

SCHOLARLY COMMUNICATION IN THE 21ST CENTURY:
TRENDS IN PROMOTING AND EVALUATING SCIENTIFIC RESEARCH
IN TEXAS A&M UNIVERSITY AT QATAR

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Abstract

This dissertation investigates the current scholarly communication process, looking for trends in promoting and evaluating scientific research in Texas A&M University at Qatar (TAMUQ). In addition, this study considers the importance of performance metrics for professional promotion and academic recognition according to TAMUQ's academics. This study collected data by conducting eight interviews with faculty members dealing with research output and an online survey which obtained 56 responses of researchers and faculty members. The results show that although the majority of academics are accustomed to scholarly communication and faculty promotion, a significant part of them are not aware of important components of these processes. Most academics are active in research and share/publish their research output; however, there is lack of awareness on scholarly communication elements, such as repositories and research measurement. Besides that, the institution does not have policy for faculty promotion and academics request a process review, prioritizing quality over quantity. The study concludes with recommendations to support academics in becoming familiar with the different aspects of scholarly communication and to improve the promotion practices by encouraging some aspects of scholarly metrics.

Declaration

I, Karina Galvao Santana, have read and understood the College and Departmental Statement and Guidelines concerning plagiarism. I declare that this submission is entirely my own original work. Wherever published, unpublished, printed, non-printed, electronic and or other information sources have been used as a contribution or component of this study, these are explicitly and individually acknowledged by appropriate use of quotation marks, citations, references, and statements in the text. It is 12000 words in length.

Dedication

This dissertation is dedicated to my husband, *Ziad El Chemaitelli*, and our son, *Kevin Eduardo Santana El Chemaitelli*. Thank you for your support and understanding. Thank you for inspiring me when I felt unmotivated, for encouraging me when I doubted myself. Thank you for not complaining of the weekends we stayed at home because I was busy in studying, for not objecting to my absence when I spent evenings in the office to work on my assignments. You are the reason that I make effort every day to become a better professional, a better person. I am grateful for having such patient and lovely ones beside me. *Obrigada & Shukran*.

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List of Abbreviations

The Web	World Wide Web
Internet	Interconnected Computer Networks
TAMUQ	Texas A&M University at Qatar
TAMU	Texas A&M University
SC	Scholarly Communication
SM	Scholarly Metrics
USA	United States of America
IRB	Institutional Review Board
STEM	Science, Technology, Engineering, and Mathematics
AIChE	American Institute of Chemical Engineers
IEEE	Institute of Electrical and Electronics Engineers
PhD	Doctor of Philosophy
IF	Impact Factor
WoS	Web of Science

Chapter 1: Background of Study

Introduction

This chapter introduces the context of the study and describes the principal concepts being discussed in this research. It presents the research questions and aims, and the significance and limitations of this study.

Scholarly Communication

“Scholarly communication is the system through which research and other scholarly writings are created, evaluated for quality, disseminated to the scholarly community, and preserved for future use” (Sawant, 2012, p.21). Its origin, according to Priem (2013, p.437), was in 1665, when created the first scientific journal in print. Scholars could then publish their articles in those journals, disseminating their work among the scientific community. Scientific journals became the principal means of scholarly communication and the article became the object through which knowledge would be built, shared, and developed.

Two centuries later, the number of journals, articles, and authors had increased considerably. Scientists started seeking means to organize basic metadata on information resources such as author, year of publication, title of the document, and the references made in the research, which, according to Sugimoto & Lariviere (2018, p.22), “would allow for the citation links between documents”. It was in 1963 that such database had been introduced and the first citation index was created, allowing “researchers not only to search by journal or by names of authors, but also to identify relationships based on the references shared among documents” (Sugimoto & Lariviere, 2018, p.23). The citation index creation was a milestone for the development of the modern scholarly communication.

The advent of the Web (World Wide Web), which is an online information space accessible through the Internet (Interconnected Computers Network), was another significant stage for the evolution of scholarly communication. It has taken the space of print journals and scholars have ‘migrated’ from the print to digital world, where the interaction is faster and more straightforward. Respectable journals, which lead the publishing world for years or even decades, have created online platforms and started publishing their articles, making them available also in the digital world. Besides that, the emergence of open access databases, institutional repositories, and other

digital repositories has contributed to increasing the rates of online publications. The Web has become the first place where researchers go when seeking information.

Since changes on disseminating scientific research have been taking place, evaluating research has also been affected. Important print journals make use of a process called peer review, through which other scholars from the same field evaluate and certify the quality of a scientific article; according to the peer review feedback, journals publish or not the submitted article. However, as scholars have started themselves sharing their research in online platforms, which allows instantaneous interaction and feedback, there is a debate whether scholarly peer review will become obsolete, being “replaced by the aggregated, collective judgements of communities themselves” (Priem, 2013. P.438). This discussion is related also to the fact that there are other means, called metrics, to evaluate research which have been developed thanks to the evolution of technologies such as the Internet.

Scholarly Metrics

Scholarly metrics are research tools that measure the quality of scientific research through quantitative indicators. The first metrics were based on printed scholarly publications: “counting books, articles, publications, citations, in general any statistically significant manifestation of recorded information” (Bellis, 2009, p.3). Due to the nature of the object being measured, these metrics were called bibliometrics, a term that “first appeared in print in 1969 in Pritchard’s article ‘Statistical Bibliography or Bibliometrics’ in the December issue of the *Journal of Documentation*” (*Scientometrics Concepts*, n.d., p.15).

Scholarly metrics have advanced significantly along with technology since 1969. Currently there are a variety of metrics, including “bibliometrics, scientometrics, informetrics, webometrics, netometrics, cybermetrics” (Bellis, 2009, p.2), each with its own function and peculiarities. They are supposed to play a substantial role in the academic world as they are going to be (or already are) a crucial instrument for scholars looking for quality material for their research, faculty seeking promotion, and institutions pursuing recognition.

The majority of researchers expect to publish work considered relevant for the scientific community. In order to reach this goal, they use reference works from renowned scholars, i.e. with high h-index, and articles from renowned journals, i.e. with high impact factor. Index and impact factor are both ways of measuring research.

Metrics can measure the “popularity” of scholars based, for instance, on the number of citations of their articles or the impact factor of the journal they have been publishing. Usually the popularity of scholars is taken into account at the time of their evaluation, when they apply for promotion. Faculty with low popularity have difficult get promoted.

Research measurement can indicate also the importance of a higher education institution through the numbers generated by the scholars working in that institution; if those numbers are high, usually the university is recognized as a good one. University recognition tends to be decisive when, for example, a scholar and/or institution is seeking funders for their research.

Research Questions

Databases and online repositories are growing in number and size. Researchers in general have chosen online resources rather than print to initiate their research. In the library, requests for online material have increased significantly, confirming a migration from print to digital. However, the following questions remain:

- Do scholars prefer digital journals to print?
- Are they joining those digital platforms?
- Are they sharing their work online?
- Do they prefer specific web platforms to disseminate their research?
- If they have preferences, what is the reason for that?

Taking into account the growth of online scholarly communication, librarians consider metrics a crucial tool for evaluating research. The academic community seems to be interested in research published/shared online, which suggests that they are also familiar with metrics. However, we must ask the following questions.

- Do scholars consider metrics important?
- Are they interested in research measurement?
- Are metrics popular among the scientific community?
- Do researchers know about and make use of metrics?
- Are metrics informative?
- Are metrics reliable?

The main question accordingly is: what is the academics' thinking about promoting and evaluating their research and what is the importance of performance metrics for professional promotion and academic recognition?

Research Aims

This dissertation aims to identify major current trends in promoting and evaluating research in Texas A&M University at Qatar (TAMUQ) and through those trends develop an understanding of the changing nature of scholarly communication in the 21st century.

Significance of Research

Scholarly communication is under continuous development and with the evolution of technology metrics has become an important part of the academic system. There are many papers about metrics and scholarly communication, most of them written by library sciences researchers. However, few of these papers give voice for scholars and express their perspective on that matter. Acknowledging the way researchers and faculty understand scholarly communication, its relation with metrics, and its effect in the academic world in terms of professional development and institutional success should provide librarians with means to support those in the academic community seeking for clarifications on the topic and for scholarly performance improvement.

The results of this study will aid in the identification of trends in promoting and evaluating research and current inadequacies, as well as recommendations for necessary improvements and predictions about the future of scholarly communication. As the first research about metrics and scholarly communication realized within a scientific community based in Qatar, this study will significantly add to the local library community important considerations about scholarly communication practices in the country and the expectation for that practices in the future. Since it is written in English, it will also enrich the international literature on scholarly communication in Qatar.

Research Limitations

This dissertation will incorporate data on researchers' perspective by TAMUQ, an international branch campus focused on engineering programs. Texas A&M University's (TAMU) main campus and its other branches in the United States of America (USA) were not included as

this study has a limitation of dealing with universities in this country. Although there are other universities in Qatar, which could contribute to this study, it has been selected as the one with the highest number of publications by scholar. Therefore, this study deals with only one of the higher education institutions based in this country and cannot reflect the scholarly communication process of all the universities in Qatar.

Chapter 2: Literature Review

Introduction

This chapter presents first an overview of scholarly communication, which contains its definition, historical foundations, its context in the digital era, and academics' perspectives. Second, it focuses on scholarly metrics and present their concept, theoretical foundations, data sources, and indicators. Lastly, it presents theories about the future of scholarly communication and scholarly metrics.

Overview of Scholarly Communication

According to Halliday (2001), scholarly communication is about “creating, disseminating, and preserving scientific knowledge”. This process involves scholars researching, reading, writing, and sharing their findings, which will in turn become other researcher’s reading. However, scholarly communication (SC) goes beyond scholars and involves many elements. Shearer and Birdsall (2005, p.99) stated that SC is a complex system, which consists of “researchers, publishers, libraries, and public and private sector institutions and organizations through numerous modes of dissemination”. Considering these elements, Sawant (2012) explained each one’s role:

The traditional/formal process of scholarly communication consists of four major groups of players with different roles: (1) researchers, who produce scholarly research, which is recorded as preprints; (2) publishers, who package scholarly research and create information products which is called prints (or formally published articles); (3) libraries, who collect, disseminate, and preserve scholarly research; and (4) consumers/users, who translate research into new research initiatives, government policy, commercial products, public services, etc. (p.21)

SC is a process in constant development and, although those roles have been pretty much the same for centuries, the advancement of computing and networks technologies allowed the creation of new channels to disseminate research, creating also new possibilities of interaction between scholars.

