This is an Accepted Manuscript of an article published by Elsevier in Tourism Management, Volume 78, 104702, June 2020, available online:

https://doi.org/10.1016/j.tourman.2019.104072

Achieving research impact in tourism: Modelling and evaluating outcomes from the UKs Research Excellence Framework

Paul A. Phillips
Kent Business School,
University of Kent, UK
p.a.phillips@kent.ac.uk

Stephen J. Page
Hertfordshire Business School
University of Hertfordshire
s.page2@herts.ac.uk

Joshua Sebu
School of Economics,
University of Cape Coast, Ghana
joshua.sebu@ucc.edu.gh

Highlights

- Research impact has emerged as a metric of growing importance among research funders
- The UK REF2014 tourism impact case studies are assessed
- Qualitative Comparative Analysis (QCA), a set-theoretic method is applied to the data
- The implications for tourism research are evaluated

Abstract

The marketisation of higher education has emerged as a global trend with a focus on using metrics to assess performance. This has led to the closer scrutiny by government in assessing value for money and effectiveness of research outcomes in national allocations of research funding. This paper focuses on one controversial strand of assessing research outcomes - the area of research impact. The paper examines the experiences of the UKs Research Assessment Exercise in 2014 and the tourism impact case studies developed as part of institutional submissions on research impact. The paper examines the case studies using Qualitative Comparative Analysis (QCA), which is a set-theoretic method, to identify what a high quality impact case study looks like from a range of criteria. The paper derives a wider range of implications for tourism scholars that has wider application across other areas in which Tourism is located.

Achieving research impact in tourism:
Modelling and evaluating outcomes from the UKs Research Excellence Framework

1.0: Introduction

The idea that tourism practitioners avidly use academic research outputs to drive strategic decision-making is a well-trodden debate and one widely contested by both sides due to the accessible nature of the outputs and their relevance to industry. The nature of academia with its "indicator-filled-world", had led to the role and purpose of academic institutions being constantly questioned in relation to the purpose of research and its relevance (Irwin, 2019). This paper aims to provide a more comprehensive understanding of high impact research in the context of the UK's Research Excellence Framework (REF2014) Impact Case Studies (ICS). It argues that such a focus could bring an invaluable perspective to the socio-political-economic system that tertiary education is currently facing worldwide. With the paucity of prior literature, we provide a narrative of the exercise and outcomes on research impact to help the academy better understand the mechanics of research impact as construed in REF2014, as other countries look to ways to measure and evaluate impactful research.

While the central role of academic research outputs continues to be debated in the tourism literature (Thomas and Ormerod, 2017) and across the social sciences and sciences, a new paradigm has emerged around how research studies create impact for various publics with a focus on economic and societal benefits, including the role of public engagement in tourism (Page et al, 2017). Increasingly, state funded research organisations and exercises to assess research performance within countries are highlighting the need for researchers to demonstrate value for money in research through impact and public engagement. This paper provides evidence and a deeper perspective of the attributes of high impact research. The need for such analysis arises from the changing University business model and the increased costs of REF2014 (Times Higher Education, 2015), which was estimated to have cost £250 million to undertake. Tourism leaders and academics need fresh insights to remain relevant, and we seek to make a contribution on the topic of research impact.

Within national research exercises, there are increasing incentives for academic institutions to achieve top positions in rankings in relation to prestige to attract students and in the prize of enhanced funds for ongoing support for research. The codifying practice within business and management, such as the Chartered Association of Business Schools Journal Guide (CABS Guide – see https://charteredabs.org/academic-journal-guide-2018/), which is also known as the Academic Journal Guide, has sought to provide a level playing field for demonstrating impact[1]. Academic researchers possess greater clarity as to where to find the best work in their field and where to target their work. The CABS Guide also has its critics too with the

[1] There is a common misconception in relation to the CABS Guide that it is only associated with Business and Management Journals. The Guide contains many broader Social Science Journals within the Guide. For example, in the section in which Tourism is located (Sector Studies), approximately 25% of the Journals cover a wider Social Science range of subjects and disciplines (e.g. Transport) while other sections (e.g. Regional Studies, Planning and Environment) contains a wide range of Social Science Journals that are not specific to Business and Management but reflect the Journals in which Business and Management scholars publish.

British Academy of Management President, Cary Cooper being concerned and making the following comments:

"We are particularly concerned about any ranking list which devalues research with real world impact and insights, in favour of that aimed at topping league tables. Research in business and management must aspire to positive impacts on academic knowledge and on the real world …" (BAM, 2015).

Given the significant interest in this issue by the academy, this paper provides a timely critique of the area of research impact in tourism drawing upon evidence from the research assessment exercise undertaken in the UK in 2014. It extends the previous literature published in this Journal that has examined different facets of research impact, seeking to provide a country-wide analysis of a substantive assessment exercise focused on tourism. The paper will generate a range of arguments that highlight the contentious nature of research impact and its measurement. Indeed, more theoretically focused researchers in tourism who are embedded in a social science paradigm may question whether impact has any value whatsoever. Such arguments are also germane as they raise fundamental questions about the role of Universities as places of learning and scholarly endeavour and whether assessment exercises and impact have any role to play in the pursuit and creation of fundamental knowledge. Whatever perspective one adopts, it is clear that higher education globally has seen different foci with the marketisation and measurement of performance now an everyday feature of modern day academia (Brown and Carasso, 2017). It is within this context that research assessment exercises feature as performance tools for the quangos and state organisations charged with the overseeing of university performance where marketisation principles exist and performance metrics are used as management tools (Deem 1998; anon, in press). The paper commences with an overview of the measurement of research impact followed by a discussion of the REF2014 research assessment exercise in the UK and its decision to use impact case studies as a measure of research and its effect outside of the academy. The research problem we seek to explore is then framed along with a discussion of how research impact can be measured and the implications for tourism rigour and relevance. The research methodology adopted is then examined as a novel way to approach the research problem. The results are then examined from both a theoretical and policy perspective highlighting the management implications for the academy as well as drawing out broader conclusions from the study. Attention now turns to the measurement of research impact in academic research.

2.0: Literature review: Research impact

2.1: Measuring the impact of academic research: An overview

In order to measure the impact of research outputs, bibliometric techniques are now commonly used (Hall, 2011), which in themselves are highly contentious. One important use of bibliometrics is to highlight research productivity within the tourism field over a period of time (Benckendorff, and Zehrer, 2013) and various tools exist electronically to draw competitor analyses (e.g. Elsevier's Scopus and Scival and Google Scholar citations and the H Index among other measures). Prior studies include outputs in academic journals (Gursoy,

and Sandstrom, 2016; Hall, 2011); citations (McKercher, 2008; Mulet-Forteza, Genovart-Balaguer, Mauleon-Mendez, and Merigó, 2018; Sainaghi, Phillips, Baggio, and Mauri, 2018); impact factor (Poria, Schwartz, and Uysal, 2015). Bibliometric approaches tend to be systematic review pieces with few studies employing evaluative and relational approaches (Koseoglu, Rahimi, Okumus, and Liu, 2016). Several arguments are put forward to explain the risks and limitations of relying solely on bibliometrics to measure academic "internal" impact, and even if academics should be pursuing the "external" impact agenda (Benckendorff, and Shu, 2019; Thomas and Ormerod, 2017).

