International Journal of Advanced Trends in Computer Science and Engineering

To Trust or Not To Trust? An Investigation into Users' Action and Perception towards Crowdsourced Information

Aqilah Azizan, Hazleen Aris
Universiti Tenaga Nasional, Malaysia, aqilahazizan06@yahoo.com

ABSTRACT

Crowdsourcing is a job or task completed by a large number of people in the form of an open call. Anyone may contribute information to the crowdsourcing platforms due to its open participation characteristic. With the rising number of crowdsourcing applications, the number of the participating crowd has increased. The identities of the crowd can be anonymous or dummy. Thus, the risk of having malicious crowd providing unreliable information is there. It is therefore important to have a mechanism that can automatically distinguish between reliable and unreliable information contributed by the crowd to increase the reliability of the crowdsourcing applications. The first step towards the construction of such mechanism is to understand how people verify the online information received. Therefore, a survey was performed with the aim to obtain information on the users (crowd) perception towards the information received online from the other crowd and how they react to it. A total of 64 responses was received, comprising a mixture of those who immediately trust, immediately ignore and perform verification first to the online information received. For those who indicated that they verify the information first, means to verify the information were asked. An analysis was performed on the various ways used by the crowd in verifying the accuracy of the online information received. From the analysis, six means to verify the online information were identified. The six means can serve as the basis in the construction of the mechanism to automatically verify the online information received from the crowd, which is useful for improving the reliability of crowdsourcing applications. In this paper, the factors that influence the crowd to trust or ignore the online information received are also presented.

Key words: Crowdsourcing, Online Information, Survey, Verification.

1. INTRODUCTION

Limitless information is being shared through *crowdsourcing*, where a job or task that is traditionally performed by the employees is performed by the crowd via online platforms [1].

Crowdsourcing makes it easy for people to obtain online information. Anyone could contribute information and it may be spread worldwide in a short amount of time by the large crowd. People can be instantly updated with the latest trends and news. Groups or individuals may contribute information through crowdsourcing applications in the forms of completed tasks, solutions to certain problems or creative ideas [2]. However, the information providers could be anonymous [3] because most of the time, there is no restriction on who could provide the information. As a result, the extent to which the provided information is true is difficult to be ascertained. The worst case in this situation is when malicious users purposely provide false information. With regard to this, a study was performed to identify the presence of spammers in a crowdsourcing website, ZhuBaJie.com [4]. ZhuBaJie.com, is a website that advertises many job offers for the crowd such as designing logos and translating articles. It also allows users to promote their businesses through the internet by posting the related keywords and contents of their businesses in several websites such as Baidu Zhidao website. Baidu Zhidao is a community-based question-and-answer kind of website in China. The study traced the crowd workers in ZhuBaJie.com to their spamming behaviours in Baidu Zhidao. From the study, it was found that thousands of crowd workers in ZhuBaJie.com are spammers. This finding is certainly worrying as the presence of such spammers in any crowdsourcing initiative can affect the reliability of the provided information.

Other than spammers, there are people who may simply provide the information without verifying its correctness [5]. This will equally affect the reliability of the information provided. Therefore, there is a need to ensure that the information contributed to the crowdsourcing platforms is worthy of trust. In other words, a mechanism is needed to verify the online information provided by the users to the platforms. This could reduce the chances of having imprecise or incorrect information being spread to the public [6]. The first step towards this is to ascertain how people usually verify the information that they receive from the online media and the factors that influence their decisions to trust or distrust the information, because crowdsourcing activities are mostly performed online. To accomplish this, a survey was performed. This paper reports the findings of the survey.

2. METHODOLOGY

In order to obtain the required information, online questionnaire is designed comprising close-ended and open-ended questions. The questionnaire is divided into two parts. The first part of the questionnaire contains four close-ended demographics questions (Q1-Q4) asking about the respondent's age, gender, employment status and their highest level of education. The second part of the questionnaire contains the following question (Q5).

Q5: "*When you receive information from the online sources (e.g. from websites or social media such as Facebook and WhatsApp), what do you normally do?*"

This is a close-ended question that aims to find out the respondents' behaviour when receiving an online information. The respondents are given the following three possible options where they are only allowed to choose one of the following.

