The cautious faculty: Malaysian university researchers' awareness, experiences, and attitudes towards Open Peer Review

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ABSTRACT
The rationale of open peer review (OPR) is transparency as a general concept, where authors and reviewers' identities are revealed and/or the reviews are published with the article. It is unclear whether there is an uptake for OPR from non-western researchers, given that there has been a geographical disparity in traditional peer review where non-western nations are under presented. As such, this study investigates the awareness, experiences, and attitudes of researchers in regard to OPR, which is part of a larger study that concentrated on the scholarly communication readiness of Malaysian researchers in open science. The data were gathered by means of a survey which obtained 135 responses from researchers based in five research universities in Malaysia. The main findings suggested that (a) attitudes towards OPR are reasonably positive with moderate levels of understanding and practices; (b) low awareness on open identities, open interactions and open reports traits of OPR; (c) a stronger levels of OPR experience amongst the sciences and younger researchers; and (d) the majority still have strong concerns about the transparency traits of OPR. The study concludes that OPR is not yet taking root among researchers from this emerging nation.

Keywords: open peer review, open science, scholarly communication, open identities, open reports

INTRODUCTION

Transparency, a key to journal peer review process, is important in helping scholarly journals focus on the quality, rigour and the soundness of the research (Horbach and Halffman 2018) and open peer review (OPR) is one way to achieve them (Godlee 2002; Pöschl 2012; Ross-Hellauer 2017). In OPR, what has traditionally been a closed process are opened up to the research community or the public, especially in revealing reviewer identities (i.e. open identities) and publishing reviews (i.e. open reports) (Ross-Hellauer and Görögh 2019). OPR is now commonly accepted across the scholarly publishing system as an important aspect of open science, together with two other open science pillars, i.e. open access and open data. Different models of OPR have ascended in the last decades, involving seven core traits to

increase the reliability, consistency of the review process, namely open identities, open reports, open participation, open interaction, open pre-review manuscripts, open final-version commenting and open platforms (Ross-Hellauer 2017). OPR practices have not only enable transparency, but also help to reduce malicious comments, halt plagiarism, reduce reviewers drawing upon their own 'agenda', and support constructive criticism (Ross-Hellauer et al. 2017; van Rooyen et al. 1999; Kravitz and Baker 2011; Wicherts 2016; Williams 2017; Williams 2018; Hodonu-Wusu 2018).

Although OPR is on the rise, it is often poorly understood. and studies of researchers' attitudes show important barriers to its implementation. Reviewers, even if they believe the value of openness, tend to decline invitations to OPR journals mainly because the reviewing process involves a considerable amount of time and intellectual effort (Bolam 2017). There have also been negative reactions towards open identities (Ross-Hellauer et al. 2017). However, in a recent study, Reekers (2020) believed that the reluctance of OPR by the reviewers has been declined over time and OPR has never been an issue in recruiting reviewers. He reported that the number of submissions in journals that support OPR is constantly increasing, suggesting that authors do not seem to have any problem with OPR. Previous studies showed that the satisfaction with OPR seems to strongly vary across disciplines and generation; it gains familiarity amongst science, technology and medicine (STM) (Ross-Hellauer et al. 2017) and younger researchers (Bravo et al. 2019) and those in developed nations (Publons 2018; Ross-Hellauer et al. 2017).

Given that the rationale of OPR is transparency as a general concept, it should be a mainstream scholarly practice (Ross-Hellauer and Göögh 2019). However, it is unclear whether there is an uptake for OPR from non-western researchers, given that there has been a geographical disparity in traditional peer review where non-western nations are under presented (Publons 2018). Given the growing interest in openness and transparency, and as more journals consider OPR, would researchers from the developing nations be attracted to OPR and are they undertaking it in scholarly practices? There is a need to further explore the uptake and monitor the evolution of attitudes and practices. No study has investigated this issue before and so, to partially fill in this gap, this paper gauges the OPR awareness, experiences, and attitudes of researchers from a non-western country and the challenges that often arise. The general assumption of this study is that researchers from global south countries, such as Malaysia, who participate in OPR are limited. As OPR develops, it would be interesting to see how it is understood and used among Malaysian researchers.

LITERATURE REVIEW

The literature reflects that OPR, despite being a major pillar of open science, has neither a standardized definition nor an agreed schema of its features and implementation. Ross-Hellauer et al. (2017) reflects this, with numerous overlapping and contradictory definitions. While for some the term refers to peer review where the identities of both author and reviewer are disclosed to each other, for others it signifies systems where reviewer reports are published alongside articles. Otherwise, it signifies both conditions in which it also refers to an open system where not only 'invited experts' are able to comment. For still others, it includes a variety of combinations of these and other novel methods. According to FOSTER (2017) there are two ways to practice OPR namely (a) to retain the current peer review system but with open reviews and identities; and (b) to develop an entirely new system that is open to the community. In this study OPR is defined as peer review that enables reviewer

and author identities open, publishes review reports and allows interaction and greater participation in the process. This was indicated in the survey questionnaire.

In recent years, there have been relatively few large-scale studies, centred around a few core researchers, that touched on issues germane to OPR. These studies, mainly on the general attitudes and practices, and the benefits and limitations, tend to show that although researchers believe OPR is necessary, there are evidences that authors and reviewers have contradictory tastes of some aspects of OPR (Ross-Hellauer et al. 2017; Taylor and Francis Group 2015). Taylor and Francis Group (2015) in their white paper reported authors' moderate but growing support for OPR, however social science journal editors are less comfortable. A major study that gauged researchers' attitudes to OPR is the OpenAire Survey (Ross-Hellauer et al. 2017), and the findings are very encouraging for OPR's prospects of moving mainstream. The survey, which had the highest responses from Europe and North America reported that the majority from the 3062 respondents to be in favour of OPR becoming mainstream scholarly practice. A high level of experience with OPR was observed, with three out of four (76.2%) respondents reporting having taken part in an OPR process as an author, reviewer, or editor. There were also high levels of support for most OPR traits, particularly open interaction, open reports, and final-version commenting. However, respondents were against opening reviewer identities to authors, with more than half-believing open identities would make peer review worse. In a earlier international survey, involving more than 4000 researchers gauging their attitudes towards open identities and open reports, found that only about 20 percent the respondents thought both forms of OPR as effective (Mulligan et al. 2013). Nature's evaluation of their experiment with OPR (Campbell 2006) and the effect of OPR on The BMJ (van Rooyen et al. 2010) tend to support this position; the latter found that that OPR deters reviewers and does not improve the quality of reviews submitted.

