MIOT H6023 Research Project (Part 1: Research Methods)

Assignment 3 [Planning Workshop]

Due Date: November 04, 2018   **CA Weighting: 3% of Final Grade**

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Submission Date: 04/11/2018   **Deferred Submission Date (when approved):**

[This assignment will be graded out of 100% and subsequently weighted to 3% of the Final Grade for the Module]

(*Please read ALL instructions carefully*)

This Assignment 3 consists of two parts: Part A— Literature & Publications; Part B— Reinforcing role of ethics in research. Instructions are:

(1) You are required to use this template for your electronic submission/upload to Moodle, and the submission MUST be in MSWord File Format. You may locate your responses after each workshop exercise/question, or consolidate all responses with clear numbering at the end of the template.

(2) Rename the electronic template file with your ITB Student Number & Assignment Name ONLY.

For example, **B0001254 Assignment 3**.

(3) Response to each exercise should be accompanied by appropriate references, and your references should be confined to refereed journal publications.

(4) For each exercise, a detailed response is required to qualify for award of the full mark.

The assignment is classified as Planning Workshop as it involves activity based instruction and assignment submission on elements of the module that have already been covered.

Instructions on Submission of Assignments:

This Assignment will contribute to the final examination grade as specified, and it is required that the submission:

(1) Should be in neat typed format in MSWord;

(2) MUST be submitted on or before the specified date, except with an approved deferral date;

(3) Should reflect independent work.

Instructor: Dr Philip Owende Office: Room F011 Ext: 1128 Email: philip.owende@itb.ie	What do you honestly consider will be a fair score for this assignment that you are handing in?	**Self assessment [Mark out of 100]** 95	**Mark Awarded** 77%

Part A

Workshop Exercise 1: Comparison of Citations

Consider a journal article in your discipline or research area of interest that was published approximately five years ago. Note the keywords in the article and type them into any one of the web-based academic search engines that you are aware of and answer the following questions:

(a) Does your original paper appear in your search results?

[handwritten: ✗ 1]

[handwritten left margin: No need to answer who (you) have (you) been asked.]

Yes, the original paper appeared in web based academic search engine.
It means articles published before 5 years ago are also available in database of web based academic search engine for record keeping and for use as citation by other readers or any other use by publishers. *[handwritten: — Reference required !]*

Link to Original paper: https://www.mdpi.com/2224-2708/1/3/217

https://scholar.google.com/scholar?as_vis=1&q=+Internet+of+Things%3B+sensors%3B+objective+metrics%3B+quantified+self%3B+personal+metrics%3B+high-tech+hardware%3B+integrated+sensor+platforms%3B+multi-sensor+platforms%3B+information+visualization%3B+health+Internet+of+Things&hl=en&as_sdt=0,5

(b) How many citations does this article have? *[handwritten: ✓ 3]*
According to Google Scholar it has 664 citations.
https://scholar.google.com/scholar?cites=9440944584306240701&as_sdt=2005&sciodt=0,5&hl=en

(c) Have the same authors published further work in the field? *[handwritten: 3]*
Yes, the same author has published further work in same field. The author published an article based on big data in relation to this article in 2013 and also used original article as a reference.
https://www.liebertpub.com/doi/abs/10.1089/big.2012.0002

Compare the citation of the article considered with those from the most cited paper in the search results and answer the following questions (*your most cited paper MUST be identified in appropriate reference format*):

(d) How many citations does this highly cited article have? *[handwritten: ✓ 3]*
The citation of the article (from 1(a)) has 568 citations.
https://scholar.google.com/scholar?hl=en&as_sdt=2005&sciodt=0,5&cites=9440944584306240701&scipsc=1

Link to citation article: https://www.liebertpub.com/doi/abs/10.1089/big.2012.0002

(e) If the paper in (d) above was published before your original paper, is it cited in your original paper? *[handwritten: 3]*
No, because it was not published before the original paper.

(f) Do you think the 'high-cited' paper should have been listed as a reference in your original paper? Justify your answer.
No, this high-cited paper was published one year after the original paper. So, it should not be listed as reference in the original paper. *[handwritten: ✓ 5]*

References:

Swan, M. (2013) The Quantified Self: Fundamental Disruption in Big Data Science and Biological Discovery. *Big Data.* 1 (2), pp. 85-99.

