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Open Access Publishing Behavior of University Faculty Members: Examining the Moderating Role of Self-efficacy

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Abstract : Open access (OA) has emerged as a modern academic publishing paradigm that strives to provide all members of society with free access to scholarly knowledge.The content creators are generally agreed that researchers' scholarly work (e.g. books, theses, and research papers) should be freely accessible on the web for wider community use without any financial, legal, or technological limitations other than the author's right of acknowledgment and citation. For developing nations such as Pakistan, OA is an essential trend. The present study is aimed to assess thebehavior of faculty members to publish in OA outletsfrom the perspective of the decomposed theory of planned behavior (DTPB). It further explores the moderating role of self-efficacy on the association of attitude towards behavior (ATB), subjective norms (SN),perceived ease of use (PEU) and perceived usefulness (PU) with the actual behavior of university faculty members towards OA publishing.A quantitative survey research design based on a cross-sectional approach was applied to investigate the phenomenon. The data were collected through a structured questionnaire from 338 faculty members of the University of the Punjab, and Riphah International University.The results of the study showed a positive significant association of ATB,PEU, PU and SN with the actual behavior of publishing in OA. Furthermore, the findings revealed that self-efficacy positively moderates the association of ATB, PEU, PU and SNwith the actual behavior of publishing with OA systems. This study will hopefully contributed to the insights how to facilitate the faculty members as they are the key contributors to OA publishing outlets.

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Introduction

The Internet and the proliferation of information and communication technologies (ICTs) has transformed the scholarly publishing industry, shifting it from traditional print journals to electronic journals.There is a sustained annual growth in the number of e-journals and articles over the last couple of decades(Firman and Basuki, 2015). Growing number of journals coupled with drastically increasing journal prices while shrinking library budget gave rise to "serial crisis" in higher education institutions (Peekhaus and Proferes, 2015). During the time, e-journals have emerged as the most popular source of scientific scholarly information dissemination (Olle and Borrego, 2006). University faculty members and research students heavily rely on these e-resources for their information intellectual curiosities, thus putting academic libraries in challenging circumstances. In response to these changing trends in academic publishing industry, certain movements such asOpen Archives Initiative (1999) and Budapest Open Access Initiative (BOAI, 2001) were the early efforts to develop and advocate for open-access (OA) modelsfor academic research. Other international declarations (i.e. Bethesda Statement on Open Access Publishing and Berlin Declaration on Open Access to Knowledge in the Sciences and Humanities) supporting OA emerged in 2003 across a range of disciplines and stakeholders such as scientists, researchers, universities, libraries and funding agencies.

The operating premise of OA is that people should have free access to scholarly content with no constraints on how they use it. Open access publishing (OAP) provides readers with barrier-free access to research and academic literature they need for teaching and research endeavors (Suber, 2016). In 2012,

the Budapest Open Access Initiative (BOAI) explained the concept of OA as a global electronic dissemination of the peer-reviewed journal literature, with completely free and unrestricted access to researchers, scholars, teachers, students, and other curious minds (Joshi et al., 2012). Specifically, BOAI defines OA as

> By 'open access', we mean its [scholarly literature] free availability on the public internet, permitting any users to read, download, copy, distribute, print, search, or link to the full texts of these articles, crawl them for indexing, pass them as data to software, or use them for any other lawful purpose, without financial, legal, or technical barriers other than those inseparable from gaining access to the internet itself. The only constraint on reproduction and distribution, and the only role for copyright in this domain, should be to give authors control over the integrity of their work and the right to be properly acknowledged and cited. [2002:1: para. 3]

Recently, in November 2021, UNESCO recommendations on open science also acknowledge the importance of the movements and practices in science, technology and innovation aiming to make multilingual scientific knowledge openly available, accessible and reusable for everyone free of charge. Here scientific knowledge includes a vast array of products such as scientific publications (i.e. peer-reviewed journal articles and books, research reports and conference papers), research data, metadata, open educational resources, open software, and source code and hardware. With the popularity of OA, multidisciplinary, international, costly, and digital literature is becoming widely accessible while removing the hidden barriers of technological walls to cope with licensing limitations, controlled or paid access. OA helps fostering a culture of openness, transparency and inclusiveness. Removing access barriers

accelerates research, enriches education and collaborative learning, and reduces duplication cost. It immensely empowers readers to access relevant literature. It also gives authors and their works a global measurable visibility, readership and impact. OA primarily benefits people from developing countries and less privileged institutions. It also enables teachers and students to bring the latest research to the study halls.