Originally, conceived as a method to analyse bibliographic data in a quantitative manner, the analysis is now being used much beyond its original intentions. Much disquiet exists in the academic field, and arguments about the efficacy and appropriateness exists. Hall and Page, (2015) assert that bibliometrics have helped to metricise the academic game, with it now being used to evaluate academic staff performance for annual appraisals and increasingly influential in hiring decisions (Benckendorff, and Shu, 2019). Although various models exist on how impact might be achieved (e.g. collaboration, partnership working, coopetition, engagement and co-creation of new knowledge – see Hughes, Webber and O'Regan 2017 for a useful review) the basis of much of the debate is around creating, enhancing and maintaining relationships between Universities and external organisations (Huang and Chen 2017). Much of the debate around such concepts is in creating pathways to greater research impact with interested stakeholders.

One way to assess impact is to rethink its purpose. Research impact has been used as a management tool in three different ways: first, to provide a guide to funding bodies to allocate research grants to Higher Education Institutions (HEIs). Secondly, to serve as an accountability measure for public investment in research and the accruing benefits of that investment. Third, to serve as an information benchmark and to provide reputational yardsticks by which research performance can be assessed against international standards (Manville et al, 2015) using metrics (see Wilsdon et al., 2015)[2]. In the UK, these three reasons informed the establishment of the Research Excellence Framework (REF), which replaced the former Research Assessment Exercise (RAE), initially developed in 1986 to assess research quality in the University sector (which expanded in 1992 when new Universities were created) to distribute research income among Universities in a climate of financial stringencies. The first REF published in 2014 (REF2014)[3] not only assessed the quality of research, but included impact of research on a wide variety of non-academic areas as a key measure. The REF2014 definition of impact was delineated as "an effect on, change

[2] The UK is not the only country assessing research quality as similar exercises have been undertaken in Hong Hong, Australia and New Zealand. The problems which have been reported around the UK REF process and the fact that this is a metric-driven activity have also been reported for the other assessment exercises in the other countries so the paper has a broader contribution to make in understanding the aims, objectives and outcomes of such exercises beyond the intended consequences of allocating research funding. One clear impact on the academy in each country implementing as assessment is gaming reflected in the way academics seek to play the short-term aims and objectives of the assessment rather than looking at the strategic development of the subject due to the competitiveness around funding that has affected reported levels of collegiality, cooperation, collaboration which have always been a traditional hallmark of the academy.

[3] Full details of REF2014 can be found at http://www.ref.ac.uk/2014/

or benefit to the economy, society, culture, public policy or services, health, the environment or quality of life, beyond academia". The application of research impact was grouped under a number of headings (including politics, health, technology, the economy, law, culture, society and the environment).

2.2: REF2014 and Impact Case Studies

There are two underpinning concepts which REF2014 introduced to guide the assessment of research impact in terms of the significance of the research to the wider community and how far it had reached these end users captured in two documents submitted by each UOA[4]. The impact score accounted for 20% of the total score in REF2014 and it is rising to 25% in REF2021. In REF2014, some 6,975 ICS were submitted for all UOAs, but much less knowledge is known about the content at the tourism level (Thomas and Ormerod, 2017). Here we consider the first full analysis of tourism ICS. We consider the diverse series of pathways to impact. While there are several routes to impact, routes to impact for tourism ICS should logically be an external focus that directly meets the requirements of REF[5]. The key research question here is whether academics pursuing the external agenda see this as their mandate and whether impactful research is informing their ICS. This also calls into question *what does a high-quality tourism ICS look like*?

2.3: The research problem

This paper provides an analysis of tourism ICS and critical debate around the role of Tourism research in the UK and its ability to connect with a range of external stakeholders. We examine the various attributes that could contribute to a high level of impactful research. An examination of the process of submission and how that affected the relevance of the tourism ICS' submitted is also proffered. For example, there could have been a situation where many ICS submissions may have only been submitted, as they were available at the time and which fitted the criteria of REF2014. This brings into question the preparedness of institutions in producing and submitting impactful cases in accordance with the criteria of REF. Despite the imperfections of the process, REF2014 provides an opportunity for us to reflect upon their preparedness for the forthcoming REF2021.

The paper provides a reality check on the relevance gap. First, the paper is based on a comprehensive assessment of the REF2014 ICS. Second, we provide a critique of the fragmented theoretical issues of tourism research impact, and its ability to connect with external stakeholders. Third, by investigating the extent to which ICS are able to bridge the gap between rigour and relevance, we are able to provide fresh evidence.

[4] According to HEFC (http://www.ref.ac.uk/2014/media/ref/content/pub/REF%20Brief%20Guide%202014.pdf) , Impact case studies comprised four-page documents which described impacts that had occurred between January 2008 and July 2013. The submitting university must have produced high quality research since 1993 that contributed to the impacts. Each submission included one case study, plus an additional case study for every 10 staff. An impact template was also submitted. This document explained how the submitted unit had enabled impact from its research during the period from 2008 to 2013, and its future strategy for impact.

[5] What is notable is that few successful ICS' can be observed in REF2014 from UOA19 (Business and Management submission as opposed to Unit 26 for Tourism) that went down this route.

Our research question we will explore in this paper is by asking: *what are the research factors, that influence and contribute to producing highly impactful case studies within Tourism related studies created by UK by HEIs?*

2.4: Understanding Research Impact

2.4.1: Defining and demonstrating research impact

The definition of impact has differed between users and audiences and according to Penfield et al. (2014) this has mostly been either an academic impact or an external socio-economic impact. According to the Economic and Social Research Council[6], academic research has impact if it has demonstrated some contribution to society and the economy or simply put impact beyond academia. ESRC frame this, as many other Research Councils in the UK do, in terms of developing pathways to impact where 'A high quality Pathways to Impact will include explicit awareness of principles and practices of knowledge exchange - including the application of principles and practices of co-production - as opposed to dissemination' (http://www.esrc.ac.uk/research/impact-toolkit/developing-pathways-to-impact/). Thus, any research output affecting society, culture, environment and the economy among other areas will be considered to have made a considerable impact than those that merely affecting academia, often measured through citations of articles that are not without their problems (e.g. Garfield 1979; Pendlebury 2009; Amara and Landry 2012) which highlights the importance of using a balance of qualitative and quantitative measures of impact.

Within the existing academic analysis of 'impact', two strategies have been used to measure the impact of research. These include the frequency of a research study being cited and the journal impact factor (IF) (see, for example, Hall and Page 2015; Holmberg et al. 2015 on IFs). But, these methods of measuring impact only help to ascertain the benefit of research within academia and so are only a partial analysis of impact (Bornmann and Marx 2013). However, in recent years new frameworks have been developed to evaluate research impact beyond the traditional measurements. Penfield et al. (2014) examined some of these frameworks within an international context. Their study recommended a mixed approach case study method as a way of collating all available information, data and evidence, which would then enable a coherent summary of impact. Aguinis et al. (2012) diverged from the traditional use of citations as the surrogate measure of impact, adopting the number of pages indexed by Google to assess the impact of academic research outside academia. This approach meant that research having numerous entries on Google to measure the number of people outside academia engaging with an academic's research. In gathering their data for the study, Aguinis et al. (2012) adopted five steps and decisions points to ensure the validity of their measure. Using a sample of 384 highly cited management scholars over the past 30 years, they demonstrated that scholarly works only affected stakeholders within academia and not stakeholders outside academia. This study noted that academic impact is a multidimensional construct and not captured adequately through conventional academic measures.

[6] The Economic and Research Council (ESRC) is one of the UKs major public funders of social science research, including studies related to Business and Management and the disciplines that are often located within Business Schools.