Historical Foundations of Scholarly Communication

As long as scientific subjects are being discussed, scholarly communication exists and, as science develops over time, SC develops and adopts different forms. According to Ball (2011, p.1), SC was initially “only an oral tradition, a face to face communication”. The author said that the first discussions on registering knowledge in manuscripts started in Greece, during Plato and Aristoteles’ period. The manuscript then became usual and, with time, evolved to letters that scholars would exchange, disseminating their work and receiving feedback. Further “with the invention of movable printing type by Gutenberg” the SC was preferred in print (Ball, 2011, p.1). Although print books became a sensation when they were created, they required a great amount of time and effort to be produced, slowing the SC process. In 1665, when scientific journal started being published, that SC revolutionized. It was then “possible to report about a variety of topics in a focused, concise, periodical and frequent way” (Ball, 2011, p.6). However, the author stated that the scholarly periodical did not become popular soon after its creation; only in the middle of the 19th century the number of periodicals increased substantially. Currently, scientific journals are the number one form of SC, but no longer only in print. Digital journals and other SC channels have become part of scholars’ routine.

Scholarly Communication in the Digital Era

Although in the last decades the advent of information and communication technologies (ICTs) such as the Web and the Internet contributed to the development of SC, new issues have emerged with the changes. According to Borgman & Furner (2002, p. 4) “the cycle of scholarly activities is blending into a continuous, looping flow”, as scholars discuss, write, share, and seek information online. Indeed, academics started joining scholarly repositories, sharing their research themselves, and getting feedback on their work directly from their peers. Universities started creating institutional repositories (IR), which allow them to store, access, and disseminate their own research output. It seemed that there would be a change in the “scholarly publishing and dissemination practices by replacing traditional publishing platforms with new formal and informal publishing platforms” (Shehata, Ellis & Foster, 2014, p.1150). However, publishers acted quickly to adapt their product to the new demand; they entered the digital world and started publishing their journals not only in print but also in digital version. More than that, they dominate the digital scholarly communication and made it a highly profitable business for a few powerful

companies. Concepts as formal and informal platforms emerged to distinguish paid from open access channels; the digital SC system was dominated and adapted to obey to the publishers' supremacy. Academics seeking faculty promotion should publish their work in formal channels instead of informal, since the first one provides then visibility and recognition. Lally (2001, p.85) said that publishing books by a commercial publisher or articles in reputable commercially published journals "is essential to academic progression". This empowers a cycle that is good only to the publishers: researchers work hard, universities pay for their work, publishers take their output, and libraries pay a right cost to access such research output. Publishers have almost no cost, no effort, but all the profit. However, the current standard for publishing and evaluating research is being discussed in the academic community, especially by information science professionals. Sawant (2012, p.21) said that there is a "crisis in scholarly communication" and it is necessary to make significant changes in this system.

Scholarly Communication by Academics' Perspective

Acord & Harley stated that there is a "tendency among researchers to use informal channels as a platform to publish their findings or to contribute to scholarly discussions. However, this trend is faced with numerous obstacles, such as scholarly recognitions and the traditional scholarly communication model" (as cited in Shehata, Ellis & Foster, 2014, p.1159). The SC system does not encourage academics to publish their research output in informal channels because these tools are not considered for faculty promotion or academic recognition. Although formal channels take the right of academics to disseminate their own work and charge highly to provide access to their publications, academics cannot alone break up with those publishers because they depend on formal publication for promotion. Formal channels control scholarly metrics system; to get high metrics results, academics have to publish in high impact factor journals and get high citation counts, which give them a high h-index. Academics depend on those publishers for recognition. According to Shehata, Ellis & Foster, (2014, p.1159), "scholars believe that the current scholarly communication model cannot continue as it is, and there is a need to develop, improve and accept new forms of scholarly publishing". However, to change the SC process, it is necessary to review the role of informal channels and the research measurement system. "Relatively few studies have investigated the adoption of informal scholarly communication platforms in the scholarly publishing process" and even fewer have investigated the academics' perceptions of scholarly

metrics. This research is important to provide information about academics understanding on these two aspects (Shehata, Ellis & Foster, 2014, p.1150).

Overview of Scholarly Metrics

Scholarly metrics (SM) are methods used for scholarly research measurement, which converts research activities into measurable units called indicators. Sugimoto & Lariviere (2018, p.1) explained that input indicators include “characteristics of the scientific workforce and funding allocated to research” while “output indicators measure the knowledge that is produced as a result of that input” and “impact indicators measure the ways in which scholarly work has an effect upon the research community and society”. Recognizing and registering those indicators is not a simple task because many aspects of research cannot be traced or standardized. That is the reason research includes mainly quantitative indicators, whose data can be traced, standardized and aggregated. Some metrics usefulness are as follows:

- Providing a reflective feedback on research
- Measuring an institution’s or country’s production
- Identifying and previewing trends in science
- Highlighting inequalities in the scientific system
- Informing decisions of administrators and policymakers

Theoretical Foundations of Scholarly Metrics

As the number of scientific journals was increasing and becoming popular within the academic community in the early 1900s, scholars started analyzing regularities in statistical bibliographies seeking trends in scientific research and reached some interesting conclusions. The main theories of SM are listed below.

- Lotka’s Law (1926) states that 20% of scholars represent 80% of published output while 80% of scholars are responsible for only 20% of published research.
- Bradford’s Law (1934) states that the majority of citations are received by relatively few journals while the majority of journals receive relatively few of the overall citations.
- Zipf’s Law (1935) states that natural language obeys to a similar power law, as the most frequent word may occur twice as often as the second most frequent and consecutively.

- Matthew Effect (1968) states that recognition is more likely to be given to those who already have high degrees of recognition than to those who are less well known.
- Matilda Effect (1976) states that women receive low levels of recognition for their work.
- Theory of Preferential Attachment (late 1990s) complements the Mathew Effect by analyzing the preferences for scientific connection in World Wide Web environment.
- Theory of Capital (1968) states that academic capital is another form of power in which hierarchies are constructed, legitimated, and maintained across generations.

These theories are important for the study of information retrieval, structure of scientific information, and network system. Besides that, they expose how skewed metrics data, scholarly communication and the academic system itself are.

Data Sources for Scholarly Metrics

Citation indexes are the dominant source for output and impact indicators; they are bibliographic databases that contain information such as authors, years, title, and references, which allow the connection between documents by citations. Currently, there are three main indexes: Web of Science (WoS), Scopus, and Google Scholar. Web of Science is the current version of the Scientific Citation Index (SCI), released by Eugene Garfield in 1963, and belongs to Clarivate Analytics. Scopus was released in 2004 and belongs to Elsevier, the world's largest scholarly publisher. Google Scholar was released in 2005 and belongs to Google, the company responsible for the Web's main search engine. The main differences among these indexes are as following:

- Size and coverage: in 2014, Google Scholar had around 160 million documents against 60 million in Scopus and 55 million in WoS. Scopus covers better than WoS social sciences and arts and humanities, but WoS covers natural science better.
- Data standardization: WoS is known for high data quality; Scopus has improved, but WoS keeps better in terms of institutional addresses and authors.
- Author disambiguation: Scopus is more accurate, as it automatically disambiguates the authors. WoS relies on ResearchID, which requires manual curation. Although Google Scholar provides individual's author profile, there is no author disambiguation.
- Document types: WoS and Scopus arrange their content by scholarly documents, such as articles, editorials, etc.; however, Google Scholar does not perform the same arrangement and analysis by document type are not possible.

Scopus is the only citation index that also owns the material it is indexing and is the best at individual level. WoS is the best index at aggregate level, such as subject, institution, country. Google Scholar has the poorest quality data because no manual cleaning is performed; however, it is the most popular since 2011, when academics became able to create their own citation profiles.

Indicators Used by Scholarly Metrics

Indicators are quantified units used for research measurement. Currently there many type of indicators, as each citation indexes and other companies interested in scholarly metrics develop their own indicators. According to Sugimoto & Lariviere (2018, p.15), it is crucial for the validity of an indicator to have a strength relationship with its corresponding concept and sufficient rationale to represent a valid measurement of that concept. Some SM main indicators are listed below along with their concept and measurement:

- Citations count: according to the norm, citations are compiled in a binary approach, e.g. the cited document receives one citation even if it is cited more times in a citing document.
- Journal Impact Factor (WoS): calculate the total number of citations received in a given year by papers published in a given journal during the two previous years and divide by the number of papers published over those two years.
- CiteScore (Elsevier): calculate the total number of citations received in a given year by papers published in a given journal during the three previous year and divide by the number of papers published over those three years.
- h-Index: involves two concepts, publications and citations; to have a h-index 10, for example, a researcher needs at least 10 different publications with 10 citations each.
- i10-Index: refers to the number of papers with at list ten citations.

The way indicators are calculated affects metrics results. For example, (i) if scholars have five publications with 100 citations each, which shows a great impact, their h-index will continue being five; (ii) journal impact factor includes citations for all the publications in the numerator, but only articles and reviews in the denominator, which contribute for a result inflation.

The Future of Scholarly Communication

Dramatic changes in the nature of scholarly research enable research practices that are highly collaborative, network-based and data-intensive. Such developments “require corresponding

fundamental changes in the nature of scholarly communication” (Nemati-Anaraki & Tavassoli-Farahi, 2018, p12) and open access platforms are one of the main elements of those changes. According to Gorman & Rowley (2015) open access SC is “a means of achieving wider access to research outcomes, and in particular making publically available the research that has been funded by the public purse”. Some funders are already requiring a copy of the research output they funded available in open access platforms; however, it is not a normal practice currently. Parekh said that “scholarly communication can play an important role in the field of knowledge sharing” (as cited in Nemati-Anaraki & Tavassoli-Farahi, 2018, p12); however, it is very essential to apply knowledge on practical grounds. Institutions should encourage academics to share their research output. Creating a policy that includes the use of IR, for example, is a good start, but it is necessary also to review the SM system and the evaluation of research for promotion.