Gold, Green and Diamond are thepopular types of OA publishing. The journals in Gold OA category require article processing charges (APC) from the authors but are freely available for the readers. Journals with **Green OA allow to make** a version of the manuscript freely available in a repository. An embargo period of 6 to 24 months is usually set by the publisher.Diamond OA outlets are completely free, with no charges to the authors (i.e. APC) and the readers(Rubin, 2016, p. 142).

As the OA history of more than two decades has been continuing to unfold, a substantial growth in the volume of OA literature, policies, and practices is evident in the literature. Recent years witnessed an increase in open access publishing (OAP). There were 19,530 OA outlets and 8,962,611 OA articles listed in Directory of OA outlets (DOAJ) on July 18, 2023. It represents the significant development in this mode of publishing. The development and the swift increase in OA publishing largely depends on the benefits being offered by this models to the individual authors. OA provides writers with universal audiences and enhances their work's exposure. OA means, there are more readers, more potential collaborators, more citations for the work, faster impact with permissive licenses and ultimately more recognition for authors, their publications, and their institutions.

Despite benefits of and growing awareness about OA, literature reveals that faculty members’level of engagement with OA publishing opportunities remained low (Li, Miller 7 Hamed; Peekhaus and Proferes, 2015). Underlying

reasons to this reluctance are the faculty perceptions and attitudes towards OA publishing. In order to understand why faculty would or would not publish in OA outlets, a number of studies investigating faculty engagement with OA was conducted across a range of disciplines in the arts and humanities, social and natural sciences. (Gross and Ryan, 2015). Their findings indicated that faculty viewed OA outlets as of lower quality, reputation and prestige. Moreover APC model was regarded as an incentive for journals to accept papers of lesser quality in exchange for money and promotion and tenure committees won't give weight to a journal charging authors fees (Harley et al., 2010). Literature shows a dichotomy between the faculty attitude in the roles as a reader and an author. Studies report that scholars extensively use OA material for their own academic and research pursuits but show reluctance while choosing them for publishing their articles (Björk, 2017; Mann et al., 2008; Sheikh, 2017). Itindicates that evaluative criteria for selecting publishing outlets differed significantly from that of access. Hence, it is pertinent to conduct more studies seeking evidence that might suggest strategies beneficial for the publishers of OA outlets to improve faculty perceptions and their uptake within academia.

During recent years, Pakistani higher education system has witnessed an exponential growth in terms of number of accredited universities (i.e. 252 higher education institutes) and research support programs such as increased research funding, and the linking of senior faculty promotions to research publications (Khokhar, Rafiq and Malik, 2023). The most eminent, Pakistan research repository (PRR) program was launched to accelerate the momentum of the OA movement in order to provide free access to national published research, conference papers, and most importantly local PhD theses across all subjects (HEC, 2019). Recent statistics shows a tremendous increase in the research output of the country (hec.gov.pk). Despite growing research culture in

Pakistan, faculty awareness, and publishing behavior towards OA publishing outlets is quite low (Qutab, 2008). Prior studies revealed that faculty members more frequently used OA platforms to read scholarly articles than to produce their own research papers. The biggest challenges reported were low-awareness about OA and APCs (article processing charges) (Sheikh, 2019; 2020). Similarly, another survey of university librarians revealed their less familiarity various OP movement initiatives (e.g. Budapest OA Initiative) and the Diamond OA model (Rafiq and Sultan, 2021) However, no further studies investigated the reason of this attitude of university faculty memberstowards OA publishing behavior. Internationally, though, a number of descriptive studies conducted on authors to assess their attitude and behaviors towards OA publishing (Björk, 2017; Gul et al. 2010; Kim, 2010;Peekhaus and Proferes, 2015; Sheikh, 2017), literature is limited in the context of Pakistani authors and particularly with a theoretical lens.

