

12-7-2022

## Enablers and Inhibitors of Public Value Creation Through the Use of Open Government Data in Australian Public Sector

Nuria Benmohamed  
*University of Wollongong, ngob163@uowmail.edu.au*

Jun Shen  
*University of Wollongong, jshen@uow.edu.au*

Tingru Cui  
*University of Melbourne, tingru.cui@unimelb.edu.au*

Follow this and additional works at: <https://aisel.aisnet.org/acis2022>

---

### Recommended Citation

Benmohamed, Nuria; Shen, Jun; and Cui, Tingru, "Enablers and Inhibitors of Public Value Creation Through the Use of Open Government Data in Australian Public Sector" (2022). *ACIS 2022 Proceedings*. 9.  
<https://aisel.aisnet.org/acis2022/9>

This material is brought to you by the Australasian (ACIS) at AIS Electronic Library (AISeL). It has been accepted for inclusion in ACIS 2022 Proceedings by an authorized administrator of AIS Electronic Library (AISeL). For more information, please contact [elibrary@aisnet.org](mailto:elibrary@aisnet.org).

# **Enablers and Inhibitors of Public Value Creation Through the Use of Open Government Data in Australian Public Sector**

## **Research-In-Progress**

### **Nuria Benmohamed**

School of Computing and Information Technology  
University of Wollongong  
NSW, Australia  
Email: ngob163@uowmail.edu.au

### **Jun Shen**

School of Computing and Information Technology  
University of Wollongong  
NSW, Australia  
Email: jshen@uow.edu.au,

### **Tingru Cui**

School of Computing and Information Systems  
University of Melbourne  
Victoria, Australia  
Email: tingru.cui@unimelb.edu.au

## **Abstract**

The development of open government data (OGD) has spread all around the world. The vast datasets that were proactively published on the OGD portal would be beneficial for the government and its citizens. There are some factors that might enable OGD usage to create public value for the users and communities in the public sector. The OGD literature shows that there is a huge gap in empirical research. This research aims to identify the salient factors that enable or inhibit successful OGD usage and its beneficial outcomes in the Australian public sector. It is important to find out the enablers and inhibitors of creating public value by OGD usage, and measuring the success of OGD usage to achieve public value for the citizens. This research has drawn on Moore's framework (1995) for creating public values and the information systems success model framework as theoretical backgrounds to conduct survey research from a government employee perspective to address the gap in the literature.

**Keywords:** open government data, Australia, public value, public sector.

# 1 Introduction

## 1.1 Background

The fast growth of information and communication technology has generated a huge amount of data. Governments can be considered as one of the main sources of data in both public and private sectors. The open government data (OGD) movement has been initiated by the USA's first Obama administration in 2009. The radically innovative idea has started when the president Obama has announced the new policies of opening and publishing government-held data freely and proactively to the public for reuse (Wirtz et al. 2018). Eventually, the development of open government data (OGD) spread all around the world (Wirtz et al. 2018). OGD consists of multiple datasets, including budget and spending, population, census, geographical, and parliament minutes. It also includes data owned by public administrations such as subsidiaries or agencies, including data related to climate, pollution, public transportation, congestion, traffic, childcare, and education. Several countries have already demonstrated their commitment to opening government data by joining the OGP. While there are a growing number of conceptual framework studies on the benefits of implementing and using OGD, (Abu-Shahab, 2015; Hossain et al. 2018; dos Santos Brito 2015; Wang et al. 2018), there remains a relative lack of empirical research on OGD implementations that have studied public value creation from OGD investments made by the governments either from a government (or supply-side) perspective or a citizen/user (or demand-side) perspective, probably due to the relative newness of the OGD phenomenon in the world. In this research, we focus on Australian public sector organisation as a case study for two main reasons. Firstly, according to the United Nations Australia is ranked the second in e-government development (United Nations 2016). Importantly, Australia is one of the leading countries in national (OGD) adoption by open government declaration (DPMC 2016). Australia is one of the leaders in promoting government data re-use in the public sector (OECD OUR data Index 2019). In the main open government data portal of Australia (data.gov.au), there are more than 7000 additional data sets have been published on data.gov.au since 2013 (DPMC, 2022). Thus, this study focuses on exploring the factors that enable or inhibit public value creation through the use of (OGD) in Australian public sector.

