

## RESEARCH ARTICLE

# Tackling the gender biases in higher education careers in Pakistan: potential online opportunities post COVID-19

[version 1; peer review: 2 approved]

Maleeha Ashraf <sup>1</sup>, Gabriella Cagliesi <sup>2</sup>, Denise Hawkes<sup>3</sup>, Maryam Rab<sup>4</sup>

<sup>1</sup>Institute of Education, University College London, London, United Kingdom

<sup>2</sup>Economics, University of Sussex, Brighton, BN1 9SL, United Kingdom

<sup>3</sup>Economics, University of Greenwich, London, United Kingdom

<sup>4</sup>British Council, Islamabad, Pakistan

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## Abstract



Driven to improve the quality of higher education as an engine of growth and socio-economic development within Pakistan for 20 years, the Higher Education Commission (HEC) in Pakistan has focused on linking academics and professional services staff with their counterparts in various countries, including the UK, US, and Australia. In collaboration with the British Council, the PAK-UK initiative has been launched to offer deeper linkages between the academics and universities in the UK and Pakistan. This paper presents statistical analysis of data collected in a British Council project highlighting the gender inequalities of the current HEC strategy. The results suggest the potential for online opportunities to help close and amend this gender gap and improve higher education in Pakistan, and the PAK-UK initiative's role in contributing more broadly to the United Nations Sustainable Development Goals.

## Keywords

Gender inequality, developing economy, Sustainable Development Goals

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2. <b>Tatiana Fumasoli</b>  , University College London, London, United Kingdom		

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**Corresponding author:** Gabriella Cagliesi ([mgc25@sussex.ac.uk](mailto:mgc25@sussex.ac.uk))

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## Introduction

The [Higher Education Commission \(HEC\)](#) in Pakistan was launched in 2002 with the motto “Facilitating Institutes of higher learning to serve as an Engine of Growth for the Socio-Economic Development of Pakistan”. Over the past 20 years, the HEC has led the development of the higher education sector in Pakistan, with active support from the British Council, to improve the quality of higher education as an engine of growth and socio-economic development within Pakistan. One of the critical drivers for this improved quality has been creating or deepening links between academics and institutions in Pakistan, and global academic leaders and high-quality universities outside of Pakistan. This was initiated by encouraging local academics to engage with their counterparts in various countries, including the UK, US, and Australia. In 2019, the HEC and the British Council in Pakistan launched a joint programme, the [PAK-UK Education Gateway](#), to deepen the links between academics and universities in the UK and Pakistan. More recently, the HEC has announced collaborative research grants for joint projects between Pakistan and China which address the China-Pakistan Economic Corridor (HEC, 2021). This study uses data from [Hawkes & Rab \(2017\)](#) relating to a survey commissioned by the British Council of all academics in HEC registered universities, and focuses on examining some of the performance assumptions often associated with the preferential hiring and placement of foreign-qualified academics. We explore the survey aspects that focus on professional outcomes and connections established with domestic and international academic institutions. We highlight the gender inequalities of the current strategy to fund post-doctoral research and PhDs outside of Pakistan and point to the potential for creating an online scholarly community, using online conferences to help level the field and render the PAK-UK more gender-balanced in creating opportunities for collaboration.

Unfortunately, the Pakistani state and society neglect females’ education and those who fight and succeed despite the impediments are not rewarded and used efficiently. This attitude comes at a loss because, as widely recognized, highly educated females have a significant role in building human capital and overall socio-cultural and economic development. Amendments in higher education policies are needed to help women gain access to higher education, and in order to achieve a higher level of social recognition of their contribution to the development of a fairer and more sustainable society. These changes will put Pakistan more in line with the United Nations Sustainable Development Goals.

## Literature review and rationale of the research

Among developing countries, [Pakistan has the lowest female labour force participation rate, at 22%](#). Females work primarily in the home or on the farm. Their role is generally subordinate to the male, shaped by patriarchal forces across classes, regions, and rural/urban areas. As a result, a gender-biased criterion dictates the allocation of resources, opportunities, and rewards. Thus, even among highly educated women, labour force participation lags behind men: only 25% of women with a university degree are working. Several studies have uncovered the

impacts of the socio-economic and cultural hurdles that Pakistani women face before entering, during, and even after leaving higher education, and when they join professions and are exposed to dominant male culture. ([Shaukat & Pell, 2017](#)).