The Future of Scholarly Metrics

Although some believe that the future of metrics is to increase the number of indicators to include aspects of SC that are currently not measured, Sugimoto & Lariviere (2018, p. 130) believe that new tools will have a more crucial role in SM than indicators. The authors said that, as technologies advances, “the proliferation of tools is likely to continue, but with different audiences, permanence, and coverage”, in accordance with new demands. Sugimoto & Lariviere (2018) forecasted the following:

The future of measuring research will rely heavily on tools that overlay on existing data, are interoperable across platforms, and can modularized for specific needs. Researchers, administrators, and policymakers want data with increased coverage and tailored to their own preferences. This requires the availability of large-scale, heterogeneous datasets and the ability to quickly standardize, normalize, and contextualize this data. (p.132)

This process has already started as certain tools that index data from different open access platforms and unify the system of full-texts available online have been created, for instance, Semantic Scholar, which indexes arXiv.org and DBLP data, and Digital Object Identifier (DOI), which identity several documents.

Chapter 3: Research Methodology

Introduction

The chapter provides justification on selecting specific research approaches, the research settings, and justification for sample population. It follows by describing the data collection tools, the data analyzing method and instruments being used in this study, as well as addressing its limitations and ethical issues and considerations.

Research Approach

This study applied a mix of quantitative and qualitative approaches, with emphasis in qualitative since both data collection tools included that. The use of both methods is justified by the fact that they support each other, i.e. the weakness of one method is fulfilled by the other one's strength. The quantitative approach allows a broader understanding since it reaches a higher number of people, who provides an expansive scenario of the discussed topic. The qualitative approach, although with a few participants, provides a more profound understanding of the topic as it is explored in deep.

The quantitative method in this research gives voice to all those researchers and faculty in TAMUQ interested in sharing their perceptions of scholarly communication in their context and how it could be improved. The qualitative method on the other hand is important to bring together the perceptions of scholars working in a management position despite their activity as researchers. Both perspectives were crucial to understand the thoughts of TAMUQ academics about publishing and evaluating research.

Data Collection Tools

Two primary data collection methods were employed in this study: semi-structured interview and questionnaires. O'Leary suggests that semi-structured interviews are good when flexibility is needed. Interviewers can start with a defined questioning plan, but will shift in order to follow the natural flow of conversation. Interviewers may also deviate from the plan to pursue interesting tangents. This method employs open-ended questions, which, "allow the interviewee to tell their own story in their own words" (Pickard, 2013, p.199), giving them certain freedom to develop their responses in ways that can differ from the original focus. The interviews have taken

place in the interviewees' offices in a period of time that varied between 15 and 75 minutes; such variation of time reflects the semi-structured interview possibility or not of extending the conversation according to the availability and interest of the interviewee. The list of questions pre-formulated for this research interview can be found in the Appendix C. This data collection employed a qualitative approach.

Quantitative data was obtained by questionnaires. Such questionnaires were released as an online survey consisted of twenty-two questions, of which two were open-ended, fourteen close-ended, and six mixed. i.e. the participant should choose one of the given options (closed-ended) and justify their choice (open-ended). The survey was sent to the potential participants through an invitation email from the TAMUQ library director, as it was agreed that survey would get a higher number of respondents if the potential participants recognized the email sender. The list of questions formulated for this survey can be found in the Appendix D. This data collection employed a quantitative and qualitative data approach.

The open-ended questions in the survey, as in the interview, have the advantage of collecting 'all the data intended but also interesting and unexpected data that emerges', which have not been included in the questionnaire (O'Leary, 2017, p.240). It provided the participants the opportunity to address what they consider appropriate to this particular study. The qualitative data outcome of these questionnaires enabled the researcher to understand the usual procedures in dealing with research publication and evaluation in TAMUQ while the quantitative data outcome provided a general picture of these practices. These two aspects support each other making possible both objective and comprehensive understanding of scholarly communication in TAMUQ.

Data Analysis

This study includes two processes of data analysis: quantitative and qualitative. The qualitative data analysis was based on the interviews, which have been recorded to assure that the whole information provided by the interviewees would be available for research. The quantitative data analysis was based on the questionnaire developed in Opinio, a University College London (UCL) web-based survey tool which provides reports and charts of survey results. The respondents were required to answer questions related to research publication and evaluation, reveal their online activity concerning research, and share their understanding of metrics. The interviewees were required to respond also to questions about research publication and evaluation but from a

different perspective: the management perspective; they were required to clarify the terms for professional promotion in their specific institution and share their perceptions of metrics in such context.

Both quantitative and qualitative data analysis needed the researcher's interpretation, although it has been done in different ways. Since the quantitative method generates objective data, it demanded the researcher's interpretation to connect the results of one question with another and make clear the broad scenario. Quantitative data analysis is important to recognize trends in specific topics, taking into consideration a specific community and specific circumstances. On the other hand, qualitative method generates subjective data, which demanded the researcher's interpretation to organize the gathered information, make correlations, and turn that data into meaningful new knowledge. As Gorman & Clayton (2005, p.206) explain, the qualitative data analysis is a 'continuum of analytical approaches to the data that ranges from sifting the raw data to find patterns, themes, properties and relationships to interpreting the findings'. This kind of analysis is important because it facilitates the identification of essential features and the systematic description of interrelationships among them – in short how things work' (Wolcott, 1994, p.12).

Research Participants

This study selected two group of potential participants – respondents and interviewees – who participated respectively in the survey and the interview. The potential respondents group was formed of TAMUQ faculty and researchers. The group of faculty was composed of 76 full time faculty and 5 double assigned faculty, the second being full time researchers working temporarily as faculty. The group of faculty was composed of 75 full time researchers and 30 temporary researchers, the last being graduate students working temporarily as researchers. There was then a total of 181 potential respondents.

The potential interviewees group was formed by TAMUQ faculty working in management positions and dealing with research output. The initial idea was to have two or three interviewees, which have been invited in advance to participate in the research. However, at the end of some interviews, the interviewee suggested other participants, who also suggested other participants, much like a chain reaction. This greatly increased the number of participants. In addition, I have been contacted by a faculty member who was interested in being my interviewee. At the end of this process, the number of interviewees has been extended to eight. Potential respondents and

interviewees were members of different departments (Table 1) composing TAMUQ educational programs.

Table 1. List of Departments

Engineering Department	Non-Engineering Department
Chemical Engineering	Sciences
Electrical and Computer Engineering	Liberal Arts
Mechanical Engineering	Library
Petroleum Engineering	

TAMUQ was chosen for several reasons:

- Its origin: the institution is an international branch campus of Texas A&M University, a renowned Texan American university.
- Its high number of research publications: the institution is currently the second in research in the country, behind only a Qatar University, which is a full campus offering many educational programs.
- Its maturity: TAMUQ has operating in Qatar for more than fifteen years and has acquired a prominent position not only in Qatar but in all the Arabic Region.

The perceptions from the actual participants were obtained to ensure the relevancy of the data gathered and to gain comprehensive material about the topic being investigated.

Research Ethical Considerations

As this research includes human participants and their data, UCL ethics approval was mandatory. This procedure required coordination between UCL Qatar and UCL main campus in London. It also required permission from TAMUQ, which coordinated with TAMU main campus in US. This process involving two main campuses and two branch campuses, each of them with different conditions to authorize this research, have taken longer than expected to be finalized. When both institutions reached an agreement, the final approval was settled under the following terms:

- Anonymity: participants could not be identified – no name or position could be presented.
- Local data: research could be conducted in TAMUQ but without engagement of TAMU.

These conditions were established because that TAMU, as an American university, requires Institutional Review Board (IRB) approval for any research including human subjects. However, according to Qatar law, if the study complies with participants' anonymity, IRB is not required.

During the process for the ethics approval, UCL required two documents that should be provided by the researcher to the participants prior to their engagement in this study: 'information sheet', and 'consent form'. The 'information sheet' presented a brief summary of the research, sample questions, and details about data storage and disposal. The 'consent form' presented a list of statements of which the participants should be aware. Both documents are standard in research and have the purpose of informing the participants of the terms and conditions of joining this study as well as ensuring their rights as human subjects. The participants were informed that any confidential information provided would not be shared but only used to this study purpose. This research applied an 'interview information sheet' and a 'survey information sheet', as well as an 'interview consent form', and a 'survey consent form'. Interview and survey documents were slightly different from each other according to the nature of each approach. Both information sheets can be found in the Appendix A. Both consent forms can be found in the Appendix B.

Research Limitations

The researcher acknowledged some limitations of this study. First, it was not possible to extend this research to the main campus due to time constraint, distance, and ethical regulations. This study only investigated its branch campus in Qatar – TAMUQ, which has been carefully chosen as stated in the research participation section. Second, researchers have not engaged to this study as expected, representing only 22% of responses against 41% of faculty. The low participation of researchers lowered the percentage of total responses, which including faculty and researchers closed in 31%. Third, the researcher encountered data limitation due to an unreplied interview invitation and a potential interviewee that was abroad during the period settled for interviews and could not join this research. The researcher considered the potential participants right in not participating in this study if they prefer not to do so.

Chapter 4: Findings and Discussion

Introduction

This chapter introduces the findings and discussion based on the analysis of assembled quantitative and qualitative data, which are presented here in order to answer the research questions. Quantitative data, which were analysed with the support of UCL Opinio application, whose graphs are displayed in this chapter, come first and are followed by the qualitative data.

Findings

The findings are supported by data gathered through both interview conducted in TAMUQ and questionnaire conducted online during the period of May 6 to June 6, 2018. In order to provide a deeper analysis of each part, this study's main research question has been split in two in this section: (i) what is the academic's thinking about promoting and evaluating research? and (ii) what is the academic's thinking about promotion and academic recognition?