Anderson et al. (2017) proposed a relational management education model to engage practitioners and involve direct interaction in the classroom which could lead to change in management practices. Such an approach builds on Aguinis et al. (2012), which criticises the use of highly rated journals articles and citations as the benchmark for measuring research impact as the sole measure. Thus, according to Anderson et al. (2017), an impactful researcher should be evaluated in terms of contribution that spans teaching, policy-work, consulting, institution-building and academic administrative duties, which are informed by research. This adopts a more multifaceted approach to impact and equates with the balanced academic model that has been adopted in many HEIs to encourage academics to be more outward facing. Yet what these debates indicate is that even the current measurement of research impact adopted in REF2014, a published work impacted outside academia is narrowly conceived. That is to say it only assumes linearity from published research to influencing practitioners, even though previous studies demonstrate the limited influence of much academic research (Kieser, Noclai and Seidl 2015). One explanation may be in the communication and language used by academics to reach wider publics, where the language diverges rather than converges on the audience needs. With these issues in mind, attention now turns to tourism rigour and relevance.

2.4.2: Research impact in tourism: Rigour and relevance

A common theme in each avenue of impactful research is that there is a disconnect, between the knowledge produced by academics and consumed by practitioners (Jackson, Schuler and Jiang 2014), and in fact this could be widening. So, a related and powerful conclusion is that tourism scholarly impact is depicted in terms of an internal exchange within its domain. This internal focus normally considers journal evaluation techniques such as journal impact factors, including the H-index, SJR, SNIP and Eigenfactors (Mingers, and Yang, 2017). Despite, prior literature considering impact beyond the internal approach and reaching out to the external perspective, it remains a dilemma for academics and practitioners.

Academic journals' role in knowledge transfer feature in prior studies (Frechtling, 2004). Indeed, the dissemination and sharing of knowledge between academics and practitioners remains rather problematic (Hardy, Vorobjovas-Pinta, and Eccleston, 2018; Walters, and Ruhanen, 2019; Xiao, and Smith, 2007). Yet, one of the most useful inputs in an innovation process is that of knowledge (Cooper, 2006; Hjalager, 2010; Hoarau and Kline, 2014; Shaw and Williams, 2009). In this context, academics have raised concerns about the paucity of influence of academics in strategic planning practice (Phillips, and Moutinho, 2014; Roper, and Hodari, 2015). Various attempts to disseminate academic research in tourism to a wider audience have had limited effects including the most notable examples being the Australian Collaborative Research Centre in tourism (now defunct), the Canadian example of Tourism Intelligence in Quebec and former Tourism Intelligence Scotland all of which have had varying levels of academic input to industry guides and research dissemination.

Debates around rigour and relevance continue, and varying research streams and outputs continue to evolve (Khan, 2019; Sainaghi, Phillips, Baggio, and Mauri, 2019; Vong, 2017). Several questions remain unanswered, and the motivation of some debates will be considered.

For example, The *Journal of Policy Research in Tourism, Leisure and Events* raised the question – "Does relevance matter in academic policy research? (Dredge 2014). Examining what is academic policy research and what does the term relevant actually mean, led to a flurry of responses. First, academic policy research includes a broad range of approaches, but Dredge concludes that relevance does not matter, communication does. The latter comment was picked up by Thomas (2014). Vehemently Thomas (2014) questions the contributions made from universities and academics. Acknowledging the changes from times of the modern university, which were in part to help society attain a higher level of intellectual life; Thomas is of the opinion that contemporary universities attempt to position themselves, but are unable to offer anything impactful, or distinctive. Thomas and Ormerod (2017) assessed the extent to which academic research (at the individual level) influenced policy and practice. Their study questioned why do universities and academics exaggerate impact, or put more crudely waste their time pursuing the impact agenda? (Thomas, 2018). Using a comprehensive dataset, Thomas (2018) set out to identify the variables that influenced impact to reveal their inter-relationships.

In the digitally disrupted environments modern universities operate in and the amount of noise created by digital communication, it is not surprising to find impact a difficult objective to achieve through research studies. Such difficulties may raise the debate that universities cannot do everything and must consider what to exclude from their provision. However, this does raise the issue of universities' responsibilities to its external stakeholders. This is rather pertinent as Britain's imminent departure from the European Union presents a number of opportunities and threats for the UK tourism small medium-sized enterprise (SME) sector as recently reviewed in key publications[7]. As a response of the threats posed by BREXIT, the tourism sector deal is being closely monitored and actions to mitigate the effects are being worked on by the government to ameliorate some of the perceived negative consequences whilst enhancing the opportunities. Above all BREXIT is a potential 'tipping point' that requires the tourism sector to innovate to stay competitive, with the most obvious area being increasing its productivity from existing resources. The tourism sector deal seeks to boost productivity by 1%; deliver an additional 70,000 jobs; build the most competitive tourism market in Europe by 2025; increase the value of tourism to all regions of the UK, given current concerns about the geographical concentration of benefits in and around London. From a relevance standpoint, tourism scholars supported by public funds should be contributing to this by the development of knowledge which influences practice and policy more directly. We now focus on the methodology we adopted to address the research question.

3.0: Methodology

[7] Anon summarises all the recent research on the impact of BREXIT on the UK tourism sector in terms of costs and benefits which demonstrates the absence of academic debate in these analyses on profound policy issues.

Qualitative Comparative Analysis (QCA) is a set-theoretic method developed by Ragin (1987) and others to analyse the possible causal contribution of a set of factors to a particular outcome of interest. This method uses a configurational theory to assume some complex interconnection of predictor variables that are associated with each other in explaining some outcome of interest (impactful research). Whether these configurations are linked to the occurrence or not of an outcome is produced through a Boolean minimisation process that reduces the long complex expressions to a shorter more parsimonious expression. In other words, it is a process to identity the simplest set of conditions that result in these links (Ragin, 1987). The objective of this study is to examine the combination of research factors that constitutes a subset of the outcome of producing high impactful case studies within Tourism related studies by HEIs. While QCA focus on the kind of conditions, thus combinations of various factors that lead to a specific outcome, regression analysis focuses on the effect of a factor on an outcome (Lassala et al, 2016). This therefore brings a great advantage of QCA over regression. The use of fuzzy logic and fuzzy sets is a recent tool advocated and used by prior researchers in tourism studies (Fotiadis, Yeh, and Huan, 2016; Woodside, 2013; Woodside, 2014). QCA is better than traditional standard regression approaches, as it overcomes the limitations of net effect estimation which can be affected in low multi-collinearity situations.

There are two main variants of the QCA: the crisp-set QCA, csQCA and the fuzzy-set QCA, fsQCA. For crisp set, an element is either a member of a set or not. Hence, for the csQCA method each variable is assigned either 1 implying membership in the set or 0 for non-membership (Ragin, 2005). For example, an ICS submitted to REF2014 could be assigned 1 if it received a grant or 0 if it did not receive a grant. However, the fsQCA is an interval-level measurement considered to be more superior permitting scores within the interval between 0 and 1. A membership score of 1 indicates full membership as usual and any other scores that are close to one, such as 0.9 and 0.8 presumes a closer link to membership than non-membership. Similarly, a score closer to 0 is also considered more out of the membership than to be in the membership. Hence, a score of less than 0.5 implies that a case is more out than in the set and above 0.5 implies more in than out of the set. However, there is generally some ambiguity where the value is 0.5. Transforming variables from their original raw values into crisp or fuzzy variables is termed calibration. This according to Ragin makes the variable to conform to external standards and also making them superior to uncalibrated variables.