Pakistani girls are expected to marry early and work at home. Parents prioritize sons’ education as their old age social security policy and discourage or oppose females’ higher education. Cultural impediments and issues of female personal security, in public transport or on campus, deter girls from entering higher education institutions. ([Mehmood \*et al.\*, 2018](#)).

In addition to female education’s social aspects, such as gender discrimination, harassment and early marriages, other hurdles are at play once women enter higher education. These challenges range from insufficient support from the administration, lack of communication with an institution, male dominance problems, data collection problems, lack of Information Technology Tools, lack of financial support, lack of assistance by a supervisor, lack experience in supervisory responsibility faced by graduate and postgraduate female students compared to male students. ([Channar \*et al.\*, 2017](#); [Channar \*et al.\*, 2020](#))

Even those women who have fought and survived the system stereotypes and gender discrimination and made it through higher education find that the battle carries on. Using semi-structured interviews and thematic analysis, [Naz \*et al.\* \(2017\)](#) report that most women academics struggle to balance their responsibilities at work and at home due to a lack of support and facilities both at home and in the workplace.

Building on the work by [Morley & Stiasny \(2014\)](#) and [Morley & Crossoard \(2015\)](#), the British Council commissioned a survey of all academics in HEC registered universities to undertake a situational analysis of academic careers with a focus on careers for women. [Hawkes & Rab \(2017\)](#) presented the main findings from this extensive survey and detailed interview. This study uses data from [Hawkes & Rab \(2017\)](#) and focuses on examining some of the performance assumptions often associated with the preferential hiring and placement of foreign-qualified academics.

Despite the lack of a formal mentoring process in Pakistan for returning academics, foreign-qualified academics still perform better than those who completed their education and work in Pakistan. Comparative assessments of academic performance for faculty who attained their highest degrees (PhDs) abroad and at home were undertaken on various research outcomes (such as publication and global engagement) to determine whether there were any significant differences in favour of foreign-qualified academics in the sample population. The key outcome variables of interest include research network membership and access to research funding and the level of publication and collaboration networks.

Our study looked at various aspects of the academic career of a sample of Pakistani academics. We explored the intersectionality of gender, marital status and types of academic

qualifications with aspects and outcomes of the academic profession. In particular, we investigated if, compared to domestically qualified colleagues, the foreign-qualified academics were more successful in publishing, in accessing research funding, and being part of research networks.

## Data

The sample size of respondents to the British council questionnaires is 385 (58% females and 42% males). Their responses were cross tabulated according to various dimensions such as: gender, highest academic qualification, country of highest qualification, marital status, and level of appointment in academia, number of publications, number of collaborations, research

network membership, and access to research funding.. The main features of the sample are summarized in the [Table 1](#) below<sup>1</sup>

Descriptive statistics involving the mean, the median, and the standard deviation for the continuous variables were examined

<sup>1</sup> Ethical approval for the survey was obtained through the UCL Institute of Education as part of Maleeha Ashraf's doctoral programme of study. The data have been released by the British Council, Islamabad for work related to Maleeha Ashraf's thesis and subsequently by the publications under licence. Respondents were never obliged to answer the questions, though very few we contacted chose not to respond. Written consent was obtained for the survey data.

