Determinants of Research Motivation and Productivity: Evidence from University of Sargodha

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Abstract

The aim of the study is to examine the relationship between the learning styles of classroom students in the force and energy unit and their scientific process skills. In the study, pre-test and post-test weak experimental design without a control group was used. The research was carried out in 2 different secondary schools in the central district of a metropolitan province. In the study, a total of 59 seventh-grade students were studied. The study lasted 5 weeks. The lessons were planned taking into account the scientific process skill steps. In the study, Kolb's learning styles inventory and scientific process skills test were applied as pre-test and post-test. Arithmetic averages, standard deviations, and percentages were calculated for the analysis of the data, and unrelated t-tests and dependent-tests were performed to determine whether there was a significant difference between the pre-test and post-test results of the learning styles. Analysis of Variance analysis was performed to determine whether there was a difference in the scientific process skills of the learning styles. The obtained data have been analyzed with SPSS 22 packet program. As a result of the research, when the pre-test and post-test results of the students were compared, it was observed that there was an increase in scientific process skills in all learning styles. When the pre-test and post-test averages were examined, the students with the highest average assimilation learning style were the students with the least dissociation. When the pre-test and post-test results of the Scientific Process Skills within the groups were compared, no significant difference was found in the learning styles that separate and absorb, while a significant difference was found in the learning styles that place and change. It was observed that the students had different learning styles, but there was no significant difference in terms of scientific process skills. However, a significant difference was found in classifying, using space/time relations, and hypothesizing scientific process skills.

Keywords: Research Motivation, Research Productivity, Research self-efficacy, Research Preference, Desire for achievement, Research Interest

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Introduction

Pakistan's higher education system had depicted a dismal picture in the past viewed in the context of its developmental role in society (Iqbal, 2018). Pakistan has undergone a profound national transformation since 2002, when the Higher Education Commission (HEC) of Pakistan was established, which initiated great reforms supported by enormous financial resources. The main purpose of HEC was to expand higher education, ensure its quality, and develop a research culture (Iqbal, 2018). Thus, higher education institutions' research activities were primarily promoted and supported as part of these reforms. As a matter of policy, government institutions were given preference because they make up a sizable portion of the country's higher education market. As a result, there was a noticeable increase in some national research-related indicators, such as publications, conferences, and research articles, that provide a general overview of the expanding research-friendly environment in Pakistani universities (Lodhi, 2016).

Academic research is a growing field of intellectual inquiry. Many aspects of academic research, such as productivity, the connection between teaching and research, and the effects of university research culture on academic research, have been the subject of varying amounts of scholarly writing. The post-reform situation of higher education, which has emerged specifically regarding factors affecting research productivity, has yet to be studied in the context of any specific Pakistani university. Therefore, it was decided to investigate how personal and organizational factors affect research productivity and motivation. This research is intended to identify variables that affect the research motivation and research productivity of faculty members at the University of Sargodha (SU). It examined how different aspects of the university or the researchers' attributes impact their research output including the gender and time spent on research work.

Literature review

Producing new knowledge and improvements through active participation in research is one of the main tasks of research universities. The competitiveness in higher education has posed challenges for all universities promoting research productivity (Nguyen, 2015). This may happen by shifting teachers from education to research in research universities (King, 2004). Research is considered the most legitimate job for university scholars (Cummings & Shin, 2014) and faculty members. Research output is an important measure for appraisal and promotion at universities worldwide, and qualitative and quantitative methods are used to assess research productivity (Nguyen, 2015; Horodnic & Zaiţ, 2015). A qualitative measure is the total number of references in abstracted journals, while a quantitative measure is the total number of researcher's publications over a period of time. Both dimensions are used yearly when universities are ranked in the world ranking system. Others focus on four output measures: quality, volume, utility, and impact (Geuna & Martin, 2003).

Citations are an important indicator of the quality of publications (Nguyen, 2015). For example, it is found that there is always a positive correlation between the total publications and the journal articles' quality in terms of creating knowledge in the field. Out of the 13 performance indicators under five areas used for the annual assessment and world research universities ranking by Times Higher Education, it indicated that citation is currently the most prominent of all, which indicates the contribution of a publication to the total amount of human knowledge (Times Higher Education, 2023). However, qualitative measurements are always difficult since only some articles are acknowledged in research databases, and the true value of publications is difficult to find. So, quantitative rather than qualitative measures are widely used to evaluate teachers' research productivity at most universities worldwide (Nguyen, 2015). However, articles published in advanced journals indexed in databases such as Scopus and Thomson Reuters are considered useful. For the academic ranking of universities, citations in academic journals are tracked by ISI databases (Buela-Casal, 2007).