The QCA method of analysis involves the analysis of necessary and sufficient conditions to come up with an outcome of interest. The necessary conditions are said to be expected to produce the outcome of interest. The sufficient conditions are those conditions that would always produce the outcome (Elliot, 2013). This is analysed using the truth table. The truth table is a combination of all possible causal sets. The number of combinations that is possible is calculated using the formula 2^k, where k is the number of factors or causal factors. The cases are then assigned to the truth table rows. The fsQCA software built by Ragin and QCA package built into the R software are able to analyse this methodology. This study uses the

QCA package built into R and follow the user written guides by of Thiem and Dusa (2013), Thomann and Wittwer (2017) and Dusa (2018) for the QCA analysis.

3.1: Data sources

Data used for this study is obtained from the tourism and hospitality related ICS submitted to the REF 2014 available at https://www.ref.ac.uk/2014/. Although, there was a particular Unit of Assessment (UoA) for tourism and sports (UOA 26), there were not much that was specifically on tourism. Hence, we did a broad search of the entire database of ICS submitted. Tourism and hospitality were the key words that were used for the search. In total, 291 case studies were obtained, but on reading them many were not actually focussing specifically on tourism and hospitality. A painstaking effort was made to evaluate each of the 291 case studies using the REF3b submitted document to identify which ICS were actually focusing on impacts on tourism and hospitality. For each ICS the submission was read with emphasis on the sections, summary of the impact; underpinning research; details of the impact to ascertain the relevance of the ICS to tourism and hospitality. From this analysis, a sample of 77 case studies across 17 UoAs (Table 1) were finally selected to give a representative sample of subjects covered and scores received.

Table 1: Sample of ICS

UoA	*UoA*	*Frequency*
Biological Sciences	5	4
Earth Systems and Environment Sciences	7	2
Physics	9	2
Computer Science and Informatics	11	1
Architecture, Built Environment and Planning	16	3
Geography, Environmental studies and Archaeology	17	13
Business and Management Studies	19	5
Anthropology and Development Studies	24	1
Sport and Exercises, Leisure and Tourism	26	6
Area Studies	27	1
Modern Languages and Literature	28	6
English Language and Literature	29	10
History	30	8
Classics	31	4
Theology and Religious Studies	33	1
Art and Design: History Practice and Theory	34	3
Music, Drama, Dance and Performing Arts	35	4
Communication, Cultural and Media, Library and Information Management	36	3
Total		77

Each of the 77 case studies selected were also carefully read to obtain the information on factors that were to be used for the study. Interestingly, more than two thirds of the sample (51) were focused on cultural impact, with societal (16) and environment (8) respectively.

Political and technology impacts were only each mention once. There was no ICS with a focus on economic or legal impact.

Factors or variables obtained are presented in Table 2 below. We examined the existing theoretical and empirical research found in the literature on research impact metrics. Then selected the factors that could potentially influence the production of impactful research (Chowdhury et al. 2016; Kellard, and Śliwa, 2016). Some of the factors such as length of time in post by key researcher(s) were obtained from the institutional websites of authors, CV's or the LinkedIn profiles of authors when they were not available on the ICS REF3b document.

Table 2: Factors influencing impactful research

Variable name	Description
Number of outputs (NO)	Average number of underpinning research output listed to support each constitutional impact case study.
Percentage of journals (J)	Percentage of the underpinning research outputs represented by journal articles
Average listed grant (£k) (G)	Average listed grant amounts for each impact case study
Number of researchers (R)	Number of key researchers for each institutional impact case study
Length of time in post (years) for key researcher(s) (TM)	Average length of service for longest serving key researcher(s) for each impact case study (i.e. the length of time a key researcher has been working in the institution prior to REF2014)
Percentage of women key researchers (W)	Percentage of women key researchers for each impact case study
Public interaction (PR)	Case study stemming from primary interaction with public and non-profit organisations
National reach (N)	National reach of case study whether the ICS had a national influence

Sources: Kellard et al. (2016) and Chowdhury et al. (2016)

For the dependent variable which is the impact score, the school level impact score was obtained. This involved weighting scores obtained for each star ratings obtained. Impact case studies were scored from a range 4* (Outstanding impacts in terms of their reach and significance.) to 1* (Recognised but modest impacts in terms of their reach and significance). Some were also scored 0* thus unclassified (The impact is of little or no reach and significance; or the impact was not eligible; or the impact was not underpinned by excellent research produced by the submitted unit.). Using these weights, the scores for each weight obtained by each school were averaged to obtain an average grade point average (GPA) impact score. Using the GPA score produces some challenges as the study is on an individual case study level while the impact scores being used are on a school level. To substantiate the use of this school level GPA, a hypothesis or assumption was tested. The hypothesis is that, a school that scores high for research environment measure in REF2014 is likely to produce high impactful research. A research environment is measured in terms of "its 'vitality and sustainability', including its contribution to the vitality and sustainability of the wider discipline or research base" (REF, 2014).

A Pearson correlation test was first conducted between impact and environment. This produced a correlation coefficient of 0.71 implying a high positive association between the environment of a school and the impact of their case studies. Secondly, a scatter plot was done, this is shown in Figure 1 below. As in the correlation test, the scatter plot confirms a positive correlation between environment and impact. Further, the regression line reveals that an increase in the environment GPA by one percentage point increases the impact score by about 66 percent. Lastly, the R-squared value implies that the environment in which a school produces a case studies contribute to almost 51 percent of the impact that the case study generates. Given this overwhelming evidence, it is supportive to use each school's impact GPA score as a proxy for the individual case studies impact GPA scores.

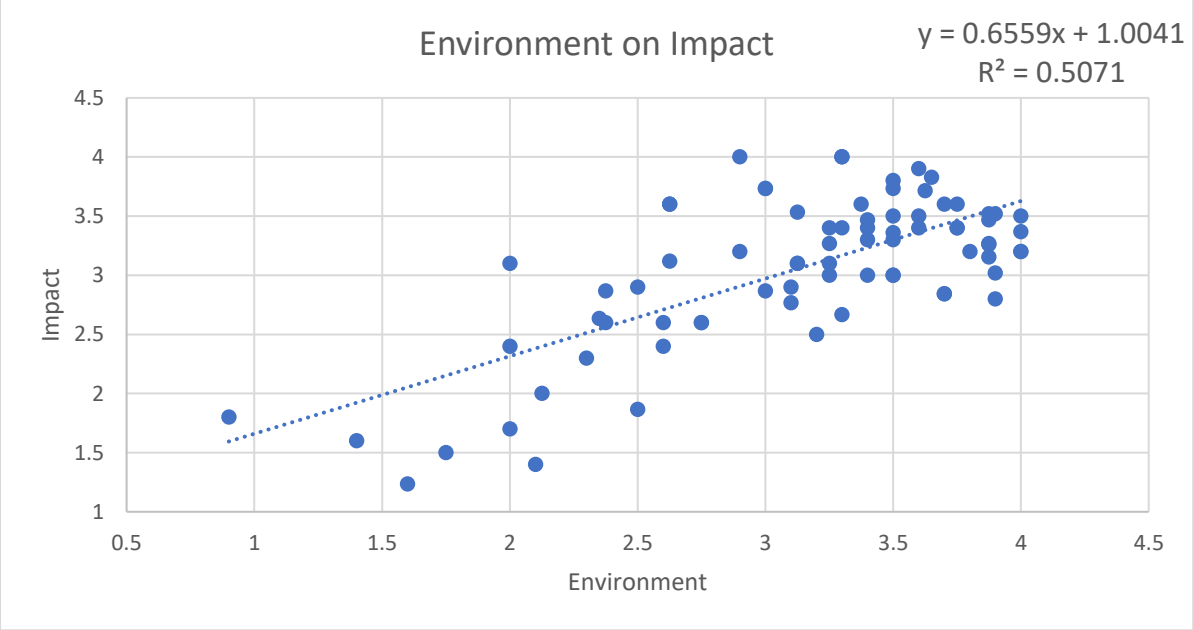

Figure 1: Relationship between environment and impact (plotted using excel)

The variables in the data were calibrated to make them appropriate for the QCA analysis. The study adopted a fuzzy set analysis although some of the variables; PR, N, J TM and IM were calibrated into a crisp form. However, as the dependent variable and the rest of the independent variables were calibrated into fuzzy sets, the study fits into a fuzzy set method of analysis (Ragin, 2005). The calibration of each variable was done through a careful consideration of each variable using theory and empirical consideration. The fuzzy set used the three-value fuzzy set calibration which also applied the logistic function and values of 0.05 for full non-membership threshold and 0.95 as the threshold for full membership and finally a linear function to transform the raw data into a set.