Q5a: Immediately trust or believe it
Q5b: Verify the information first
Q5c: Ignore or disregard the information

Depending on the option chosen by the respondent, the subsequent flow of the questionnaire differs. If the respondent chooses the first option (Q5a), it will be the end of the survey. If the respondent chooses the second option (Q5b), he/she needs to answer the following two open-ended questions, Q6 and Q7.

Q6: "*How do you verify the information? Note: You can give more than one answer.*"
Q7: "*What are the factors that influence you to trust the information or not?*"

If the respondent chooses the third option, which is to ignore or disregard the information, he/she needs to answer the following open-ended question instead (Q8).

Q8: "*Why do you choose to ignore or disregard the information? Note: You can give more than one answer.*"

The questionnaire ends after the necessary open-ended questions are answered.

The questionnaire was distributed online through Facebook and Twitter. Prior to the actual distribution, a pilot test was conducted to assess the clarity of the questions. This was to ensure that the respondents interpreted the questions correctly and hence, more accurate results can be obtained. Twenty-one respondents participated in the pilot test. As a result of the pilot test, it was found that several respondents' answers were either out of context or vague. Hence, a number of questions were rephrased to ensure that they are more straightforward. The questionnaire was prepared in two languages, English and Malay, to make it easier for the respondents from different background to understand the questions.

Results from the survey were quantitatively and qualitatively analysed using descriptive statistics and constant comparison method respectively. The demographics information of the respondents was analysed by using descriptive statistics. The respondents' answers to open-ended questions were analysed using the constant comparison method. In this method, discernible unique answers given by the respondents are grouped into several discrete categories. The categories represent the means of verifying the online information and the factors that influence the respondents to decide on an online information, as explained in the following section.

3. RESULTS AND ANALYSIS

The questionnaires were distributed from 6th June 2017 to 15th June 2017. At the end of the period, a total of 16 responses were received. This number of responses was deemed too small. Therefore, the questionnaires were redistributed from 22nd December 2018 to 2nd of January 2019. A total of 48 responses were received from the second distribution of the questionnaires, which gave 64 responses in total.

Demographic Information
The majority of the respondents in this survey are female as shown in Figure 1. Most of the respondents fall under the age group of between 25 and 34 years old (Figure 2), followed by those between 18 and 24 years old. There are four respondents from the 35 to 44 years old group and only one respondent from the 55 years old and above group. The number of respondents who are employed is 38 while those who are currently studying is 23. There are three and one respondent who are self-employed and unemployed respectively as shown in Figure 3.
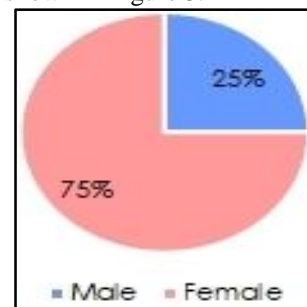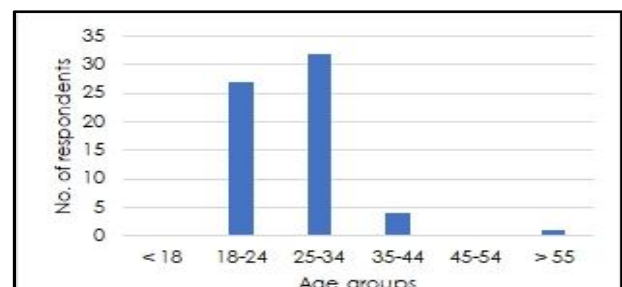