Many researchers have investigated the research productivity of academicians and its determinants. Lertputtarak (2008) in Thailand investigates the aspects contributing to the low productivity level of research among teachers in public universities through in-depth interviews. He identified three barriers to research productivity, i.e., teachers are overburdened, they need more university support, and scholars lack research self-efficacy. Sulo (2012) investigated variables contributing to the low output of research in academia in Kenyan universities. The analysis revealed that time for research, teachers' access to funding, and the research environment were positively related to research productivity. The number of conferences researchers attended each year, and the amount of grants respondents received was positively correlated. Bentley and Kyvik (2012) studied the impact of time given to research by scholars in international research and predicted that the more time they spend on research, the higher their research productivity.

Smeby and Try (2005) investigated the impact of research settings and the time consumed by the researchers. They found that researchers with a Ph.D. degree provided research guidance, collaborated with other researchers, and supported junior scholars. Teodorescu (2000) conducted an extensive international study to observe the impact of organizational and personal variables on research productivity in researchers with a sample of 11,572 full-time scholars from ten different nations. Research findings point to the importance of attending professional research conferences or becoming a participant in an organization association. Scholars developed their investigation abilities and outcomes by participating in specialized groups through debate and discussion with other researchers. Blackburn et al. (1991) also emphasize the advantages of a research setting where scholars collaborate and receive peer support.

Studies in this area reveal that research productivity is based on many external and internal variables. The range of variables includes educational field, personal characteristics (Teodorescu, 2000), educational background (Smeby & Try, 2005), self-efficacy of research (Lertputtarak, 2008), early research direction, time for research (Bentley & Kyvik, 2012), heads' leadership style, the incentive and award system, interest of research, the research culture of the department (Awan, 2022), organizational characteristics, assignment of administrative tasks, the number of postgraduate education programs, and the acquisition of research funding(Sulo et al., 2012). Different studies have looked at different disciplines and organizational types across the world. Therefore, to prepare the conceptual background for this study, personal and organizational factors were considered sufficient to examine. Research productivity was examined in two sets of publishing outputs: 1) the overall publications of SU researchers in national refereed journals and, 2) the overall publications of SU researchers in international refereed journals recognized by HEC Pakistan.

Objectives

The specific objectives of the study are:

1. To explore the personal and organizational factors affecting teachers' motivation for research and research productivity at the University of Sargodha.
2. To discover the association between the time spent on research and the number of articles published in national and international refereed journals.
3. To investigate the role of gender in publishing nationally and internationally.
4. To assess the effect of personal and organizational factors on research motivation and the publication output of teachers at the University of Sargodha.

Methodology

Research Design

This descriptive study used a survey technique to collect data directly from faculty members about their opinions regarding factors affecting research productivity and their motivation.

Population and Sample

The population of this study comprised the teaching faculty at the University of Sargodha. Therefore, teachers from different departments of Sargodha University were the subject of study. Data were collected from 170 teachers of ten departments from social science and science faculties who were randomly selected.

Research Instrument

After reviewing the literature (Bland et al., 2005; Nguyen, 2015; Peng & Gao, 2019; White & Allen, 2012), a questionnaire was developed as a research instrument. The questionnaire has three parts. Part one was related to demographic information, part two was related to five personal factors, and part three covered eight organizational factors. After conducting a comprehensive review of existing literature, a Likert-type questionnaire comprising five points was developed as the research instrument. A comprehensive list of all factors mentioned in previous research was made and the factors were short-listed based on the consultation of experts' opinion in the field. This questionnaire comprising 26 items was designed to measure five specific constructs related to researchers' attributes i.e. Research Self-efficacy, Research Orientation, Desire for Achievement, Research Interest, and Research Motivation. Forty Items were also developed to measure eight constructs related to organizational factors i.e. Teaching Load, training and Seminars, Resources and Funds, Academic Promotion, Peer Support, Research Policy, Climate in the Department, and the leadership of Heads. The validity of the tools was determined by expert opinion and for reliability internal consistency was measured through using SPSS. The number of items for each sub-scale and Cronbach alpha values are reported in Table 1.