**Table 1. Variable descriptions.**

Academic qualification	Main features
<i>Gender and country of highest degree</i>	The percentage of males studying abroad (20%) in the male group is more than twice as large as the one of the female groups (9%), so a higher percentage of females tend to study at home, relative to the male category ( <a href="#">Table 1.1</a> ).
<i>Country of highest degree</i>	The majority of qualifications obtained abroad were doctoral degrees, representing one-third of the total doctoral degrees obtained by Pakistani academics ( <a href="#">Table 1.2</a> ).
<i>Marital Status and country of highest degree</i>	The distribution of married and single individuals amongst faculty trained in Pakistan and abroad is very similar, with married faculty members being more likely to have a domestic or international higher education degree ( <a href="#">Table 1.3</a> ).
<i>Level of Appointment and country of highest degree</i>	Both the Pakistani graduates and faculty returning from abroad had higher percentages in the senior category, with the percentage of senior academics who have studied abroad being more than double the percentage of junior academics trained abroad ( <a href="#">Table 1.4</a> ).
<i>Research network membership and country of highest degree</i> (linked to research performance indicators)	Foreign-qualified faculty had a higher percentage of members in research networks, while the Pakistani-qualified faculty had a lower percentage ( <a href="#">Table 1.5</a> ).
<i>Access to research funding and country of highest degree</i> (linked to research performance indicators)	The percentage of academics who studied abroad and obtained funds was higher (1.5% higher) than the percentage of academics trained at home and who have obtained funds ( <a href="#">Table 1.6</a> ).
<i>Experience and country of highest degree</i>	Faculty who studied abroad were a slightly higher percentage of the more experienced faculty than the faculty who studied at home. ( <a href="#">Table 1.7</a> )(*)

(\*) The experience variable was recoded as a dichotomous variable with faculty of five years' or less experience grouped together and those above five years' experience were grouped under a separate category.

**Table 1.1. Proportion of females in higher education in Pakistan.**

Gender	Pakistan	Other countries (abroad)	Total
Female	204	21	225
	91%	9%	100%
Male	128	32	160
	80%	20%	100%
Total	332	53	385
	86%	14%	100%

**Table 1.2. Proportion of doctorate holders in higher education in Pakistan.**

Academic qualification	Pakistan	Other countries	Total
Below doctorate	251	16	267
	81%	19%	100%
Doctoral degree	81	37	118
	69%	31%	100%
Total	332	53	385
	86%	14%	100%

**Table 1.3.** Proportion of married people in higher education in Pakistan.

Marital status	Pakistan	Other countries (abroad)	Total
Others (single or separated)	111	16	127
	87%	13%	100%
Married	221	37	258
	86%	14%	100%
Total	332	53	385
	86%	14%	100%

**Table 1.4.** Cross tabulation of level of appointment by country of highest degree.

Appointment	Pakistan	Other countries (abroad)	Total
Not Senior	136	12	148
	92%	8%	100%
Senior	182	40	222
	82%	18%	100%
Total	318	52	370
	86%	14%	100%

**Table 1.5.** Cross tabulation for research network membership by country of highest degree.

Membership of research networks	Pakistan	Other countries (abroad)	Total
Non-members	182	21	203
	57%	41%	55%
Members	135	30	165
	43%	59%	45%
Total	317	51	368
	100%	100%	100%

(Table 2). The minimum for the two categories of both publications and collaborations was the same: zero. Meanwhile, the scores for foreign-qualified faculty in both publications and collaborations were higher than for the domestically-qualified faculty. Even the median and standard deviations were greater for faculty who qualified abroad, thereby suggesting that their scores were also affected by a higher number of faculty who

**Table 1.6.** Cross tabulation of access to research funding by country of highest degree.

Research funding	Pakistan	Other countries (abroad)	Total
Non-funded	257	38	295
	83%	75%	82%
Funded	54	13	67
	17%	25%	18%
Total	311	51	362
	100%	100%	100%

**Table 1.7.** Cross tabulation of experience by country of highest degree.

Experience	Pakistan	Other countries (abroad)	Total
Five years or less in higher education	110	15	125
	33%	28%	33%
More than five years in higher education	222	38	260
	70%	72%	67%
Total	332	53	385
	100%	100%	100%

performed exceptionally well instead of the domestic faculty. The descriptive statistics of our sample suggest that foreign-qualified graduates performed better, despite the absence of mentoring.

## Methodology

Given the many variables in the study context, there is a need for an inferential analysis that controls other variables to make a more informed performance assessment. In the subsequent sections of this paper, faculty performance analysis is conducted on outcomes related to publications, collaborations, access to research funding, and membership of research networks. The methodology used is regression analysis and more specifically binomial and logistic regressions.