The present study is an attempt to bridge this gap by reporting the finding of a survey on faculty attitude and behavior towards OA publishing by employing a theoretical lens from the theory of planned behavior. Drawing upon the constructs from the theory of planned behavior and moderated by the concept of self-efficacy, a research model of the study was developed to examine whether faculty attitude towards OA publishing accord with their actual behavior and how self-efficacy moderates this association. The study helps to understand the behaviorof faculty members to publish in OA outlets. Such understanding will provide insights to university higher authorities, policymakers, and funders to devise and design policies and guidelines for fostering open access research culture in the higher education institutions of the country.

This study is a part of a large research project designed to explore the actual behavior of university faculty members towards OA publishing by

employing a theoretical lens of decomposed theory of planned behavior. A part of the project with the constructs of decomposed theory has already published (Khokhar, Rafiq and Malik, 2023), while this article is focused on the moderating role of self-efficacy between the constructs i.e. attitude towards behavior, perceived ease of use, usefulness and subjective normsand actual behavior towards OA publishing.

Literature Review and Hypothesis Development

During recent years, a considerable amount of research is appearing on the challenges and prospects of OA publishing and open science. The following sections will present a discussion related to OA publishing behavior of university faculty members along with the hypothetical development of the study constructs.

Open Access Publishing (OAP)

The SOAP (Study of Open Access Publishing) initiative led a significant global online survey to learn about academic scholar's perspectives and experiences with OA publishing. Multiple publishers were contacted to get author's list. Almost 53,890 respondents from 162 countries filled the survey, and a large majority (89%) of themconsidered OAP advantageous and beneficial to their scholarly research works (Dallmeier-Tiessen et al. 2011). Similarly, Rodriguez (2014) studied the behavior, awareness and views of faculty members about OAP and reported that most of them (67%), across disciplines and age groups, were fully aware of OA publishing. Though, their actual involvement with OA publishing was relatively weak. Previous studies conducted in 2000 era indicated a high degree of awareness about OA outlets, however a low level of awareness about self-archiving (Swan and Brown,

2004). Concerns about copyright, and plagiarism (Abrizah, 2009) as well as additional time, effort, and technological expertise all served as roadblocks to self-archiving (Kim, 2010). Previous literature also reported the factors motivating the researchers to engage with OA publishing. These factors include disciplinary norms, speedy publishing, increased visibility of their work, and raise in number of citations (Gul et al. 2010; Kim, 2010; Shuva, 2016). A study by Kaba and Said (2015) reported that faculty members had a positive perception of OA resources, and they commonly utilized them for teaching, learning, and research purpose. It is interesting finding of the study that faculty members who were familiar with or knew how to use OA resources had a very favorable perception of them. Similarly, Peekhaus (2021) also reported that faculty who have knowledge or experience of publishing with OA outlets tended to be convinced about the quality of OA publications and less apprehensive about OA publishing. A recent study by Maryam et al. (2023) reported that behavioral intentions, subjective norms, and perceived behavioral control positively influenced the actual behavior of faculty members towards OA publishing.

Although, prior literature reported the faculty's perceptions, attitude and usage of OA publishing is growing gradually, still factors motivating or impeding their actual behavior towards OA publishing need further attention. Hence, this study is designed to extend the past studies. We have developed a model based on the constructs from decomposed theory of planned behavior (DTPB) and social cognitive theory (SCT; Bandura, 1986). The following section will present how these theoretical approaches are connected to develop the research model of the current study.