Results

Quantitative data analysis was performed using SPSS. Data were analyzed by applying mean, standard deviation, chi-square, linear regression, and multinomial logistic regression.

Table 1

Mean, Standard Deviation Pearson Correlation Coefficient and Alpha values of Personal and Organizational Factors

SN	Personal Factors	Mean	SD	A	No of items	Motivation	National Publications	International Publications
1	Research Self-efficacy	3.929	0.706	.952	7	.865[**]	.030	.007
2	Research Orientation	4.003	0.688	.926	4	.799[**]	.081	.047
3	Desire for Achievement	3.907	0.784	.936	5	.798[**]	.050	.073
4	Research Interest	3.941	0.712	.903	6	.800[**]	.025	.014
5	Research Motivation	3.932	0.690	.935	5	-	.051	.016

	Organizational Factors							
1	Teaching Load	4.088	1.048	.804	4	.569**	-.174*	-.159*
2	Training and Seminars	3.318	1.159	.905	6	.412**	.130	.123
3	Resources and Fund	2.925	0.954	.767	6	.299**	-.039	-.041
4	Academic Promotion	3.616	1.002	.832	4	.485**	.018	-.024
5	Peer Support	2.937	0.872	.811	4	.443**	.139	.075
6	Research Policy	3.288	0.937	.794	6	.343**	.026	-.001
7	Climate in Department	3.649	1.053	.860	5	.361**	-.031	-.012
8	The leadership of Heads	3.760	1.000	.927	5	.484**	.099	.126

The above table shows the mean values of personal and organizational factors. Researchers' perceptions were very similar in terms of both factors. It was observed that researchers' self-efficacy, research orientation, and desire for achievement were high. Teachers were motivated and had a strong research interest. It was also evident that there was good support from departmental heads to the researchers, with a clear research policy in a better research climate for the departments. Researchers were unhappy with the available resources and funds and perceived their teaching workload as too high for research. Moreover, they were unsatisfied with the support from colleagues. The correlation values reflect that motivation was highly and significantly related to all personal and organizational factors. Contrary to these results, research productivity regarding national and international journals' publications was insignificant and weekly correlated. In some cases, it was negatively related to both categories of factors, such as teaching workload, the non-availability of funds and other resources, and the non-conducive climate of the department.

Table 2

Spearman Rank Correlation coefficients for Time Spent on Research and Number of articles in National and International Refereed Journal

		Time Spent on Research
1	Articles in National Refereed Journal	.364**
2	Articles in International Refereed Journal	.366**

**. Correlation is significant at the 0.01 level (2-tailed).

Table 3 indicates a positive and moderate correlation (r= .364) between the time spent on research and national refereed journals. The table also indicates a positive and moderate correlation (r= .366) between time spent on research and the number of articles published in international refereed journals.

Table 3

Chi-square between Gender and Number of Articles in National Refereed Journals

Research Articles		Male	Female	Total	X^2	P
1-5	Count	41	53	94	13.012	.001
	Expected Count	50.9	43.1	94.0		
6-10	Count	20	16	36		
	Expected Count	19.5	16.5	36.0		
More than 10	Count	31	9	40		
	Expected Count	21.6	18.4	40.0		
Total	Count	92	78	170		
	Expected Count	92.0	78.0	170.0		

The above table shows a significant difference between gender and national refereed journals, X^2 (2, N = 170) = 13.012, p = .001. An association was found between gender and the number of articles in national refereed journals. It also indicates that male teachers were more likely to publish in national refereed journals than female teachers.

Table 4

Chi-square between Gender and International Refereed Journals

Research Articles		Male	Female	Total	X^2	P
1-5	Count	57	61	118	5.318	.070
	Expected Count	63.9	54.1	118.0		
6-10	Count	11	6	17		
	Expected Count	9.2	7.8	17.0		
More than 10	Count	24	11	35		
	Expected Count	18.9	16.1	35.0		
Total	Count	92	78	170		
	Expected Count	92.0	78.0	170.0		

The above table shows a significant difference between gender and publications in international refereed journals, X^2 (3, N = 170) = 5.318, p = .070. There was no association between gender and international refereed journals.

