

The importance of international collaboration in transport research: a comparative study of two networking events in Brazil and Thailand

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Abstract. The importance of international collaboration in transport from an early career researchers' perspective is discussed in this study. Currently, there is a limited literature looking at this issue and its benefits. A comparison of feedback collected on completion of two transport workshops, delivered in Brazil and Thailand, is analysed. The results revealed some differences between the UK and local respondents' approaches to international collaborations as well as their intercultural skills and post-event initiatives. The outcomes send a message to decision makers, potential sponsors and funders of transport research activities that such initiatives are a foundation for planning future education and international research relationships.

Keywords: Transport research, international collaborations, early career researchers.

INTRODUCTION

Transport education and research is an area investigated by various academics around the world. As each country is different in terms of economy or geography, and many other aspects, their transport systems face different challenges and require unique solutions. However, many principles of transport systems are common in each case and can be shared between international experts. Therefore, creating a platform for international collaborations in transport research is important, as it allows professionals and academics to exchange their knowledge and plan education and research activities. Outcomes of these international collaborations have a potential to, in a short-term, benefit careers of Early Career Researchers (ECRs) and, in a long term, lead to improvements in local transport systems.

The paper first presents a literature review on international collaborations and their benefits. Next, it explains methods used for data collection and presents

analysis of results and findings. Finally, conclusions and recommendations addressed to funding agencies and research community are listed.

LITERATURE REVIEW

It is well recognised that international collaborations in academia bring many benefits to students and academics involved, from knowledge sharing to tackling global challenges to cultural exchanges to soft skills' upgrade. Adams and Gurney (2016) studied research collaborations between countries based on numbers of scientific papers published. They analysed data available at Thomson Reuters Web of Science™ and focused on the authors' details collected over the last three decades. Analyses of their results revealed that in the UK "almost all the growth in output [research publications] of the last

three decades has been produced by international partnerships” (Adams and Gurney, 2016:2). Moreover, they also found that papers with international co-authors have a greater citation impact than the UK-authors only papers.

Scientific publishers also recognize the power of international collaborations and started producing guidance for academics on how to effectively engage with colleagues from other institutions and countries. For example, Elsevier published a post by Shaikh (2015), where the author guides scholars on useful arrangements with research collaborations (RC) with others. He distinguished two types of RC:

- Vertical research collaboration (VRC) – requires less effort, single-discipline research, narrows the focus of research, an example is a student-supervisor relationship;
- Horizontal research collaboration (HRC) – requires more effort, interdisciplinary based, which helps to widen research horizons by engaging with researchers from other fields.

An example of a horizontal collaboration in transport education was an international summer school in rail and logistics in the UK, which for three consecutive years attracted students and professors from various European Union countries and beyond. This summer school initiative, which in addition to 1-week lectures included a 1-week research component, has been very positively evaluated by organisers and participants (Fraszczyk *et al.*, 2015a; Fraszczyk *et al.*, 2015b; Fraszczyk *et al.*, 2016). Analysis of feedback revealed that students who attended the summer school received academic benefits such as new knowledge, e.g. in multimodal transport and rail infrastructure topics, as well as improved their non-technical skills, e.g. English language and communication (Fraszczyk *et al.*, 2015a). Also, a great majority of students believed that participation in the summer school would positively influence their careers in the future (Fraszczyk *et al.*, 2016).

International collaborations create excellent opportunities for soft skills development and joint ventures including joint publications, co-authoring and co-editing books and special issues. Examples include: Marinov and Ricci (2012), Marinov 2013, Marinov *et al.* (2013), Marinov (2014), Marinov and Fraszczyk (2014), and Mysore *et al.* (2019).

In 2017 Opinion Leader published a report focused on the importance of international collaboration and mobility in research (Opinion Leader, 2017). The document presented outcomes of a study with fellows and grant recipients of the four UK national academies: the Royal Society, British Academy, Royal Academy of Engineering and the Academy of Medical Sciences. The focus of the study was on quantity and quality of international collaborations and mobilities (visits and placements) experienced by researchers from the UK and partner

countries. The experience of 1,286 respondents who participated in a survey and interviews showed that an overwhelming majority (95%) have been involved in at least one international collaboration in the past five years. However, majority in the 5% who did not engage internationally were in the 70+ age category, although in the postdoctoral category there were still 13% of respondents with a similar (lack of) experience. Overall, the study sample included 21% of respondents under the age of 40, 56% of respondents between the age of 40 and 69, and 23% of respondents age 70+. Most of the analyses presented in the report focused on international collaboration experience of an aggregated age group without targeting a specific age or career-stage group.