Decomposed Theory of Planned Behavior (DTPB)

Decomposed theory of planned behavior is an extension of theory of planned behavior (TPB) (Ajzen, 1991).DTPB examines behavioral intentions and actual behavior by further decomposing the three components of TPB (Taylor and Todd, 1995). For the purpose of this study, we have taken attitude towards behavior, perceived ease of use, perceived usefulness and subjective norms. There are certain reasons to do so. First, the previous literature on the topic of OA publishing indicated certain reasons and benefits of using and publishing OA publications that can be well explained through perceived ease of use, perceived usefulness and subjective norms (Gul et al. 2010; Kim, 2010;Peekhaus, 2021; Shuva, 2016).Second, these constructs are authenticated for predicting behavioral intentions in both information technology and education studies (Gangwal and Bansal, 2016; Sadaf, et al., 2012; Taylor and Todd, 1995). For example, attitude is described as individuals' feelings towards performing certain behaviors while perceived ease of use and perceived usefulness is the degree to which individuals believe that using a particularly technology or adopting a particular trend would be easy and beneficial. Subjective norms refers to the individuals' beliefs about whether peers or people of importance approve or disapprove the particular behavior. Prior research has used these constructs to measure their impact to perform a specific behavior and found a strong relationship with the behavioral intentions to use computer technologies (Sadaf et al., 2012; Sadaf and Gezer, 2020). Therefore, we formulated the following hypothesis:

H1: Attitude of university faculty members towards OA publishing will positively affect their actual behavior to publish in OA outlets.

H2: Perceived usefulness of OA publishing will positively affect actual behavior of faculty members to publish in OA outlets.

H3: Perceived ease of OA publishing will positively affect actual behavior of faculty members to publish in OA outlets.

H4: The subjective norms positively affects the actual behavior of faculty members to publish in OA outlets.

Social Cognitive Theory (SCT)

Social cognitive theory (SCT) presented by Bandura's (1986) states that individuals' cognition also predicts their future behavior. Self-efficacy is an important cognitive concept that may influence behavioral intentions. Self-efficacy is a belief that an individual is capable of performing a specific task or behavior to produce outcomes with success. Previous literature coupled this concept with particular environment or tasks to measure people's skills or abilities of working in that particular environment or performing a particular task such as social media self-efficacy and online information evaluation skills, Internet self-efficacy (Hamdan *et al.*, 2021), web self-efficacy (Basaran and Yalman, 2020) and computer self-efficacy (Ebijuwa and Mabawonku, 2019). In this study, self-efficacy refers to an individual' ability to publish research. We assume that such self-efficacy may moderate the relationship of attitude, perceived ease of use, perceived usefulness and subjective norms with actual behavior of faculty members to publish in OA outlets. As self-efficacy gives ability and confidence which may affect the relationship of between the determinants and outcome variables.Thus, we hypothesized:

H5: Self-efficacy moderates the association between attitude and actual OAP behavior of university faculty members.

H6: Self-efficacy moderates the association between perceived ease of use and actual OAP behavior of university faculty members.

H7: Self-efficacy moderates the association between Perceived usefulness and actual OAP behavior of university faculty members.

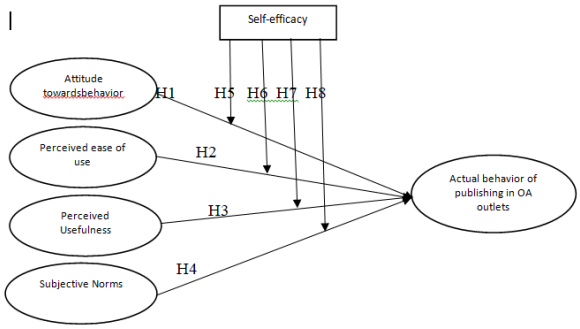

Figure 1. Research Model of the Study

Research Design

Based on quantitative research design, a cross-sectional survey research method was adopted to conduct the study by following the suggestion of Gerrish and Lacey (2010) that the survey is useful when exploring attitudes, beliefs, and behaviors**.**

The Study Measures

A questionnaire was developed with the help of the related literature. The measurement items for the variable were taken from the prior studies. To fit the context of the present study, a few modifications were made. The measurement items assessing the attitude towards behavior, and actual behavior were adopted from Malik, et al. (2022) and Sadaf, et al. (2012). The items measuring perceived ease of use, self-efficacy, perceived usefulness, and subjective norms were adopted from Gangwal and Bansal 2016), and Sadaf, et al. (2012). Five-point Likert scale (i.e. from 1=strongly disagree to 5= strongly agree) was used to measure the study variables.