Table 5

Multiple Linear Regression Analysis of Research Motivation toward Personal Factors

	B	SE	Beta	t	P	R^2
(Constant)	.396	.214		1.850	.066	.631
Research Self-efficacy	.469	.080	.457	5.862	.000	
Research Preference	.028	.069	.031	.405	.686	
Desire for Achievement	.117	.078	.118	1.504	.134	
Research Interest	.277	.077	.271	3.578	.000	
F= (4,165) 70.577, Sig. =.000						

The output in the table shows a high degree of the coefficient of determination (.631), which signaled that the personal factors explained 63.1% variations in research motivation. The outcome in the table portrayed that the regression equation utilized in this research was significant toward research efficacy (β = .457, p<.05) and research interest (β = .271, p<.05). While for research preference and desire for achievement, it was not significant.

Table 6

Multiple Linear Regression Analysis of Research Motivation toward Organizational Factors

	B	Std. Error	Beta	t	P	R^2
(Constant)	2.181	.260		8.396	.000	.290
Teaching Load	.212	.052	.315	4.081	.000	
Training and Seminars	.077	.057	.126	1.340	.182	
Resources and Fund	-.007	.063	-.010	-.113	.910	
Academic Promotion	.064	.057	.091	1.120	.264	
Peer Support	.128	.070	.158	1.824	.070	
Research Policy	-.095	.069	-.126	-1.376	.171	
Climate in Department	-.056	.065	-.084	-.860	.391	
Leadership of Heads	.129	.062	.183	2.089	.038	
F=(8,161) 8.233, Sig. =.000						

The output in the table shows a moderate coefficient of determination (.290), which signaled that the organizational factors explained 29% of variations in research motivation. The outcome in the table portrayed that the regression equation utilized in this research was significant towards teaching load (β = .315, p<.05) and Leadership of departmental heads (β = .183, p<.05). While for other organizational factors, it was not significant. Overall organizational factors made a significant contribution to explaining the research motivation.

Table 7

Multinomial logistic Regression for Publications in National Journals and Personal Factors

Articles in National Refereed Journals		B	$SE\ B$	Wald	P	Exp (B)	95% CI LL	UL
1-5	Intercept	1.280	1.290	.985	.321			
	Self-efficacy	.500	.499	1.001	.317	1.648	.619	4.386
	Preference for Research	.178	.390	.209	.648	1.195	.557	2.566
	Desire for Achievement	.144	.458	.098	.754	1.155	.470	2.835
	Research Interest	-.191	.493	.151	.698	.826	.314	2.170
	Motivation	-.735	.470	2.450	.118	.479	.191	1.204
6-10	Intercept	.952	1.550	.377	.539			
	Self-efficacy	1.299	.665	3.818	.050	3.667	.996	13.505
	Preference for Research	-.565	.488	1.344	.246	.568	.218	1.478
	Desire for Achievement	.512	.584	.769	.381	1.668	.531	5.237
	Research Interest	-.535	.567	.889	.346	.586	.193	1.781
	Motivation	1.013	.582	3.028	.042	1.363	.116	1.137
R^{2} = .119, X^2 = 10.575, p = .392								

Note. N=170, a. The reference category is More than 10.

A multinomial logistic regression was performed to model the relationship between the predictors and research publications in national refereed journals in the three groups (1-5 publications, 5-9 publications, and 10 or more publications). The logistic regression model was statistically insignificant, X^2 (10, N = 170) = 10.57, p = .392. The model explained 12% (Nagelkerke R^2) of the variance in research productivity.

Results indicated that *self-efficacy* (B=1.299, Wald =3.8, p=.050, 95% CI [.966, 13.505]) and *motivation* (B=1.013, Wald =3.0, p=.042, 95% CI [.116, 1.137]) were significantly related to publications in national refereed journals. Other personal factors were not significant predictors in the model. The self-efficacy of the group with more than 10 publications was higher than that of 6-10 research publications (OR=3.67, 95% CI [.996, 13.50]). The motivation of the group with more than 10 publications was higher than that of 6-10 research publications (OR=1.36, 95% CI [.116, 1.137]). All other factors were not associated with the increased number of papers in national journals.