## 1.2 Motivation and Research Gap

Although many studies have focused on the potential benefits of the use of OGD from either supply-side or demand-side perspectives (Abu-Shahab 2015; Hossain et al. 2018; dos Santos Brito 2015; Wang et al. 2018), few studies have examined both theoretically and empirically the values creation of OGD usage in the public sector. Furthermore, all of the existing studies on the values creation of OGD investments tend to have focused on generating conceptual frameworks (Janssen et al. 2012; Zuiderwijk et al. 2015). A study by (Hossain et al. 2018) interviewed eleven employees from six different Australian government agencies has found six important antecedents to the adoption of open data in Australian public organisations using organisational behaviour theory toward technology diffusion. In this research, the organisational behaviour theory is not applicable due to the goals of our research are to find out the factors affecting the public value creation of (OGD) usage in the Australian public sector rather than the adoption of (OGD) in the Australian public sector. After a thorough review of the OGD literature, it has been found that there is a critical research gap in the existing works that were based on sound theory to empirically examine plausible enablers and inhibitors factors, which enable or inhibit public value creation by using OGD in the Australian public sector. Therefore, there is an urgent need for theory-driven empirical research to identify and evaluate the strength of the enablers and inhibitors of public values creation from OGD usage in the public sector in general and Australia in particular. We choose the perspectives of the government agency managers in this study in order to seek a deeper understanding of the usage of the (OGD) and how to maximise its benefits in the public sector organisation in general while focusing on Australia in particular. This research would guild the managers of public organisations for effective use of the (OGD) within Australia and abroad. This proposed research agenda in this paper aims to study the factors that enable and inhibit co-creating public values by using OGD in Australian public sector. Nevertheless, the research focus is important given the relative lack of empirical questionnaire survey research in the literature. Therefore, this study aims to investigate and answer the following research questions:

1. What are the factors that enable creating public value from the OGD usage in Australian public sector?
2. What are the factors that inhibit creating public value from the OGD usage in Australian public sector?

## **2 LITERATURE REVIEW**

### **2.1 OGD Definition**

Even though the term open government data is relatively new, the concepts of OGD have been studied widely. OGD can be defined as “Non-privacy-restricted and non-confidential data which is produced with public money and is made available without any restrictions on its usage or distribution.” (Janssen et al. 2012, p.259). Also, OGD has been defined as published public sector data that are opened up for use and/or re-use by public and/or private agents for their own or organizational purposes (Talukder et al. 2019; Jetzek et al. 2014). In addition, OGD can be explained as, “Governments accumulate wealth of data which data can be compiled into de-identified datasets and released to the general public as open data” (Hassan and Twinomurinzi 2018).

### **2.2 Open Government Data Benefits**

The OGD benefits have also been addressed widely in the literature (Saxena & Janssen 2017; Hossain et al. 2018; dos Santos Brito 2015; Wang et al. 2018; Jetzek et al. 2014; Abu-Shanab 2015). The three main principles of OGD is to achieve transparency, accountability and collaboration between citizens and their governments. Enhancement in accountability would lead the citizens to increase participation which would improve not only collaboration but also trust between citizens and governments (Abu-Shanab 2015). Furthermore, a study by (Saxena and Janssen 2017) aimed to investigate the usage of OGD of different stockholders in India. The authors argued that, the use of OGD by citizens could lead to improved transparency and efficiency of public service delivery. Making data freely accessible to all citizens could also lead to increased trust between governments and their citizens. Further, the implementation and the use of OGD could have a positive impact on citizens' empowerment. As the enhancement of collaboration between citizens and governments will lead to more trust between both of them in the governance system (Hossain et al. 2018). In another study by Zuiderwijk (2018) argues that the benefits that is gained from the adoption and use of OGD among government agencies can be operational and technical benefits of OGD followed by economic benefits, and lastly the social benefits are the most delivered benefits of OGD. Even though many OGD initiatives do deliver benefits yet may not be closely related to their objectives as there is mismatch between the aims of OGD and the actual benefits delivered according to Zuiderwijk (2018). The benefits of OGD were discussed in more details by using an OGD portal in the Brazilian's election results (2014). The results of the study show that, citizens consider using applications based on OGD as a very useful tool than official government websites. As a result, collaboration, engagement and participation of citizens in government owned data have a very important role in the election results. This means that any misuse of OGD may lead to change in the election results. Thus, OGD applications play an improvement role in not only the voting processes but also in reducing of possible corruption. As a result of transparency generated by OGD usage, the quality of political debates and the effectiveness of political process will be improved (dos Santos Brito 2015). Open innovation may be stimulated into new values, such as new business values, or new public values such as transparency, accountability and collaboration that can be created and realized by the open government data usage (Jetzek et al. 2014). Thus, it could be argued that effective use of OGD in the public sector would promote not only the use of these datasets but also create innovations and values of these data.