Inspired by the above literature, this paper looks specifically at a Researcher Links (RL) initiative addressed to early career researchers (ECR) from the UK and a partner (developing) country. More specifically, it looks at two RL events held in Brazil (BR) and in Thailand (TH) co-funded by Newton Fund, both focused on transport research issues and addressed to ECRs. Analyses of the feedback data collected at the BR event were already presented (Dawson *et al.*, 2019) and this paper offers an extension of the previous analyses. Therefore, the aim of the paper is to study feedback on two transport RL ECRs networking events with an attempt to quantify outcomes in order to inform decision makers, potential sponsors and funders of transport research activities about benefits such events bring to ECRs, their institutions and transport research community as a whole.

METHODOLOGY

Two RL networking events were investigated: the first took place in BR in 2017 and the second in TH in 2018. Two data collection methods were used in the study: post-event feedback form and a follow-up communication.

Feedback form

A feedback template provided by the events' funders was distributed at the end of each event. The form was divided into five sections: About You, Collaboration, Your Research, About the UK and This Workshop. All but the first section were related to participants' research interests, their perception and importance of international academic collaborations and self-assessment of their own abilities to be involved in such initiatives.

Follow-up

In June 2016 all the participants of the two events were contacted again to follow-up with initiatives, if any,

Table 1. Respondents age and gender [%].

Age	BR		BR Total	TH		TH Total
	Male	Female		Male	Female	
24-34	23.1	7.7	23.5	15.5	22.0	37.5
35-44	38.5	11.5	50.0	40.0	10.0	50.0
45+	19.2	0.0	26.5	12.5	0.0	12.5
Total	80.8%	19.2%	100.0	68%	32%	100.0*

* two TH respondents did not report their age

originated after the events. It was a 6-month follow-up for the TH event participants, and a 12-month follow-up for the BR event participants.

ANALYSIS OF RESULTS

Data collected after the two ECRs' events, one in BR and one in TH, was then analysed and is displayed in the following sub-sections. The responses given by the two events' attendees are displayed on graphs and distinguished between the two locations to highlight differences, if any, in responses given. Each event was attended by ECRs from UK (approx. 50%) and the host country (approx. 50%). Therefore, where relevant, results are split between UK and non-UK participants, to emphasize differences between the sub-groups. Overall, the two events were attended by 34 ECRs each. The BR event attracted 11 UK and 16 BR ECRs while the TH event gathered 15 UK and 17 TH ECRs, where two UK ECRs attended both events.

Post-events feedback

Socio-economics

As both events were dedicated to ECRs, majority of attendees was expected to be 10 or less years from completion of their PhDs (or research time equivalent). Table 1 presents respondents' age and gender split at the two events.

The sample was divided into three age groups: 25-34, 35-44 and 45+, with half of the respondents in each of the samples being between 35 and 44 years old. Overall, the TH event sample was younger than the BR event sample. In terms of a gender split both events were dominated by males with only 32% vs. 19% of females at the TH and BR events, respectively.

The professional field of both events' participants was very similar with 'Engineering' category being the largest (20 vs. 24 ECRs attending the BR and the TH events, respectively). The remaining participants came from disciplines such as business, social sciences, IT and others. As the events were addressed primarily to ECRs, the great majority came from academia (21 BR vs. 28

TH) with only few representing private and government sectors in each sub-group. Table 2 presents more details.

Importance of active international collaborations

Results for BR and TH event participants are combined and displayed on Figure 1. All of the BR participants (100%) stated that it is 'very important' (score 5 on a 5-point Likert scale) to them to work with people from other countries and cultures. UK participants of the BR event also had a very positive opinion about importance of international collaborations with 4:6 split between score 4 (40%) and score 5 (60%), but overall slightly less positive than the BR respondents. For the TH event participants, collaborations with other countries and cultures are still important, but the split is different from the BR sub-sample. Just over half of TH ECRs (53%) stated that this issue was 'very important' (score 5) but 18% stayed 'neutral' (score 3). In contrast, majority of UK ECRs (67%) agreed that this issue is 'very important' (score 5) and only 12% were 'neutral' (score 3).

