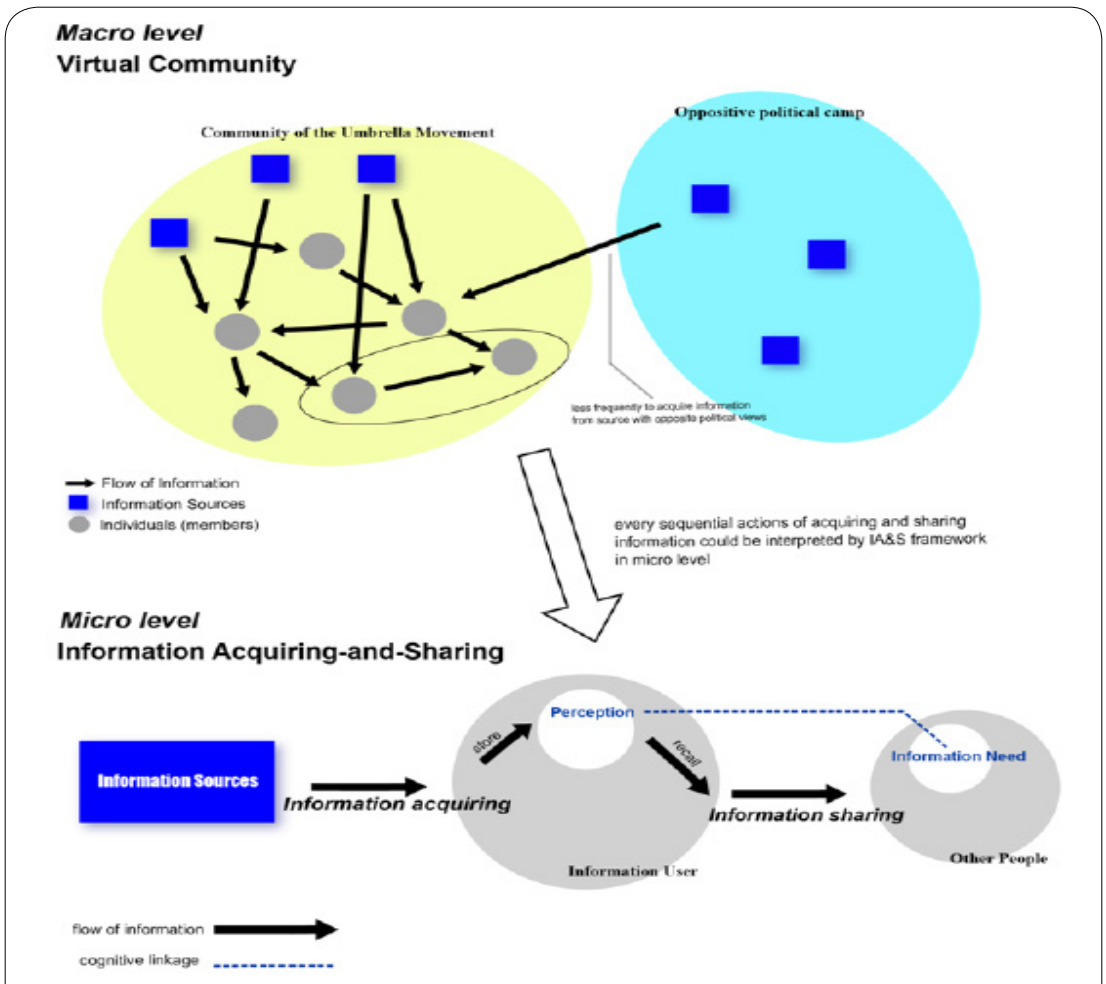

Figure 3: Macro and Micro Levels for Analysis (before Umbrella Movement).

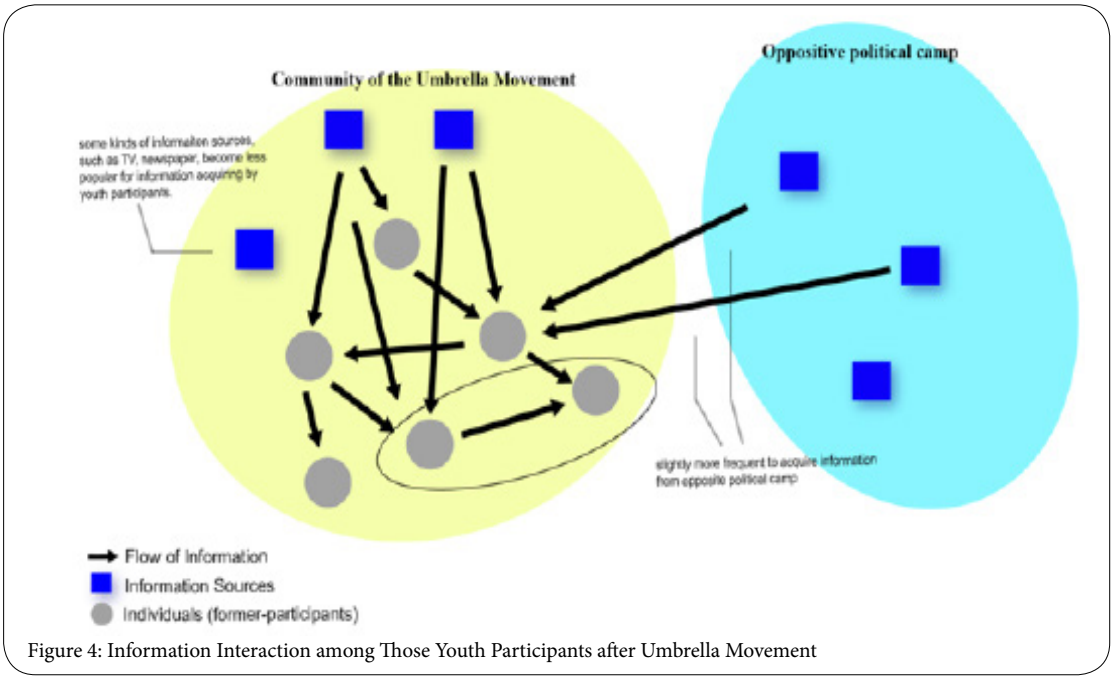

Figure 4: Information Interaction among Those Youth Participants after Umbrella Movement