Support for OPR in the surveys that captured researchers' practices and perception was also not strong, although many of them reported having taken part in an OPR as author, reviewer or editor. Spanish researchers were more cautious about OPR; younger and female scholars indicated more reluctance to accept OPR; while seasoned professors were unwilling to criticize their peers (Segado-Boj et al. 2018). Bravo et al. (2019) however reported that younger and non-academic scholars were more willing to accept invitations to review and provided more positive and objective recommendations, and male reviewers tended to write reports that are more constructive.

Benefits of OPR are revealed in a recent small-scale study by Besançon et al. (2020) that considered 30 responses from authors and reviewers on the OPR of conference papers. The participants demonstrated a positive attitude to OPR, pointing out to the benefits of non-anonymous and transparent academic discussions. Rath and Wang (2017) concurred that authors were receptive of OPR for the following reasons: it has the possibility of receiving a good quality and more constructive review; it minimizes reviewer's delay; and it benefits readers with reviewers' comments, as rebuttals were showcased to public. Ross-Hellauer (2017) highlighted that OPR facilitates discussions between reviewers and authors and could be a good learning experience for younger researchers to improve their works. Reviewers on the other hand were willing to adopt OPR for to demonstrate their credentials in the field; receiving credit for doing OPR as opposed to close peer review process where anonymous contributions cannot be recognized and thus incentivized (Ross-Hellauer 2017). While in van Rooyen et al. (2010)'s study, many of the reviewers favoured OPR, while few maintained that they would not review if their identities be made open. This was also echoed in Bravo et al. (2019)'s study where only a small number of referees (8.1%) agreed to reveal their

identity in the published report. It is probable that this reflects the perception of OPR evaluations that were likely to be influenced by personal biases (Segado-Boj et al. 2018) or the need for protection from possible retaliation or other unforeseen implications of OPR (Bravo et al. 2019).

A few studies have investigated the scope and depth of OPR adoption. Wang et al. (2016a) analyzed the optional OPR journal *PeerJ*'s publicly available reports during 2013-2016 and found that about 70 percent of the papers published during this period had open reports; and about 40 percent had open identities. Wolfram et al. (2020) studied early adopters of OPR and identified 617 journals that published at least one article with open identities or open reports. The findings indicated a steady growth in OPR adoption, mainly by journals in the medical and health sciences and the natural sciences, and largely spurred by a small number of publishers predominantly based in Europe. This is expected as Europe has a strong open science movement through initiatives such as OpenAIRE (see https://www.openaire.eu/mission-and-vision) and OpenUP (see https://cordis.europa.eu/project/id/710722). Wolfram et al. (2020)'s study also identified four different models of OPR transparency based on open identities and open reports namely: (a) open identities-only model (as in *Frontiers*); (b) optional for both open identities and open reports (as in *PeerJ*); (c) both open identities and open reports alongside articles (as in *BMC*); and (d) open review process together with open identities and open reports (as in *F1000 Research*). Agha (2017)'s study, documenting the experience of two Elsevier pilot OPR journals, reported that many authors 'like it or like it a lot' i.e. the publication of peer reviewer reports as supplemental volumes. They were more likely to publish in an OPR journals because of the open reports.

The arguments against OPR raised the following issues: biasness (Bowman 2014; Helmer et al. 2017); lack of true transparency (Wang et al. 2016b; Wierzbinski-Cross 2017), unsustainability due to few willing reviewers (Strickland 2015; Wang et al. 2016b); and lack of agreement on whether editors should leave referees freely to decide for themselves, or not to make themselves known to authors (Wang et al. 2016b). Since Ross-Hellauer et al. (2017) suggested a no 'one-size fits all' solution when dealing with OPR implementation, Wolfram et al. (2020) proposed that an OPR journal needs to decide either as a journal mandate or optional of: (a) who (reviewer, author, editor/journal) would make the decisions for the implementation; (b) when (pre-, post, or concurrent process) the decision is made; (c) what (reviewer name, review report, decision letter) should contained in open reports; and (d) where (alongside paper, year-end issue, peer review repository) the open reports can be accessed.

This review suggests that the scholarly literature has not yet entirely caught up with the OPR movement. While there has been a vast amount of literature in areas closely related to other aspects of open science, particularly open access and open data, empirical works specifically discussing OPR is relatively sparse. In contrast, the more informal modes of communication especially scholarly blogs (Bolam 2017; Boughton 2013; Burley 2017; Reekers 2020; Wilkinson 2017) are more vocal, featuring a range of views and, at times, heavily polarised debate.

OBJECTIVE AND METHOD

The objective of the paper is to gauge Malaysian researchers' awareness and experiences of, and their general attitudes towards OPR. To accomplish this, the following research questions were formulated to shape the data collection and analyses:

a) What do Malaysian researchers know about open peer review?
b) To what extent have Malaysian researchers personally experienced open peer review?
c) What is their attitude towards open peer review in general, and in their role as an author or reviewer in particular?

