



Challenges in Research & Innovation During the Pandemic Era: Malaysians' Perspectives

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Abstract. The COVID-19 pandemic has ravaged many nations economically and socially. This study attempts to analyze Malaysia researchers at the tertiary level on their perspectives towards challenges in research and innovation during the Pandemic Era throughout almost two-year of the lockdown. This article undertakes an analysis of researchers based on issues and challenges as the main sources of reference by adopting the document analysis method. Therefore, this study used a qualitative method with a protocol of observation and analysis of several sources to get data and information. The outcome of this article suggests that higher institutions have to consider all aspects in supporting the continuity of research and innovation to ensure no researchers are left behind. Researchers are majorly concerned about their research competency with none to minimal exposure to laboratory settings. All stakeholders' well-being, including mental health, should be prioritized, should this mode of delivery continue in these times of uncertainty. This paper clarifies that the methods and point solutions to the challenges faced by the researcher and innovators are considered a new issue and are supposed to be handled by all parties to enhance the top quality of research and innovation in Malaysia.

Keywords: Challenges, Research, Innovation, Pandemic, Malaysia

1. INTRODUCTION

Nobody would have thought that the lockdowns are to be around for such a long time in many parts of the world. In Malaysia, this is termed the Movement Control Order (MCO). Well into the second year of the MCO, the Institutions of Higher Learning (IHLs) have adapted quite well in publishing research or even innovation. To everybody's surprise, major innovations events arranged online or in hybrid modes are getting common and accepted, these include registration of new research projects, intellectual properties, new products and even pitching and innovation competitions. Mental and health effects are one of the many effects brought about by disruptions to daily routines. By April 2020, according to UNESCO, over 90% of enrolled learners and researchers i.e. 1.5 billion people worldwide were out of education. For people with mental health needs, the closure of research education means inaccessibility to formal resources (Lee, 2020). One of the most followed SOPs, social distancing, causes social isolation in abusive homes, with abuse likely increasing during times of economic uncertainty

and stress. Notwithstanding, there is not much evidence yet about the long-term mental health effects of a pandemic (Lee, 2020). A survey conducted involving 1182 individuals of different age groups from various educational institutes in Delhi - National Capital Region (NCR), India found numerous impacts on students and researchers i.e., time spent on online research and self-research study, a medium used for publishing, sleeping habits, daily fitness routine, and the subsequent effects on weight, social life, and mental health (Chaturvedi et al. 2021). Researchers seek help from people nearest to them to address

these issues and adopt different coping mechanisms. Another survey study conducted over 62 countries involving 30,383 students and researchers found that inferior computer skills and the perceived higher workloads prevented them from appreciating their own improved performance in the new interdisciplinary research environment. Most importantly mental health issues seem to be the most significant issues haunting them such as; boredom, anxiety, and frustration (Aristovnik et al. 2020). A survey study at Changzhi medical college, China by using cluster sampling found significant unbearable psychological pressure among researchers (Cao et al. 2020).

2. CHALLENGES IN RESEARCH & INNOVATION

According to a study conducted by Mohamed Nazul (2020), there are several challenges faced by researchers in undergoing online research and innovations involving the ability to adapt to new challenges in technology because it involves a new normal in a digital as well as attitude change to accept a new practice and implement online research and innovation.

Among the key aspects of challenges in research and innovation during the Pandemic Era is that the researchers need to master the process of self-directed research and innovation with more strategy. The main challenge in the aspect of self-research is weaknesses in time management among academicians. The previous studies (Misra & McKean, 2000; Kearns & Gardiner, 2007) show that time management has a relationship with stress levels in circles researchers. They need to divide the time between schedules, lectures, tutorials, and research. In fact, the academic workload which is excessive at one time also can cause stress. Workload or load assessment can be defined as the amount of work that is given by the faculty or university to academic staff within a period of a certain time.

The fact is that before the pandemic era, the burden of research and innovation was more holistic where it required academicians to create research and innovations on their own, discussion within the interdisciplinary research and lecturers face to face, and perform laboratory experiments for pure sciences and direct/physical projects. Yet, during this pandemic era, the burden of research and innovation is concentrated because researchers need to use a considerable amount of time in front of a computer involves purely self-directed research, virtual discussions with other innovators and collaborators, computer simulations, and virtual seminar activities involving virtual presentation in front of computers. This no longer takes paper presentations in front of audiences, video making for presentations as well as research grants activities that require full concentration and focus. This online research and innovation also demand academics allocate a long period of time ahead of computers or laptops to do research, innovation, and publishing online almost all day. The research and innovation challenges during the pandemic era are indeed totally different and might cause academic stress among researchers.

In this regard, stress or academic pressure is defined as an unfavorable condition of the string of demands that need to be met by researchers at once triggers anxiety and influences well-being in their area of study (Mohd Arif & Saodah, 2019). According to Le, Berenbaum, and Raghavan (2002) university researchers who are in major cities in Malaysia record high levels of alexithymia. Alexithymia can be identified among researchers through several symptoms. For example, researchers have difficulty in understanding, processing, and expressing emotions well and this can lead to other psychiatric problems.