### **2.3 Enablers and Inhibitors of Public Values Creation from OGD Usage in the Public Sector**

There are some factors that might enable OGD usage to create public values. Opening access to government data is one of the main factors that enable citizens and governments to get involved in the government system. Opening access to government data assures that public organizations engage in a process, which has to consider influences, discourses and exchanges to be constructive. Publishing policy documents online will increase the efficiency and effectiveness of government service (Janssen et al. 2012). Enabling citizens to participate in the data generating and reviewing processes, and enabling access to commercially valuable information for innovation purposes (Janssen et al. 2012). Public organisations should publish data with sufficient and good quality. Unknown, inconsistent or unsatisfactory quality of OGD could lead to risks for validity and relevance. Thus, the misuse of data could be avoided if more information about the way open data was collected and processed were to be provided by providing metadata (Zuiderwijk et al. 2015). Saxena and Janssen (2017) argue that governments should make OGD portals more friendly, updated and accurate, which may be conducive to increase the use of OGD

and its benefits. Another study by (Wang et Al. 2018) argues that the interaction between both the users and portals during data users' acquisition processes is very important. The functions of data portals and quality could lead to better interaction between users and open data portals. As users are considered to be the main consumers of the data that are provided by the governments, making better functions in the data portals will lead to better achievement of OGD benefits. Therefore, the improvement of the functions of data portals could lead to improve the delivered benefits of OGD (Wang et al. 2018).

The first inhibitor to OGD values creation is a lack of awareness of the values of government data by public officials. The opportunity to capture values from OGD usage in the public sector might be challenging even if the data is made available and free, as some users are not aware of the value of (OGD) and/or do not have the required skills or knowledge to reuse these data effectively. The digital divide is another fact that governments should consider and that should be prevented to support the citizens to reuse government's open data. Increasing computer and data literacy as well as promoting the awareness of public officials and the general public of the value of (OGD) are very critical. (Janssen et al. 2012; Zuiderwijk et al. 2015). Government agencies are responsible to release high quality of data and high values datasets in a machine readable format. The quality and quantity of datasets are very important in releasing open data (Talukder et al. 2019). As the challenges of OGD could be in different perspectives according to a study by Verma and Gupta (2015), it is indicated that the challenges of OGD by government agencies in India's' context could be technical, formats and metadata that could affect the access of OGD. These data may be collected for purpose ending with a lack of metadata that make it hard to interpret these data correctly with anyone, who is not aware of the context of these data. In addition, the lack of awareness of data makes it difficult even for the government officer to use these data in order to make better values. Capacity buildings of government officials are also important to find the high valued datasets and release them in the open domain (Zhao 2018). On the other hand, privacy and security are very big issues in publishing data online. Making balance between data available online and the privacy right is a big challenge (Wang et al.2020).Therefore, the OGD service support that is responsible for maintaining the data and facing the challenges of using OGD effectively in order to get users' satisfaction as well as maximize the benefits of these data is very important. Delivering the benefits of OGD usage in the public sector would provide public value creation for both users and communities.