Figure 1: Respondents' Gender

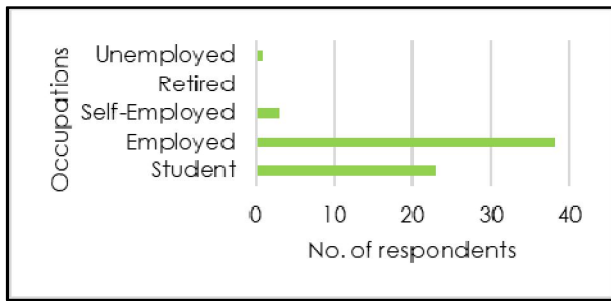**Figure 2:** Respondents' Age Groups

Figure 3: Respondents' Occupation

Out of the 64 respondents, 49 of them verify the online information received as shown in Figure 4. Thirteen of them completely disregard it and only two respondents directly trust the online information received.
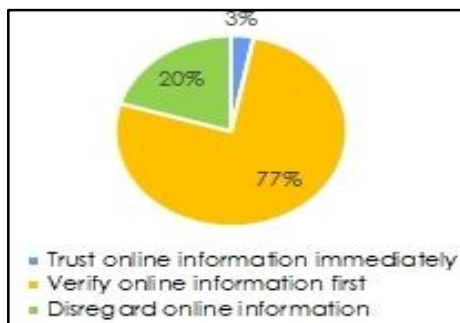

Figure 4 Respondents' Behaviour When Receiving an Online Information

Means of Verifying Online Information
The 49 respondents who verify the online information received before deciding to trust them shared various ways of doing the verification (Q6). Two such answers are shown below.

Example 1:
"Search mainstream news site, google relevant information, [and] ask friends or family".

Example 2:
"Search [the] internet about the information."

The coded information obtained from these answers are shown in bold below.

Example 1:
"Search mainstream news site **[verify with news website]**, google relevant information **[verify with the internet source]**, [and] ask friends **[verify with friend]** or family **[verify with family member]**".

Example 2:
"Search [the] internet **[verify with the internet source]** about the information."
The coding process was performed on the 49 answers given. At the end of the constant comparison analysis, 15 unique answers and 11 coded answers were identified as shown in

Table 1, together with the ID of the respondents where the answers originated from. From the 11 coded answers, a total of seven means to verify the online information are identified, which are explained below.

Originating source: Based on the survey, the respondents are more likely to believe the information which comes from the original source of the information. If they receive an online information which is not from the originating source, they will search for the sources which originally shared the information to compare the content of the information received with the original source that posted the information. For example, if the information is about a news that is said to originate from Berita Harian (BH), then they will go to the BH portal to verify that the news is really there.

Table 1: Various Ways of Verifying the Online Information

No.	Unique Answer	ID	Coded Answer	Category
1	Original source	3, 17, 21, 36, 60, 61	Verify with original websites that post the information	Originating source
2	[The Informa-tion] makes sense	5	Sensible information	Self-verification
3	By research	6, 45	Verify with other websites	Other sources
4	[Confirm] information [with] trusted parties	8, 29	Verify with trusted parties	Trusted source (people)
5	Search mainstream news site	11, 41 48, 51	Verify with news websites	Reputable source
6	Google relevant information	11, 24, 27, 34, 47, 49, 52, 55, 59, 61	Verify with the internet source	Other sources
7	Ask friends	11, 15, 27, 37, 41, 48, 52, 64, 43, 47, 57, 63, 64	Verify with friend	Trusted source (people)
8	Ask family	11, 15, 27, 37, 43, 47, 57, 63	Verify with family member	Trusted source (people)
9	Search internet	13, 29, 30, 33, 37, 39, 44, 54, 63	Verify with the internet source	Other sources
10	Reliable [online]	16, 20, 23, 50,	Verify with reputable	Reputable source

No.	Unique Answer	ID	Coded Answer	Category
	source	40, 53, 56, 58	source of information	
11	Unbiased source	16	Verify with neutral source of information	Neutral source
12	Multiple sources	31, 35, 42, 45, 46	Verify with the internet source	Other sources
13	Ask the profession-nals	25, 44	Verify with experts	Experts
14	News reporting	25	Verify with reputable source of information	Reputable source
15	Review comments by others	62	Verify with the internet source	Other sources

Reputable source: Apart from the originating sources, the respondents also mentioned that before trusting the online information, they make sure that the sources of the information are reputable. Reputable sources in this context consist of websites that belong to official bodies such as government agencies and mainstream news, which provide official announcements or news to the public. These reputable websites usually use official domain name such as gov.my for government agencies. Because reputable sources are well-known, and need to maintain their integrity, they must maintain the quality of the information shared with the crowd. Therefore, the possibilities for the information to be accurate is higher compared to other websites that are less reputable.