Overall, the results show that BR event sample, both BR and UK ECRs, were much more positive about international collaborations than TH sample. This finding could be linked with the existence of special international funding programmes in BR (e.g. Science Without Borders), supported by BR government in years 2011-2017. Many BR students and academic staff directly benefited from these programmes and had an opportunity to experience international exchanges and collaborations. Since 2014, when Newton Fund was launched in the UK, ECRs started experiencing similar international collaborations when UK funded programmes partnered with developing countries, including TH, and in partnership with local organisations started offering various opportunities to students and academics. However, in a transport field these opportunities in TH are still not very popular what is reflected in the TH sample responses.

Current international contacts

Overall, results show that majority of BR and TH ECRs currently have very little contact (scores 1-3 on a 5-point

Table 2. Respondents' professional field and sector represented [count].

Professional field	BR				BR total	TH				TH total
	University	Private sector	Government	NGO		University	Private sector	Government	NGO	
Engineering	17	2	1		20	22		2		24
Business	1				1	1	2			3
Social sciences	1				1	1				1
Environmental science						1				1
Physical science					0					
Mathematics				1	1					
IT	1				1	2				2
Other	1				1	1				1
Total	21	2	1	1	25*	28	2	2	0	32

* two UK participants did not state their professional field.

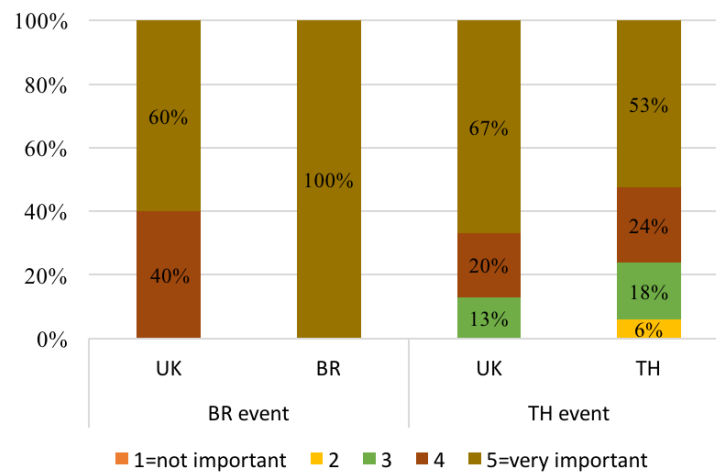


Figure 1. Importance of active international collaborations [%]. *one UK participant in the BR event did not state their professional field.

Likert scale, where 1 – the lowest and 5 – the highest) with their UK colleagues (86% vs. 78%, respectively). However, results displayed on Figure 2 show that, twice as many TH ECRs than BR ECRs reported that they currently have ‘very much’ (score 5; 7% vs. 12%) or ‘much’ (score 4; 7% vs. 12%) contact with counterparts from the UK. UK ECRs reported much better links with their UK colleagues with 27% of BR event attendees and 53% of TH event attendees declaring ‘much’ or ‘very much’ (score 4 or 5) contact, followed by low contact level confirmed by the remaining ECRs.

In terms of contact with academic colleagues from other countries UK ECRs are way ahead in comparison with BR and TH ECRs. Results displayed on Figure 3 show that between 18% (BR event) and 54% (TH event)

UK ECRs declared ‘much’ or ‘very much’ (score 4 or 5) current contact with international academics in comparison with 26% of BR ECRs and 29% of TH ECRs only. It is clearly visible that the amount of international academic contacts and interactions is very different for the ECRs from the UK and those from the two developing countries studied.

Confidence in own international collaboration abilities

UK ECRs in both samples are ‘confident’ or ‘very confident’ (score 4 or 5) with their abilities to collaborate (73% BR event vs. 94% TH event). Interestingly, BR