What is the Academic's Thinking about Promoting and Evaluating Research?

To understand the academics' thinking about promoting and evaluating research, it is necessary to understand (i) the research publication practices and (ii) the research evaluation procedures taking place in TAMUQ.

What are the Research Publication Practices in TAMUQ?

This part aims to establish the profile of scholars publishing/sharing research online by identifying their position, research background, and research activity in the digital world. It aims also to recognize scholars' preferences for sharing research online. In addition, this part presents TAMUQ requirements to publish research output.

Work Position.

The survey was answered by 56 respondents, from which 31 were faculty and 25 researchers. Their job entailed research, lecturing, administration, and service, being research the main activity, selected by 50 respondents. Scholars from seven different departments have

responded to the survey, but in different proportions (Figure 1). Library appeared as the ‘other’ department, with two respondents.

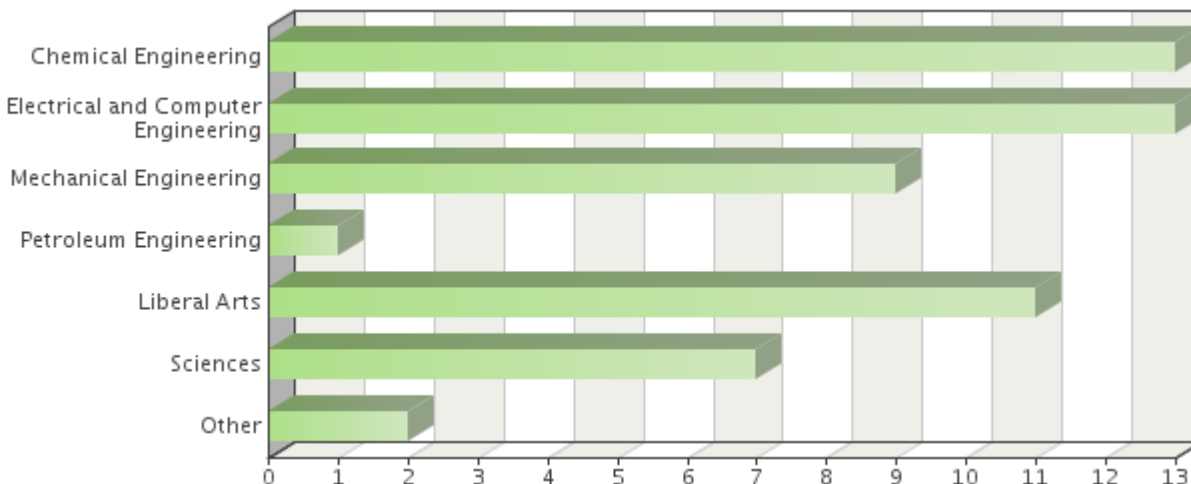


Figure 1. Which department are you associated with? (Q.04)

Regarding the interviews, eight faculty members have been interviewed. Excepted for the ones working in high administration positions, research was reported as their main job activity, taking 40-50% of their time. All the interviewees agreed that research is a very important part of faculty’s work in TAMUQ as they are evaluated on their research publications. Even full professors, who already reached the faculty’s top position, are evaluated yearly to keep their positions.

Research Background.

Fifty of the respondents said they are research active against four no active; and two who preferred not to answer. Articles and conference proceedings are the most popular publications among academics, followed by books and patents. Their years of research varies: 25 respondents have more than 10 years of experience while 14 have more than five, and 17 have less. The different research experience is reflected on their number of publications (Figure 2).

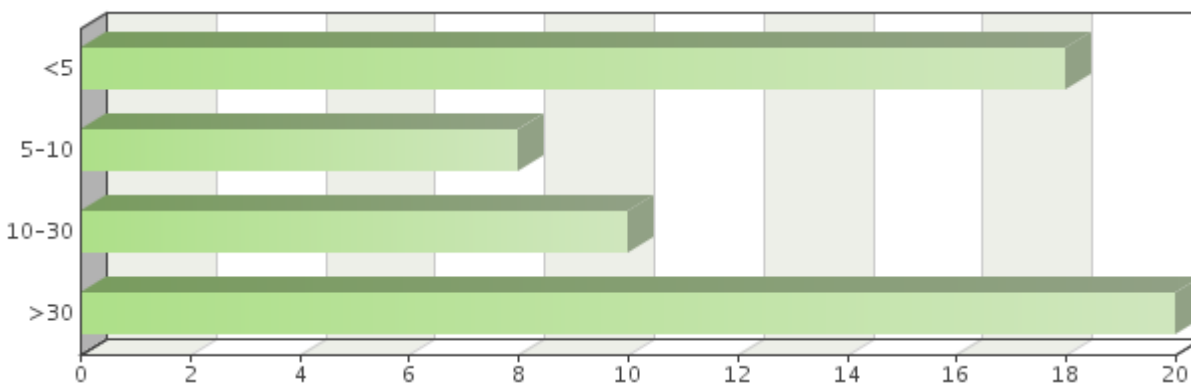


Figure 2. How many research publications have you published so far? (Q.08)

Regarding the interviewees, the ones working with research all have a PhD degree. The research faculty members have 15 years of postgraduate experience or more, with the most experienced working for 26 years.

Research Activity Online.

Eleven respondents have been very active on scholarly repositories, sharing more than 30 of their published research; however, 35 has shared less than five. The repositories where they shared their research can be seen in Figure 3; arXiv.org and Purdue e-Pubs were also mentioned. Most of the respondents do not have a favourite repository, however the ones with preferences mentioned the following reasons:

Table 2. Favourite Scholarly Repositories

Reserachgate.net	arXiv.org
Easy interface	No reasons were presented
Suggests readings	
Better visibility	

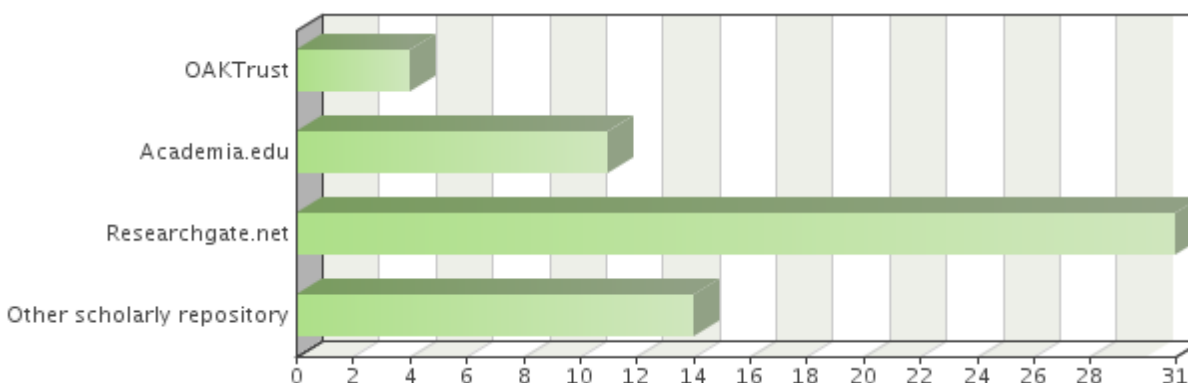


Figure 3. On which repositories have you recently shared publications? (Q.10)

As can be seen above, only two of 56 respondents have shared their research on the university's repository, OAKTrust. The respondents that prefer not to share research output on scholarly repositories said that they are useless for tracking citations and are in violation of copyright. As an experienced scholar with more than 20 years of post-graduate research, the interviewee#2 did not recognize the value of either scholarly repositories or open access databases and stated that valuable online platforms are the ones maintained by high impact journals, respectable publishers, or international societies. Two reasons were mentioned: questionable quality and low impact. The same interviewee said that databases such as Elsevier are not appreciated by his community because they take the rights from authors, who cannot disseminate their work, and charge highly for their publications access; however, other academics consider their content and metrics reliable.

Research Publication Policies.

Although TAMUQ has no policy for publishing research, all the interviewees agreed that there are standard expectations, which are listed below:

- apply for new grants
- get funded
- do groundbreaking research
- generate a new knowledge
- show significant initiatives
- publish results
- publish in high impact journals
- publish in prestigious conferences
- number of publication competitive with the peer group internationally

There are no clear requirements regarding number of publications; however, research faculty have to submit annual reports with the numbers of their scholarly output. Besides that, TAMUQ requests them to have a profile with Google Scholars for research measurement reasons. Interviewees also said that when junior faculty join the university they are mentored about those expectations, receiving advice from senior faculty.

Regarding institutional repository, which is included in certain research publication policies, only one interviewee was aware of TAMUQ's. The interviewee #2 said that they 'have never been invited to publish in such repository'. Most of the interviewees said that sharing research in repositories is not a requirement from either TAMUQ or main campus, nor Qatar Foundation (QF). The interviewee that was aware of the repository said that 'although there is no effort to encourage faculty to publish in that space, there is an open invitation'. Some funders, usually European, require an open access copy of the research output to be made available; TAMUQ then make it available on OAKTrust. However, 'most of TAMUQ's faculty just publish; they provide a copy to the publisher and the publisher publishes it with whatever copyright or strains they may or may not be', stated the interviewee#4.

What are the Research Evaluation Procedures in TAMUQ?

This part measures scholar's familiarity with research metrics. It aims also to indicate the scientific community adhesion to scholarly indexes and unique identifiers, and their perceptions of the importance of digital exposure for academics.

Contact with Scholarly Metrics.