Neutral source: Another source to verify online information mentioned by the respondents is the neutral or unbiased source. It is a source that is free from any influence. The information from this category is regarded as more trustworthy as it does not discriminate anyone or any party. Neutral source is more preferable to the respondents as it is more likely to provide information without twisting it and to keep the information on the right track. The respondents are more comfortable in trusting the information from the neutral sources which are not siding on any sides or in favour of anyone. In other words, they are being fair in providing the online information.

Other sources: Respondents are also seen doing verification of online information received by comparing it with just any sources that they have the access to. Because these websites are of no particular reputation, more than one source is usually compared with. They compare the content of the information and find its similarity. They will only trust the online information if it is similar to those in several websites. In this respect, the information is believed to be trustworthy when many websites are also posting the same information.

Trusted source (people): Other than online sources, the respondents also verify the online information with people. It could either be friends, family members or anyone that they trust. The online information that they receive will only be trusted after confirming it with these people. They shared the online information with those that they trust just to ensure that they receive the same kind of information as well. This way they could discuss the reliability of the information and they felt that the online information is more accurate when the information that they received is the same as those received by the people that they trust.

Self-verification: Finally, the respondents are also found to be using their common sense and logical reasoning in verifying the online information received. In this respect, they mentioned that they will ensure that the online information received makes sense, straight to the point and not being excessively exaggerated. Therefore, the way the online information is presented plays a big role in determining whether it can be trusted or not. They preferred logical and unambiguous information rather than debatable and controversial information.

Experts: When the respondents receive crucial online information, which is related to health, laws, public safety or even political information, they would rather ask the professionals in the field to validate it when they are dealing with that kind of information. There are chances of the online information received to be written incorrectly and poorly which will misinform the crowd. It is more reliable to confirm the online information with professionals as they are certified in their field.

Factors for Trusting Online Information
Other than the means to verify the online information received, this study also looked at the factors that influence the users in deciding whether to trust or not the received information. Various factors were given by the users, and the same constant comparison analysis method was used in coding the answers. Table 2 shows the unique answers, ID of the respondents where the answers originated from, coded factors and the categorisation of the factors. Based on the answers given by the 49 respondents, there are 24 unique answers and 17 coded answers. From the seventeen coded answers, a total of seven factors for trusting online information are identified as presented below.

Content: The type of content of the online information affect the respondents influenced in trusting online information. The respondents take into account the quality of the content seriously. When they receive online information, they tend to pay attention on the online information which provide facts and inoffensive information. They also prefer information which present the information professionally in such a way that the information looks reliable and trustable.

Source/sender: The respondents are cautious when it comes to the source or the sender of the online information. The respondents would prefer to trust information from the original source or sender that post the information online. The online information which is not from the main source or sender might make mistakes in delivering the same information. This is due to the fact that there are chances of the online information to be altered by other party. It is safer to trust online information from the original source and sender to ensure in receiving trustable online information.

Table 2: Factors That Influence the Respondents in Trusting the Online Information

No.	Unique Answer	ID	Coded Answer	Category
1	Trusted resources	3, 6, 20, 29 35, 37, 40, 47, 48, 53, 54, 59	Information from reputable websites	Source/ sender
2	The presenta-tion of the information	5, 58	The way information is presented	Content
3	Source of the information	5, 8, 17, 27, 39	Main source of information	Source/ sender
4	Source of the news	11, 33, 63	Main source of information	Source/ sender
5	Learn from mistakes	13, 63	Information from reputable websites	Personal experience
6	Widely known information	15, 30, 42, 56, 57	Well-known information	Popularity
7	Widely known source	31	Well-known source	Popularity
8	Sender of the information	24, 29, 43, 44	Main sender of the information	Source/ sender
9	Moderate information	16	Neutral point of view information	Content
10	Unbiased information	16	Neutral point of view information	Content
12	Factual argument	16, 44, 45	Fact-based information	Content
13	The credibility writer of the information	20, 41, 46	Reputable writers	Source/ Sender
14	The authority of the information providers	34	The authority	Source/ Sender
15	The issue of the	44	The main focus of the	Content