Table 8
Multinomial Logistic Regression of Publications in National Journals and Organizational Factors

National Refereed Journals		*B*	SE B	Wald	P	Exp (β)	LLCI	ULCI
	Intercept	1.420	1.123	1.597	.206			
	Teaching Load	-.059	.227	.068	.794	.942	.604	1.470
	Training and Seminars	.450	.242	3.469	.063	1.569	.977	2.519
	Resources and Fund	-.145	.273	.282	.596	.865	.506	1.478
1-5	Academic Promotion	-.044	.247	.032	.857	.957	.590	1.551
	Peer Support	-.218	.301	.521	.470	.804	.446	1.452
	Research Policy	.241	.287	.707	.401	1.272	.725	2.232
	Climate in Department	-.711	.298	5.709	.017	.491	.274	.880
	Leadership of Heads	.357	.275	1.691	.194	1.429	.834	2.449
6-	Intercept	.890	1.307	.464	.496			
10	Teaching Load	-.270	.257	1.106	.293	.763	.462	1.263
	Training and Seminars	.473	.293	2.612	.106	1.605	.904	2.851
	Resources and Fund	-.042	.324	.017	.897	.959	.508	1.809
	Academic Promotion	-.192	.292	.435	.510	.825	.466	1.461
	Peer Support	.064	.372	.030	.862	1.067	.514	2.212
	Research Policy	-.031	.346	.008	.929	.969	.492	1.911
	Climate in Department	-.278	.342	.660	.417	.758	.388	1.480
	Leadership of Heads	.049	.321	.023	.880	1.050	.559	1.971

R^2 = .099, X^2 = 15.216, p = .509

Note. N=170, a. The reference category is: More than 10

A multinomial logistic regression was performed to model the relationship between the predictors and research publications in international refereed journals in the three groups (1-5 publications, 5-9 publications, and 10 or more publications). The logistic regression model was not statistically significant, X^2 (10, N = 170) = 15.216, p = .509. The model explained 9.9% (Nagelkerke R^2) of the variance in research productivity.

The result indicated that the research climate of the department (*B*=-.711, Wald=5.709, p=.017, 95% CI [.274, .880]) was significantly related to publications in international refereed journals. Other organizational factors were not significant predictors in the model. The researchers with more than 10 publications were less satisfied with the research culture in the department than those with 1-5 research publications (OR=.491, 95% CI [.274, .880]). Teaching load, research funding, academic promotions, peer support, research policy, and leadership of departmental heads were not associated with the increased number of papers in national journals.

Table 9

Multinomial logistic Regression Analysis of Teacher's Publications in International Refereed Journals and Personal Factors

National Refereed Journals		*B*	SE B	Wald	P	Exp (β)	LLCI	ULCI
1-5	Intercept	.367	1.221	.090	.764			
	Self-efficacy	.122	.522	.055	.815	1.130	.406	3.146
	Preference for research	.472	.401	1.387	.239	1.604	.731	3.520
	Desire for Achievement	-.097	.454	.046	.830	.907	.373	2.208
	Research Interest	.582	.477	1.491	.222	1.790	.703	4.557
	Research Motivation	-.855	.484	3.115	.058	.425	.165	1.099
6-10	Intercept	-.036	1.719	.000	.983			
	Self-efficacy	.841	.812	1.073	.300	2.319	.472	11.384
	Preference for research	-.581	.571	1.036	.309	.559	.183	1.712
	Desire for Achievement	.514	.658	.608	.435	1.671	.460	6.073
	Research Interest	-.415	.592	.490	.484	.661	.207	2.109
	Research Motivation	-.585	.680	.740	.390	.557	.147	2.113
R^2 = .095, X^2=13.481, p=.198								

Note. N=170 a. The reference category is more than 10.

A multinomial logistic regression was performed to model the relationship between the predictors and research publications in international refereed journals in the three groups (1-5 publications, 5-9 publications, and 10 or more publications). The logistic regression model was not statistically significant, X^2 (10, N = 170) = 13.481, p = .198. The model explained 1% (Nagelkerke R^2) of the variance in research productivity. Self-efficacy, preference for research, and motivation were not associated with the increased number of papers in international journals.

Table 10

Multinomial logistic Regression analysis of teacher publications in International Refereed Journals and Organizational Factors