Although the majority of academics are familiar with the concept of scholarly metrics, still a high number, 1/3 of the respondents, are either not familiar or not sure. (Figure 4). Respondents were asked for naming as many types of scholarly metrics as they could; the following responses were mentioned:

- h-Index
- Impact factor (IF)
- Citation count
- i10-Index
- Number of publications
- Number of downloads
- Grant dollars' award
- h5-Index / g-Index

Asked for briefly explaining the use of scholarly metrics, 35 respondents provided answers, which are the following:

Table 3. Use of Scholarly Metrics

Measurement of Impact	Measurement of Productivity
Quantify impact of research or author	Measure how active is a research
Evaluate an article research impact	Quantify productivity of scientific outcome
Measure the impact of a journal	Track research productivity over time
Quantify how often a paper is cited	Judge research money making potential
Measurement of Visibility	Measurement of Quality
Measure research influence	Show importance or contribution of a research
Measure the importance of an article	Collectively give an idea of a research quality
Look at country of publication	Assess the quality of a researcher in numbers
Promotion, career, advancement, networking	Express how an article fared over time

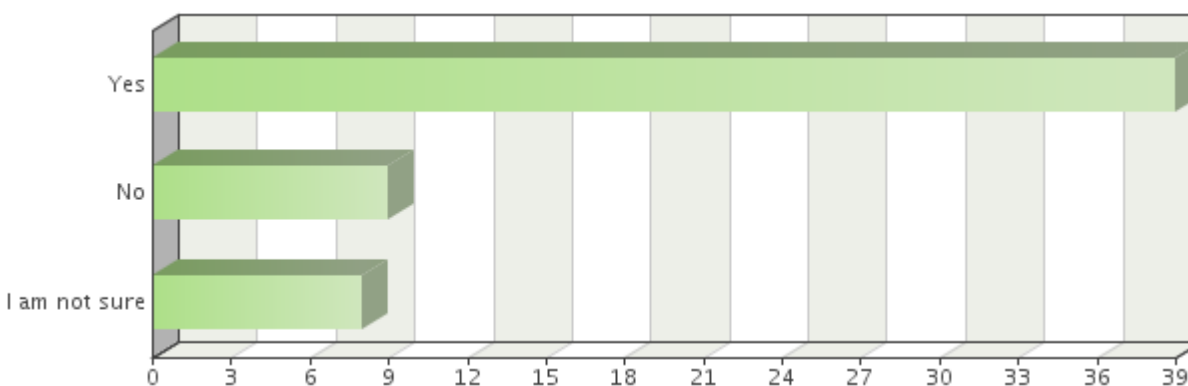


Figure 4. Have you heard of scholarly metrics? (Q.13)

Scholarly Indexes and Unique Identifiers.

Most of the respondents have scholarly index and unique identifier profiles (Figure 5); only four reported not having any of them. Google Scholar was chosen as the best scholarly index by 14 respondents, two preferred Scopus, and two preferred Web of Science. ResearcherID was mentioned by a respondent as the best unique identifier. The reasons presented for their indexes preferences are listed below:

Table 4. Favourite Scholarly Indexes

Google Scholar	Web of Science
Availability	Restrictiveness (citation/publication)
Comprehensiveness (citation/publication)	

The most important aspects of scholarly indexes are listed below in order of importance:

- Citation count
- Impact factor
- h-Index
- number of publications
- number of downloads/usage
- i10-Index

Scholarly indexes consistency divided opinions. Twenty-five of the respondents agreed that they are consistent against 25 that disagreed; eight preferred not to answer. Regarding the interviewees, they considered indexes relatively consistent; agreeing that there are variations, which more or less match when compared. However, some academics complained of the results' inflation as, for example, in Google Scholars, which counts self-citation, and the manipulation of results by publishers, which control other indexes, to increase the impact factor of their journals. Indexes were also reported as misleading because they do not account publication co-authoring.

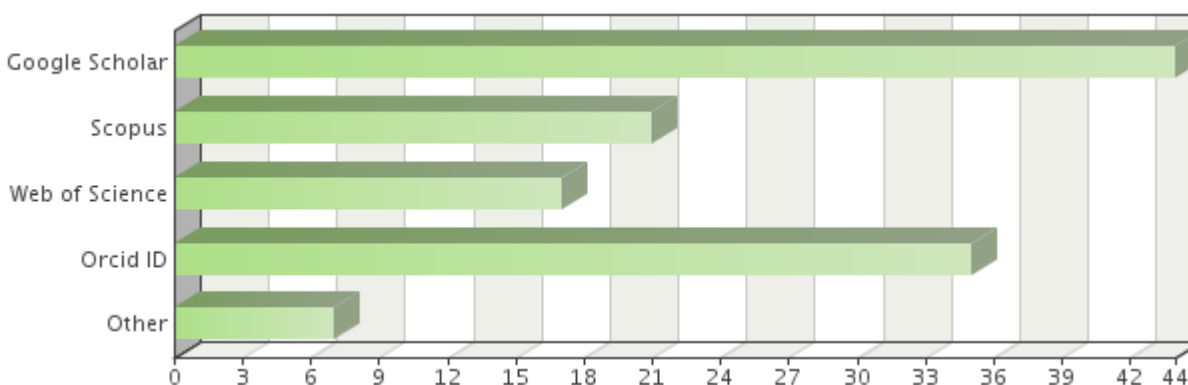


Figure 5. Do you have a personal profile in any of the following scholarly indexes and unique identifiers? (Q.16)

Digital Exposure.

From the 56 respondents, 27 consider academics' digital exposure very important and 22 considered it important, while five considered it neither important nor unimportant and two considered it not important and not important at all (Figure 6). The ones who considered digital exposure important and very important defended the following ideas:

Table 5. Digital Exposure for Academics

Visibility	Networking	Feedback
Larger audience	Build collaborations	Feedback on your own work
Expose research to peers	Connect scholars to peers	
Better chances for tenure	Career advancement	
Updates on latest researches		

Digital exposure has a drawback, according to a respondent, as it removes depth from complex topics and moves people to use of buzzwords rather than knowledge.

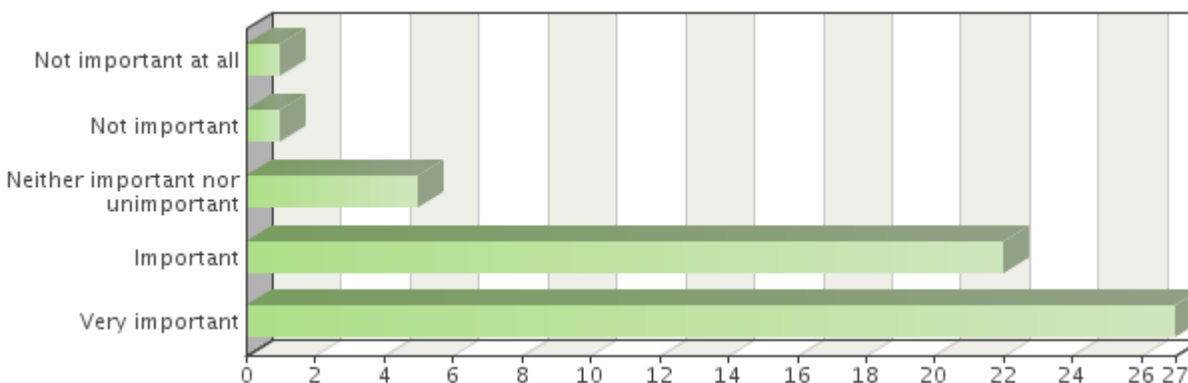


Figure 6. How important is digital exposure for academics? (Q.12)

What is the Importance of Metrics for Promotion and Academic Recognition?

To understand the academics' thinking about the importance of metrics for promotion and academic recognition, it is necessary to understand (i) the role of metrics for promoting individual research and the requirements for faculty promotion in TAMUQ, as well as (ii) the contribution of metrics to the institution's image.

What are the Procedures for Faculty Promotion in TAMUQ?

This part aims to identify the role of metrics for promoting individual research according to the academics' perspective. It also aims to present the requirements for faculty promotion in TAMUQ and the role of metrics in this process.

Scholarly Metrics and Individual Research Promotion.

The majority of academics considered scholarly metrics important for promotion; however, 1/4 of the respondents do not share the same opinion (Figure 7). The ones who recognized the importance of metrics for promotion defended their ideas in several ways, as noted in the table below.

Table 6. Scholarly Metrics Important for Faculty Promotion

Summary	Quality	Status Quo
Reflect researcher's achievements	Show some of the best researches	Main aspects used to evaluate research
First impression on researcher's work	Indicate importance of research contributions	Emphasis is on these indices during promotion schedule
Save time that would be spent on reading detailed information	Suggest impact of the work on the community	
	Express validity and usefulness of research	

The respondents that discredited or doubted the importance of scholarly metrics for promotion defended the following opinions:

Table 7. Scholarly Metrics Not Important for Faculty Promotion

Incomplete	Inaccurate
Important academia's aspects are not captured	Vary according to institutional affiliation
Numbers are important, but research results should be relevant	Famous research group/institutions have more visibility than small or not well-known ones
	Good/original work is often ignored by the mainstream (established researchers)
Misleading	Distracting
Can lead to focusing too much on number of papers and number of citations instead of quality.	Seems strange to spend your time trying to cater to these indices instead of focusing on your research itself.

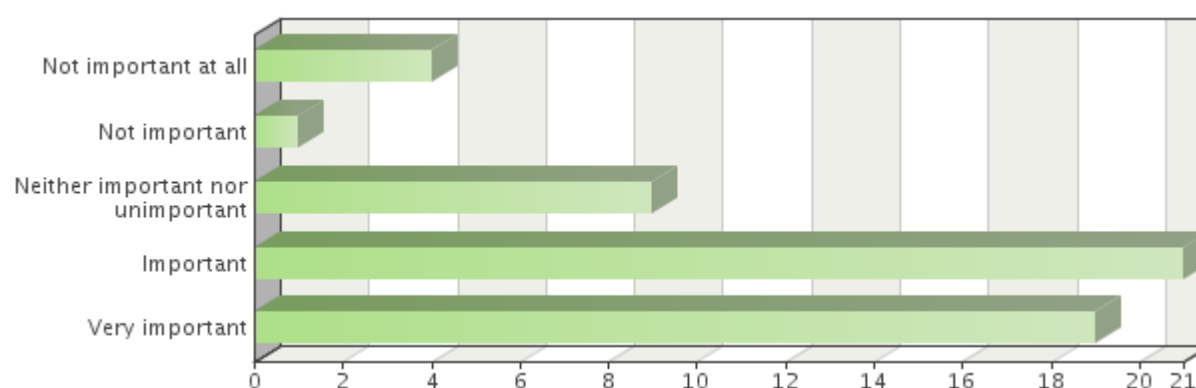


Figure 7. How important do you consider scholarly metrics for promoting individual academic research? (Q.20)

Scholarly metrics and faculty promotion.