### Binomial regression

We tested for outliers in the data and multicollinearity among ordinal or interval predictors for each model used. Continuous predictors were converted to standardised values and tests were conducted for the presence of outliers. No outliers were found. For test multicollinearity diagnostics, the intercorrelation between predictors was examined. We used the correlation matrix for discrete predictors, number of publications, and collaborations. Correlations were found below the threshold of 0.90 recommended by *Tabachnick & Fidell (2012)*.

The first model focuses on examining faculty performance in terms of publications, controlling for a series of factors that may affect the research performance of a faculty. These factors are: country of highest qualification (domestic versus international), gender, academic qualification, appointment level, membership of research networks, experience, and level of collaboration, which were included as control variables.

A binary negative binomial regression model was used to estimate probabilities of research publication rates<sup>2</sup>; the form of

<sup>2</sup> Being the dependent variable a count data one, the Poisson regression could have been used. However, when the variance is far greater than the mean (Table 2), a Negative binomial regression is the preferred estimation method. Negative Binomial Regression is similar to regular multiple regression except that the dependent variable (Y) is an observed count that follows the negative binomial distribution.

the model equation for negative binomial regression is the same as that for Poisson regression. The log of the outcome ( $\hat{y}_i$ ) for individual “i” is predicted with a linear combination of the predictors (vector of  $X_i$ 's variables):

$$\log(\hat{Y})_i = \hat{\alpha} + \hat{\beta}_1(X_{1,i}) + \hat{\beta}_2X_{2,i} + \hat{\beta}_3X_{3,i} + \hat{\beta}_4X_{4,i} + \hat{\beta}_5X_{5,i} + \hat{\beta}_6X_{6,i} + \hat{\beta}_7X_{7,i} \quad (1)$$

The results of our estimates are presented in Table 3.

No significant differences were found between the foreign-qualified graduates and their Pakistani-qualified counterparts. Similarly, gender, appointment level (senior/junior), and experience were not significant in predicting research performance. Publication outcomes were positively affected by faculty's higher academic qualifications (PhDs), access to membership of research networks, access to research funding, and opportunities of collaborations.

**Table 2. Descriptive statistics for publications and collaborations by country of highest degree.**

Variable	Country	Mean	Median	SD	Min	Max
Publications	Abroad	10.89	6.50	12.91	.00	56.00
	Pakistan	6.87	3.00	10.62	.00	65.00
Collaborations	Abroad	7.66	4.00	11.72	.00	49.00
	Pakistan	4.42	2.00	7.94	.00	65.00

**Table 3. Negative binomial for research publication rates (n=385).**

Parameter	Coef.	SE	P-value	Exp (coeff)
Intercept	2.331	.231	<b>.000</b>	10.284
Highest degree domestic <sup>a</sup>	-.076	.200	.703	.927
Female <sup>b</sup>	-.009	.141	.948	.991
Academic qualification below PhD <sup>c</sup>	-1.037	.178	<b>.000</b>	.354
Junior appointment <sup>d</sup>	-.251	.152	.100	.778
No research network membership <sup>e</sup>	-.918	.144	<b>.000</b>	.399
No access research funding <sup>f</sup>	-.449	.181	<b>.013</b>	.638
Experience in years	-.004	.009	.685	.996
Number of collaborations	.071	.012	<b>.000</b>	1.074

Notes:

a = dummy variable (0,1) foreign-qualified graduates is the reference category

b = dummy variable (0,1) Males are the reference category

c = dummy variable (0,1) PhD is the reference category

d = dummy variable (0,1) Senior appointment is the reference category

e = dummy variable (0,1) Membership of research networks is the reference category

f = dummy variable (0,1) Access to research funding is the reference category

P-values in bold indicate a level of statistical significance at 5% or below

## Logistic regression

To investigate the two binary variables, access to research funds and membership of research networks, we used a binary logistic regression. Logistic regression uses the natural logarithm function of the odds of an event to estimate the probability of its occurrence, given some controlling variables. The estimated coefficients of the controlling variables are then used in the logistic equation to predict future results.