Swan, M. (2012) Sensor Mania! the Internet of Things, Wearable Computing, Objective Metrics, and the Quantified Self 2.0. *Journal of Sensor and Actuator Networks, Vol 1, Iss 3, Pp 217-253 (2012).* (3). pp. 217.

[handwritten left margin: You have not explained which is which in (1) ?]

[handwritten: Pls revisit your reference format ?]

[handwritten: 18/25]

[20 Marks]

Workshop Exercise 2: Mini Literature Review
Choose the keywords of your discipline/specialisation and/or the particular research project that you are/or wish to embark on as part of your current postgraduate research project. Enter these keywords into a web-based academic search engine. Read the top-five relevant articles for which you have access to the full-text, and write a literature review using the three-sentence structure outlined in **Slide 6 in Lecture 4(c)**. The review should cover the individual review of each of the five papers, a summary of the strengths and weaknesses of the papers reviewed, and the list of references using a consistent referencing style. The review (i.e., minus the reference list), should be approximately 300 words in length.

Literature review: Paper 1

You need to revisit your Harvard Referencing System.

Jianli Pan, Raj Jain, Subharthi Paul, Tam Vu, Abusayeed Saifullah, Mo Sha (2015) investigated the effect of 'IoT experimental testbed' on 'Energy efficiency and building intelligence research'.

AIM: By building IoT system in homes or workplaces, the aim was not only to empower multi-scale Energy proportionality, yet in addition make an intelligent home space.

They used following methods were used in their research:

- They assembled a one of a kind IoT trial testbed for energy efficiency and building intelligence research.
- They monitored and gathered one-year-long building Energy utilization information and afterward deliberately assess and break down them.

They propose an IoT system with area based computerized and organized Energy control, which utilizes cell phone location and distributed computing advancements to empower multi-scale energy proportionality including building, client and authoritative level energy proportionality. They additionally manufacture a proof-of-idea IoT system and control framework model and did true tests which shows the effectiveness of the proposed arrangement.

Observations and findings:
- The heating and cooling frameworks don't effectively accept the outside climate condition as factors to automatically adjust the running schedule to save energy.
- In summer months the energy usage for cooling is essentially higher as compared to other months. A lot of electrical energy is wasted particularly during afterhours.
- The actual inhabitancy rate has very low impact to the energy consumption.

They concluded from the results that the actual running process of green buildings may not be energy efficient even if they were 'green' by design. The proposed solution by them provided economic benefits in term of energy saving, improving home/office network intelligence, but also put social impact in terms of global sustainability.

Literature review: Paper 2

F Shrouf, G Miragliotta (2015) Investigated the benefits of 'adopting Internet of things methodology' on 'Production management or manufacturing'

They presented framework to support the integration of gathered energy data into a company's information technology tools and platforms. ✓

AIM: To highlight how operational and tactical decision-making processes could base on such data in order to improve energy efficiency and therefore competitiveness, of manufacturing companies.

The following methods were used in their research:

1. literature review of concepts and theoretical frameworks on energy management practices and the IoT paradigm was conducted.
2. They interviewed Production company's account managers and product managers from the information they collected from their literature review.
3. They gathered data of ten manufacturing companies that have already adopted IoT technology for energy efficiency.
4. They conducted survey to get more information about integration of IOT awareness.

Observations:

They observed that not all manufacturing companies are aware about role of Internet of Things technology for use of energy effiecient manufacturing and its importance in benefiting the company and improving manufacturing productivity with energy efficient techniques integrated with IOT.

The **conclusion** made is that Energy administrators can approach the Internet of Things reception in an advantage driven way, tending to those Energy management practices that are more lined up with organization development, measurable information and accessible data frameworks and tools.

Literature review: Paper 3   — Botta et al (2016)

A Botta, W De Donato, V Persico, A Pescapé (2016) Investigated the 'integration of Cloud and Internet of things' on 'Future Internet trend and applications in Business and Research'

Methods used:
- Firstly, they conducted background research on basic concepts of Cloud computing and internet of things.
- Secondly, they observed devices IOT such as sensors, actuators, RFID etc. and its various applications and how these can be connected or integrated with cloud system.
- Thirdly they conduct research for the various applications of integrating these two different frameworks such as smart healthcare, homes, cities etc.
- Further, they elaborate various challenges, scope issues that comes into play while bridging gaps of cloud and internet of things and how this paradigm can benefit the society in future.