4.0: Data Analysis

4.1: Test for necessity

The analysis tested for any conditions that were consistent with being necessary for the outcome of achieving a high impact case study score. Using 0.8 as the threshold for the coverage cut-off, below which the necessary conditions are deemed trivial the results from the analysis of the necessary conditions are presented in Table 3. The table presents 46 necessary solutions. Lower cases of the variables in the results show the negation of the variable. The first combinations (PR+N+R) implies that having a public interaction or national reach or larger research team is necessary for having a high impactful research case study.

Table 3: Necessary Condition Table

		inclN	RoN	covN
1	PR+N+R	1.000	0.000	0.856
2	PR+N+TM	1.000	0.000	0.856
3	PR+g+R	1.000	0.000	0.856
4	PR+g+TM	1.000	0.000	0.856
5	PR+g+W	1.000	0.000	0.856
6	pr+R+TM	1.000	0.086	0.867
7	PR+r+TM	1.000	0.005	0.857
8	PR+R+w	1.000	0.000	0.856
9	PR+TM+w	1.000	0.005	0.857
10	N+R+TM	1.000	0.000	0.856
11	g+R+TM	1.000	0.000	0.856
12	R+TM+w	1.000	0.000	0.856
13	PR+n+J+g	1.000	0.000	0.856
14	PR+N+J+G	1.000	0.017	0.858
15	PR+n+J+r	1.000	0.040	0.861
16	PR+n+J+w	1.000	0.040	0.861
17	PR+N+J+W	1.000	0.000	0.856
18	PR+n+r+W	1.000	0.000	0.856
19	PR+NO+G+w	1.000	0.011	0.857
20	PR+J+G+r	1.000	0.056	0.863
21	PR+J+G+w	1.000	0.056	0.863
22	PR+J+r+W	1.000	0.000	0.856
23	n+J+g+TM	1.000	0.001	0.856
24	N+J+G+TM	1.000	0.001	0.856
25	N+g+R+w	1.000	0.000	0.856

```
26  n+g+TM+w        1.000  0.001  0.856
27  PR+n+no+G+r     1.000  0.100  0.869
28  PR+n+NO+G+r     1.000  0.005  0.857
29  PR+n+no+G+w     1.000  0.100  0.869
30  PR+n+j+G+r      1.000  0.066  0.864
31  PR+n+j+G+w      1.000  0.066  0.864
32  pr+n+J+TM+W     1.000  0.006  0.857
33  PR+n+G+r+tm     1.000  0.100  0.869
34  pr+n+G+TM+W     1.000  0.086  0.867
35  PR+n+G+tm+w     1.000  0.100  0.869
36  pr+j+G+R+W      1.000  0.111  0.870
37  pr+J+G+TM+W     1.000  0.006  0.857
38  n+J+g+r+w       1.000  0.000  0.856
39  N+j+G+R+W       1.000  0.011  0.857
40  n+J+r+TM+W      1.000  0.000  0.856
41  n+G+r+TM+W      1.000  0.000  0.856
42  J+G+r+TM+W      1.000  0.000  0.856
43  pr+n+no+G+R+W   1.000  0.077  0.866
44  pr+n+NO+G+R+W   1.000  0.029  0.860
45  pr+n+J+G+R+W    1.000  0.005  0.857
46  pr+n+G+R+tm+W   1.000  0.020  0.859
-------------------------------------
```

4.1.1: Testing for sufficiency

A truth table was generated in order to be able to identify the configurations that could be considered as sufficient conditions, thus the conditions that always leads to the outcome of interest. This is shown in Table 4. Each row in the table shows a configuration that corresponds to one or more cases, thus case studies in the dataset. The columns also display the presence or absence of each condition or factor in each configuration. Hence, a value of 1 indicates the presence a high level of that condition and a 0 for the presence of a low level of that condition. A consistency threshold of 0.8 was chosen above which it is deemed that the configuration is consistent with being sufficient for the outcome of interest to occur.

Table 4: Truth Table

```
  OUT: output value
    n: number of cases in configuration
 incl: sufficiency inclusion score
  PRI: proportional reduction in inconsistency
```

	PR	N	NO	J	G	R	TM	W	OUT	n	incl	PRI
248	1	1	1	1	0	1	1	1	1	5	1.000	1.000
255	1	1	1	1	1	1	1	0	1	5	1.000	1.000
231	1	1	1	0	0	1	1	0	1	3	1.000	1.000
187	1	0	1	1	1	0	1	0	1	2	1.000	1.000
252	1	1	1	1	1	0	1	1	1	2	1.000	1.000
48	0	0	1	0	1	1	1	1	1	1	1.000	1.000
55	0	0	1	1	0	1	1	0	1	1	1.000	1.000
67	0	1	0	0	0	0	1	0	1	1	1.000	1.000
128	0	1	1	1	1	1	1	1	1	1	1.000	1.000
132	1	0	0	0	0	0	1	1	1	1	1.000	1.000
149	1	0	0	1	0	1	0	0	1	1	1.000	1.000
163	1	0	1	0	0	0	1	0	1	1	1.000	1.000
167	1	0	1	0	0	1	1	0	1	1	1.000	1.000
171	1	0	1	0	1	0	1	0	1	1	1.000	1.000
203	1	1	0	0	1	0	1	0	1	1	1.000	1.000
207	1	1	0	0	1	1	1	0	1	1	1.000	1.000
244	1	1	1	1	0	0	1	1	1	1	1.000	1.000

```
253  1  1  1  1  1  1  0  0      1      1    1.000 1.000
256  1  1  1  1  1  1  1  1      1      1    1.000 1.000
247  1  1  1  1  0  1  1  0      1      3    0.982 0.981
175  1  0  1  0  1  1  1  0      1      1    0.966 0.933
131  1  0  0  0  0  0  1  0      1      1    0.921 0.882
191  1  0  1  1  1  1  1  0      1      4    0.888 0.871
192  1  0  1  1  1  1  1  1      1      13   0.884 0.876
183  1  0  1  1  0  1  1  0      1      3    0.868 0.838
184  1  0  1  1  0  1  1  1      1      3    0.863 0.836
176  1  0  1  0  1  1  1  1      1      1    0.808 0.769
168  1  0  1  0  0  1  1  1      0      2    0.772 0.701
 56  0  0  1  1  0  1  1  1      0      1    0.761 0.587
182  1  0  1  1  0  1  0  1      0      1    0.227 0.194
120  0  1  1  1  0  1  1  1      0      1    0.025 0.000
241  1  1  1  1  0  0  0  0      0      1    0.004 0.000
```

4.1.2: Parsimonious solutions

A logical minimisation process also called the Boolean minimisation is performed to obtain the solution(s) of consistently sufficient configurations. What this implies is that the minimisation process performs a pairwise comparison of configurations that have similar outcomes but differ in one other condition (Verweij, 2015). There are three methods of minimising a truth table, these include conservative/complex solution, parsimonious solution and intermediate solution. This study adopts the parsimonious solution method as it uses a less conservative approach over the empirical evidence and the results are also easier to interpret. The parsimonious solution includes the logical remainders, where empty truth tables rows are included in the analysis as these could act as potential counterfactuals that could be used to minimise the observed configurations. Results from the parsimonious solution are presented in Table 5.