In order to understand the importance of metrics for faculty promotion, I first asked the interviewees about the role of research publication. They all agreed that research publication is essential for promotion. However, 'the role of publications to promotion depends on the nature of the work faculty are doing', stated the interviewee#4. For example, for instructional and administrative faculty publication is irrelevant. However, for research faculty publication is essential.

The majority of interviewees agreed that scholarly metrics are important for promotion, but in conjunction with other aspects. According to the interviewee#1, ‘h-index, IF, and citation count, calibrated by research field, are all taken into account for promotion along with the faculty’s submitted annual report and the external reviewers’ feedback’. The interviewee#3 said that metrics indicate trends, ‘if citations go up, h-index increases over time, and there is constant output, for example, there is growth in productivity’; however, the decisions are based on the entire researcher’s portfolio.

What are the Practices for Institutional Recognition in TAMUQ?

This part aims to establish the importance of scholarly metrics for academic recognition according to the academics. Most of them considered scholarly metrics important for recognition; however, almost 1/4 of the respondents do not shared the same opinion (Figure 8). The ones who defended the importance of metrics for recognition presented their reasons in the following table.

Table 8. Scholarly Metrics Important for Institutional Recognition

Visibility	Ranking
Help the institution stand out	Administrators take it seriously
Give a clear indication of the caliber of the faculty and their research contributions.	Became more important in assessing the quality of programs

The respondents that discredited or doubted the importance of scholarly metrics for recognition defended themselves accordingly.

Table 9. Scholarly Metrics Not Important for Institutional Recognition

Incomplete	Inaccurate
Promote disciplines that use metrics, which is at the expense of humanities	Universities with higher exposure worldwide, might have publications with higher impact
Do not reflect the quality of instruction or holistic learning at any institution	Do not really say anything about quality, only about dissemination

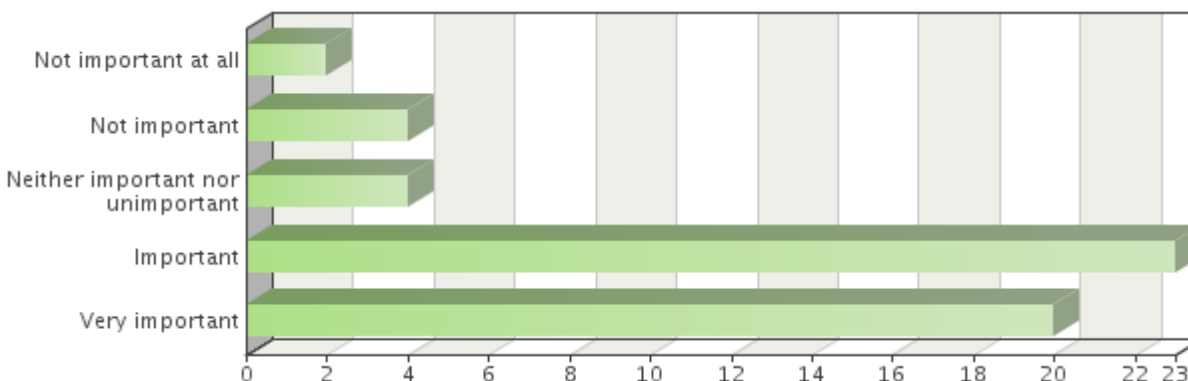


Figure 8. How important do you consider scholarly metrics for institutional academic recognition? (Q.21)

Previous to their opinion about the relation between scholarly metrics and institutional recognition, the interviewees were questioned about the impact of TAMUQ's research on Qatar. They all stated that the university has a great impact. TAMUQ contributes to Qatar's scientific profile internationally; has a high level of research output tied to the industry, which allows the development of work and impact to the country's economy; and faculty members serve as specialists in the Ministry of Environment and committees to review environmental regulations. Besides that, TAMUQ has impact in terms of education, preparing people that further join Qatar's work force. The interviewee#1, explained the institution's impact referring to metrics: 'over the last ten years, TAMUQ's slope is very big', reflecting the use of metrics to promote higher education institutions. Most of the interviewees agreed that scholarly metrics are important for academic recognition not only in Qatar but internationally. TAMUQ has already Qatar's highest research output per academic and is considered Qatar's top university. Their goal then is to become MENA (Middle East and North Africa) region's top university. In terms of recognition within Qatar, it was also mentioned, a word-of-mouth marketing, as previous students bring new ones, and the university's high brand name, Texas A&M, which brings recognition by itself.

What are the Necessary Improvements?

This part aims to present suggested improvements in scholarly communication to better promote the university and scholars' research in TAMUQ. It aims also to indicate ways through which librarians can support such improvement process. Although many researchers seemed not

to have a formed opinion on this matter, there were a significant number of academics seeking improvements. (Figure 9). Their suggestions are listed below:

Table 10. Necessary Scholarly Metrics Improvements

Quality	Relativize
Look at cross-disciplinary and applied research, publications, grants and other efforts	Recognize differences between disciplines, metrics, publications, and venues
Capture qualitative aspects that are not be measurable in the traditional way	Differentiate basic from applied research and specialist from theoretician
Addition	Change
Books and book chapters should not be rated as conference publications	Reports should be based on Web of Science instead of on Google Scholars
Invited plenary talks at international conferences should be taken into account	Assessments should be based on non-self-citations count
Encouragement	Workshop
Encourage researchers to use scholarly repositories and indexes	Make researchers more aware of the metrics to optimize research output
Promote appreciation of scientific ideas and scholars within the institution	Some tutorial sessions occasionally on these topics would be good

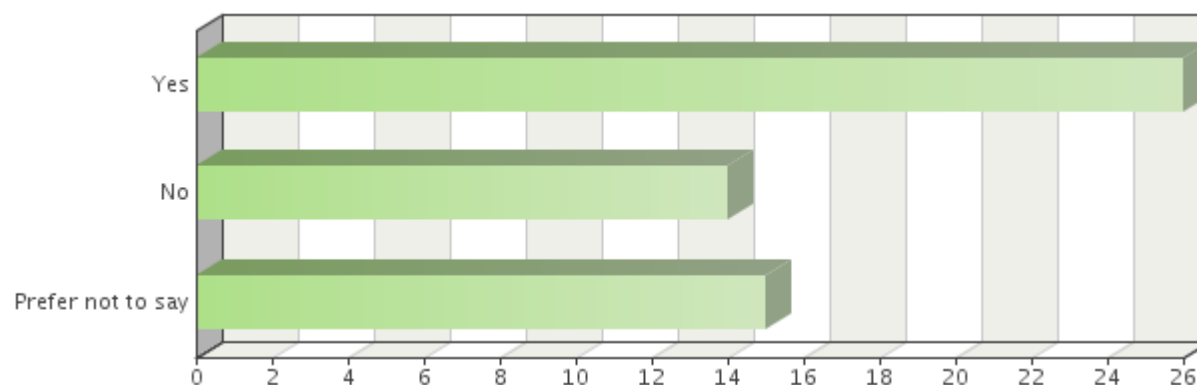


Figure 9. In your opinion, are there areas related to scholarly metrics that need improvement in TAMUQ in order to better promote the university and scholar's research? (Q.22)

Regarding the interviewees, this question about improvements in TAMUQ's scholarly metrics was the one that most reflected the differences between administrators and researchers' perceptions. The interviewees that work in high administration positions could not tell how to do it better. They were satisfied with both the institution's metrics growth and the progress that academics in general have been doing over the years, which are captured in metrics. However, other interviewees presented many suggestions on how improve scholarly metrics process in TAMUQ. Some insisted that research evaluation should be based on qualitative measurements instead of quantitative, stating that academics should emphasize results such as changing standards and specifications or training students in research. In addition, they proposed qualitative assessments, such as talking with decision makers about policies changed because of TAMUQ's research output and taking testimonies from Qatar's leadership. Others suggested actions involving the library staff, such as collecting copy of research output where copyright allow and detailing researchers', departmental, and institutional profiles, as the main campus has been doing, which make the numbers more visible and easily get. Trainings, manual and guidelines were also suggested as alternatives to help researchers becoming familiar with metrics.

Discussion

This section discuss the findings presented in the previous section. The discussion follows this study's research question.

What is the Academics' Thinking About Promoting and Evaluating Research?

The qualitative data obtained from the interviewee supported with the quantitative data showed that the participants are aware of the existence of scholarly communication and most of them have been part of this process. Academics are interested in promoting their research output and getting their work's results evaluated by their peers. Their majority have heard about scholarly repositories, metrics, and indexes and agreed that those concepts are been used by scholars. However, the way and the frequency in which academics use scholarly repositories varies; their perceptions of scholarly metrics are diverse, a significant number of researchers have never heard of that, which is surprising, and their understanding of indexes reflected two extremes. In general, it seems that those elements are so deeply related that it is difficult to scholars to understand their peculiarities, their roles, and their purpose.

Sharing on Repositories.

Although sharing research on scholarly repository is not a requirement, few academics said do not make use of scholarly repositories. They have been sharing their research output on Researchgate.net, Academia.edu, and ArXiv.org, for example. However, most of the respondents have not used the institutional repository and none of the interviewees working with research output was aware of OAKTrust, which is TAMU/TAMUQ's institutional repository. Interviewees stated that they have never been either invited to share their work in such repository or informed about the existence of it. It is important that the academics become aware of this virtual space and be encouraged to share their research output within their institution. This initiative along with detailed researchers', departmental and institutional profiles, centralize the information, making content and numbers easier to access and take, which facilitate to users seeking academics work and to scholars in period of evaluation, when they have to submit their publication numbers and metrics results.