Besides, the inability to access internet coverage is another challenge in research and innovation during the Pandemic era. The Organization for Economic Co-operation and Development (OECD) reports that access limitations to digital equipment and the Internet

are identified as one of the main possible factors inhibiting research and innovation. The low coverage of internet access as provided by telecommunication services disturb researchers and academicians to access information and data collection from websites. The internet is constrained in certain areas, especially in rural areas. Some researchers do not have WIFI at home and much depends on the “hotspot” availability on their respective smartphones. In fact, a number of researchers also still use traditional cell phones due to the financial constraints of belonging a smartphone, which caused them not to get internet access for research purposes.

3. DISCUSSION AND SOLUTION

Adaptability is essential for researchers and academic staff as we explore a new method of conducting online research and innovation which previously used to be face-to-face lectures. In our personal experiences, obstacles are unavoidable in many different ways. UKM, being one of the research institutions in Malaysia, has the best competent and experienced academicians. Numerous training sessions are needed for them to break their defiance where they believe that the implementation of research and innovation are meant to be physically conducted. Apart from bedside research, academic staff are also occupied with teaching duties which makes it more challenging for them to adapt to the new way of research and innovation.

In our institution, there are some researchers from rural areas who are unable to afford an internet data plan or experienced limited internet connection (Kumar & Akoijam, 2017). Therefore, having the voice-over PPT slides is to improve the effectiveness of the delivery of online teaching and seminars. Moreover, not all researchers can attend the live seminar sessions or even have access to the Internet. Hence, the university needs to provide mobile data to underprivileged researchers (Lynch, 2020). Inadequate equipment and device (i.e., laptops, headphones, and webcams) are also one of the challenges that should not be taken lightly (Dhawan, 2020). Some of these researchers come from underprivileged family backgrounds which makes it difficult for them to cope with this new mode of online research and innovation. They might be left behind should they fail to own the equipment needed.

After 16 months of going through the Covid-19 pandemic, we realized that some academic staff are trying to adapt and be open to learning new sets of skills and knowledge despite the initial resistance. Moreover, the application of online research and innovation seems more convenient for both academic staff and researchers as it can be done remotely. It is also easier for administrative staff and librarians to monitor and provide swift technical assistance in online research and innovation sessions. In addition, it is cost-effective (Wilson & Shankar, 2021) as no on-site venue is needed for research workshops, hence, saving on electricity and maintenance costs.

We found that having both types of research and innovation (asynchronous and synchronous) was beneficial (Lowenthal, Borup, West, & Archambault, 2020). First, it is viewed as an efficient way of conducting research. Researchers and presenters in a conference for example can also review the voice-over PPT slides many times before and after the conferences at any time apart from the live sessions (with no concerns about the availability or instability of internet connection). In a way, this pandemic has also taught the majority of researchers about adult learning. However, some researchers in pure sciences seem to have issues applying what they have done online to clinical practice (Reese, 2015). From our personal perspective, this might happen due to a lack of clinical exposure, pandemic fatigue, or lack of self-initiative to revise after the online sessions.

At the core of this pandemic, it is crucial to make every stakeholder buy into the use of technology within a short period of time. In our institution, online training on how to use the chosen platform is extended to all academic staff and researchers. This is also to be supplemented with a guideline (either in written form, direct form as in frequently asked questions (FAQs), or short videos). However, some of the academic staff are still struggling with the technology. Therefore, continuous online training or as requested are necessary to assist those who are still struggling with the use of technology. Being one of the research institutions in Malaysia, the available working space is limited coupled with lacking or poorly working equipment. This could hinder the academic staff in preparing voice-over PPT slides on time. If there is no lockdown, the Center for Research, Innovation, and Management (CRIM) could provide the necessary working space and equipment (i.e., laptop, microphone, and camera) to aid the academic staff in recording their voice-over PPT slides.

In addition, the academic staff also can deliver their seminar presentation in the working space provided. At the same time, we are proposing more funding from the faculty management to support publications and also assessments (e.g., laptop, computer, hard disk, webcam, headphones, pen drive, and microphone). The institution management should organize more motivational talks and give support to the academicians while identifying struggling researchers. This is to help them to maintain their focus on research and reduce emotional burden. Moreover, an online platform where researchers can directly contact and keep in touch with the librarians would be helpful in gaining the sources on track.

Meanwhile, working in interdisciplinary research is something interesting and quite proud of, but it is not always easy and there are some career development issues to consider if pursuing

this approach. Below, there are some tips and observations regarding interdisciplinary research, innovation, and publishing.