In the logistic regression the logit of the probability is a linear relation with respect to a vector of controlling factors  $X'$ , so the logit estimated probability of the outcome ( $Y$ ) for individual "i" is expressed as a linear combination of the estimated coefficients and predictors (vectors of  $X_i'$ ) as follows:

$$\text{logit } \hat{P}(X'_i) = \ln(\widehat{\text{Odds}}(Y_i = 1 | X'_i)) = \ln \left[ \frac{\hat{P}(Y_i = 1 | X'_i)}{1 - \hat{P}(Y_i = 1 | X'_i)} \right] = \hat{\alpha} + \hat{\beta}_1(X_{1,i}) + \hat{\beta}_2 X_{2,i} + \hat{\beta}_3 X_{3,i} + \hat{\beta}_4 X_{4,i} + \hat{\beta}_5 X_{5,i} + \hat{\beta}_6 X_{6,i} + \hat{\beta}_7 X_{7,i} \quad (2)$$

For the logistic regression, in addition to outliers in the data and multicollinearity diagnostics, we tested for the linearity assumption. We ran a logistic regression that included the interaction term between each discrete variable and its logarithmic transformation. The interaction variables were not statistically significant, which indicated that the linearity assumption was not violated (Field, 2013).

The first logistic model investigated academics' access to research funding. Given the level of awareness of funding

sources occasioned by studying abroad, we expected that those studying for their PhDs abroad would have had more exposure and access to funding. The results of binary logistic regression (Table 4) suggested that, as expected, Pakistani-qualified graduates had a lower probability of accessing research funding than academics who had obtained their highest qualifications abroad. The level of academic qualifications of faculty was also important in predicting access to funding. Compared to faculty with lower qualifications, academics with PhDs were more likely to access funding for research. The other covariates in the model were non-statistically significant predictors of accessing research funding.

The second logistic regression looked at access to research networks, one important aspect of career development for academics. International experience allows the expansion of networks before and after returning from a foreign country (on the completion of a foreign-qualification degree). Therefore, those academics with the opportunities afforded by studying abroad would have more prospects to expand their membership of academic networks. Thus, the expectation would be that academics who had the highest qualification abroad would have more opportunities for memberships of research networks.

The binary logistic regression model predicting membership of research networks, based on the study destination, had a non-significant result (Table 5). There were no significant differences in membership of research networks for faculty who qualified in Pakistan and faculty who qualified abroad. However, gender and qualifications of faculty were significant

**Table 4. Binary logistic regression for access to research funding (n=385).**

Parameter	Coeff.	SE	P-value	Exp (coeff)
Intercept	.188	.470	.690	1.206
Highest degree domestic <sup>a</sup>	-1.075	.475	<b>.024</b>	.341
Female <sup>b</sup>	-.295	.354	.404	.744
Academic qualification below PhD <sup>c</sup>	-2.378	.420	<b>.000</b>	.093
Junior appointment <sup>d</sup>	-.257	.388	.507	.773
Not member of research network <sup>e</sup>	-.478	.383	.212	.620
Number of publications	.036	.026	.167	1.037
Number of collaborations	-.017	.031	.573	.983
Experience in years <sup>f</sup>	-.001	.021	.970	.999

Notes:

a = dummy variable (0,1) foreign-qualified graduates is the reference category

b = dummy variable (0,1) Males are the reference category

c = dummy variable (0,1) PhD is the reference category

d = dummy variable (0,1) Senior appointment is the reference category

e = dummy variable (0,1) Membership of research networks is the reference category

f = Experience in years

P-values in bold indicate a level of statistical significance at 5% or below

**Table 5. Binary logistic regression for membership of research networks (n=385).**

Parameter	Coeff.	SE	P-Value	Exp (coeff)
Intercept	1.671	.428	.000	5.317
Highest degree domestic <sup>a</sup>	-.157	.388	.687	.855
Female <sup>b</sup>	-.591	.262	<b>.024</b>	.554
Highest degree below PhD <sup>c</sup>	-1.685	.331	<b>.000</b>	.185
Experience in years	.015	.017	.384	1.015
Marital status (married) <sup>d</sup>	.539	.290	<b>.063</b>	1.714
No access research funding <sup>e</sup>	-.598	.372	.108	.550
Junior appointment <sup>f</sup>	-.396	.269	.141	.673