Table 5: Parsimonious Solution of the Truth Table

Solutions	Raw Coverage	Consistency
Grant (G)	0.550	0.888
Public interaction (PR) * Percentage of journals (J) * Length of time (TM)	0.603	0.924
Number of outputs (no)	0.189	0.953
Percentage of journals (j) * Number of researchers (r)	0.122	0.958
Number of researchers (r) * Length of time (TM)	0.182	0.922
Number of researchers (R) * Percentage of women (w)	0.391	0.921
Length of time (TM) * Percentage of women (w)	0.470	0.909
M1: G + PR*J*TM + (no + TM*w) => IM	0.956	0.903
M2: G + PR*J*TM + (j*r + R*w) => IM	0.952	0.906
M3: G + PR*J*TM + (r*TM + R*w) => IM	0.954	0.904

The results show seven configurations linked by the logical relation OR (+) to make up three parsimonious solutions (M1, M2 and M3) found after the estimation. Generally, this suggests that there are several conditions that can influence the impact of a case study. For each configuration, upper cases of a condition of factor imply the presence or greater influence of that factor within the configuration and a lower case implies the absence or less influence of a factor to achieving an impactful research. The seven configurations obtained are made up of coincidentally seven conditions which includes Grant (G), Public interactions (PR), Journal

percentage (J), Length of time in post by key researcher(s) (TM), Number of researchers (R) and Percentage of key female researchers (W). As can be observed some of the configurations are made up of only one condition.

The first configuration is made up of only one condition, which is the presence of Large Research Grant (G). This implies that a case study that obtains a large grant is sufficient enough to produce a high impactful research. The next configuration is made up of three conditions; p
Public interaction (PR), High percentage of journal (J) and Length of time in post by key researcher (TM). Hence, high level of public interaction during the research process combined with high volume of journal publications and also having a key researcher who has spent more time in his/her current position is sufficient enough in producing a high impactful research. The rest of the configuration may be quite controversial or are counterintuitive. For instance, the third configuration which is also made up of only one condition suggests that less research output produces high impactful research. The fourth is a combination of low journal output and low number of researchers. Next is low number of researchers and length of time of key researchers in post. The sixth implies a high number of researchers and low percentage of key female researchers and the last configuration is longer time of key researcher in current post and low percentage of key female researchers.

Table 5 also presents the consistency or inclusion scores (incls) which demonstrates how much each causal combination or configuration results in the outcome. The consistency score ranges between 0 and 1. Generally, a high value implies that the causal combinations are highly consistent and a lower score implies a low consistency or low inclusion. In other words, a high consistency score implies the configuration is sufficient to result in the outcome. From the table, each configuration has a high value of inclusion or consistencies score with the least value being 0.888 for Grant. For the solutions or configurations is it seen that all consistency scores are above 0.9 also implying very high consistency.

The raw coverage (covS) of each configuration are also shown in the table. The coverage is similar to the idea of the R-squared in the regression model. Therefore, this shows how much of the outcome, impact score, is explained by the configurations or solutions. The results reveal that apart from the first two configurations (G and PR*J*TM) that have coverage of above 0.5 the rest of the configuration have low coverage of below 0.5. The results therefore show that the most compelling configurations that could contribute to the outcome is the first two, that is Grant on its own and the configuration of Public interaction, High percentage of Journal Publication from output and Length of time spent in current position by key researchers (Table 5).

5.0: Research Findings

5.1: Theoretical implications

In this paper we have drawn on the academic literature in arguing that a shift in tourism academic research needs to take place if researchers are to grasp the current paradigm of impact that is emerging in marketised university systems in some countries (Anon, in press). We firmly believe that the "old game" has been replaced by the "new game". However, we acknowledge that universities were originally created in part to help society attain a higher level of intellectual life (Annan 1999; Boyer et al 2013; Thomas, 2014), but now feel that there is a social responsibility to public value. Each of the core supply and demand drivers facing global higher education, technology and the changing values of stakeholders, will shape and constrain tourism research. For REF2021, there needs to be greater re-framing of tourism research impact, as evidenced through public value. Brewer (2013) supports such views, as this approach suggests the need for changes within the academic world rather than only between the university and wider society. Concepts such as – marketisation, managerialism, audit accountability, entrepreneurialism, competitive individualism, rating and ranking performance, and internationalisation are now part of university life (Smyth, 2017) although we do not make any value judgement here on whether these changes are beneficial for universities and their stakeholders; this point opens a wide range of interpretations depending upon one's political or philosophical stance. Interestingly, university leadership teams have embraced such concepts without rigorous critique and contestation (Smyth, 2017) as they have had these systems of accountability imposed upon them and they are malleable through consultation that has been the hallmark of university life and internal management systems through it hallmark - collegiality. The new paradigm of marketisation has meant external accountability and competition between HEIs (see Anon, in press for a detailed review of this issue in relation to organisational climate). This in part has led to nuanced efforts to explore ambiguities, contradictions and paradoxes, in research evaluation and measurement systems (Irwin, 2019).

Our findings illustrate that the most compelling configurations that could contribute to a good outcome in REF impact terms is holding a publicly-funded research grant, the configuration of public interaction (i.e. public engagement), a high percentage of journal publication from the grant funding as output and length of time in current position by key researchers to help establish longevity in the impact through stability and consistency in the research focus. Intriguingly, that period of time is a much longer time horizon than many research grants and whilst there may be exceptions where serendipitous impact has occurred in a short time horizon this is not the norm.

The ICS acts as a mechanism for academics to showcase where their influence occurs, beyond mere disseminating activities such as events, and conferences. Impact activities can include spin outs, patents and license agreements; business/industry collaboration or consultancy; government activity. In our sample of tourism ICS, we observe multiple impacts and evidence. ICS were submitted across many university schools/departments and in some cases were submitted by multidisciplinary teams of researchers. These impacts were prominently cultural, societal, and environment, which reflect the representation of 17 UoAs. The business and management (UoA 19) only had five submissions, which may account for the limited number of ICS with a focus on economic impact. A wide range of stakeholders

were influenced across the globe with evidence from public engagement varied in terms of being impactful.

As previously mentioned, the tourism sector needs to innovate to stay competitive. Tourism organisations need to do more with less resources. The UK Government's tourism sector deal seeks to boost productivity by 1%; deliver an additional 70,000 jobs; build the most competitive tourism market in Europe by 2025; increase the value of tourism to all regions of the UK. Moreover, institutional funding is linked in part to research performance, a move which places greater pressure on academics to contribute by providing the knowledge that can enhance economic and environment performance. One of the aims of this paper is to focus on the apparent disconnect between ICS outputs and the economic priorities of the UK government. There is of course a long tradition in the debate of rigour versus relevance, but our observations are that many ICS possess rigour based on the testimonials they received. However, perhaps the primary intention now is that the focus should be on how relevant the ICS' are and do they align with the economic needs of the global marketplace. It was noticeable that with technology being a significant disrupter in the tourism industry, this was only a feature of a single ICS. In terms of implications for future research, a number of avenues are worthy of enquiry. In assessing the differing research themes, questions remain unanswered such as (1) what was the precise motivation for the ICS?; (2) what are the contributions that they really want to make?; (3) what is the rationale for academics to locate their research outputs? (4) what was the actual magnitude of the impact?