International Refereed Journals		B	SE B	Wald	P	Exp (β)	LLCI	ULCI
1-5	Intercept	1.039	1.102	.889	.346			
	Teaching Load	.093	.216	.186	.666	1.098	.719	1.676
	Training and Seminars	.480	.245	3.843	.050	1.617	1.000	2.613
	Resources and Fund	-.319	.276	1.336	.248	.727	.423	1.249
	Academic Promotion	-.092	.250	.134	.714	.913	.559	1.489
	Peer Support	-.074	.311	.057	.811	.929	.505	1.707
	Research Policy	.115	.290	.158	.691	1.122	.636	1.979
	Climate in Department	-.443	.281	2.483	.115	.642	.370	1.114
	Leadership of Heads	.269	.266	1.023	.312	1.309	.777	2.207
6-10	Intercept	.966	1.593	.368	.544			
	Teaching Load	.090	.319	.079	.778	1.094	.586	2.043
	Training and Seminars	.143	.396	.131	.718	1.154	.531	2.510
	Resources and Fund	-.217	.436	.247	.619	.805	.343	1.891
	Academic Promotion	.095	.369	.067	.796	1.100	.534	2.267
	Peer Support	-.705	.412	2.928	.087	.494	.220	1.108
	Research Policy	.582	.449	1.676	.195	1.789	.742	4.317
	Climate in Department	-.473	.429	1.214	.270	.623	.269	1.445
	Leadership of Heads	-.006	.400	.000	.988	.994	.453	2.178

$R^2 = .114$, $X^2 = 16.356$, p = .428

Note. N=170, a. The reference category is: More than 10

A multinomial logistic regression was performed to model the relationship between the predictors and research publications in international refereed journals in the three groups (1-5 publications, 5-9 publications, and 10 or more publications). The logistic regression model was not statistically significant, X^2 (10, N = 170) = 16.356, p = .428. The model explained 11.4% (Nagelkerke R^2) of the variance in research productivity.

The result indicated that the training and seminars (B=.480, Wald= 3.84, p=.050, 95% CI [1.00, 2.613]) were significantly related to publications in international refereed journals. Other organizational factors were not significant predictors in the model. The researchers with more than 10 publications were more inclined toward training and seminars in the department than those with 1-5 research publications (OR=1.617, 95% CI [1.000, 2.613]). Teaching load, research funding, academic promotions, peer support, research policy, and leadership of departmental heads were not associated with the increased number of papers in national journals.

Discussion

The findings regarding personal factors revealed that researchers rated themselves high on all dimensions. They were motivated, had an interest, and preferred doing research. According to the findings, respondents agree they have high research self-efficacy as they can create research hypotheses, select appropriate data analysis techniques, utilize APA referencing in research, and appropriately report on data analysis. These results contradict Awan (2022), revealing that teachers' belief in their self-efficacy was not very strong, and they were moderately motivated. The findings also support the views of Garnasih et al. (2017), who reported that research self-efficacy among the lecturers was high, especially in writing the introduction, research methodology, discussion of results, and research publication. Findings related to research interest indicated that respondents agreed that they often try to find the newest topics and enjoy conducting research in their favorite field. The finding supports the view of Ramsden (1994) that the teachers who had high academic ranks frequently participated in research activities; they were more interested in research and were more productive.

It was also evident from the results regarding organizational factors that there was good support from the departmental heads to the researchers, organizing training, seminars, workshops, and conferences and making the department climate conducive for research activities. Researchers were unhappy with the availability of resources, funds, and peer support for research endeavors, and they perceived their teaching workload as too high to do the research. This result backs Blackburn and Lawrence's (1995) and Awan's (2022) findings that teachers' productivity in research decreases with the increase in teaching load. Sulo et al. (2012) identified a strong link between the number of research publications they produce and the research funds that teachers receive. Researchers reported that they do research for promotions, better salaries, and other incentives. According to Zhang (2014), 82.8% of participants agreed that getting a promotion is their big research motivation factor. The findings also provide evidence that respondents wanted to do research in collaboration with others in the departments, which they were partly missing. Bland and Ruffin (1992) emphasize the importance of collaboration between teachers, which should frequently occur to increase research output and create a research environment in the department and the university.

It was found that there was a positive and moderate correlation between time spent on research and publications in national and international refereed journals. This finding is consistent with Hu & Gill (2000), who claim that time spent on research positively correlates with research productivity. According to the findings, respondents agree that they often need more time to complete their research projects. The findings are consistent with the idea of Smeby and Try (2005), documenting that time allocation is an

important input factor and a predictor of research completion and productivity. Hemmings and Kay (2010) report that researchers who allocate more work time to executing research tasks are better at producing scholarly products. Time spent on research is a strong predictor of research publication. Male teachers were more likely to publish in national and international refereed journals than female teachers. The finding supports the view of Kaya & Weber's (2003) research on gender and publication productivity suggests that men publish more articles than women.