The Study Participants

University faculty members were selected as the study participants because they involve in doing and publishing research. According to the policy of Higher Education Commission (HEC), Pakistan, research articles and publications are required from university faculty members for promotion and career advancement. A certain number of articles is required to meet eligibility criteria for different teaching cadres in university sector. For the purpose, two large universities (i.e. The University of the Punjab and Riphah International University) of the country were chosen for recruiting study participants, as thefaculty strength of each institute was about 1000. The University of the Punjab, Lahore, is oldest and largest university in Pakistan. It has 991 full-time faculty members(pu.edu.pk). Riphah International University is a private sector institution, established in 2002, with the faculty strength of 900 (www.riphah.edu.pk). Hence the total population was about 2000 faculty members. The sample size was calculated online through calculator net, which suggested a sample of 338 respondents with 5% margin of error and a 95% confidence level. Convenience sampling technique was applied to collect data from the faculty members.

Both selected universities offer an ideal settings as faculty members were engage in teaching at various level (i.e. BS, Master/MS and PhD programs) in a range of disciplines from arts and humanities, social and management sciences, engineering, science and technology.

Data Collection Procedures

A questionnaire, comprising two parts, was developed to collect data from the faculty members. The first section of the questionnaire was consisted of measurement items regarding attitude towards behavior, perceived ease of use, Perceived usefulness, self-efficacy, and actual behavior towards open access publishing. The second part of the questionnaire collected the

demographic characteristics of the faculty members such as their age, gender, qualification level, experience, designation and institute. Before collection data, the questionnaire was sent to the experts from library and information science field for their opinion to ensure its content validity. In the light of the feedback provided by the experts, the questionnaire was revised with minor changes.Data were collected personally by physically visiting the offices of the faculty members of both the universities. It took almost three months to collect data. Almost 200 faculty members were approached from the both universities to ensure the total collection of the responses should not be less than the determined sample size. Finally, after multiple visits, the researchers were able to collect 338 dully filled questionnaires.Statistical analysis was applied using Statistical Package for Social Sciences 24.0 (SPSS) software and appropriate statistical tests (i.e. frequency, percentage, mean, standard deviation, correlation and regression analysis) were employed to present and interpret the findings.

Data Analysis and Results

Sample Profile

The findings regarding our sample profile is detailed in table 1 which shows that 58% of the survey respondents were female faculty members and 42% were male.According to the staff directoriesavailable on the websites of the both universities (i.e. University of the Punjab and Riphah International University), the proportion of female faculty members is higher than that of their male counterpart. Hence, the statistics are aligned with the gender ratio data in these universities. With regard to their qualification, a majority of the faculty members (61%) were PhD followed 26% holding the degree of M.Phil. Only a few(13%) had master degrees. Majority of the respondents 62% were from Riphah International University, Lahore and the remaining 38% were from the

University of the Punjab, Lahore. Majority of the faculty member (56%) have had an experience of 11 to 15 years. Almost 30% were found working from past 6 to10 years. A few participants had either less (up to five years) or extensive work experience (more than 16 years).

Table 1

Demographic Profile of the Participants (n=338)

	Frequency	Percentage
Gender		
Male	144	42
Female	194	58
Qualification		
Master	45	13
MPhil	88	26
PhD	205	61
Experience		
up to 5	20	5
6-10	100	30
11-15	188	56
More than 16	30	9
Designation		
Lecturer	74	22
Assistant professor	122	36
Associate professor	36	11
Professor	106	31
Institute-Wise Distribution		
Punjab University Lahore	160	47
Riphah International University	178	53

With regard to the respondents' designation, 36% were assistant professors, followed by professors (31%). Almost 22% were working as lecturer and the rest of them (11%) were working as associate professor at the time of data collection. Fifty three percent faculty members were from the Riphah International University and 47% were from the University of the Punjab. The researcher had approached the equal number of the faculty members from each institute but slightly more faculty members responded form the Riphah International University than those from the University of the Punjab. The demographic details provided in the table indicates a reasonable diversity among the study participants in terms of gender and cadre representation, qualification level, and length of work experience. A reasonable participation of the faculty members from the both universities were also present. Hence, we can safely state that the study participants' demographic profile is representing the characteristics of the actual population.