5.2: Policy implications

Giddens (1998) sentiments, when considered in the context of the REF and ICS, reinforce additional stakeholder aspirations, especially from the government for business and management institutions, by squeezing the HEI asset harder to get additional outcomes. Obviously, it is up to the management team of institutions, and those responsible for the provision of tourism academic outputs to articulate and implement their strategies, but a failure to be relevant in a business context, dilutes their voice at a national level. The three key points of the UK *National Industrial Strategy* (Department for Business, Energy and Industrial Strategy 2017a) (developing strengths and excellence in future; closing the gap on productivity regionally and sectorally; making the UK more competitive and a place to start a new business) sets out of some of the grand challenges for business and management institutions to engage with. Subsequent studies such as the *Made Smarter Review* Strategy (Department for Business, Energy and Industrial Strategy 2017b) illustrate the significance of these challenges and opportunities for the UK economy, which some commentators have described as heralding a Fourth Industrial Revolution (referred to as Industry 4.0 based on digital, physical and biological technologies) as well as the impact of disruptive technologies impacting business practices.

Tourism academics could use ICS to perform an intermediary type role in regional activities and help shape regional solutions in Industry 4.0, especially when aligned with the key pillars of the National Industrial Strategy. These include: – investing in science, technology and research; developing skills, upgrading infrastructure; supporting businesses to start and grow;

improving procurement; encouraging trade and investment; developing affordable energy and clean growth; cultivating world leading sectors; driving growth across the country; creating the right institutions to bring together sectors and places (Department for Business, Energy and Industrial Strategy 2017a). The tourism ICS in our sample, have research activity that span many of these themes, notably cultural, societal and environment, but economic and technology are vital too. The tension between academia and practitioners are not helped by the need for responsive and agile deployment of resources to build stakeholder relationships that may often be at short notice and be serendipitous. Criticism of speed and response rates to organisations requests to collaborate sometimes demonstrate these tensions.

6.0: Conclusion

This paper suggests that tourism ICS have primarily focused on attaining high quality scholarship and outputs but these are not enhancing the engagement agenda with business, with its emphasis on economic and technology impact. So, what are the implications for tourism ICS? Who are they serving? Who is driving the ICS agenda? Have business and management institutions turned ICS' into a bolt on academic activity perceived as another chore? These questions are all worthy of future investigation. There have been many theoretical debates about this schism between scholarship and practice which is not as evident in other disciplines and the sciences. Van de Ven and Heath (2007) suggest that the epistemological issues might be overcome with the engaged model of scholarship where rigour and relevance are more fully integrated. In this model, theory building and testing has equal weighting with problem formulation, problem solving and research design to address the current auto-referential system of research epistemologies in the business and management institutions and the status quo. It is clear that ICS require a more engaged scholarship model if tourism academics are to rebalance their research contribution beyond a narrow focus on cultural, societal and environment outputs.

What the ICS embodies is the engaged scholarship process for research development where the impact issue commences at the start of the research process and not retrospectively and aligns objectives with one of the grand challenges that governments are identifying. This does not mean that there is no scope for blue-sky type research, but tourism academics' need to adopt a portfolio approach to demonstrate their contribution to the broader impact agenda. In other words, we may be returning to era of knowledge transfer now formalised via journal outputs and a tracked and evidenced pathway. Rather than to adopt the short-term assignment style response that management consultancies would do, there are clear advantages to specialisation in key competencies around research and engagement that demonstrate excellence and help external stakeholders to understand what tourism academic research does and can offer them in a fast-changing business environment. Finally, we acknowledge that the ICS do not represent the universe of UK-based academics' impact work. The ICS have been carefully selected and packaged by heads of schools for the REF audit. We do speculate that the decision-making process that went into their selection may have provided a selective approach to maximise their ratings.

7.0: References

Aguinis, H., Suárez-González, I., Lannelongue, G. and Joo, H., 2012. Scholarly Impact Revisited. *Academy of Management Perspectives* 26 (2), 105-132.

Amara, N., and Landry, R., 2012. Counting citations in the field of business and management: why use Google Scholar rather than the Web of Science. *Scientometrics,* 93, 553–581.

Anderson, L., Ellwood, P. and Coleman, C., 2017. The Impactful Academic: Relational Management Education as an Intervention for Impact. *British Journal of Management*, 28 (1), 14-28.

Annan, N. 1999. *The Dons: Mentors, Eccentrics and Geniuses*. London: Harper Collins.

Anon

Anon (in press)

Benckendorff, P. and Shu, M.L., 2019. Research impact benchmarks for tourism, hospitality and events scholars in Australia and New Zealand. *Journal of Hospitality and Tourism Management, 38*, 184-190.

Benckendorff, P. and Zehrer, A. 2013. A network analysis of tourism research. *Annals of Tourism Research, 43*, 121-149.

Bornmann, L. and Marx, W. 2013. How good is research really?. *EMBO reports*, 14 (3), 226-230.

Brewer, J.D. 2013. *The public value of the social sciences: An interpretive essay*. A&C Black.

British Academy of Management 2015. The association of business schools list of elite journals (Press Release, Feb 26). Available at: https://www.bam.ac.uk/news/british-academy-management-press-release-association-business-schools-list-%E2%80%98elite%E2%80%99-journals [Accessed 16th May 2019]

Brown, R., & Carasso, H. 2013. Everything for Sale? The Marketisation of UK Higher Education. London: Routledge.

Boyer, E.L., Altback, P.G., & Whitelaw, M.J. 1994. *The Academic Profession: An International Perspective*. Princeton, N.J.: Carnegie Foundation for the Advancement of Teaching.

Chowdhury G, Koya K, Philipson, P., 2016. Measuring the impact of research: Lessons from the UK's Research Excellence Framework 2014. *PLoS ONE* 11(6)

Cooper, C. 2006. Knowledge management and tourism. *Annals of Tourism Research,* 33 (1), 47–64.

Deem, R. 1998. New managerialism and higher education. The management of performances and cultures in universities in the United Kingdom. *International Studies in Sociology in Education*, 8(1), 47-70.

Dusa, A. 2018. QCA with R: A Comprehensive Resource. Springer

Elliott, T. 2013. Fuzzy set qualitative comparative analysis. *Research Notes: Statistics Group, UCI*.

Fotiadis, A., Yeh, S.S. and Huan, T.C.T., 2016. Applying configural analysis to explaining rural-tourism success recipes. *Journal of Business Research*, *69*(4), 1479-1483.

Frechtling, D.C., 2004. Assessment of tourism/hospitality journals' role in knowledge transfer: an exploratory study. *Journal of Travel Research*, *43*(2), 100-107.

Garfield, E., 1979. Citation indexing: Its Theory and Application in Science, Technology, and Humanities. John Wiley, New York.

Gursoy, D. and Sandstrom, J.K., 2016. An updated ranking of hospitality and tourism journals. *Journal of Hospitality & Tourism Research*, *40*(1), 3-18.

Hall, C.M. and Page, S.J., 2015. Following the impact factor: Utilitarianism or academic compliance?. *Tourism Management*, *51*, 309-312.

Hall, C.M., 2011. Publish and perish? Bibliometric analysis, journal ranking and the assessment of research quality in tourism. *Tourism Management*, *32*(1),16-27.