### **3 Theoretical foundation**

#### **3.1 Moore Framework for Creating Public Value**

According to Moore (1995), public value can be created by "establishing and operating an institution that meets citizens' (and their representatives') desires for properly ordered and productive public institutions" (Moore 1995, p.53), it is explained that the public value is considered as the product of governmentally produced benefits generating from either its physical products or service. The public value framework is based on the premise that public resources should be used to increase value in an economic sense broadly in terms of what is valued for both citizens and communities (Moore 1995). In the public sector, Public Value can be created by the increase of transparency, participation and collaboration as a social value of OGD (Janssen et al.2012; Zuiderwijk et al.2015). Thus, it can be argued that using OGD in Australian public sector could not only bring public service co-creation but also, could increase transparency and collaboration among citizens and governments. Value creation can be categorised into two main groups: economic and social value. Economic value includes all goods that could be delivered to the citizens by market while social values includes improvement in lives for all individuals and societies. Thus, creating values for society means that using public resources to increase public values in both economic and social values for citizen and communities (Jetzek et al. 2014). In this research, the Moore's (1995) framework is used to support our arguments that the usage of OGD in Australian public sector has a great potential to create public values. Open government data could improve not only the efficiency and effectiveness of the public organisation service but also increase transparency, accountability and collaboration between citizens and governments. Value creation of open data perspective in general is lack in the literature. Although there are many potential benefits of OGD, there are still many challenges that face its potential value. The traditional way of evaluating e-government system was the return of investments and cost benefits, however understanding of the social and economic values that simulate the benefits delivered to the public is still lacking. In this study public value creation through OGD usage considered as the total benefits created by governments, including economic value and social value. These public values include the efficiency, and effectiveness of public service as well as increased transparency, accountability and collaboration between citizens and governments. Thus, in this study, the view of public value creation is created by the government employee who

is involved the public value creation process to achieve the public agencies goals and deliver benefits to the public.

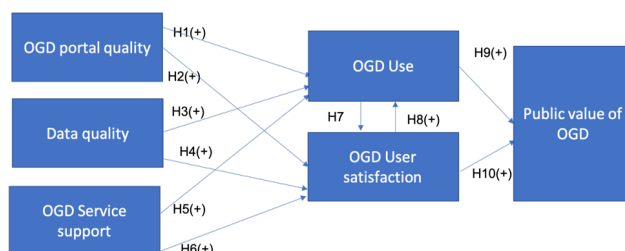
### 3.2 The Information Systems Success Model

The information systems (IS) success is a popular model used in information system literature which was developed by DeLone and McLean (2003). The IS success model includes six dimensions namely system quality, intention to use, system quality, user satisfaction, information quality, individual and organizational impact. The model then had been updated in 2003 to DeLone and McLean (2003) by adding a “service quality” measure as a new dimension of the IS success model, and by grouping all the “impact” measures into a single impact or benefit category called “net benefit.” (Sterrenberg and Keating 2016). Many studies used the DeLone and McLean IS success model for measuring and evaluating the performance of e-government systems and its impact in different perspectives (Mellouli et al. 2020; Purwanto et al.2017).Scott et.al (2015) used IS success model from the value perspective by the citizens of the U.S government web 2.0 websites. (Mellouli et al. 2020) focused in their studies on the IS model to evaluate the e-government from the public value perspective. Similarly, (Purwanto et al.2017) used the IS success model to develop an OGD success evaluation model that explore the public value creation through the usage of OGD initiatives in the context of Indonesia’s 2014 presidential election.

## 4 Proposed Research Model

In order to find out the enablers and inhibitors of creating public values by OGD usage, measuring the success of OGD usage in achieving public value to the citizens is crucial. Thus, in this research adopting DeLone and McLean's (2003) updated IS success model with the Moore (1995) public value framework is reasonable. Since the focus of this study is on creating public value from OGD systems success from the perspective of public sector employees, net benefit in this study refers to the social and economic value of OGD usage. As in the (Moor 1995) framework, the public value of any public organisation is achieving the stockholder’s needs. Therefore, the net benefits in our research model include benefits of OGD usage for individual users of OGD applications and organisations. The hypothesized relationship between use, user satisfaction, and the three quality variables is based on the theoretical and empirical work reported by DeLone and McLean (2003). As they suggest, use and user satisfaction are closely interrelated. Positive experience with “use” will lead to greater “user satisfaction” in the DeLone and McLean model and then because of usage and user satisfaction, a different net benefits will occur. DeLone and McLean also assume that the positive (or negative) net benefit from the perspective of the stakeholder of the system will impact the use and user satisfaction (Sterrenberg and Keating 2016). In this model the feedback links from net benefit to both use and user satisfaction were excluded because of the complexity and to reflect the cross-sectional nature of this study. From the theoretical foundation and the previous literature discussion, we propose these hypotheses:

- H1. OGD portal quality will positively affect use of OGD.
- H2. OGD portal quality will positively affect user satisfaction of OGD
- H3. Data quality will positively affect use of OGD.
- H4. Data quality will positively affect user satisfaction of OGD
- H5. OGD Service support will positively affect use of OGD
- H6: OGD Service support will positively affect user satisfaction of OGD
- H7. OGD Use will strongly affect OGD user satisfaction.
- H8. OGD User satisfaction will positively affect OGD use.
- H9. OGD Use will positively affect social and economic value of OGD.
- H10. OGD User satisfaction will positively affect social and economic value of OGD.