- a. Be prepared to read a lot more. Inevitably when the researchers start to dabble in lots of different subject areas, this means engaging with a wider range of scholarly outputs. One of the ways around this is to work with people in different subject areas who may already have extensive knowledge of alternative literature.
- b. Work with authors in different subject areas that can increase researchers' work and the writing of researchers. This will make the task of research and publishing in an interdisciplinary manner a lot easier.
- c. Think about ways in which researchers' interdisciplinary knowledge can increase theoretical value and contribute to a different subject area. For example, the researchers have had some success taking ideas from marketing and writing about them in geography journals, and vice versa.
- d. Engage with debates within the researchers' journal and are targeting for a publication. Look through previous editions of the journal and identify work that relates to the researchers' field of studies, then make this connection for the reader of the researchers' paper.
- e. Understand that different subject areas have different ways of approaching research, and adapt researchers' styles according to where researchers are trying to get work published. For example, in the author's experience marketing journals often want a substantive methodology section, with the rationale for sampling and the approach to analysis laid out in intricate detail. Conversely, some of the best science journals seem

not to get overly focused on methodological detail, preferring instead to arrive more quickly at unpacking the richness of any findings.

- f. From a career development point of view, working and publishing in an interdisciplinary way can attract criticism if it is not managed well. The researchers have heard people refer to those taking an interdisciplinary perspective in pejorative terms as taking a scattergun approach. To deal with this, the author would strongly recommend focusing on a central intellectual theme that links the majority of work together. Find a way of articulating this theme in a few well-chosen words, and be prepared to repeat these words with confidence in every career development review, promotion case, job application, and interview you undertake.

The author concludes that interdisciplinary research is not for everyone. Some prefer to focus on one specific research area for their whole academic career, and this is a perfectly legitimate path to pursue. But for others, there is real reward in working in an interdisciplinary way, provided it is managed properly. Learning the perspectives and theories of different discipline areas can broaden researchers' intellectual palettes when writing, opening up opportunities for some unexpected and welcome interdisciplinary synergies to emerge. Also, as someone who has moved into academic management and leadership in the second half of their career, the author has found an interdisciplinary perspective incredibly helpful as it allows him to better understand how academic colleagues from a variety of subject areas may think and act differently.

4. SUGGESTION FOR THE INTERDISCIPLINARY RESEARCH

There are several tips and suggestions on how to successfully publish interdisciplinary research:

First, over the past years, publishing in teams has been observed to be a general trend within academia (Hicks and Katz 1996). In natural sciences, engineering, and social sciences, the number of authors per article in Web of Science publications has steadily increased over the last 50 years. Only in arts and humanities do 90% of the publications remain single-author monographs (Wuchty et al. 2007, Jones et al. 2008). It is due to the number of authors of a paper that seems to positively correlate with how often it is quoted (Gazni and Didegah 2011), publishing in teams appears to be the proper strategy in times when scientific achievements are primarily measured quantitatively, by the h-index among other factors. Hence, publishing in teams is not a specific phenomenon of social-ecological research or of research for sustainable development, but a general phenomenon.

Second, publishing in teams mirrors the more general trend of doing research in collaboration. According to Bozeman et al. (2013:1), "There is abundant evidence that research collaboration has become the norm in every field of scientific and technical research." A key indicator that has been used "as a basic counting unit to measure collaborative activity" is co-authorship, again mostly because it is easy to quantify (Katz and Martin 1997:2).

Third, collaboration in teams does not necessarily have to be interdisciplinary. The author refers to interdisciplinary as "a mode of research by teams or individuals that integrates information, data, techniques, tools, perspectives, concepts, and/or theories from two or more disciplines or bodies of specialized knowledge to advance fundamental understanding or to solve problems whose solutions are beyond the scope of a single discipline or area of research practice" (NAS/NAE/IOM 2005:2).

Fourth, the interest in better understanding and practicing collaborative research in general, and inter- and transdisciplinary research in particular, is growing. Scholars of the novel field of the science of team science (Stokols et al. 2008a, Falk-Krzesinski et al. 2011) provide, for instance, an extensive review of the intrapersonal, interpersonal, organizational/institutional, physical/ environmental, technological, and socio-political factors that influence teams and provide the context for the “ecology of team science” (Stokols et al. 2008b).

5. CONCLUSION

Looking at the current situation, we are unsure when the pandemic will settle down. We are also curious if the implementation during the pandemic will continue when things get better. As a researcher or innovator, some activities such as; clinical or laboratory skills for pure sciences, research grants, research funding, bedside research and innovations, and procedural skills are better-conducted face-to-face. However, it would be a shame to drop the integrated technology when the pandemic is over. To sum up, the Covid-19 pandemic has left massive impacts and challenges to many educational institutions in restructuring their research and innovation system to maintain and enhance the top quality of research and innovation. Our institution has invested in a technological platform (Microsoft Teams and WebEx) which we believe has aided us in implementing an effective way of research and innovation. This is imperative in order to produce more publications in terms of high-impact journal articles, books, proceedings, etc.

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