Hardy, A., Vorobjovas-Pinta, O. and Eccleston, R., 2018. Enhancing knowledge transfer in tourism: An Elaboration Likelihood Model approach. *Journal of Hospitality and Tourism Management*, *37*, 33-41.

Hjalager, A.M., 2010. A review of innovation research in tourism. *Tourism management*, *31*(1), 1-12.

Hoarau, H. and Kline, C., 2014. Science and industry: Sharing knowledge for innovation. *Annals of Tourism Research*, *46*, 44-61.

Holmberg, K., Didegah, F., and Bowman, T., 2015. The different meanings and levels of impact of altmetrics. Accepted for oral presentation at the 11th International Conference on Webometrics, Informetrics and Scientometrics & 16th COLLNET Meeting, 26-28 November, New Delhi, India.

Huang, M. and Chen, D., 2017. How can academic innovation performance in university–industry collaboration be improved? *Technological Forecasting and Social Change* 123, 210-215.

Hughes, T., Webber, D. and O'Reagan, N., 2017. Achieving wider impact in business and management: Analysing the case studies from REF2014. *Studies in Higher Education* in press

Irwin, A., 2019. Re-making 'quality' within the social sciences: The debate over rigour and relevance in the modern business school. *The Sociological Review*, *67*(1), 194-209.

Jackson, S.E., Schuler, R.S. and Jiang, K., 2014. An aspirational framework for strategic human resource management. *The Academy of Management Annals*, *8*(1), 1-56.

Kellard, N.M. and Śliwa, M., 2016. Business and management impact assessment in research excellence framework 2014: analysis and reflection. *British Journal of Management*, *27*(4), 693-711.

Khan, M.A., 2019. A systematic assessment of gaps between academic research and industry participation in hospitality management discipline. *International Journal of Hospitality Management*, *82*, 82-90.

Kieser, A., Nicolai, A., and Seidl, D. 2015. The Practical Relevance of Management Research: Turning the Debate on Relevance into a Rigorous Scientific Research Program. The Academy of Management Annals, 9(1), 143-233.

Koseoglu, M.A., Rahimi, R., Okumus, F. and Liu, J., 2016. Bibliometric studies in tourism. *Annals of Tourism Research*, *61*, 180-198.

Lassala, C., Carmona, P., & Momparler, A. 2016. Alternative paths to high consulting fees: A fuzzy-set analysis. *Journal of Business Research, 69*(4), 1367-1371.

Manville, C., Guthrie, S., Henham, M.., Garrod, B., Sousa, S., Kirtley, A., Castle-Clarke, S. and Ling, T., 2015. Assessing impact submissions for REF 2014: An evaluation. *RAND Europe: Cambridge.*

McKercher, B., 2008. A citation analysis of tourism scholars. *Tourism Management*, *29*(6), 1226-1232.

Mingers, J. and Yang, L., 2017. Evaluating journal quality: A review of journal citation indicators and ranking in business and management. *European Journal of Operational Research*, *257*(1), 323-337.

Mulet-Forteza, C., Genovart-Balaguer, J., Mauleon-Mendez, E. and Merigó, J.M., 2018. A bibliometric research in the tourism, leisure and hospitality fields. *Journal of Business Research.*

Page, S. J., Hartwell, H., Johns, N., Fyall, A., Ladkin, A., & Hemingway, A. 2017. Case study: Wellness, tourism and small business development in a UK coastal resort: Public engagement in practice. *Tourism Management*, 60, 466-477.

Pendlebury, D., 2009. The use and misuse of journal metrics and other citation indicators. *Archivum Immunologiae et Therapiae Experimentalis*, 57(1), 1-11.

Penfield, T., Baker, M., Scoble, R. and Wykes, M., 2014. Assessment, evaluations, and definitions of research impact: A review. *Research Evaluation*, 23 (1), 21-32.

Phillips, P. and Moutinho, L., 2014. Critical review of strategic planning research in hospitality and tourism. *Annals of Tourism Research*, *48*, 96-120.

Poria, Y., Schwartz, Z. and Uysal, M., 2015. IF you can keep your head: The unintended consequences of the Impact Factor on tourism research. *Tourism Management, 51*, 300-302.

Ragin C., 1987. The comparative method. Moving beyond qualitative and quantitative strategies. University of California Press, Berkeley, Los Angeles & London

Ragin C., 2005. From fuzzy sets to crisp truth tables, URL http://www.compasss.org/wpseries/Ragin2004.pdf, COMPASSS Working Paper

Roper, A. and Hodari, D., 2015. Strategy tools: Contextual factors impacting use and usefulness. *Tourism Management, 51*, 1-12.

Sainaghi, R., Phillips, P., Baggio, R. and Mauri, A., 2018. Cross-citation and authorship analysis of hotel performance studies. *International Journal of Hospitality Management, 73*, 75-84.

Sainaghi, R., Phillips, P., Baggio, R. and Mauri, A., 2019. Hotel performance: Rigour and relevant research topics. *International Journal of Hospitality Management, 78*, 13-26.

Shaw, G. and Williams, A., 2009. Knowledge transfer and management in tourism organisations: An emerging research agenda. *Tourism management*, *30*(3), 325-335.

Smyth, J. 2017. *Toxic University*. London: Palgrave Macmillan.

Thiem, A. and Dusa, A., 2013. *Qualitative comparative analysis with R: A user's guide*. Springer, New York.

Thomann, E. and Wittwer, S., 2017. Performing fuzzy- and crisp set QCA with R: A user-oriented beginner's guide. URL: http://www.evathomann.com/links/qca-r-manual.

Thomas, J., O'Mara-Eves, A. and Brunton, G., 2014. Using qualitative comparative analysis (QCA) in systematic reviews of complex interventions: a worked example. *Systematic reviews*, *3*(1), 67.

Thomas, R. and Ormerod, N., 2017. The (almost) imperceptible impact of tourism research on policy and practice. *Tourism Management*, *62*, 379-389.

Thomas, R., 2018. *Questioning the assessment of research impact: Illusions, myths and marginal sectors*. Springer.

Times Higher Education, 2015. REF cost almost £250m, 13 July.

Verweij, S., 2015. Producing satisfactory outcomes in the implementation phase of PPP infrastructure projects: A fuzzy set qualitative comparative analysis of 27 road constructions in the Netherlands. *International Journal of Project Management*, *33*(8), 1877-1887.

Vong, F., 2017. Relevance of academic research to hospitality practitioners. *Journal of Hospitality & Tourism Education*, *29*(3), 116-128.

Walters, G. and Ruhanen, L., 2019. A market positioning approach to university–industry collaboration in tourism. *Tourism Recreation Research*, *44*(1), 103-115.

Wilsdon J.,Allen L., Belfiore E., Campbell P., Curry S., Hill S., et al. 2015. The Metric Tide: Report of the Independent Review of the Role of Metrics in Research Assessment and Management. http://www.hefce.ac.uk/pubs/rereports/year/2015/metrictide

Woodside, A., 2013. Moving beyond multiple regression analysis to algorithms: Calling for adoption of a paradigm shift from symmetric to asymmetric thinking in data analysis and crafting theory. *Journal of Business Research*, 66(4), 463–472.

Woodside, A., 2014. Embrace perform model: Complexity theory, contrarian case analysis, and multiple realities. *Journal of Business Research*, 67(12), 2495–2503.

Xiao, H. and Smith, S.L., 2007. The use of tourism knowledge: Research propositions. *Annals of Tourism Research*, *34*(2), 310-331.