Descriptive Statistics and Correlational Analysis

Table 2 presents the values of mean and standard deviation (i.e. descriptive statistics) and bivariate correlational analysis of the study variables. The data analysis reveal that values of mean and standard deviation of all the variables were within the range of 3.49 to 3.66 and .639 to .804 respectively. The results indicates that the faculty members who participated in the study were agreed to the provided statements against each variables. Similarly, the results of correlation coefficients show a positive significant association among the study variables. The values of correlation coefficients demonstrate that attitude towards behavior was positively and significantly related to actual behavior of publishing in OA outlets (r = .42, p< 0.01). Moreover, perceived ease of use had a positive association with actual behaviorof publishing in OA

publications(r = .32, p< 0.01).The association of perceived usefulness (r = .40, p< 0.01)subjective norms (r = .42, p< 0.01) and self-efficacy(r = .47, p< 0.01) with actual behavior was also positive and significant. Cronbach's alpha values of the study variables shown in the table range from 0.815 to 0.962 and are above the suggested threshold value of 0.70.It indicates that measurement scale of the study variables had internal consistency.

Table 2

Descriptive Statistics and Correlational Analysis

	Variables	Mean	S.D	A	1	2	3	4	5	6
1	Attitude towards behavior	3.61	.639	.815	1					
2	Perceived ease of use	3.55	.804	.831	.577**	1				
3	Perceived usefulness	3.60	.731	.927	.392**	.489**	1			
4	Subjective norms	3.32	.694		.347**	.215**	.390**	1		
5	Self-efficacy	3.49	.648	.954	.443**	.479**	.717**	.409**	1	
6	Actual behavior of publishing in OA journal	3.66	.802	.962	.419**	.323**	.404**	.423**	.477**	1

Note: ** p< 0.01, α = Cronbach's Alpha.

Direct and hierarchical regression analysis

Hierarchical regression method proposed by Baron and Kenny (1986) was applied to measure the moderating effect of self-efficacy between independent (ATB, PEU, PU, SN) and dependent variables (AB-OAP). Before estimating the proposed model of the study, the preliminary analysis was conducted to meet the certain conditions suggested by Baron and Kenny (1986). For example, normality of the collected data was examined and the values of skewness (± 1) and kurtosis (± 3) were within the acceptable range indicating the suitability of the study data. Furthermore, five-point Likert scale was used for data collection and result showed in table 2 indicate that less variation in the data as the spread around mean values varied from 0.63 to 0.80. There was less possibility for the residuals to be serially correlated as the time component was not involved in the data and responses were collected from the faculty members of the both universities simultaneously. Hence, Ordinary Least Squares (OLS) regress was considered appropriate to attain best, linear and unbiased (BLU) estimates.

In the first step, we employed simple linear regression to examine the direct association between the study variables. Table 3 showed the values of beta showing positive and significant association of ATB with AB-OAP(r = .56, p< 0.0).Similarly, the association of PEU, PUand SN with AB-OAP (r = .31, p< 0.01;r = .48, p< 0.01&r = .42, p< 0.01) was also positive and significant. In short, all the independent variables of the study were positively and significantly associated with the dependent variable (AB-OAP) .