Notes:

a = dummy variable (0,1) foreign-qualified graduates is the reference category

b = dummy variable (0,1) Males are the reference category

c = dummy variable (0,1) PhD is the reference category

d = dummy variable (0,1) Single is the reference category

e = dummy variable (0,1) Access to research funding is the reference category

f = dummy variable (0,1) Senior appointment is the reference category

P-values in bold indicate a level of statistical significance at 10% or below

predictors of membership of research networks: male academics were more likely to belong to research networks than females, and doctoral graduates were also more likely to be members of academic networks. Other covariates, such as experience, research funding, and appointment level, were non-significant.

Marital status was found to be statistically significant, but only marginally at 10%. This was an interesting finding. In their qualitative analysis, Hawkes & Rab (2017) argued that marital status interacts with gender: marriage for men was positively associated with membership of research networks; for females, the association depended on whom these female academics were married to. If married to another academic, the association was positive, as they could benefit from their husband's connections; if married to a non-academic, then marriage was not a condition that would put an academic female at any advantage over a single academic female. Marriage is therefore not a clear predictor of women's success in accessing research networks due to intersectionality with their husbands' profession.

## Discussion

The discussion is focused on three areas that were examined in the analysis. The interest was in determining whether a gender bias was present and whether foreign-qualified academics would benefit the Pakistani higher education system, providing them with more opportunities for success in their professional career. The results of the analysis are discussed in the subsequent sections starting with the level of publications, level of collaboration, access to research funding, and research network memberships.

## Faculty publications

Publication outcomes were positively affected by the faculty's higher academic qualifications (PhDs), access to membership of research networks, access to research funding, and opportunities for collaboration, indirectly benefitting foreign-qualified academics. Given the fact that the percentage of females studying abroad is one-third of that of males, it may be harder for female academics to gain access to resources and opportunities in order to succeed in academic research. This fact creates a vicious cycle: reduced access to research funds and networks leads to reduced success in publications which in turn provides less opportunities for research visibility, funding and networking. How do we increase exposure to research funds and networks and achieve higher returns of education for those academics lacking these opportunities, so that they can engage more successfully in research? One area to look at is the role and responsibilities they face as academics in order to ameliorate obstacles and create a level playing field. Teaching and administrative overload is a major constraint on researchers in many developing countries in Asia and Africa (Nguyen, 2013).

## Faculty access to research funding

The differences in access to research funding were also examined, and the outcomes were positive. The analysis performed using logistic regression indicated that domestically-trained graduates have less access to research funding than foreign-trained graduates. The findings reinforce our interpretation of the results above and bear some implications for current practice. Referring specifically to Vietnam, Nguyen (2013) points out the negative impact of administrative responsibilities on research

performance. Therefore, bestowing huge responsibilities on academics denies them time for research and the opportunity to sharpen their research skills.

Our study emphasizes the idea of mentoring and supporting faculty, particularly the domestically-qualified group and the female academics, to encourage engagement in research. Mentoring programmes could raise awareness about the importance of research and research funds and guide them in searching for these opportunities. We also believe that appointment into higher level positions or the heavy burden of administrative responsibilities without prior mentoring could become counterproductive.

### Research network memberships

Membership of research networks is an essential aspect of research and is one indicator of research activity. The results of the logistic model do not show a significant difference between foreign and domestically qualified academics. This is surprising because academics who trained abroad were expected to have both domestic and international networks. However, similarly to research output, having a PhD is a very significant predictor. Given that the degree level of foreign-qualified academics is mainly PhD, this group has more chance than the domestically-qualified group to belong to established research networks. Gender bias here plays an independent role, with females clearly at a disadvantage.

### Conclusion

The evidence above suggests that those who study abroad have a direct and/or an indirect advantage in terms of publications, funding, and other research success measures. On the one hand, this advantage already represents an improvement in the higher education system sought by the Higher Education Commission. On the other hand, the system may exacerbate the gender bias that already pervades Pakistani society.