Scholarly repositories are important in order to remove the publication supremacy from the hands of big corporations, which make a fortune at the expense of researchers and universities. According to TAMU's Dean of Libraries, who gave a lecture on this topic earlier this year in TAMUQ, academic databases companies, such as Elsevier, are having the highest profit including all the market sectors. Their profit is higher than Mercedes Benz and the tobacco industry. It happens because the product they sell has almost no cost to them. One interviewee complained of those databases because they take the rights from authors, by not allowing them to disseminate their work themselves, and charge heavily to provide access to their publications, but the same scholar said that does not share research output in repositories. Academics need to understand that the only way to change the publishing scenario is by sharing their results on scholarly/institutional repositories and open access databases, negotiating their contracts with publishers before signing, and rethinking the whole system of measuring research.

Consistency of Indexes.

Both groups, respondents and interviewees, considered scholarly indexes relatively consistent, but they expressed this opinion in different ways. The respondents, who had to choose one option, split between 'yes' and 'no' while the interviewees, who could formulate their

responses, responded to the same question saying ‘yes and no’. Initially, it is necessary to understand that different indexes have different sources and different metrics that generate different results. The current relevant indexes belong each one to a different powerful publisher; for instance, Web of Science, which belongs to Clarivate Analytics, and Scopus, which belongs to Elsevier. Relatively recently Google joined the scholarly indexes marked with the creation of its Google Scholars. Each of these companies develop its own measurement tools, for example, *Journal Citation Report* is Clarivate Analytics’ tool to measure impact factor, *CiteScore* is the Elsevier’s one. Besides that, the companies base their measurements on their own data, which also affects the results. The interviewees said being aware of those variations, but that more or less the results match when compared.

However, some academics complained of the inflation of results in scholarly indexes by both the researchers themselves or research groups. For example, Google Scholars counts self-citation, so researchers citing themselves can increase their numbers; for the same reason, research groups keep on citing each other. The indexes themselves, i.e. the companies behind them, can also manipulate results to increase, for example, the impact factor of their journals, as publications from the same publisher cite each other and get higher results. Google Scholars was criticized by some and praised by others due to its high data range, which goes beyond academic content. Although their opinion regard indexes vary between questionable and reliable, most of the academics have a scholarly metrics profile.

Understanding Metrics.

Researchers in general know metrics, make use of them, but do not know how their results are calculated. However, in broad terms, they showed a good notion of the use of metrics, mentioning right aspects, which were summarized as measurement of impact, productivity, visibility, and quality. Although the majority of scholars are familiar with the concept, still a high number, 1/3 of them, are either not familiar or not sure if they have heard of scholarly metrics. It is necessary to increase academics awareness of scholarly communication, they need to understand the system, what is involved in it, and how to work to optimize this process. Workshops, trainings, manual, and guidelines were suggested as initiatives to help researchers to get familiar with different aspects of scholarly communication. They are ideas that library staff could develop to support their academics on this matter.

What is the Importance of Metrics for Promotion and Academic Recognition?

Most of academics agreed that metrics are important for both faculty promotion and institutional recognition. They stated that the use of quantitative data to measure quality of research output is the usual process currently. The scholars working in administrative positions are satisfied with scholarly metrics and the role they play in both institutional and scholars' level and they have reasons for that. TAMUQ is the country's top university in number of publications per academic and scholars' keep raising their metrics results over years. However, scholars presented different perspectives on the relevancy of metrics for promotion and recognition. Academics believe that quality should prevail over quantity. They suggested different forms of evaluating research output and presented different opinions on how TAMUQ recognition is built within Qatar.

Evaluation.

The importance of publication for faculty promotion was unanimous; all the academics agreed that it is the number one reason for promotion. Academics have to submit their publications report to the management annually and they are invited to create a profile in Google Scholars for research measurement purposes. During the promotion period, external peer faculty are contacted and their feedback are analysed along with academics' portfolio and metrics results. Metrics have an important role in this process, especially h-index and impact factor.

However, scholars stated that they should not have such prominent role in promotion because their results are incomplete, inaccurate, misleading and distracting. They are incomplete because there are many academia's aspects that are important for research measurement that are not captured by common metrics. They are inaccurate because they vary according to, for example, institutional affiliation, and researcher status. They are misleading because they focus on quantity over quality. They are distracting because they took scholars' time and energy that could be directed to their research, which really matters.

Besides that, there is a recommended list of high impact journals for each field publications and because of that some scholars do not see benefits of sharing research on scholarly repositories or open access databases. It is understandable that researchers and administrators want to see their research in the best journals, but that will just trap them more into the system where big corporations control the publication market and metrics results. To break this cycle, it is necessary

to look to types of research measurement other than the metrics created and controlled by such companies. Academics suggested evaluation based on quality not only on quantitative metrics, which is in accordance with *Leiden Manifesto for Research Metrics*. The manifesto presents 10 principles to guide research evaluation, including ‘using quantitative evaluation as support for qualitative, expert assessment’ and ‘protecting excellence in locally relevant research’ (Hicks, 2015, p.430). Those principles match with some scholar’s suggestions for collecting local quantitative data for research evaluation, such as ‘talking with decision makers about policies that they have changed because of works coming from TAMUQ’ and taking ‘testimonies from Qatar’s leadership’. Most of the academics agreed that it is necessary to develop ways of capturing qualitative aspects of research output as the current metrics are based on quantitative.

Reputation.

While some academics think that metrics are incomplete in evaluation, others think they are useful to promote the university internationally. Metrics are incomplete because they can promote just disciplines where they are significant, which is not the case with humanities, for example, and they cannot measure the quality of instruction or holistic learning at any institution. Besides that, universities with high exposure worldwide might have publications with higher impact than less famous institutions, which means that they have more visibility not more quality, since metrics do not measure quality but dissemination.

Although TAMUQ, as a TAMU branch campus, is well known worldwide and has high metrics results, which place the university among the top, some academics believe that metrics are important to promote the university internationally more than locally. Within Qatar, academics consider that TAMUQ has an impact that goes farther than numbers. For example, faculty members serving as specialists in the Ministry of Environment and committees to review environmental regulations, research output tied to the industry, which affects the country’s economy, and its educational impact, as TAMUQ prepares professionals that further join Qatar’s work force. In addition, academics said that previous students bring new ones, in a kind of word-of-mouth marketing, and that Texas A&M, which is a very high brand name, brings recognition by itself. However, some academics emphasized the importance of metrics locally, as TAMUQ has the highest research output per academic and because of that is considered Qatar’s top university. At international level, administrators are looking to consolidate TAMUQ’s position as

MENA (Middle East and North Africa) region's top university and they rely on metrics to fulfil this purpose.

Chapter 5: Conclusion and Recommendations

Conclusion

Although the majority of academics are used to scholarly communication and faculty promotion, a significant part of them are not aware of important components of these both processes. Most academics are active in research and share/publish their research output; however, there is lack of awareness on scholarly communication elements, such as repositories and research measurement. The scholars in general are sharing research output in scholarly repositories, but not in the institutional repository; just few know of OAKTrust's existence. Besides that, the differences between scholarly repositories and indexes are not clear to the academics and this lack of clarity contributes to these tools' concept ambiguity. Scholars are not sure of scholarly indexes consistency, they look at it with skepticism and preferences differ between one and another. Regarding research measurement, 1/3 of the scholars are not familiar or have not heard of scholarly metrics and the ones who know about these measures have a broad idea of metrics but not how their numbers are generated.


In addition, faculty promotion is based on the faculty members' publications and this process is directly connected to their metrics; however, the institution does not have a promotion policy and academics do not have a clear understanding of the requirements that need to be achieved. Number, type, and place of publications vary and there is no unified view regarding these aspects; the decisions are taken subjectively by the promotion committee and administrators. Besides that, academics see metrics not reflecting quality but the ability to disseminate. Some quality research suffers from low dissemination and, as a result, can jeopardize author promotion. Academics then requested a promotion process review in order to include means that contribute to the prioritization of quality over quantity when evaluating research. Lastly, this study concludes that although metrics are important for institutional recognition and have local value, their major role is carried out internationally. Locally there are other means by which the university can achieve success; however, internationally metrics are strong tools. Some academics disagreed with that, as they consider metrics incomplete to reflect the quality of the whole institution.

Recommendations

Based on the findings of this research, some suggestions and recommendations are made to improve the scholarly communication process in TAMUQ. These recommendations are meant to serve as preliminary ideas and the factors of their implementation need further study and analysis.

- Institutional repository should be promoted within the university. Academics should be invited and encouraged to share their research output in such digital space. Library staff with the approval of the management could lead this process.
- Academics should be aware of the differences between scholarly repositories and scholarly indexes as well as the peculiarities and similarities of different indexes, their sources and measurements tools. Library staff could offer workshops on this topic.
- Academics should be familiar with the concept of scholarly metrics as well as their peculiarities and how they are calculated in order to understand their results and improve their performance. Library staff could create a manual with basic information.
- The institution should consider the development of a scholarly publications and faculty promotion policy encouraging the four aspects of metrics mentioned by the academics in this research: impact, visibility, productivity, and quality.
- The institution should include the non-scientific disciplines in the process of promoting the university, giving importance also to the courses that although not supported by metrics provide a significant work for the students' development.