The **conclusion** made from this research is that this integration of Cloud Computing and Internet of Things can be called as Cloud-IoT and open doors to various business and research practices in future and its various applications would set a benchmark and will have a great improvement in future if Internet.

Literature review: Paper 4   Mohanty and Choppali (2016)

SP Mohanty, U Choppali (2016) investigated 'concept of Big data and Internet of things technologies and applications' on 'design framework of smart cities'

The following methods were used in their research:

- Gathering information on requirement and implementation benefits of smart cities.
- Illustrating various components and sub components related to infrastructure and smart city design.
- Elaborating concept of big data and its importance, requirement, complexity and management in case of smart city.

The conclusion made is that the concept smart city is very wide, and its maintainability totally depend upon the maintenance and handling challenges and issues of big data.

Literature review: Paper 5

[handwritten: Trappe et al.(2015)]

W Trappe, R Howard, RS Moore (2015) investigated 'Cryptographic tools' on 'Security of Low powered Internet of things systems'

The following methods were used in their research:

- Identifying security and energy concerns related to Integration and communication of data through IoT systems.
- Identification of available technologies that could possibly resolve energy and security issues.
- Describing limitations of available techniques for securing low powered IOT systems.
- Identifying that what can be done to secure low end IoT devices and communication and providing possible solution using radio communication.

The Conclusion brought out from article is that the future of IoT systems depend upon its communication and security while keeping in mind privacy breaches.

Summary of the strengths and weaknesses of the papers reviewed

All the above papers are related to 'Internet of Things' and are connected to its existence and its future benefits and challenges.

Strengths:

[handwritten: Personal neutral Expression]

I believe that authors of research papers have explained their research questions properly and to support their answers these papers are provided with frameworks and surveys conducted from the real world. These papers have also considered the facts of real world to describe challenges and issues. Papers are also strong in terms of information gathering from various resources and present hypothesis where it is essential. They have also mentioned all the references and sources from where they conducted their research.

Weaknesses:

The papers are based on research and hypothesis and information gathered from various sources, but it is not necessary all the information presented is correct and true in relation to the real world. The written demonstration does not provide any proper solution it just proposes a possible measure or technique that can be used to reach to a possible solution. These papers are based on outcomes that they received during their research. There could be possibility of some other results as well

[handwritten: These should be within the papers.]

References:

Jianli Pan, Jain, R., Paul, S., Vu, T., Saifullah, A. & Mo Sha. (2015) An Internet of Things Framework for Smart Energy in Buildings: Designs, Prototype, and Experiments. *IEEE Internet of Things Journal.* 2 (6), pp. 527-537.

Shrouf, F. & Miragliotta, G. (2015) Energy Management Based on Internet of Things: Practices and Framework for Adoption in Production Management. *Journal of Cleaner Production.* 100 pp. 235-246.

Botta, A., de Donato, W., Persico, V. & Pescapé, A. (2016) Integration of Cloud Computing and Internet of Things: A Survey. *Future Generation Computer Systems.* 56 pp. 684-700.

Mohanty, S.P., Choppali, U. & Kougianos, E. (2016) Everything You Wanted to Know about Smart Cities: The Internet of Things is the Backbone. *IEEE Consumer Electronics Magazine.* 5 (3), pp. 60-70.

Trappe, W., Howard, R. & Moore, R.S. (2015) Low-Energy Security: Limits and Opportunities in the Internet of Things. *IEEE Security & Privacy.* 13 (1), pp. 14-21.

[handwritten: Word Count (1092) — 1/5   Clarity + Coherence — 2/5   14/30]

[handwritten: Tech Detail — 8/15   Referencing — 3/5]

[30 Marks]

Workshop Exercise 3: Copyright Infringement

[*Novice researchers need to understand how easy it is to detect direct copying from previously published works; therefore, this exercise is to emphasise that it must not be done, both for ethical (see Lecture 2) and legal reasons*].