No.	Unique Answer	ID	Coded Answer	Category
	information spread		online information	
16	Multiple trusted sources	36, 52, 50, 59	Well-known sources	Source/ sender
17	Sources reputations	31	Information from reputable websites	Source/ sender
18	News reporting	51	Appears in official channels/ news	Official news
19	Similar information as the one in newspaper	41, 62, 64	Appears in official channels/ news	Official news
20	Purpose of writing	20	The objective of the information	Objective
21	Logic	21	The flow of the information	Content
22	The Account-ability or justification of the information	23	Reasonable information	Content
23	One's stand on the issues of the information	44	What one thinks about the content	Personal stand
24	Trails the information received	61	Look for the original source	Source/ sender

Popularity: Another factor which influenced the respondents in trusting online information is the popularity of the online information. The respondents trust online information that are very well-known by the crowd than the information which are less popular to the public. The respondents admitted that they would prefer to receive online information that everyone else knows about. They felt that when more people are aware about the same information as they are, they are more certain that information is correct and could be trusted.

Personal experience: One of the reasons that was given by the respondents in trusting online information is that they learn from the mistakes that they have done in trusting online information. In this case, there are chances of them in behaving this way after becoming a victim of trusting false information or being scammed. Now they are more cautious in determining whether to trust the online information. They would evaluate the online information that they receive to ensure that the information is valid.

Purpose/Objective: Another reason in trusting the online information received is by considering the purpose of writing it. If the purpose of writing is to create awareness to the

public or to spread useful information, the respondents will pay attention to the information. However, if the purpose of writing is not informative and does not enlighten them towards the subject of the information, the respondents will decide not to pay attention to them. For example, if the online information is regarding raising funds for disaster reliefs, and they received the information of the fund raiser as well, then they will trust the information.

Personal stand: Another factor that makes the respondents trust the online information is their personal stand on the issues. Personal stand is referring to one's belief and understanding on a particular issue. If the online information received is aligned with their personal stand, they will trust them. Otherwise, they will disregard the online information. For example, when a person is a supporter of a political party, they will believe the information that positively support the party.

Official news: The last factor identified in this study in trusting online information is official news. The respondents will only trust the online information provided that is similar to the official news release from accountable organisations. Hence, whenever they received the online information regarding politics, crime, disaster or even health issues, they will only trust them with the statements released either through newspapers or news from the radio and television.

Factors for Ignoring the Information
Finally, this study also investigated the reasons for the other 13 respondents who decided not to trust the online information received. The answers received from the 13 respondents were also analysed in the same way as the previous two open-ended answers. The unique answers, ID of the respondents where the answers originated from, the coded reasons, and the categorisation of the factors are shown in Table 3 below. Based on the analysis, there are eight unique answers and a total of three coded reasons. Based on the three coded reasons, four categories of the factors for ignoring online information were identified as described below.

Contradict information: One of the reasons that causes the respondents to ignore or disregard online information is contradict information. There are cases where the respondents receive contradict information from different sources. This happens since certain sources favour certain sides of some parties. They will only cover the news or information which in return will benefit the parties instead of covering the whole coverage of the news or information. The respondents are undoubtedly expecting to receive online information which is straightforward and unambiguous. Therefore, the respondents are aware that they have to be alert with the content of online information that they received.

Table 3: Reasons for Ignoring or Disregarding Online Information

No.	Unique Answer	ID	Coded Answer	Category
1	Non-related [information]	1	Out of interest	Content
2	Not the truth	4, 19, 22, 32	Inaccurate information	False information
3	Two sides [of stories]	7	Different version of information	Contradict information
4	Rumour	9	Inaccurate information	False information
5	Not important [information]	10	Out of interest	Content
6	Not interested	12, 28	Out of interest	Content
7	Waste [of] time reading from other websites [besides official announcement]	14, 18	Out of interest	Source
8	Irrelevant information	26	Out of interest	Content

False information: The next factor of ignoring online information given by the respondents is false information. There are irresponsible sources which provide false information and share it online which causes the online users to receive misleading information. This will cause a disturbance to the crowd if the mislead information is related to crucial issues such as natural disaster or political issues. Hence, the respondents choose to ignore online information in order to avoid in receiving false information which could cause unpleasantness.