Appendix A: Information Sheet

<p style="text-align: center;">Interview Information Sheet</p> <p>Project Title: Scholarly Communication in the 21st Century: Trends in Promoting and Evaluating Scientific Research in Texas A&M University at Qatar</p> <p>This Master's level research, conducted under the supervision of Principal Researcher Dr Milena Dobрева aims to present the progression of scholarly communication, promotion and evaluation of scientific research, and their relation with metrics; explain metrics terminology and the interconnection as well as specific roles of different metrics. It aims also to introduce the most important bibliometric scholars and their contributions to the field; describe the transition from print journals to online publishing and present reasons for that. In addition, this research aims to determine scholars' favourite network websites and their benefits and drawbacks.</p> <p>In order to achieve these aims, a number of research strategies will be employed, including survey and interviews. The survey is going to be applied to Texas A&M University at Qatar (TAMUQ) scholars, researchers and faculty, as this research aims to recognize trends in scholarly communication considering this particular group. Most of the survey is going to be composed of closed ended questions; however, some open ended questions should be applied. The face-to-face interview is going to be applied to TAMUQ managers dealing with research output.</p> <p>As a participant you will be required to respond questions related to research publication and evaluation as well as share your opinion about the role of metrics in the current context. For example: Are there any specific policies regarding publishing of research? What is the role of research publications in promotion? How important are scholarly metrics for TAMUQ academic recognition within Qatar?</p> <p>The data that is collected will be stored in the researcher office until the dissertation is approved and any publications relating to the dissertation have been published. After that, it will be safely disposed.</p> <p>The data collected will be used to identify trends in promoting and evaluating scientific research in Texas A&M University at Qatar. All interviewees will have access to the completed research output by requesting either a print or a soft copy.</p> <p>The data collected will be used to identify trends in promoting and evaluating scientific research in Texas A&M University at Qatar.</p> <p>Please contact Dr Milena Dobрева (email: m.dobрева@ucl.ac.uk) if you have any questions.</p> <p>With much thanks and best wishes</p> <p>Dr Milena Dobрева Principal Researcher University College London- Qatar</p> <p>Karina Galvao Santana MA Librarianship and Information Science candidate University College London - Qatar</p>	 <p>UCL QATAR كلية لندن الجامعية قطر</p>
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Survey Information Sheet

Project Title: Scholarly Communication in the 21st Century: Trends in Promoting and Evaluating Scientific Research in Texas A&M University at Qatar

This Master's level research, conducted under the supervision of Principal Researcher Dr Milena Dobрева aims to present the progression of scholarly communication, promotion and evaluation of scientific research, and their relation with metrics; explain metrics terminology and the interconnection as well as specific roles of different metrics. It aims also to introduce the most important bibliometric scholars and their contributions to the field; describe the transition from print journals to online publishing and present reasons for that. In addition, this research aims to determine scholars' favourite network websites and their benefits and drawbacks.

In order to achieve these aims, a number of research strategies will be employed, including survey and interviews. The survey is going to be applied to Texas A&M University at Qatar (TAMUQ) scholars, researchers and faculty, as this research aims to recognize trends in scholarly communication considering this particular group. Most of the survey is going to be composed of closed ended questions; however, some open ended questions should be applied. The face-to-face interview is going to be applied to TAMUQ managers dealing with research output.

As a participant you will be required to respond to questions related to research publication and evaluation as well as to share your opinion about the role of metrics in the current context. For example: What kinds of publications have you authored? On which repositories have you recently shared publications? What aspects of scholarly indexes are most important overall?

The collected data will be stored in the researcher office until the dissertation is approved and any publications relating to the dissertation have been published. After that, it will be safely disposed.

The data collected will be used to identify trends in promoting and evaluating scientific research in Texas A&M University at Qatar.

Filling in the survey confirms your consent to participate.

Please contact Dr Milena Dobрева (email: m.dobрева@ucl.ac.uk) if you have any questions.

With much thanks and best wishes

Dr Milena Dobрева
Principal Researcher
University College London- Qatar

Karina Galvao Santana
MA Librarianship and Information Science candidate
University College London - Qatar

Appendix B: Consent Form

**Interview Consent Form**

Project Title: Scholarly Communication in the 21st Century: Trends in Promoting and Evaluating Scientific Research in Texas A&M University at Qatar

This Master's level research is conducted under the supervision of Dr Milena Dobрева. The data collected will be used in the dissertation of UCL Qatar Master's student Karina Santana. The purpose of the research is outlined in the associated *Information Sheet*.

Note that material gathered as part of this study will be treated as confidential and securely stored.

Please take time to read the information and discuss this if you have any questions, and then answer the following statements to provide your consent to take part in the research.

- | | | |
|--|------------------------------|-----------------------------|
| I have read and I understand the information sheet. | Yes <input type="checkbox"/> | No <input type="checkbox"/> |
| I have been given the opportunity to ask questions about the project and they were answered to my satisfaction. | Yes <input type="checkbox"/> | No <input type="checkbox"/> |
| I understand that I can withdraw from the study at any time. | Yes <input type="checkbox"/> | No <input type="checkbox"/> |
| I agree to the interview being recorded and my words being used for the research purposes described in the Information Sheet. | Yes <input type="checkbox"/> | No <input type="checkbox"/> |
| I request that my comments are presented anonymously but give permission to connect my institutional affiliation and the title of my position with my words. | Yes <input type="checkbox"/> | No <input type="checkbox"/> |
| I request that my comments are presented anonymously but give permission to connect my institutional affiliation with my words (but not the title of my position). | Yes <input type="checkbox"/> | No <input type="checkbox"/> |
| I understand that my personal, identifying details will not be included in the dissertation. | Yes <input type="checkbox"/> | No <input type="checkbox"/> |

Name (PRINT) _____

Signed _____

Date _____

Please contact Dr Milena Dobрева (email: m.dobрева@ucl.ac.uk) if you have any questions.

With much thanks and best wishes,

Dr Milena Dobрева
Principal Researcher
University College London- Qatar

Karina Galvao Santana
MA Librarianship and Information Science Candidate
University College London - Qatar



Survey Consent Form

Project Title: Scholarly Communication in the 21st Century: Trends in Promoting and Evaluating Scientific Research in Texas A&M University at Qatar

This Master's level research is conducted under the supervision of Dr Milena Dobрева. The data collected will be used in the dissertation of UCL Qatar Master's student Karina Santana. The purpose of the research is outlined in the associated *Information Sheet*.

Note that material gathered as part of this study will be treated as confidential and securely stored.

By continuing with the survey, I confirm that:

I confirm I am over the age of 18 (eighteen).

I have read and I understand the information sheet.

I have been given the opportunity to ask questions about the project and they were answered to my satisfaction.

I fully understand the purpose of the study.

I understand that I can withdraw from the study at any time.

Please contact Dr. Milena Dobрева (email: m.dobрева@ucl.ac.uk) if you have any questions.

With many thanks,

Dr Milena Dobрева
Principal Researcher
University College London- Qatar

Karina Santana
MA Librarianship and Information Science Candidate
University College London – Qatar

Appendix C: Interview Questions

INTERVIEW

- 1) Are you faculty, researcher or other?
- 2) What does your job entail? [lecturing, administration, research or other]
- 3) Are there any specific policies regarding publishing of research? If you are familiar with the policies, how do they work? If there are no policies, what are the expectations for TAMUQ scholars and their publications?
- 4) Are you aware of whether TAMUQ has an institutional repository? If yes, are TAMUQ scholars invited to publish in such space? If no, is there a virtual space where they are supposed to publish their work?
- 5) Does anyone require scholars to publish in repositories? [TAMUQ, funders, other]
- 6) What is the role of research publications in promotion? Are publications essential? Are there any clear requirements / guidelines? [quantity: number of publications – quality: good journal papers / recommended list of journals]
- 7) How important are scholarly metrics for faculty promotion? What are the scholarly metrics taken into account? [citation count, impact factor, h-index, other]
- 8) Do you have any ideas / observations on the impact of TAMUQ research on Qatar?
- 9) How important are scholarly metrics for TAMUQ academic recognition within Qatar?
- 10) Are there areas related to scholarly metrics that need improvement in TAMUQ in order to better promote the university and scholars' research?

Appendix D: Questionnaire

Scholarly Communications

1. 1) What is your position at TAMUQ?

- Faculty
 Researcher
 Other

2. What does your job entail? Select all that apply.

- Lecturing
 Administration
 Research
 Other

3. What is the level of your position? Select all that apply.

- Visiting
 Instructional
 Assistant
 Associate
 Professor
 Other

4. Which department are you associated with?

- Chemical Engineering
 Electrical and Computer Engineering
 Mechanical Engineering
 Petroleum Engineering
 Liberal Arts
 Sciences
 Other

5. Are you research active?

- Yes
 No
 Prefer not to say

6. What kinds of publications have you authored? Select all that apply.

- Book
- Article
- Patent
- Conference proceeding
- Other

7. How many years of research experience do you have?

- <5
- 5-10
- >10

8. How many research publications have you published so far?

- <5
- 5-10
- 10-30
- >30

9. How many of those publications have you shared on digital repositories?

- <5
- 5-10
- 10-30
- >30

10. On which repositories have you recently shared publications? Select all that apply.

- OAKTrust
- Academia.edu
- Researchgate.net
- Other scholarly repository

11. Do you have a preference among the repositories mentioned above? If yes, which one and why? If no, why not?

- Yes
- No
- Prefer not to say

12. How important is digital exposure for academics? Why?

- Not important at all
- Not important
- Neither important nor unimportant
- Important
- Very important

13. Have you heard of scholarly metrics?

- Yes
- No
- I am not sure

14. Please name as many types of scholarly metrics as you can.

15. Can you briefly explain the use of scholarly metrics?

16. Do you have a personal profile in any of the following scholarly indexes and unique identifiers? Select all that apply.

- Google Scholar
- Scopus
- Web of Science
- Orcid ID

Other

17. Do you have a preference among the indexes mentioned above? If yes, which one and why?

- Yes
- No
- Prefer not to say

18. Do you feel the information in these indexes is consistent?

- Yes
- No
- Prefer not to say

19. What aspects of scholarly indexes are most important overall? Select all that apply.

- Number of publications
- Number of downloads/usage
- Citation count
- Impact factor
- h-Index
- i10-Index
- Other

20. How important do you consider scholarly metrics for promoting individual academic research? Why?

- Not important at all
- Not important
- Neither important nor unimportant
- Important
- Very important

21. How important do you consider scholarly metrics for institutional academic recognition? Why?

- Not important at all
- Not important
- Neither important nor unimportant
- Important
- Very important

22. In your opinion, are there areas related to scholarly metrics that need improvement in TAMUQ in order to better promote the university and scholars' research? If yes, what needs improvement? Why? Do you have any suggestions?

- Yes
- No
- Prefer not to say

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