In our sample, women represent almost 60% of respondents. Within this group, the percentage of those who study abroad is one-third of the equivalent proportion for the male group, pointing to a gender bias in academic success. There is scope for improving educational returns in Pakistan for all domestically-qualified academics and all female scholars.

Unfortunately, the inequitable uptake of these opportunities pre-COVID-19 (coronavirus disease 2019), and the reduction of these opportunities during the COVID-19 crisis, will exacerbate biases and inequality. Other online routes which build connections between academics in Pakistan and those in other countries could help to ensure that the PAK-UK gateway fulfills the 4th Sustainable Development Goal “Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all”.

We suggest there is now a role for the British Council and the HEC to take in facilitating an online community of female academics, to ensure that all female academics have access to

mentors in their fields of expertise and to help them navigate the various online communities that are emerging. For those left behind in the old model due to a lack of ability to leave the family to work overseas, the need for this online community of mentors is vital in order for them to effectively join the academic community online. Knowing which communities to engage with and how to engage with them are skills which can be learned through mentorship and, unlike other mentoring model proposed pre-COVID, would not mean large numbers of female mentors and mentees traveling the globe, by instead using video conferencing. This has the advantage of opening up opportunities to female academics in Pakistan for whom travel was difficult, as well as for female academic mentors in the UK for whom travel to Pakistan or arranging to host a visiting academic may not have been possible.

The numbers highlight the potential reward from a facilitated online community of academics, providing opportunities to help close this gender gap in the ability to contribute to the improvement in higher education in Pakistan and for the PAK-UK to contribute more broadly to the Sustainable Development Goals, especially goal 5 “Achieve gender equality and empower all women and girl” and goal 10 “Reduce inequality within and among countries.” The opportunity to build an equal future for all female academics and especially those in Pakistan is possible, and the potential rewards are beyond the mere career aspirations of a set of female academics in the many benefits the academic community and beyond gain from academic collaboration across borders, that same potential that drives the development of the PAK-UK gateway to start with.

### Data availability

#### Underlying data

Dryad: Academic Careers in Pakistan. <https://doi.org/10.5061/dryad.s7h44j16p> (Hawkes, 2021)

The project contains the following underlying data:

- Academic\_Careers\_in\_Pakistan.xls (questionnaire responses).

Data are available under the terms of the [Creative Commons Zero “No rights reserved” data waiver](#) (CC0 1.0 Public domain dedication).

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# Open Peer Review

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## Version 1

Reviewer Report 04 August 2021

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**Tatiana Fumasoli** 

UCL Institute of Education, University College London, London, United Kingdom

This paper looks at gender in academic careers in Pakistan. It does so based on a sample of more than 300 respondents in higher education, both male and female. The findings confirm that female academics are disadvantaged in a country where women and girls are disadvantaged generally. This is interesting, as one could expect academics to stem from an elite socioeconomic group, where the male/female divide could be less striking. As academic careers are built on international experience, networks and publications (these being interdependent) it is not surprising that the gender gap increases even more. I believe that the most interesting part in the paper are the recommendations, particularly establishing mentoring programmes and scholarly communities for women. In a COVID 19 world this needs probably to take place online, which would make drawing on international female academic expertise easier.

**Is the work clearly and accurately presented and does it cite the current literature?**

Yes

**Is the study design appropriate and is the work technically sound?**

Yes

**Are sufficient details of methods and analysis provided to allow replication by others?**

Yes

**If applicable, is the statistical analysis and its interpretation appropriate?**

I cannot comment. A qualified statistician is required.