This study adopted a quantitative method and employed a survey research design.. The questionnaire, which is part of a larger study that concentrated on the scholarly communication readiness of Malaysian researchers in open science, was developed based on a detailed literature review, anchored to the systematic review of OPR (Ford 2013; Pöschl 2012; Ross-Hellauer 2017; Hodonu-Wusu 2018). It was also based on organizational change readiness theory (Rafferty et al. 2013; Weiner 2009) which cover constructs of awareness, practices and attitudes in order to see how people react to change when new behaviour or practice is introduced. The questionnaire contains five parts and has 26 item statements and an open-ended question (see Appendix). It was prepared in English, all item statements are on 5 points Likert-scale measurement. The questionnaire was pilot tested to five faculty members in a research university, of whom feedback and comments were then incorporated into the final instrument involving some minor reconstruction of the item statements.

The online administration of the survey was considered appropriate with regards to wide accessibility and reduction in cost (Wilson and Laskey 2003) The survey was distributed via respondents' university e-mail address and confidentiality of respondents however, was assured. The survey was conducted for two months in February and March 2018, and due to the low response, the time of data collection was extended until end of July 2018 to achieve an acceptable response rate for a web-based survey.

The sample size was determined based on Krejcie and Morgan (1970) population and sample table. With total population of 9,229 researchers in the five research universities in Malaysia (at the point of data collection), the sample size was determined as between 368-370 (confidence level = 95 percent, margin of error = 2.50 percent). However, oversampling was performed with a total of 400. A total of 135 complete responses were received (a further 165 responses were discarded as incomplete). The survey achieved a 33.8 percent response rates, constituting all complete survey responses (see Table 1). The response rate is exceptionally good for online survey as Gravetter and Forzano (2009) indicated that a typical response rate for online surveys is only about 18 percent.

Table 1: Survey Response of this Study

Total population	9299
Sample size	368-370
Oversample size	400
Clicked on the survey link	300
Incomplete survey	165
Completed survey	135
Response rate	33.8%

The returned questionnaire was analyzed using descriptive statistics. Mean values for the questions were calculated based on numeric values of the scale item with not at all aware (or very untrue of me) being 1 and extremely aware (or very true of me) being 5. Diverging

stack bars and pie charts were used to visualize the percentages in Likert questions, with the mean values shown at the end of each bar/pie.

Table 2 presents the study demographics. The age of the respondents was used to identify whether they are early career researchers (ECRs) or established researchers. According to the working definition of Malaysian ECRs, they are 'researchers between 30-39 years old, who are not more than ten years from receiving their doctorates operating without tenure' (Abrizah et al. 2019, p. 76). Established researchers (ERs) in this study are researchers in their prime who have developed a level of independence or those that are leading in their research areas. These are researchers aged between 41 years and above and have experience more than 10 years on the academic job – as defined by the Vitae European Researchers Framework (2016) (p. 5). The respondents were also requested to indicate the number of publications they had in the last 5 years; 76 (56.4%) of the respondents reported more than 7 publications, while 59 (43.6%) indicated 6 or less. The latter were mainly ECRs.

Table 2: Demographic Information of Survey Respondents

Demographics		Number	Percentage
Gender	Female	85	63.0%
	Male	50	37.0%
Research experience	Early career researcher (ECR)	62	45.9.%
	Established researcher (EC)	73	54.1%
Academic Position	Senior Lecturers	106	78.5%
	Professors & Associate Professors	29	21.5%
Academic discipline	Sciences	94	69.6%
	Social sciences	41	30.4%
Publication for the last five years	Six or less	59	43.6%
	Seven or more	76	56.4%

RESULTS

Awareness of Open Peer Review

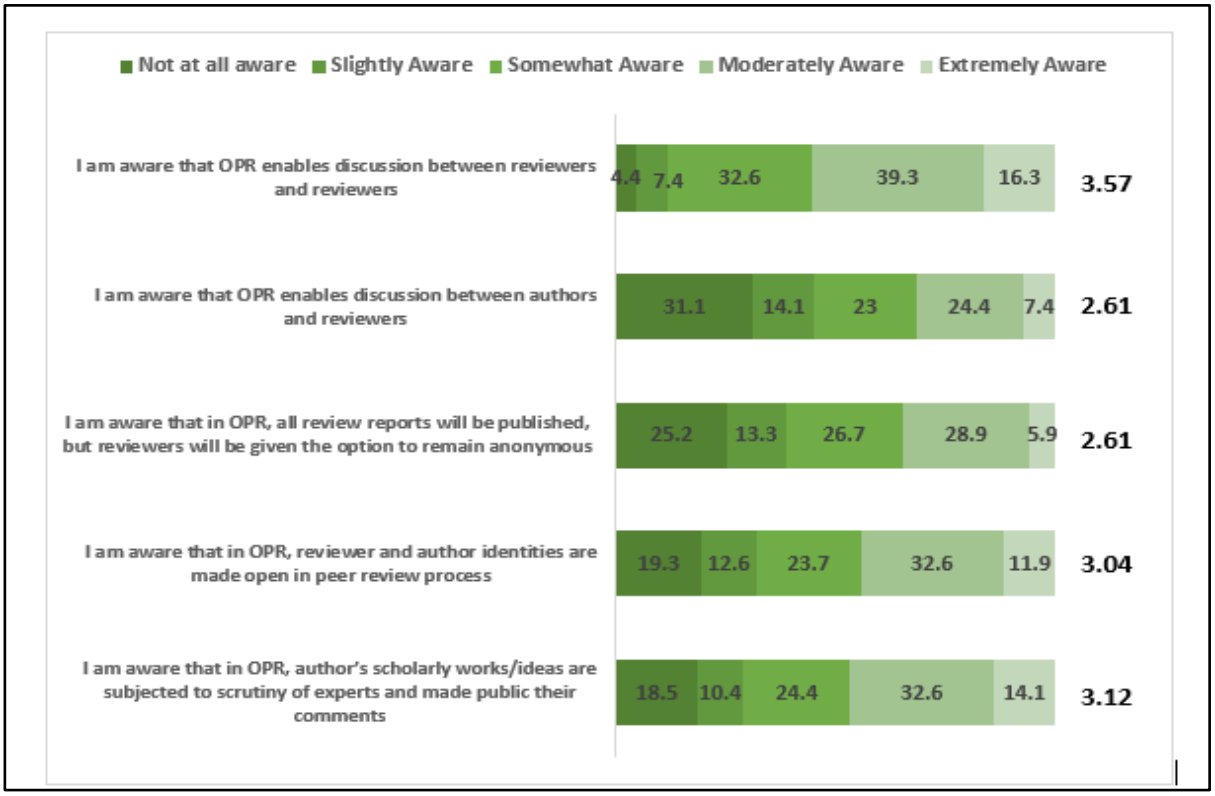
This section examines Malaysian researchers' awareness of OPR. OPR awareness in this study covers the understanding that OPR include making reviewer and author identities open, publishing review reports, and enabling greater participation in the peer review process. Figure 1 presents five item statements describing aspects of OPR that one might expect a researcher to know, based on the Likert scale of 1-5 (from not at all aware to extremely aware). The overall mean score of 3.57 for the awareness that OPR encourages open interaction i.e. enables discussion between reviewers themselves (SD=0.973, 16.2% extremely aware; 39.3% moderately aware), positions it first among all five OPR awareness statements. Only 4.4 percent acknowledged unaware that in OPR, interaction exists among reviewers. Researchers in general exhibit somewhat aware on the OPR concept that:

a) author's scholarly works/ideas are subjected to scrutiny of experts and made public their comments (M=3.12; SD=1.310; 14.1% extremely aware; 32.6% moderately aware).
b) reviewer and author identities are made open in peer review process (M= 3.04; SD=1.309; 11.9% extremely aware; 32.6% moderately aware).

However, the following aspects of OPR received a much lower mean value and high level of unawareness (i.e. more than one third of the respondents were not aware at all), that in OPR:

a) discussion between authors and reviewers is allowed (M= 2.61;SD=1.332; 31.1% not at all aware).
b) all review reports will be published, but reviewers will be given the option to remain anonymous (M= 2.61;SD=1.265; 25.2% not at all aware).

The mixed awareness shows that the respondents may be grasping the aspects of OPR, which may indicate either that the journals they submit their manuscripts to do not exercise OPR, or many of them have never been involved in OPR. The statement that in OPR, 'all review reports will be published, but reviewers will be given the option to remain anonymous' received the lowest level of understanding probably because the researchers found it difficult to agree with the statement 'to remain anonymous', as in line with the advocates of open review, somebody making an important judgement on the work of others and make the report open should not do so in secret.



Note: 1 – Not at all aware, 2 – Slightly Aware, 3 – Somewhat Aware, 4 – Moderately Aware and 5 – Extremely Aware

Figure 1: Awareness of OPR among Malaysian Researchers (N=135)

Experiences with Open Peer Review

This section reports on the extent Malaysian researchers have personally experienced OPR. Findings indicate that OPR practices vary considerably among researchers with about 25 percent (n=33) had never had a manuscript open peer reviewed; about 27 percent (n=37) researchers who acknowledged always or often involve in OPR, and slightly more (48%, n=65) either sometimes or rarely make their review open (see Table 3). These findings show that many researchers in Malaysia have not made OPR a normal practice. This could be

because of common myths about open research such as concern about rigour of peer review for open access journal, risks to funding and career advancement and fears of forfeiture of author's rights are burdensome for scholars (McKiernan et al. 2016). Also, authors express limited support for it in surveys and seem reluctant to participate in practice (Campbell 2006). However, the most important reason is probably that the respondents are concerned about the possible consequences of being identified as the source of a negative review.

Table 3: Experience of OPR based on Research Discipline and Experience (N=135)

	Discipline				Research Experience			
	Sciences		**Social sciences**		**ECRs**		**ERs**	
Practicing OPR	**#**	**%**	**#**	**%**	**#**	**%**	**#**	**%**
Always	6	6.4	4	9.8	4	6.5	6	8.2
Often	21	22.3	6	14.6	14	22.6	11	15.1
Sometimes	31	33.0	14	34.1	19	30.6	27	37.0
Rarely	11	11.7	9	22.0	7	11.3	13	17.8
Never	25	26.6	8	19.5	18	29.0	16	21.9
N	94		41		62		73	