Table 3

Simple linear regression

Variables	B	SE	*T*	*p*-value	R^2
ATB → AB-OAJ†	0.56	.067	8.42	.001	0.20

PEU → AB-OAJ	0.31	.049	6.23	.001	0.10
PU→ AB-OAJ	0.48	.059	8.07	.001	0.16
SN→ AB-OAJ	0.42	.055	7.05	.001	0.20

Note: ATB: attitude towards behavior; PEU: perceived ease of use; PU: perceived usefulness; SN: subjective norms; AB-OAJ: actual behaviorof publishing in open access journal

†= *Dependent Variable:Actual behaviortowards open access publishing*

After that, we measured the moderating effect of self-efficacy (S-EFF) between independent variables and dependent variable (ATB, PEU, PU & SN) and dependent variables (AB-OAP) and results are presented in Table 4, column 1. To examine the moderating effect of S-EFF,an interaction term consisting of ATB and S-EFF was introduced in the regression model. Then, a 2-step hierarchical regression was applied. In the first step, we introduced ATB and S-EFF as independent variables and noted their positive association ($\beta = 0.39$, $p< 0.01$ & $\beta = 0.39$, $p< 0.01$) with AB-OAP respectively. In the second step, we added the interaction term (ATB* S-EFF) and noted a significant positive impact ($\beta = .056$, $p< 0.05$). It implies that self-efficacy (S-EFF) positively moderates the effect of ATB on AB-OAP. Likewise, we estimated the moderation effect of S-EFF on the association of PEU and AB-OAP in Table 4, column 2. The results, more or the less, are the same as a positive and significant association of PEU ($\beta= 0.46$, $p< 0.01$) and S-EFF ($\beta= 0.15$, $p< 0.01$) with AB-OAP. The coefficient value of interaction term (PEU*S-EFF) was noted significant and positive ($\beta= .029$, $p< 0.05$). It implies that self-efficacy positively moderates the association between PEU and AB-OAP. The same procedure was followed to measure the moderating effect of S-EFF on the association between PU and AB-OAP. The results presented in the table 4

column 3 remained the same. The coefficients values of PU (β= 0.25, p< 0.01) and S-EFF (β= 0.36, p< 0.01) as independent variables showed positive association with AB-OAP. Similarly, a positive and significant impact of the interaction term (PCB* AB-OAP) was noted (β= 0.17, p< 0.05). It implies that S-EFF positively moderated the effect of PU on AB-OAJ. Likewise, the moderating effect of S-EFF on the association between SN and AB-OAP, presented in the table 4 column 4, is positive and significant. The values of SN (β= 0.35, p< 0.01) and S-EFF (β= 0.17, p< 0.01) show positive association with AB-OAP. The impact of the interaction term (SN* AB-OAP) was noted as positive and significant (β= 0. 25, p< 0.05).

Table 4
Hierarchical regression for moderation of S-EFF

Table 4
Hierarchical regression for moderation of S-EFF

Variables	ATB & AB (I)			PEU & AB (II)			PU & AB (III)			SN & AB (IV)		
	β	SE	t	B	SE	T	β	SE	t	β	SE	t
Step 1: Independent and moderating variables												
ATB	0.39**	.072	5.41	-	-	-	-	-	-	-	-	-
S-EFF	0.39**	.071	5.56	0.15**	.053	2.79	0.36**	.094	3.89	0.17**	0.78	3.56
PEU	-	-	-	0.46**	.074	6.22	-	-	-	-	-	-
PU	-	-	-	-	-	-	0.25**	.083	2.95	-	-	-
SN	-	-	-	-	-	-	-	-	-	0.35**	.072	2.89
R^2	0.25			0.19			.200			0.23		
ΔR^2	0.25			0.19			.200			0.23		
F-Value (p-value)	54.11 (0.00)			40.97 (0.00)			41.54 (0.00)			52.34 (0.00)		
Step 2: Interaction term												
ATB* AB-OAJ	.056*	.075	0.75	-	-	-	-	-	-	-	-	-
PEU* AB-OAJ	-	-	-	0.28*	0.05	0.15	-	-	-	-	-	-
PU* AB-OAJ	-	-	-	-	-	-	.017*	.071	0.24	-	-	-
SN* AB-OAJ	-	-	-	-	-	-	-	-	-	.025*	.065	0.18
R^2	0.25			0.20			0.23			0.24		
ΔR^2	0.00			0.01			0.03			0.02		
F-Value (p-value)	36.21 (0.00)			27.24 (0.00)			27.63 (0.00)					

Note: ATB: attitude towards behavior; S-EFF: Self-efficacy; PEU: perceived ease of use; PU: Perceived usefulness; AB-OAP: actual behavior towards open access publishing.
*Note: ** indicates p < 0.00, * indicates p < 0.05*

Discussion

Drawing from decomposed theory of planned behavior (DTPB) and social cognitive theory (SCT), the present study examined the direct and moderating effect of self-efficacy in publishing research on the actual behavior of publishing with OA. This study extends the previous literature on the topic by adding the component of self-efficacy.