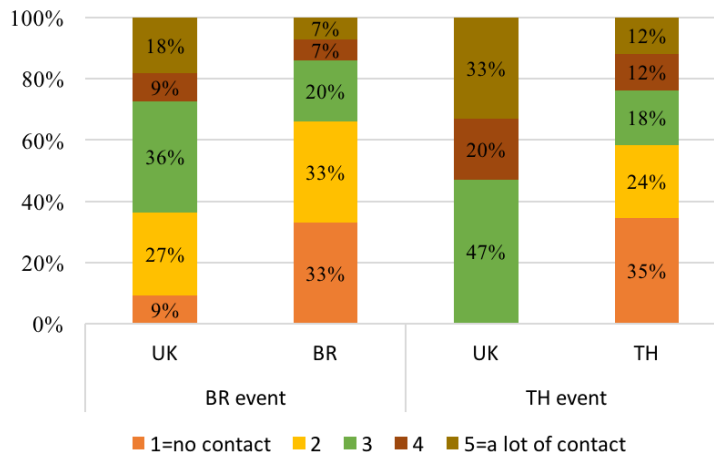


Figure 2. Amount of contact with colleagues from the UK [%].

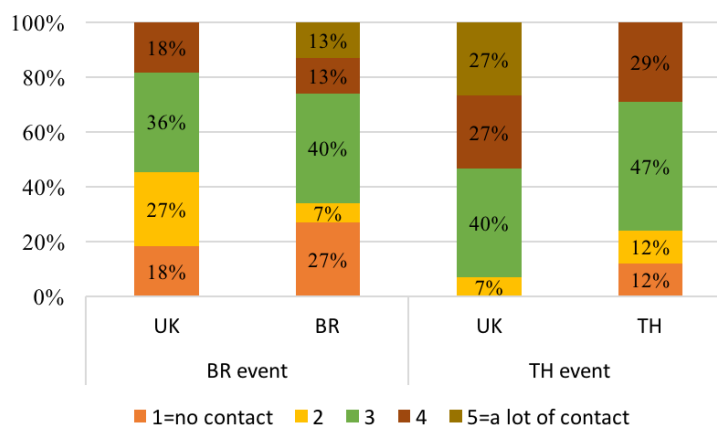


Figure 3. Amount of contact with colleagues from across the world [%].

ECRs self-assess their abilities much higher than their TH ECRs colleagues (80% vs. 53%), but overall over half of respondents in both samples is quite confident about their skills. Details are displayed on Figures 4 and 5.

Understating research strength of developing countries

Results displayed on Figure 6 clearly show that local ECRs had a much better understanding of their country's research strengths than their visiting ECR colleagues from the UK and this is somehow expected. Although majority of BR and TH ECRs were 'confident' and 'very confident' (score 4 and 5) with their understanding (80% vs. 77%), still the split for 'very confident' (score 5) was much higher for BR ECRs than their TH colleagues (67% vs. 12%). This could probably be explained by cultural differences with Brazilian culture encouraging more expressive and confident behaviour while Thai culture promoting humble behaviour. In contrast, UK ECRs were

not very aware of research strengths of the host countries, with those visiting BR reporting 46% confidence (4 and 5 scores) and those visiting TH expressing 27% (4 and 5 scores) confidence only.

Post-events follow-ups

All participants of the BR and TH events were approached to self-report new initiatives that occurred after the events. Collectively 17 activities that were initiated after the two events were reported. ECRs attending BR event reported 11 activities which occurred after the event and these included research placements, mobility grants, research projects and conference attendances.

Four participants of the TH event responded to the call and altogether reported six new initiatives which originated after the January 2018 event. Each of these initiatives involved a mix of UK and TH partners who did not know each other before the event. Table 3 shows

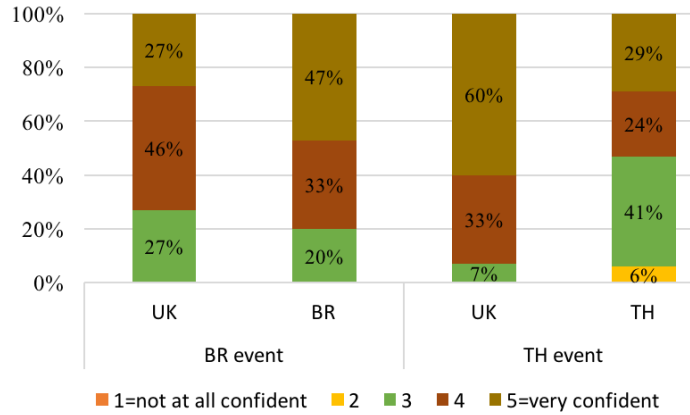


Figure 4. Respondents' confidence in their ability for active international collaboration [%].