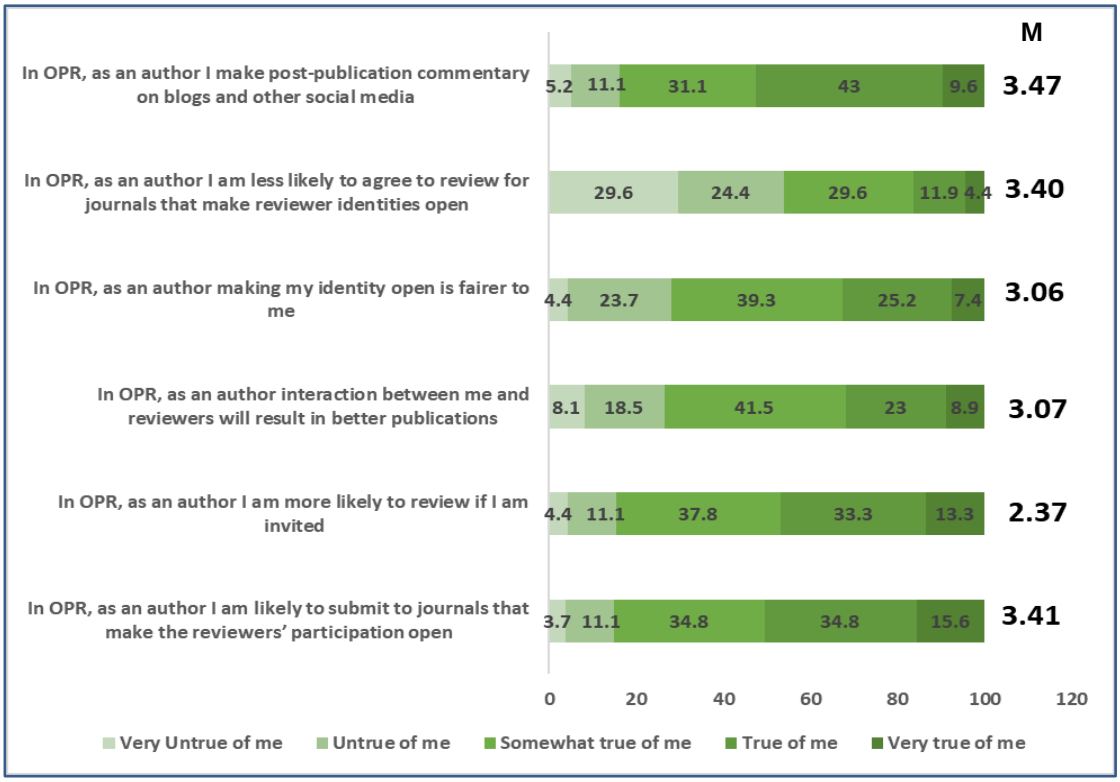
Data were cross-tabulated to find out how often the respondents exercise OPR in their respective disciplines. For the purpose of this analysis, those research areas that are of the same field were grouped into 2 major disciplines, sciences and social sciences. Responses came from 94 (69.6%) sciences and 41 (30.4%) social sciences. However, looking at their percentage score (see Table 3) implies that more science-based researchers had experience with OPR as either a reviewer or author, with 27 of them always or often conduct OPR. The level of experience with OPR as authors or reviewers was substantially lower amongst those from the social sciences (10 always or often OPR). This is expected as science-based journals, especially medical and health sciences, have been practising OPR for quite some time compared to the open access social sciences journals. Response rate by discipline that was heavily skewed towards the sciences may also contribute to this finding. OPR is a fairly new and developing practice, and it is expected that a high percentage would have not experienced OPR. However, the findings reported a low percentage (24.4%) having no experience and more than two third (75.6%) of the respondents have experienced OPR to some extent. A plausible explanation for this is that those who have taken the time to complete the survey were researchers who had prior experience with OPR and therefore were particularly interested in the subject.

The respondents were grouped into ECR (30-39 years old) and ER (40 years and above). These data allow comparison between the two groups and the analysis indicates that slighlty more ECRs had the experience with OPR (29.1% always or often OPR) compared to their senior counterparts (23.3% always or often OPR) (see Table 3). This could be because the younger researchers, as authors, see the benefits of open reports as providing them a guide to help them as they begin to do peer review themselves, and making their identities open would not be a problem to them, provided their efforts would be credited (e.g. through Publons). Bravo et al. (2019) and Casnici et al. (2017) findings lend support to this study - that junior researchers are motivated to take the peer reviewing task seriously, both a means of learning and for building reputation with the journal's editor for future submission.

General Attitudes towards Open Peer Review

This section reports on researchers' attitudes towards OPR as both authors and/or reviewers. Figure 2 presents the descriptive analysis of the six statements that captured the attitude of researchers towards OPR as authors, based on the Likert scale of 1-5 (from very untrue of me to very true of me).

Considering the mean responses, the survey showed that as authors, the researchers exhibit somewhat more interest in making post publication summary on blogs and other social media (M=3.47, SD=1.006) and are likely to submit to journals that make the reviewers' participation open (M= 3.41, SD=.987). They are also more inclined to 'less likely to agree to review for journals that make reviewer identities open' (M=3.40, SD=1.001) and very few (M=2.37, SD=1.157) thought that they would more likely to review if invited. These responses seemed to reflect more reluctance among the researchers to accept OPR practices. The respondents also exhibit somewhat true that as an author, making the identity open is fairer (M=3.06, SD=1.049) and that the interaction between authors and reviewers will result in better publication (3.07, SD=0.982). This reflects that for both statements, the majority (about 65%) shows little interest of OPR as a tool to foster open science by making the traditional peer review more transparent and accountable, characteristics which connects OPR to open science.



Note: 1 – Very Untrue of me, 2 – Untrue of me, 3 – Somewhat true of me, 4 – True of me, 5 – Very true of me