It was found that personal and organizational factors significantly contributed to explaining the research motivation. Research self-efficacy, research interest, workload, and role of department heads were the major contributing factors. However, Chen et al. (2006), who worked on 12 motivational factors in personal and organizational categories, found that motivation reflects psychological status, so it is not easy to achieve; moreover, the type of motivation can change over time. Horodnic and Zaiţ (2015) found a positive correlation between intrinsic motivation and research productivity, implying that researchers who are strongly interested in their research are more productive. Schunk (1995) shows that self-efficacy predicts performance and motivation. Bailey (1999) concluded that highly qualified teachers with greater research productivity were self-efficacious about research and were consequently more motivated. Awan (2022) explains that the researchers feel more motivated with high self-efficacy. Ng et al. (2008) asserted that people with manageable workload are more likely to experience increased motivation. Awan further emphasizes that supportive leadership is worthwhile in creating a conducive research culture by managing the teaching workload and fostering self-efficacy, resulting in greater motivation to engage the faculty members in research activities.

According to the findings, personal and organizational factors insignificantly impact productivity in the research of teachers. Only research self-efficacy, research motivation, and department climate impacted research productivity. These findings are mixed and only partly coincide with previous research. Contrary to our research Teodorescu (2000) claimed a high correlation between the personal and organizational factors and the research productivity of teachers. The findings coincide with Blackburn et al. (1991), who investigated the relationship between organizational and personal characteristics in research publications, which showed that the most important indicators for research publications were research self-efficacy, research interest, research culture of the department, financial support for research, and research grants. Bay and Clerigo (2013) assured that researchers' confidence in writing the research and organizational support are the most pertinent factors in creating a research culture. Sulo et al. (2012) concluded that the research environment, funding, and researchers' qualifications were significantly and positively related to the research output. They reported that time

allocated to research, researchers' qualifications, research environment, and funding explain 51% variation in research output. Jung (2012) demonstrated that personal characteristics, workload, and institutional characteristics influence research productivity.

Conclusion

It was concluded that personal and organizational factors differentially affect research motivation and productivity. Time spent on research does improve the number of articles in national and international refereed journals. Male teachers were more likely to publish in national and international refereed journals than female teachers. Findings indicated that teachers' self-efficacy, research motivation, and the department's climate were significantly related to teachers' publications. The findings revealed that the university did not provide sufficient funding for conducting and publishing research. In conclusion, the examination of factors influencing teachers' research productivity underscores the intricate relationship between personal attributes and organizational support. While researchers typically exhibit high levels of motivation, self-efficacy, and research interest, they often face challenges stemming from organizational limitations such as insufficient resources and heavy teaching loads. Despite supportive measures like departmental training and seminars, collaboration within departments remains an area needing improvement.

The findings emphasize the pivotal roles of personal factors like self-efficacy and intrinsic motivation, alongside organizational factors such as departmental climate and leadership support, in improving research productivity. Notably, the observed gender gap in publication rates prompts reflection on issues of equity within academia. Additionally, the correlation between research time investment and publication output underscores the importance of workload management. While some findings align with prior research, discrepancies highlight the need for further exploration into the multifaceted influences on teachers' research productivity. Future initiatives to enhance research culture should prioritize bolstering self-efficacy, providing adequate resources, and addressing workload concerns. By addressing these factors, institutions can cultivate an environment conducive to robust research engagement, thereby enriching scholarly discourse and advancing educational knowledge.

Suggestions

It was found that the university did not provide the research funding for conducting research and university faculty paid publication fees themselves. It is recommended that universities may provide organizational support for research by giving ample funds to university teachers to conduct and publish research which ultimately increases university ranking. Sufficient financial resources are crucial for effective research conduct and

publication in reputable journals. Universities may organize workshops, seminars, and training sessions aimed at enhancing faculty members' research skills and competencies to boost research productivity. These initiatives should cover various facets of the research process, including literature review, data analysis, and publication strategies.

Institutions should strive to cultivate an environment that fosters a supportive research culture characterized by collaboration, openness, and recognition of scholarly achievements. Acknowledging and rewarding faculty members' research contributions can incentivize continued engagement in research pursuits. Universities may consider adopting flexible workload management policies to enable faculty members to effectively balance teaching, administrative duties, and research commitments. Supporting workload management can alleviate the strain on researchers and enable them to dedicate sufficient time and effort to scholarly endeavors.

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