**Are all the source data underlying the results available to ensure full reproducibility?**

Yes

**Are the conclusions drawn adequately supported by the results?**

Yes

**Is the argument information presented in such a way that it can be understood by a non-academic audience?**

Yes

**Does the piece present solutions to actual real world challenges?**

Yes

**Is real-world evidence provided to support any conclusions made?**

Yes

**Could any solutions being offered be effectively implemented in practice?**

Yes

**Competing Interests:** No competing interests were disclosed.

**Reviewer Expertise:** higher education studies

**I confirm that I have read this submission and believe that I have an appropriate level of expertise to confirm that it is of an acceptable scientific standard.**

Author Response 06 Aug 2021

**Gabriella Cagliesi**, University of Sussex, Brighton, United Kingdom

Thank you very much for the review, particularly for the policy recommendation. We believe that offering an online mentorship for female academics in Pakistan can be valuable in Covid and post Covid times. This initiative will reduce the need for international travel and create more networking opportunities for women who traditionally may have been constrained in accessing the existing career pathways.

Kind regards  
The authors

**Competing Interests:** No competing interests were disclosed.

Reviewer Report 22 July 2021

<https://doi.org/10.21956/emeraldopenres.15346.r27595>

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**Ana Maria Vallina-Hernandez** 

School of Business and Economics, Pontificia Universidad Católica de Valparaíso, Valparaíso, Chile

The article analyses the opportunities that female professionals have to become higher education academics and develop a career in research. First, the article describes the effort that the Higher Education Commission (HEC) in Pakistan has done to improve higher education as an engine for growth and economic development, with the support of the British Council.

Afterward, the study assess female participation in education and in the labor force, which is quite low, and women's education is considered practically unnecessary in Pakistan. This last condition hinders the country's development in two ways. The first one is that part of the potential labor force has lower human capital. The second one is related to the role of women in children's education, where higher education implies better human capital formation in the next generation, regarding health and education.

Regarding the literature, the study is based on previous research about female education in Pakistan and the obstacles that women face to get into higher education and to pursue a career in academia, highlighting that foreign-qualified academics have better performance than the ones whose preparation is fully done in Pakistan.

The data used in the analysis is well described and of public access. The variable description is presented in a very synthetic and clear way. The descriptive statistic tables lack comments and explanation, especially table 1.1, whose results seem to be in the wrong column.

The methodology is well described and there is a discussion comparing the use of a binary negative binomial model with alternative education.

The discussion about the findings of the paper reveals the importance of mentoring and research networks in the access to research funding and, therefore, to publication outcome. Research network memberships are essential to improve research and publication outcomes, this condition even overcomes the difference between foreign-qualified and domestically training academics.

Covid-19 has negatively influenced the participation of women in higher education research, like many other economic activities that had hit harder on female workers. The importance of online activities is addressed to diminish gender gaps in this area of knowledge, and the potential role of the British Council is highlighted.

The conclusions of this paper can be used to design public policies oriented to increase women's participation in higher education and research.

**Is the work clearly and accurately presented and does it cite the current literature?**

Yes

**Is the study design appropriate and is the work technically sound?**

Yes

**Are sufficient details of methods and analysis provided to allow replication by others?**

Yes

**If applicable, is the statistical analysis and its interpretation appropriate?**

Yes

**Are all the source data underlying the results available to ensure full reproducibility?**

Yes

**Are the conclusions drawn adequately supported by the results?**

Yes

**Is the argument information presented in such a way that it can be understood by a non-academic audience?**

Not applicable

**Does the piece present solutions to actual real world challenges?**

Yes

**Is real-world evidence provided to support any conclusions made?**

Yes

**Could any solutions being offered be effectively implemented in practice?**

Yes

**Competing Interests:** No competing interests were disclosed.

**Reviewer Expertise:** Economics, International Business

**I confirm that I have read this submission and believe that I have an appropriate level of expertise to confirm that it is of an acceptable scientific standard.**

Author Response 23 Jul 2021

**Gabriella Cagliesi**, University of Sussex, Brighton, United Kingdom

Dear Ana,

Thank you for the insightful and detailed review and report of the paper. We are particularly pleased by your view about the potential policy implication of this work.

Thank you for highlighting the presentation of the descriptive statistics tables, which were meant to be placed originally into an appendix. Through your comments, we realised that to see the tables in their entirety and solve the misalignment of columns, the reader would need to click on them and open them fully.

We are grateful for your time in completing this review.

Kind regards,

The authors

**Competing Interests:** No competing interests were disclosed.