Consider any journal article published in the last two years in your research area of interest. Copy more than ten words from the introduction section of the identified paper, and paste them into an academic search engine between quotation marks:

(a) Is your original article found?

Yes, the original article was found in the google scholar.
https://scholar.google.com/scholar?hl=en&as_sdt=0%2C5&as_vis=1&q=%22This+article+makes+the+case+that+to+be+a+major+player+%22&btnG=

[handwritten: +3 Proper reference is required.]

(b) Are any other articles found?
No other articles were found on the page.
But as per search, 'Google scholar' looked for the exact match of the text when searched in quotation marks.
It means there is no copyright violation found related to this article.

[handwritten: ✓ 2]

(c) If your answer to (b) is in the affirmative, comment on this outcome.
Not applicable as no other article appeared in search.

[handwritten: ✓ 3]

[handwritten marginal grade: 8/10]

References:

JACOBSON, I., SPENCE, I. & PAN-WEI, N.G. (2017) Is there a Single Method for the Internet of Things? *Communications of the ACM.* 60 (11), pp. 46-53.

[10 Marks]

Workshop Exercise 4: Correction to Journal Papers

[*Errors in published material are discovered by other researchers working in the same subject area/topic, and who may have tried to reproduce the published results without success. The anticipated error may have been detected this way*]

Using your keywords, find an 'Errata' or 'Correction' to a published paper in your academic/research area or professional area of interest. Read the original paper and the correction. Write a brief report on the error and explain why it was sufficiently important to warrant the publication of the correction.

[10 Marks]

[handwritten: +5 ok But proper reference is required here.]

Link to original paper: https://link.springer.com/article/10.1186/2192-1121-1-4

Erratum link: https://muxjournal.springeropen.com/articles/10.1186/2192-1121-2-3

"One of the original authors of the article 'Prof. Rod King' was removed from the author list and his contributions to the article were not acknowledged.
The lead author accepts full responsibility and apologized to Prof. King, as well as the co-authors of this article, the Editors and readers."

[handwritten: ✓ 5]

Errors are generally observed by readers, practitioners, authors, reviewer, another journal, a publisher. They can put a request to publication asking about missing information, unacknowledged information because it creates plagiarism.

Publication then can take suitable action and publish article in form of erratum with respect to original one.
It is important to warrant and report these kinds of corrections because it might create more errors in the articles of those who are citing this original article containing errors and further create copyright violation and plagiarism in the research of other readers and researchers.

[handwritten marginal grade: 10/10]

References:

Sun, Y., Yan, H., Lu, C., Bie, R. & Thomas, P. (2012) A Holistic Approach to Visualizing Business Models for the Internet of Things. *Communications in Mobile Computing.* 1 .

Sun, Y., Yan, H., Lu, C., Bie, R. & Thomas, P. (2012) A Holistic Approach to Visualizing Business Models for the Internet of Things. *Communications in Mobile Computing.* 1 (1), pp. 4.

Workshop Exercise 5: Journal Impact Factor
[*Publication of articles in journals with very high Impact Factors increases the likely number of citations of the article*]

Using your keyword search in Workshop Exercise 1 above, note the impact factor for the first 10 different journals returned by your search engine. Create a rank order of these journals

[10 Marks]

Impact Factor	Journal URL	Rankings
6.639	https://www.sciencedirect.com/science/article/pii/S1566253517306991	1
3.991	https://www.journals.elsevier.com/journal-of-network-and-computer-applications	2
3.232	https://www.springer.com/business+%26+management/business+information+systems/journal/10796	3
2.588	https://www.journals.elsevier.com/business-horizons	4
2.522	https://www.sciencedirect.com/journal/computer-networks	5
2.475	https://www.mdpi.com/2224-2708/1/3/217	6
2.407	https://jwcn-eurasipjournals.springeropen.com/raitsp	7
2.320	https://www.journals.elsevier.com/annual-reviews-in-control	8
1.963	https://jisajournal.springeropen.com/	9
0.24	https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3115768	10

You were asked to rank the journals & NOT the URLs ✗ 8 (8/10)

Part B
Workshop Exercise 6: Research Integrity Case Study
[*This Case Study was adopted from: UKRIO (2017). Research integrity peer-learning event, Irish Universities Association*]

Dr Jones and Dr Smith are researchers based in the same department at a UK university. They have been working on a joint research project for several years, publishing a number of articles on their work in peer reviewed journals. The two researchers are now producing a book about their research. The research was conducted under the auspices of their university.