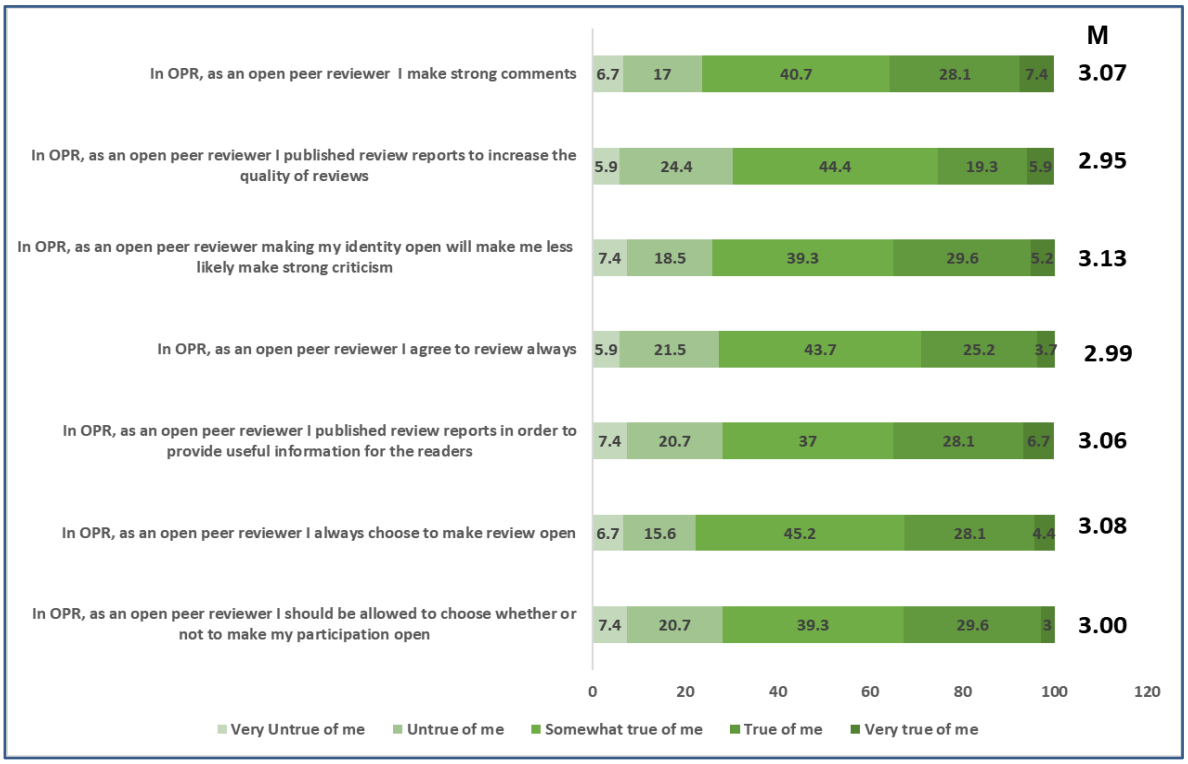
Figure 2: Attitudes of Authors towards OPR

Figure 3 presents the descriptive analysis of the seven statements that captured the attitude of researchers towards OPR as reviewers, based on the Likert scale of 1-5 (from 'very untrue of me' to 'very true of me'). For all statements, more than 70 percent exhibited somewhat positive attitude towards OPR ('somewhat true of me' to 'very true of me'), however, this may not necessarily translate into enthusiasm for this emerging trend in scholarly publishing. Considering the mean responses, the survey showed that as reviewers, the respondents seemed to be cautious to accept OPR practices. The majority declared 'somewhat true of me' that as open peer reviewers:

a) making their identity open will make them less likely make strong criticisms (M=3.13; SD= 1.003).
b) they always choose to make their peer review open (M= 3.08; SD=0.939).

c) they always make strong comments in OPR (M= 3.07; SD= 0.994).
d) they published review reports in order to provide useful information for the reader (M=3.06; SD= 1.028).

The mean values speak volumes of the respondents' attitude towards OPR. There seems to be a rather strong pushback against open participation, as only about one-third expressed positiveness to 'agree to review always' (M= 2.99; SD=0.926) and to 'be allowed to choose whether or not to make my participation open' (M= 3.00; SD=0.962). On a less positive note, they also do not hold the attitude that they published review reports to increase the quality of reviews (M= 2.95; SD=0.957).



Note: 1 – Very Untrue of me, 2 – Untrue of me, 3 – Somewhat true of me, 4 – True of me, 5 – Very true of me

Figure 3: Attitudes of Reviewers towards OPR

The study also explores what factors encourage or incentivize researchers to participate in OPR, which further capture their attitudes towards OPR. The pie charts and their corresponding statements in Figure 4 reflect the incentivized (blue pies) and disincentivized (orange pies) beliefs to perform OPR. Findings indicate that Malaysian researchers in general believe in the principle goals of OPR, however only slightly more that 50 percent resonate with the value of OPR that:

a) Upholds the integrity of science by making the reviewers' identities known to authors (M=3.52, SD= 0.88; 57% truly believe or believe)
b) Helps in ensuring control in scientific communication (M=3.48, SD= 0.88, 51.8% truly believe or believe)

Less than 50 percent (43.7%) either truly believe or believe that OPR helps reviewers to play an active role in the community participation (M=3.33, SD= 0.94), although in OPR, reviewers will naturally allocate their limited time towards reviewing work that adheres to basic standards of scientific quality to allow them to be published more quickly.

Note: 1=Very untrue of what I believe, 2=Untrue of what I believe, 3=Somewhat true of what I believe, 4=Very true of what I believe, 5=True of what I believe

Figure 4: Incentivized and Disincentivized Beliefs of OPR

Although more than 50 percent respondents see the value in OPR in terms of upholding the integrity of science through open identities, they remain sceptical about the effects and advocate for open reports. Slightly more that 50 percent (51.9%) believe that OPR results in more unanimous negative reviews/reports (M=3.50, SD=1.196) of the manucripts. However, considering the mean responses that reflect researchers' disincentivized beliefs towards OPR, there seemed to be a mixed feeling in attitude toward OPR among Malaysia researchers. Many still believe that making reviews suitable for publication takes longer time, hence making OPR more time-intensive leading to few willing reviewers, as reflected from the following findings:

a) Timing is not consistent in some journals (M=3.15, SD= 0.851; 30.4% truly believe or believe).
b) OPR is unsustainable because there are too few willing reviewers (M=3.31, SD= 0.902; 41.4% truly believe or believe).

Four respondents left comments about OPR. Two responses stressed that OPR leads to better quality review (*Open review is a good way to improve the quality of manuscript, but it might interrupt the review process; OPR needs to be monitored to maintain the quality of the information to avoid plagiarism*); one response indicated that OPR enables open collaboration (*It is a good avenue for research collaboration and publication*). Another response suggested the need for journal editors and publishers to open the door to OPR but

with quality control (*It should be employed throughout research journal however, it should be controlled)*. These responses suggest the need for journal publishers to create more awareness and training both for the reviewers and the editors themselves in order to compel authors with the policies of openness. Also, incentivizing reviewers' time and allowing them to showcase their verified reviews, as can be seen with some journals partnering with Publons, may improve the peer review process.