*Figure1: proposed research model*

## 5 Expected Research Contribution

While the research on OGD has been on the rise over the recent years, theory-driven empirical research in general and theory-driven questionnaire survey research in particular appears to be critically lagging in the literature. In consequence, the promise of OGD and what underlies these “open” concepts, such as the realization and acknowledgement that quality data is an asset, and that open innovation is facilitated if such data is openly published and openly shared with external stakeholders, have not been rigorously examined. In this study, we employ the most cited enablers and inhibitors of (OGD) in the literature. In this model we apply the factors enable and/or inhibit public value creation to the proposed research model. Factors affecting OGD users to create public value which is considered as the benefits of OGD in the public sector. Using survey study, we investigate the enablers of OGD values creation such as Opening data access, data quality (machine readable format, accurate, complete), OGD portal quality (friendly, updated and accurate). Also, the inhibitors of OGD values creation such as privacy and security, The lack of awareness of the values of government data by public officials, the lack of metadata that make it hard to interpret these data, the lack of required skills or knowledge to reuse these data effectively have been addressed in the proposed study. Through this proposed research, new insights may be generated which can inform government OGD practices in a manner which stimulates open innovation through OGD reuse and the creation of new public values such as government transparency, government accountability, inter-agency collaboration and active citizen engagement with government (e.g. new app developments). Public value of OGD at organisational level can be considered as social and economic benefits created by government employee in the process of public values creation. These benefits including the increase transparency, accountability and collaboration between citizens and governments in addition to enhance of efficiency, effectiveness of the public service. In fact, the impact of OGD in the public agency is not directly guaranteed by making government data open, hence OGD has no value itself (Zhao 2018). Thus, OGD benefits require making these benefits delivered to the public. Using the IS model and the Moors(1995) framework as a combined framework, we apply the most cited enablers and inhibitors of OGD to create public value. The proposed research components OGD portal quality, data quality, and OGD service support are used to measure the enablers and inhibitors of public value creation through the use of OGD while the OGD public value represent the benefits delivered to the citizens. Our assumption will be tested by empirical survey research method and using statistical analysis of structural equation modelling in order to come up with a contribution in the research area and gives a valued result which would be beneficial for both academics and governments agencies of OGD.

This research has been approved by host institution’s ethics committee and the survey has obtained 166 responses so far, we will analyse the data when the data collection is complete and report the findings.

## 6 REFERENCES

- Abu-Shanab, EA .2015. “Reengineering the open government concept: An empirical support for a proposed model,” *Government Information Quarterly* ( 32:4), pp. 453–463.
- DeLone, W. and McLean, R .2003. "The DeLone and McLean model of information systems success: A ten-year update," *Journal of Management Information Systems* (19:4), pp. 9-30.
- Department of the Prime Minister and Cabinet. 2016. " Australia’s first open government national action plan 2016-18. "([https://www.opengovpartnership.org/wpcontent/uploads/2001/01/Australia\\_NAP\\_2016-2018\\_o.pdf](https://www.opengovpartnership.org/wpcontent/uploads/2001/01/Australia_NAP_2016-2018_o.pdf), accessed Jun 2, 2021)
- Department of the Prime Minister and Cabinet. 2022. " Public data." (<https://www.pmc.gov.au/public-data>, accessed May 22, 2022)
- Dos Santos Brito, K., da Silva Costa, M., Garcia, V. and de Lemos Meira, S .2015. "Assessing the benefits of open government data," *Proceedings of the 16th Annual International Conference on Digital Government Research*. PP.89-96 (<https://doi-org.ezproxy.uow.edu.au/10.1145/2757401.2757422> accessed May 5, 2020)
- Hassan, M. and Twinomurinzi, H .2018. "A Systematic Literature Review of Open Government Data Research: Challenges, Opportunities and Gaps," 2018 Open Innovations Conference (OI). pp.299–304. (<https://doi.org/10.1109/OI.2018.8535794> accessed July 5, 2020).