Content: Lastly, the respondents believe that they should ignore online information with content which do not have added value. In other words, they do not pay attention at online information which shares gossips such as the celebrity's personal life update. They would usually pay attention in receiving news or official statements from organizations. They would also disregard online information which is out of their interest. For example, if the respondents are only interested in receiving online information which provide educational information, they will only consider trusting those information and disregard other kind of information.

Source: The respondents mentioned that they will disregard online information that they receive which are not from the original source of the information. They think that it is a waste of time to trust online information from other sources instead of its originating source. They would check the source of the online information first when they receive them. From the sources, they would determine immediately whether to disregard the information or not. This process would save them from wasting time in reading the information that might not be correct if it is shared by other sources instead of the originating source.

4. RESULTS AND DISCUSSION

Based on the findings from the survey, it shows that majority of the users take the necessary actions to verify the online information received before trusting it. In performing the verification, they show a significant interest on the sources of the online information received. The sources will influence the decision made by the respondents in trusting the online information. The sources are seen as important in guaranteeing the correctness of the information received. They differentiate between the trustworthy and the untrustworthy online information based on the originating sources of the online information. Apart from that, the users' decisions in trusting the online information received are affected by the human factor as verification of the online information received by the people in their circles, the experts and their own opinions. These people have impact on the users in trusting the online information received due to their relationships with them. They either have close relationships with the users or are well respected by the users based on their expertise.

This finding is similar to a previous study [7], which shows that verification by other people affects the decision in trusting online information. In the study, a survey was done to study the effect of the trustworthiness of social media and traditional websites on small companies in improving their online presence. Each company shared information on their social media account and traditional websites. The consumers could provide feedbacks regarding their knowledge and experience on using the products only on the small companies' social media accounts. The outcome of the survey showed that the consumers have more trust on the information from the social media account compared to the traditional websites. This is due to the openness of the small companies in allowing feedbacks from the consumers on their social media account. Therefore, the consumers can make decisions in trusting the online information based on the feedbacks given by other consumers in using the products.

With regard to the factors influencing them to trust the online information, users' responses are diversified. They look at several different aspects before trusting them. Particularly, their personal stand is affecting them in determining which online information to trust. Each of them has different levels of knowledge and different types of beliefs over time which appear to be connected to their personal stand and experience. Moreover, some people are inclined in reminiscing and remembering what had happened to them. Therefore, they tend to trust the one which is connected to them in a certain way. The details accompanying the online information received are also influencing in determining the users to trust them. The details in this context are referring to the content of the online information, the purpose of writing them as well as the sources and senders. These details could be easily obtained by the users upon receiving the information. They could therefore instantly decide whether to trust the online information.

Apart from that, public reputation of the online information received is also influential to the users. The online information with good public reputation from reputable sources is prioritised by the users in trusting them. Besides, the popularity and publicity of an online information is affecting them in trusting online information. This is because it is easier for them to distinguish correct online information by only trusting widely known information. However, in my opinion, the popularity of online information does not imply its truthfulness. False information may be rapidly spread online to a huge crowd in a short period of time. This causes the users to accept them as correct until the truth comes out. Therefore, it is risky to consider popularity in distinguishing correct online information.

Based on the findings from the survey too, some users refuse to trust online information totally and consider online information to be incorrect. The online information received may be inaccurate, misleading or even a hoax. People need to be attentive in receiving online information to avoid trusting incorrect or misleading information. This group of users feel that it is troublesome to verify the correctness of the online information received. Therefore, they make the safest decision to avoid becoming the victims of incorrect information by completely disregarding them.

In overall, findings from our survey shows that the majority of the respondents are aware on the potential of receiving unreliable online information, which might be provided by accident or by malicious users in open environment such as crowdsourcing. It can be seen that the majority of the online users' attitude and behaviour towards the information obtained from the online sources is to not immediately trust them. This finding is in contrast with the one found in a previous study done in three countries, Greece, Czech Republic and Estonia [8]. In the study, the majority of the respondents trust the online information while only the minority of them distrust it. This potentially indicates the influence of geographical and cultural background in trusting online information. However, detailed discussion on this is beyond the scope of this research.