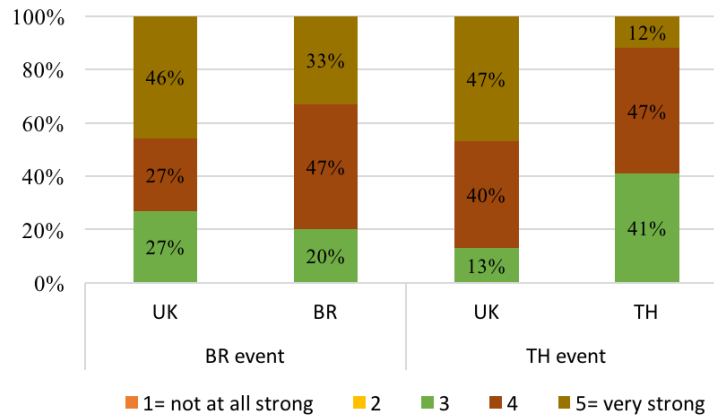


Figure 5. Participants' self-assessment of intercultural skills [%].

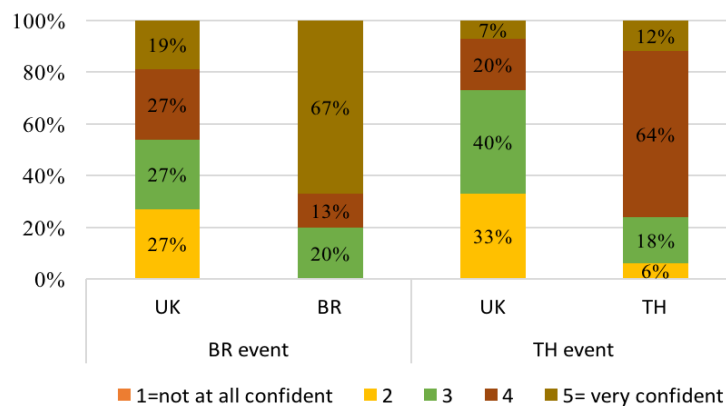


Figure 6. Participants' confidence in understanding developing countries research strengths [%].

details of the self-reported new initiatives.

What is interesting is that all the new activities self-reported by both samples involved international consortia (UK-BR and UK-TH) and none national partners' only

initiatives. On one hand that is a good sign as ECRs started new initiatives at an international level, which might evolve into long-term partnerships. However, more national activities would be encouraged and expected in

Table 3. List of new initiatives originated after the BR and TH events.

Partners	Action	Quantity	Fund/description
UK-TH	Mobility applications	2	Newton Mobility Grants
	Joint publication (this paper)	1	Post-events feedback paper
	Grant applications	3	Newton Fund Institutional Links
UK-BR	Mobility applications	3	Newton Mobility Grants
	Research projects	3	Various BR + UK
	Conference attendance	1	BR funding
	Visiting Fellowship	1	BR funding
	Joint publication	1	A chapter in a book
	Seminar event	2	BR funding

order to facilitate national networks of ECRs in transport.

CONCLUSIONS

The paper analysed feedback from two ECRs-oriented transport networking events which took place in 2017 in Brazil and in 2018 in Thailand. Each event attracted about 30 participants, where approx. half was represented by UK-based ECRs and the other half by host country based ECRs. Post-event feedback forms and follow-up communication were employed to collect data about participants' perception of importance of international collaborations and their own level of confidence in engaging with international partners.

Overall, the results revealed that UK ECRs were much more active in international collaborations than representatives of the two developing countries studied. This is somehow expected as the UK, as a developed country, has a long tradition of involvement in international research, in Europe and beyond. More recently, this involvement intensified thanks to additional research funding programmes, which focus their attention on developing countries. UK-based schemes, such as Newton Fund or Global Challenges Research Fund, accelerated the country's involvement with developing countries research built on (government) match-funding principles. Countries, such as Brazil or Thailand, collaborate with UK-based researchers and investigate developing countries' issues, which follow clearly specified (transport) priority areas. Although transport is rarely a priority area in itself, transport research often fits into categories such as resilient cities, mobility or infrastructure.

Interestingly, when BR and TH ECRs views are compared some striking differences in their opinions about international research can be identified. BR ECRs, most likely due to their culture and attitude, are more confident in their skills and capacity to collaborate internationally than their TH ECRs colleagues. The paper

provides a quantitative evidence of differences between transport ECRs from three different countries in terms of international collaborations and argues that more networking opportunities will benefit ECRs careers as well as their local communities.