DISCUSSION

This study has explored the awareness, experiences, and attitudes of researchers in a non-western country towards OPR, which may further be deliberated to gauge the main drivers of OPR, and the barriers to the positioning of OPR. The results of this survey, which received 135 full responses, suggests that OPR is not yet taking root among Malaysian researchers, with moderate levels of understanding and awareness. A substantial proportion of Malaysian researchers are still not aware or have limited awareness of OPR and belief in its potential benefits. Recognition on the concept of OPR is mainly confined to the awareness that OPR allows and encourages direct reciprocal discussion between reviewers themselves (Ross-Hellauer 2017), while this is a very uncommon feature of OPR and one not practiced widely, although the outcome of OPR is that reviewers and authors can communicate. There is low awareness on open identities (authors and reviewers are aware of each other's identity), open interactions (direct reciprocal discussion between author(s) and reviewers) and open reports (review reports are published alongside the relevant article) traits of OPR.

There is evidence of disciplinary and generational elements, with stronger levels of exposure for OPR amongst the sciences and the ECRs, similar to other studies which reported a stronger levels of experience for OPR amongst the sciences (Ross-Hellauer et al., 2017) and younger generations (Bravo et al. 2019; Casnici et al. 2017; Ross-Hellauer et al. 2017). This could be because ECRs in the current study see the benefits of OPR and making their identities open would not be a problem to them, provided their efforts would be appreciated (e.g. through Publons). Casnici et al. (2017) reasoned out that junior researchers are motivated to take the peer-reviewing task seriously, both a means of learning and for building reputation with the journal's editor for future submission. However, this was not the case of a recent international survey of 1600 ECRs (Jamali et al. 2020b) and the qualitative study where there was only a little support for the types of peer review that have open identities and open reports (Rodríguez-Bravo et al. 2017). The majority prefer double blind peer review for the anonymity it affords.

Attitudes towards OPR show reasonably positive, and consistent in their roles as authors and reviewers, suggesting that Malaysian researchers in general would support a move towards OPR but with caution. This indicates that although, as authors, the respondents see the benefits of OPR, but this negates their attitudes towards OPR as reviewers as the majority remain 'on the fence' about the effects open reports and open identities. The findings suggest that the majority still have strong concerns about these two transparency traits, being afraid, vulnerable to criticism, or prone to positive bias in their review that OPR is known for (Schmidt et al. 2018). These findings chime with Jamali et al. (2020b) study of ECRs, whose as reviewers, prefer the anonymity and show little support for the types of peer review that have open identities because of 'a possible backlash' from the scholarly community or the fact that as ECRs, they might not be able to make strong comments to more senior authors. Similarly, Nicholas et al. (2019b) three-year longitudinal study of ECRs from seven countries, including Malaysia, found that although the majority were supportive,

but they were uncomfortable with the idea of OPR, which contains too many perils for many of them, increased criticism being one. Nevertheless, similar to Jamali et al. (2020a), this study has reasons to believe that from the attitudinal responses, Malaysian researchers who support open identities do so because it increases transparency and prevents the use of impolite language in comments. Ware (2008) also argued that reviewers would produce better work and avoid offhand, careless or rude comments when their identity is known.

Many believe that OPR is more time-intensive leading to few willing reviewers, and this is consistent with findings on attitude that not many respondents thought they would more likely to review if invited. Others' findings (van Rooyen et al. 1999; Ware 2008) lend support to this study, which time and voluntary participation are indeed the case, although Ross-Hellauer et al. (2017) study found that a high majority of their respondents thought that reviewers are more likely to review if invited. However, Nicholson and Alperin (2016) study reported it would take no extra time/effort or only moderate extra time/effort to make peer reviews suitable for public posting.

OPR is clearly an emerging open science practice (Walker and Rocha da Silva, 2015) with a number of barriers to its implementation (Ross-Hellauer and Görögh 2019). Although not new, it is an uncommon practice among researchers in developed nations (Segado-Boj et al. 2018; Bravo et al. 2019), and indeed, it is very early days for Malaysian researchers who seem not to be strong advocates of this open science pillar. However, this study reported relatively higher practices of OPR most probably because the sample for this study seems skewed in favour of researchers who have used OPR. There is little sign of them relinquishing their beliefs and practices in regard to sharing, openness and transparency, similar to other findings that reported Malaysian researchers attitudes and behaviours on open data (Hodonu-Wusu et al. 2020), green open access (Singeh et al. 2013) open access mega journals (Abrizah et al. 2019), open metrics (Nicholas et al. 2020) and open science (Nicholas et al. 2019a).

The concerns relating to OPR among the researchers in this study, who are largely faculty academics, reflect to some degree that Malaysian researchers tend to be more cautious; in theory they believe that OPR is good because it is transparent and ensures quality in scientific communication, but in practice they think that it is harmful because too much exposure. Another possible explanation might be that as indicated in Rodríguez-Bravo et al. (2017), they tend to be traditional and comfortable with the existing scholarly communication systems and procedures. They may lack exposure and experience in OPR that have been practised by some open access mega-journals, because they come from research-intensive universities, they are raised with a strong culture that measure research performance through publications in 'impact-factored journals' - it is still the case that they will only publish in open access journals if they are Web of Science-indexed (Abrizah et al. 2019), which many new open access peer-reviewed journals have yet to establish a name in their scientific field. The truth is that, in light of the novelty of many open access journals indexed in the Web of Science, the majority follow a traditional scholarly communication peer review process. OPR has also not reached the 813 Malaysian-based journals (as of 12 June 2021) that are predominantly on bronze open access (see http://www.myjurnal.my/public/browse.php).