Threat to Validity
The sample size of this survey (64) is deemed sufficient with the rule of thumb usually requiring only 30. Furthermore, the main part of the questionnaire involves open-ended questions that do not require a large number of samples. It is observed that the same answers were given by several participants, indicating that data saturation has occurred and after certain point, no new information was collected [9], [10]. Though not completely balanced, the samples come from all groups of respondents. The first and second questionnaires distribution were made to two totally different target groups, thus, chances of duplicate respondents are nil. Pilot test was also conducted, which further enhanced the clarity and construct validity of the questionnaire[11].

5. CONCLUSION

In this paper, the results of a survey performed with the aim to obtain the information on users' perception and reaction towards the online information received is presented. From the survey, it is found that a majority of the users verify the online information before trusting them. Meanwhile, a minority of the respondents completely disregard them. There are several ways of verifying the online information received identified from the survey. Factors that influence the users in trusting the online information received are also identified. In addition, those who disregard the online information provide insights to justify their action. These findings provide better understanding on the users' perception and reaction towards the online information received. The identified means of verifying the online information, the factors that influence users in trusting the information and the reasons for disregarding the online information would be good candidates to become the parameters in developing an automated mechanism to verify the online information received from the crowd, as mentioned at the beginning of this paper. Thus, future work includes applying the identified parameters in the construction of the automated verification mechanism.

ACKNOWLEDGEMENT

REFERENCES

1. J. Howe, "The Rise of Crowdsourcing," Wired Mag., vol. 14, no. 06, pp. 1–5, 2006.
2. D. C. Brabham, "Crowdsourcing," in MIT Press, Cambridge, Massachusetts: MIT Press, 2013, p. 176.
3. L. R. Varshney, "Privacy and Reliability in Crowdsourcing Service Delivery," in 2012 Annual SRII Global Conference, 2012, pp. 55–60. https://doi.org/10.1109/SRII.2012.17
4. A. Xu, X. Feng, and Y. Tian, "Revealing, characterizing, and detecting crowdsourcing spammers: A case study in community Q&A," Proc. - IEEE INFOCOM, vol. 26, pp. 2533–2541, 2015.
5. J. Cabot, R. De Virgilio, and R. Torlone, "Web engineering: 17th international conference, ICWE 2017 Rome, Italy, June 5-8, 2017 proceedings," Lect. Notes Comput. Sci. (including Subser. Lect. Notes Artif. Intell. Lect. Notes Bioinformatics), vol. 10360 LNCS, no. June, 2017.
6. L. R. Varshney, A. Vempaty, and P. K. Varshney, "Assuring privacy and reliability in crowdsourcing with coding," 2014 Inf. Theory Appl. Work. ITA 2014 - Conf. Proc., 2014. https://doi.org/10.1109/ITA.2014.6804213
7. F. Calefato, D. Damian, and F. Lanubile, "Investigating the Effect of Social Media on Trust Building in Customer-supplier Relationships," Proc. 16th Int. Conf. Enterp. Inf. Syst., vol. 17, no. 6, pp. 635–642, 2014.
8. J. Macek, A. Macková, V. Pavlopoulos, V. Kalmus, C. M. Elavsky, and J. Šerek, "Trust in alternative and professional media: The case of the youth news audiences in three European countries," Eur. J. Dev. Psychol., vol. 15, no. 3, pp. 340–354, 2018.
9. D. Bonde, "Qualitative interviews: When enough is enough?," Res. by Des., pp. 1–10, 2013.
10. B. Saunders et al., "Saturation in qualitative research: exploring its conceptualization and operationalization," Qual. Quant., vol. 52, no. 4, pp. 1893–1907, Jul. 2018. https://doi.org/10.1007/s11135-017-0574-8
11. Marcel Bonar Kristanda et al., International Journal of Advanced Trends in Computer Science and Engineering, 8(4), July- August 2019, 1308 – 1311 https://doi.org/10.30534/ijatcse/2019/43842019