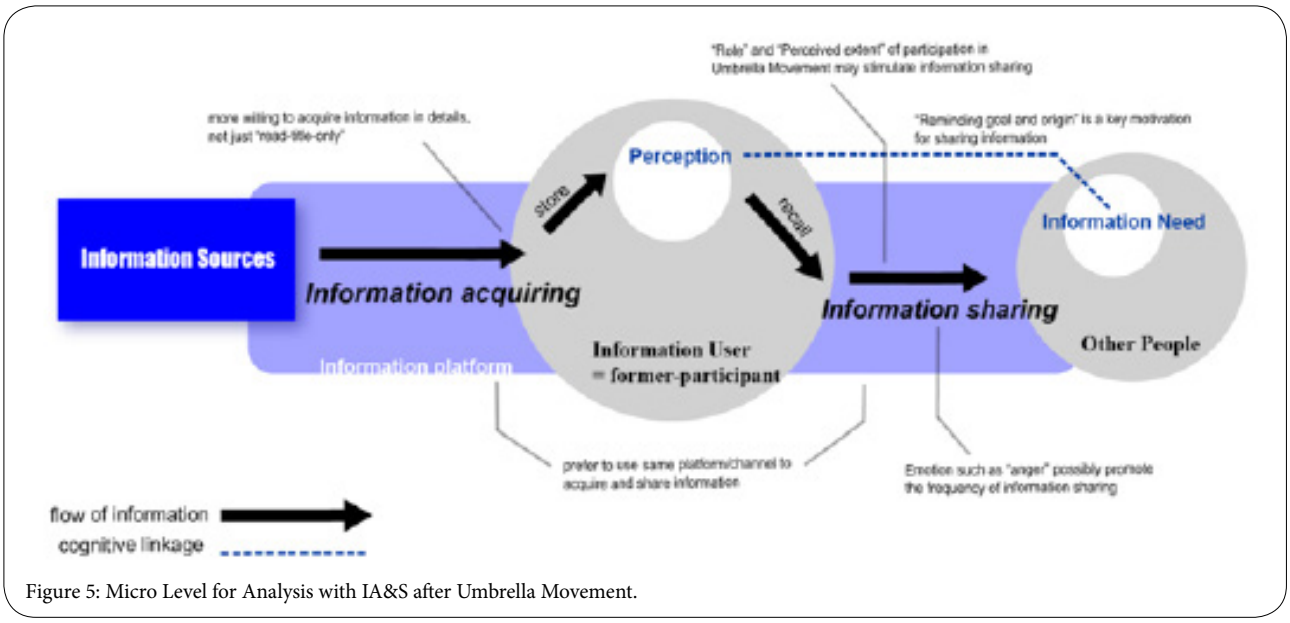

Figure 5: Micro Level for Analysis with IA&S after Umbrella Movement.

sort of pattern on using same platform for both acquiring and sharing information for fast-moving action is holding among the participants after the end of the event. Also, specific emotion status such as "anger" are slightly enhance the activities of sharing information in post-Umbrella Movement era, and this point may be able to fill the research gap with the line of studying relationship between emotion and information behavior.

One of the core arguments in this is the extent of participation in this large social movement could influence individual information behavior, and the results to some extent are matching with this argument and is reflected in micro level. "Role" and perceived extent of participation is positively related to the frequency of information sharing after the Movement, not to mention that overall participants are engaged in more sharing and acquiring activities than non-participants after the Movement. It is believed that, for more engaged in Umbrella Movement, taking a role with more responsibility for protest action, a youth participant needed to consult more resources and giving information to co-workers for unified action, and this phenomenon is echoing the claims from sociology on "framing" [32]. Now such kind of "framing" action has turned to be a long-run endeavor, in which higher extent participants will keep reminding the peer group about "original goal" by sharing information even after the end of Umbrella Movement.

Conclusion

As the review of literatures shown, numerous preliminary studies discussed on the role of information activities in major social movement around the world. Few of these researches, however, focus on the impact from these social movements on changes of information behavior among those participants hereafter. From a theoretical

information acquiring and information sharing are elaborated in both macro and micro perspective with explanations. It is impossible to hold a research without limitation. One of the major weakness of this study is on the sampling method. Approaching to university students is rather an alternative way to getting the first hand data from youth participants, given the reality that the Umbrella Movement is ended already. Some of the results, such as the increasingly level of using information sources from opposite political camp, may be attributed to the relatively higher education level among these research targets. And using a single questionnaire to collect data about behavioral patterns before and after a critical event seems to be not the best way of practice. But still, these practices are more practical ones in which no better alternative ways are available. And the findings and analysis generated from this study could still be served as the starting pointof the similar kind of academic works. Future direction of research on the subject could include more qualitative works to investigate the in-depth rationale behind the behavioral changes among those participants.

Competing Interests

The authors declare that they have no competing interest.

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