The study results show that attitude towards behavior (ATB), perceived ease of use (PEU), perceived usefulness (PU) and subjective norms (SN)significantly and positively influence the actual behavior of publishing with OA. Previous studies also supported these findings (e.g. Gangwal and Bansal, 2016; Sadaf et al., 2012). A recent study by Khokhar, Rafiq and Malik (2023)also reported the similar findings where PEU and PU positively influenced the ATB which in turn had positive effect on behavioral intentions. Prior literature also reported that many scholars and prominent scientists are being interested in the discussion to reform the existing scholarly communication system to an OA system (Suber, 2016)Faculty positive attitude could be due to certain benefits attached with OA publishing. For example, OA gives the rights to reproduce, create, and share content. Furthermore, OA raises the visibility of faculty and their research, lowers cost to information access and supports their mission of knowledge sharing. The knowledge workers, authors, and researchers are also interested in making their articles widely accessible in order to maximize the impact of their study and remain informed in their disciplines.

Positive and significant influence of SN indicates that professional colleagues, and peers' opinion affects the faculty members' behavior towards OA publishing. It implies that if the people around them hold a positive views about OA publishing, they are more likely to publish with OA outlets. This study found a positive moderating effect of self-efficacy on actual behavior of

publishing in OA with its determinants (i.e. ATB, PEU, PU & SN). It indicates that faculty members who have skills to publish their research are more likely to have positive attitude towards OA publishing. Moreover, they find OA publishing more beneficial and easy.

The major challenge for OA movement is how to advocate, and convince researchers, scholars, librarians, universities and other funding agencies to publish in open access journals and other outlets. Simply, it is a challenging how to expand engagement beyond access to publishing. This study findings suggest a potential role for senior faculty, university authorities in achieving this goal. OA as a means of increasing access to a wider body of research and enhancing exposure to global research and exposure to global research trends. It is a common assumption that researchers from developing countries encounter certain hindrances to publish with OA outlets, for instance, non-affordability of article processing charges

Implications and Conclusion

This study provide theoretical and practical implications. Theoretically, our study contribute to the literature by reporting the moderating role of self-efficacy on theattitude towards behavior (ATB), perceived ease of use (PEU), perceived usefulness (PU) and subjective norms (SN) and actual behavior. This understanding can be used as a guideline to develop programs to train faculty members in conducting and publishing research as this will enhance their actual behavior of publishing in OA. Practically, the study findings established the need of awareness among faculty members. Furthermore, positive effect of perceived ease of use reveal the need of user-friendly interface and easy to understand mechanism for submitting articles in OA publishing outlets.

The significant moderating effect of self-efficacy denotes that if faculty members are competent in conducting research, they will more likely to publish in OA journals. Self-efficacy can enhance positive attitude towards OA publishing, help to understand the benefits of publishing in OA, increase the ease of publishing in OA outlets. These results indicate that universities and funding agencies should devise training program to enhance faulty members' research and publishing skills. Their ability and confidence to conduct and publish research would enhance submission to OA journals.

The present study is based on a self-reported survey, future researcher can employ other research design such as qualitative, or even mixed methods. Moreover, future studies can select their participants form other universities. Finally, future researchers may extend their studies by considering other potentially influencing factors such as trust, perceived cost, and perceived quality of OA journals to understand the OA publishing behavior.

OAP paradigm is gaining momentum due to prevailing digital environment which is going to stay and university faculty members are the key contributors to academic journals and this study will hopefully contributed to the insights how to facilitate them in this regard.

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