Taking into account of the findings, this study may have practical implications. As Malaysia is rolling out open science national plans through the Malaysian Open Science Platform (see https://www.akademisains.gov.my/mosp/about/), the research community, will be expected to comply down the line, but that will only come if the issues of a common

understanding, incentivizing the actors as well as trust and ethical challenges are addressed, and the current reward system is changed to provide incentives to think and practice open science, including OPR. OPR can only be performed credibly well if those involved have a clear idea as to its central drive and motivation to practise. As it provides excellent learning opportunities and has the potential to strengthen scholarly communication and research towards a more transparent, collaborative and participative undertaking (Schmidt et al. 2018), it should be used to achieve best value and mutual benefits for all stakeholders and the wider research community. Transparency, collaborative and participative that allows openness and a more objective and fair judgment of research and scholarship may well be the way science will be assessed in the future (Hachani 2015). However, if the attitude and uptake of researchers from emerging regions are low and slow, as the current study shows, this would mean fewer chances for these researchers to better understand the transparent process from the initial manuscript submission to final published version. This means that fewer opportunities for them to 'see the latest research trends, learn what OPR journals are looking for in a great manuscript, make professional connections with editors [and reviewers], and develop critical analysis skills' (Publons 2018, p.2). As a result, there would be a geographical peer-review disparity which may harm the participation and development, as well as research assessment of non-Western researchers in this aspect of open science.

CONCLUSION

As a conclusion, the findings had addressed the main research aim to investigate the awareness, experiences, and attitudes of researchers in a non-western country towards OPR. The respondents showed mixed awareness of OPR, which could indicate a minimal involvement in exercising it. Their attitude towards OPR is intermingled between positive and negative, that could either encourage or discourage their intention in practising OPR as a reviewer or author.

The study is not without limitations. It is based on a small sample of 135 academic researchers from five research universities in Malaysia. The responses were relied on researchers who agree to take part which likely many of them have prior experience with OPR and thus were particularly interested in the subject, rather than a representative subsample of the population. This does not necessarily harm the validity of the survey, but it does limit the scope. Therefore, the findings should be treated with caution as it is a representative of researchers who are more likely to be open to using OPR. Findings are based only on respondents' self-report; attitudes may not necessarily translate to practice, there may be large differences between what people say and what they actually do. In spite of this shortcoming, the findings concur with related studies that have more or less the same number of responses (Rodríguez-Bravo et al. 2017; Segado-Boj et al. 2018) suggesting that sample size is not in question.

Future research may be warranted, by both a broader sample of authors and reviewers, and analysis of peer-review activity researchers registered in the Publons peer review-tracking website. A more extended study timeline would also give better insight to trends over time. The OPR attitudes and behaviours could also be explored in depth qualitatively based on interviews, actual observation, and concrete evidence of their participation in OPR platforms of pre-prints and journals.

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APPENDIX

Questionnaire

Instruction: Please fill in the space provided or tick (√) the answer that BEST describe you and your awareness, general experience and practices, as well as attitude towards Open Peer Review (OPR).

DEMOGRAPHIC DATA

1. Age: a) <=30 b) 31-35 years c) 36-40 years d) 41-45 years e) >=46 years
2. Gender: a) Male b) Female
3. Academic Position a) Senior Lecturers and, Other Cadres b) Professor and Associate Professor
4. Discipline: a) Sciences b) Non-Sciences
5. Research University: a) UM b) USM c) UKM d) UPM e) UTM
6. Publications Experience in 5 years: a) <= 6 publications b) >=7 publications

AWARENESS

7. I am aware that in OPR author's scholarly works/ideas are subjected to scrutiny of experts and made public their comments.
8. I am aware that reviewer and author identities are made open in peer review process
9. I am aware that all review reports will be published, but reviewers will be given the option to remain anonymous
10. I am aware that there are discussions between authors and reviewers
11. I am aware that there are discussions between reviewers and reviewers

GENERAL EXPERIENCE IN OPEN PEER REVIEW

12. Have you ever had a manuscript open peer reviewed in a journal? (Yes/No)
13. How often do you open peer review in journal? (Always, Often, Sometimes, Rarely, Never)

PRACTICE

14. In OPR, as an open peer reviewer I should be allowed to choose whether or not to make my participation open
15. In OPR, as an open peer reviewer I always choose to make my peer review open
16. In OPR, as an open peer reviewer I always agree to review OPR journal
17. In OPR, as an open peer reviewer I always make strong comments in OPR
18. In OPR, as an open peer reviewer I published review reports in order to provide useful information for the reader
19. In OPR, as an open peer reviewer I published review reports to increase the quality of reviews
20. In OPR, as an open peer reviewer making my identity open will make me less likely make strong criticisms

ATTITUDE

21. In OPR, as an author I am likely to submit to journals that make the reviewers' participation open
22. In OPR, as an author I am more likely to review if I am invited
23. In OPR, as an author interaction between me and reviewers will result in better publications

24. In OPR, as an author making my identity open is fairer to me as an author
25. In OPR, as an author I am less likely to agree to review for journals that make reviewer identities open
26. In OPR, as an author I make post–publication commentary on blogs and other social media
27. I believe that Open Peer Review helps in ensuring control in scientific communication
28. I believe that Open Peer Review upholds the integrity of science by making the reviewers' identities known to authors
29. I believe that Open Peer Review helps reviewers to play an active role in the community participation
30. I believe that Open Peer Review is unsustainable because there are too few willing reviewers
31. I believe that Open Peer Review timing is not consistent in some journals
32. I believe that Open Peer Review receives unanimous negative reviews/reports

33. Please provide any opinion and comment about open peer review.

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Thank you for your responses.