- Hossain, M., Talukder, S, Hoque, M. and Bao, Y .2018."The use of open government data to citizen empowerment: an empirical validation of a proposed model," *Foresight: The Journal of Futures Studies, Strategic Thinking and Policy* (20: 6), pp. 665-680.
- OECD, 2019."OECD OURdata Index: 2019."( <https://www.oecd.org/gov/digital-government/ourdata-index-australia.pdf> accessed April 22, 2022)
- Janssen, M., Charalabidis, Y .and Zuiderwijk, A .2012. "Benefits, Adoption Barriers and Myths of Open Data and Open Government," *Information Systems Management* (29:4), pp. 258–268.
- Jetzek, T., Avital, M. and Bjorn-Andersen, N .2014."Data-driven innovation through open government data," *Journal of Theoretical and Applied Electronic Commerce Research* (9:2), pp. 100-116.
- Mellouli, M., Bouaziz, F., and Bentahar, O. 2020."E-government success assessment from a public value perspective," *International Review of Public Administration*, (25:3), 153–174.
- Moore, M. H. 1995, *Creating public value: Strategic management in government*, Harvard University Press, USA.
- Purwanto, A., Janssen, M. and Zuiderwijk, A .2017."Towards an Open Government Data Success Model: A Case Study from Indonesia," *European Conference on Digital Government*, pp. 154–XIV.
- Saxena, S. and Janssen, M .2017."Examining open government data (OGD) usage in India through UTAUT framework," *Foresight* (19:4), pp. 421-436.
- Scott, M., Delone, W., Golden, W.2015."Measuring e-government success: a public value approach," *European Journal of Information Systems*, (25:3), pp.187–208.
- Sterrenberg, G. and Keating, B., 2016. "Measuring IS success of e-government: A case study on the disability sector in Australia," *Proceedings of the 27th Australasian Conference on Information Systems, ACIS 2016*, (<https://aisel.aisnet.org/acis2016/75> accessed Jun 5, 2019)
- Talukder, M., Shen, L., Hossain Talukder, M.F. and Bao, Y. 2019. "Determinants of user acceptance and use of open government data (OGD): An empirical investigation in Bangladesh," *Technology in Society* (56), pp. 147-156.
- United Nations, 2016,"United Nations E-government Survey" (<https://www.un.org/development/desa/publications/publication/>.accessed March 3, 2020)
- Verma, N. and Gupta, M.2015."Challenges in publishing Open Government Data: A study in Indian context, "Proceedings of the 2015 2nd International Conference on Electronic Governance and Open Society, (<https://doi.org/10.1145/2846012.2846016>, accessed Jun 20, 2019)
- Wang, D., Richards, D. and Chen, C .2018. "An analysis of interaction between users and open government data portals in data acquisition process, "*Springer International Publishing*, pp. 184 - 200 ([https://doi.org/10.1007/978-3-319-97289-3\\_14](https://doi.org/10.1007/978-3-319-97289-3_14), accessed May 23, 2020).
- Wang, H. and Lo, J. 2020."Factors Influencing the Adoption of Open Government Data at the Firm Level,"*IEEE Transactions on Engineering Management* (67:3), pp.670-682.
- Wang, H-J. and Lo, J., 2016."Adoption of open government data among government agencies,"*Government Information Quarterly* (33: 1), pp. 80-8.
- Wirtz, BW., Weyerer, JC. and Roesch, M .2018."Citizen and Open Government: An Empirical Analysis of Antecedents of Open Government Data," *International Journal of Public Administration* (41:4), pp. 308-320.
- Zhao, Y .and Fan, B.2018. "Exploring open government data capacity of government agency: Based on the resource-based theory, "*Government Information Quarterly* (35:1), pp. 1-12.
- Zuiderwijk-van Eijk, A., Shinde, R., & Janssen, M. 2018, "Investigating the attainment of open government data objectives: Is there a mismatch between objectives and results?" *International review of administrative sciences*.
- Zuiderwijk, A., Janssen, M .and Dwivedi, Y. 2015. "Acceptance and use predictors of open data technologies: Drawing upon the unified theory of acceptance and use of technology, "*Government Information Quarterly* (32:4), pp. 429-440.



**Copyright © 2022** [Nuria Benmohamed, Jun Shen, Tingru Cui]. This is an open-access article licensed under a Creative Commons Attribution-Non-Commercial 3.0 Australia License, which permits non-commercial use, distribution, and reproduction in any me-dium, provided the original author and ACIS are credited.