RECOMMENDATIONS

Three main recommendations have been identified targeting specifically: funding agencies, (transport) ECRs and a research community overall.

Firstly, the outcomes of the study send a clear message to decision makers, potential sponsors and funders of transport research activities promoting international collaboration, at ECRs and other levels, that such initiatives are a foundation for future collaborations, which in a long-term are expected to lead to positive impacts on ECRs careers as well as positive impacts of their research outcomes, often focused on local challenges and communities. Such networking initiatives allow ECRs exchange knowledge with their international colleagues as well as benchmark their performance and inspire them to engage, learn from each other and plan future education and research activities together.

Secondly, the outcomes of the analysis show that ECRs that took part in one of the two events are already confident in their abilities and skills needed to collaborate with international academics. It is recommended to ECRs to get involved in activities targeting specifically this group of researchers as the benefits of participation are obvious: contact with international peers, potential for future joint activities and exposure to other cultures, in terms of heritage but also 'working culture' and a different (transport) perspective on research challenges. Also, it is recommended to keep a track of post-event activities initiated by the participants in order to measure long-term impacts.

Finally, the results of this study can be applied to other disciplines than transport, since benefits presented above

are transferable and measurable, at least in a short-term, as shown in the Results section.

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REFERENCES

- Adams J, Gurney KA (2016).** "The Implications of International Research Collaboration for UK Universities Research assessment, knowledge capacity and the knowledge economy." Digital Science. Report.
- Dawson A, Dacoreggio VBL, Blauensteiner B, Isler CA, Dias A, Asaff Y, Marinov M (2019).** "Evaluation of a Rail-Orientated Researcher Links Workshop". In: Fraszczyk, A. and Marinov, M. (Ed.) (2019) Sustainable Rail Transport. Proceedings of Rail Newcastle 2017:289-306.
- Fraszczyk A, Drobisher D, Marinov M (2016).** "Statistical analyses of motivations to participate in a rail focused extra-curricular activity and its short terms personal impacts". 7th International Conference on Operations and Supply Chain Management, 18-21 December 2016, Phuket, Thailand.
- Fraszczyk A, Dungworth J, Marinov M (2015a).** "Analysis of Benefits to Young Rail Enthusiasts of Participating in Extracurricular Academic Activities". Soc. Sci. 4(4):967-986.
- Fraszczyk A, Dungworth J, Marinov M (2015b).** "An evaluation of a successful structure and organization of an intensive programme in rail and logistics". 3rd UIC World Congress on Rail Training, April 2015, Lisbon, Portugal.
- Marinov M (2013).** Introduction: Handbook: An intensive Programme in Railway and Logistics. Res. Trans. Econ. 41(1):1-2.
- Marinov M (2014).** Editorial: introduction to group research projects developed within an intensive programme in railway and logistics. Transp. Probl. 9:5-7.
- Marinov M, Fraszczyk A (2014).** Curriculum development and design for university programmes in rail freight and logistics. *Procedia - Social and Behav. Sci.* 141:1166-1170.
- Marinov M, Fraszczyk A, Zunder T, Rizzetto L, Ricci S, Todorova M, Dzhaleva A, Karagyozev K, Trendafilov Z, Schlingensiepen J (2013).** A supply-demand study of practice in rail logistics higher education. *J. Transp. Literature* 7(2):338-351.
- Marinov M, Ricci S (2012).** Organization and Management of an Innovative Intensive Programme in Rail Logistics. *Procedia-Soc. Behav. J.* 46:4813-4816.
- Mysore K, Marinov M, Watcharejyothin M (2019).** Professional Rail Freight and Logistics Training Programme: A Case Study of Energy and Petrochemical Company in Bangkok, Thailand. In: Sustainable Rail Transport. Vol 3. Springer.
- Opinion Leader (2017).** "The role of international collaboration and mobility in research." Report. March 2017.
- Shaikh AA (2015).** "A brief guide to research collaboration for the young scholar. Working with other scholars can boost your profile, but some arrangements are more likely to lead to publication." <https://www.elsevier.com/connect/a-brief-guide-to-research-collaboration-for-the-young-scholar>, accessed February 21, 2019.