The final manuscript was submitted to the publishers a while ago and Dr Jones contacts the firm for an update. He is surprised and very upset when the publishers tell him that the book is to be published with Dr Smith as the sole author. Dr Jones is informed that his role in both the research and the book itself will be acknowledged in the list of contributors to the project, nothing more. The publishers' decision is based on information supplied by Dr Smith.

As far as Dr Jones is concerned, he wrote the book with Dr Smith and should also be credited as an author of the work. Indeed, he is convinced that he and Dr Smith had previously agreed that the book was a joint work and that they would each receive co-authorship. He does not remember having any written record of this agreement or of any discussions regarding authorship.

Dr Jones speaks to Dr Smith in an attempt to reach some sort of agreement on the matter but the position remains unchanged. He then tries speaking to the publishers of the book. They say that they have received reassurances from Dr Smith which they accept and they have no plans to change the attribution of authorship.

Prior to this dispute, Dr Jones believed that he had a good working relationship with Dr Smith. As well as wanting to resolve the issue of authorship, he is also concerned how his career may be affected by the dispute with Dr Smith.

    (a) How should the university address this situation?

Since the research has been conducted under the supervision of department of University, If the University is not aware about this concern, Dr. Jones should raise and report this issue to UK University. The university research department is aware of that Dr. Jones and Dr. Smith conducted the research together based on university research standards and published a lot of articles together. The UK university should investigate and handle the issue critically as this issue is not only problem of Dr. Jones, but it violates the University's standards also. The University should assure Dr. Jones that it has rules, regulations and procedures to resolve this matter and get him recognition of his work in the book that he deserves. The University should notify the complaint to Dr. smith as well and try to resolve this issue informally first. In case this would not work, the university must take strict actions against Dr. Smith and should do its best to make a fair decision in this dispute. Moreover, University can also send a formal notice to publication to look into the matter and inspect all elements again.

    (b) What 'evidence' or other information might shed some light on the matter?

Talking with Dr Jones and Dr Smith to get their records of the circumstance and listening to their views and understanding their situation can possibly shed some light in this matter. There may be proof to show who contributed what to the research, for instance: draft original copies; research notes; university records; third parties included in the research progress and record of Journal publications.
All the information from discussion, relevant parties and sources can be inspected, including the roles played by both researchers and checking who was recorded as a writer and who contributed to the research to how much percentage. The University can arrange/conduct for a formal meeting with all the parties and people involved in this matter of dispute and can take evidences and interview suspects in the meeting for gathering more information about this matter.

    (c) How might the situation be resolved?

In my opinion, following are some resolution methods for this authorisation dispute:

Informal ways:

- The university can ask Dr. jones and Dr. Smith to resolve this issue on authorship with personal discussion as they did joint researches in previous publications and the book that is based on that research.
- If they cannot reach to any solution, then university department can conduct a meeting with all parties involved in research work and can make a negotiating decision based on views of all which is agreed upon by Dr. Jones and Dr. Smith.

Formal ways:

- The university can collect all information from evidences, suspects and third parties and evaluate that information to check for contribution of each researcher and inspect for any misconduct that is shameful and sensitive to the university as well and can act as per research policy of the university.
- The other possible formal way is to take the case to the judiciary confidentially and conduct respectful procedure for the resolution of dispute.

(d) Could anything have been done to prevent this situation from occurring in the first place?

Dr. Jones should have read the terms and conditions given by the book publications before it was going for the process of printing and should have already discussed about the authorship with Dr. Jones. According to the passage the book publication information was supplied by Dr. Smith which means Dr. Jones blindly trusted his research partner without any agreement or written proof about their roles and contributions in the research. If he would have made an agreement and contributed in the process of submitting the application along with Dr. Smith, this could have been prevented at the first place.

[5 Marks Each, Total 20 Marks]

[Students are asked to note that there is no single correct answer to the questions above. Each student should be able to articulate their personal understanding of reasonable practice for handling the issues at hand]