Research self-efficacy and research productivity: evidence from academics in Tanzanian public higher education institutions

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Abstract

Purpose – This study aims to examine the influence of research self-efficacy (RSE) on academics' research productivity (RPR) in public higher education institutions in Tanzania.

Design/methodology/approach – A cross-sectional design was utilized to collect and analyze data from 247 academics in four public higher education institutions in Tanzania.

Findings – The findings show that RSE has a positive and significant influence on academics' RPR in higher education ($\beta = 0.657$ and $p < 0.001$).

Practical implications – Higher education institutions should focus on creating a favorable work environment that fosters academics' RSE so as to enhance more productivity in terms of research.

Originality/value – The results of this study expand the aspects in which social cognitive theory can be applied in Tanzania's higher education institutions. On the other hand, by conducting empirical-based research on the influence of RSE on RPR in developing nations like Tanzania, the findings contribute to the literature on RSE and RPR.

Keywords Research, Research self-efficacy, Research productivity, Academics, Tanzania

Paper type Research paper

1. Introduction

What makes up the work of academics in a higher education? The most common answer to this question is teaching, research and service-related activities (Sacre *et al.*, 2023), whereas these core functions are given a substantial attention in institutional mission statements as well as the strategic plans (Nguyen, 2022; Delbari *et al.*, 2020; Sharp *et al.*, 2011). Despite having different roles, the promotion and tenure decisions of academics as well as recognition within their disciplines relies much on the number and quality of their scholarly works (Ismayilova and Klassen, 2019; Wester *et al.*, 2020). Academics who are highly productive in research are able to advance to higher positions, whereas, those who are less productive remain stagnant in their current positions, putting their prospects of occupation and advancement at risk (Ismayilova and Klassen, 2019). Research brings higher returns of prestige and reputation in academia as a result it is being valued over teaching and service

related activities (Sukoco *et al.*, 2023; Silva *et al.*, 2022). Thus, there is an ongoing demand for academics in higher education institutions to conduct research.

However, for one to achieve worthwhile goals in his daily activities he/she should be self-efficacious (Bandura, 1977). Based on the social cognitive theory (SCT), self-efficacy is the belief in one's capacity to organize and carry out the actions required to accomplish particular objectives (Haider and Dasti, 2021; Matos *et al.*, 2021). Self-efficacy significantly influences how goals, tasks and obstacles are tackled (Amirian *et al.*, 2022; Fatima *et al.*, 2022). Similarly, research self-efficacy (RSE) refers to individual's belief or confidence in their capacity to carry out duties related to conducting research (Litson *et al.*, 2021; Forester *et al.*, 2004). It explains why academics focus on research and determines the amount of efforts they devote to attain success in research activities (Manitzas Hill *et al.*, 2022).

Prior research demonstrated a positive influence of RSE on research related outcomes in higher education (Adekunle, 2022; Gaoat, 2022; Ocampo *et al.*, 2022; Zhang, 2022; Garnasih *et al.*, 2017; Hemmings and Kay, 2009). Academics with higher levels of RSE are more likely to produce more, whereas those with low RSE tend to produce less research output (Livinţi *et al.*, 2021; Nazari *et al.*, 2021). Furthermore, despite having studies that explored RSE and research productivity (RPR) in higher education, a number of these studies have been conducted in developed countries, there is dearth of research in the context of developing countries, in particular Tanzania. Besides, previous studies, however, have produced inconsistent results, leading to the conclusion that RSE and RPR relationship is inconclusive (Ocampo *et al.*, 2022; Zhang, 2022; Hemmings and Kay, 2009; Pasupathy and Siwatu, 2014). However, given the fact that self-efficacy results from a relationship between personal characteristics, behavior patterns and environmental factors (Wood and Bandura, 1989) the differences in institutional working environments may limit the relevance of the results obtained. The amount of resources available in most higher education institutions in developing countries is significantly lower when compared to those in developed nations (Zarei and Mohammadi, 2022; Ismayilova and Klassen, 2019), whereas, favorable work environment with enough resources enhances academics RPR (Aboagye *et al.*, 2021). On the other hand, some studies recommended additional research on RSE and outcomes, such as productivity, to have a greater implication on higher education (Garnasih *et al.*, 2017; Jang and Shin, 2011). Moreover, other studies also call up for more investigation on RPR in higher education in African institutions as it is still low and imbalanced (Platania and Paolillo, 2022; Uwizeye *et al.*, 2021; Nafukho *et al.*, 2019; Muriithi *et al.*, 2018). Thus, by examining the influence of RSE on academics' RPR in higher education institutions in Tanzania, this study seeks to fill the existing knowledge gap. The study's findings may provide higher education with useful information that will assist in creating a favorable work environment that fosters academics' RSE in order to enhance RPR through training and capacity building programs.

2. Literature review and development of study hypothesis
2.1 SCT
Consistent with previous studies (Adekunle, 2022; Amirian *et al.*, 2022; Gaoat, 2022; Abun, 2021; Livinţi *et al.*, 2021; Matos *et al.*, 2021), the current study employed SCT by Bandura (1977) to examine the influence of RSE on RPR. SCT is a theory of human behavior that combines cognitive and behavioral views to explain human behavior (Mensah *et al.*, 2023; Wood and Bandura, 1989). Based on the theory, three elements influence human behavior and these are the individual, the behavior and the environment (Gaoat *et al.*, 2023; Mensah *et al.*, 2023; Azila-Gbettor *et al.*, 2022). A central construct of SCT is self-efficacy which is an individual's awareness of his or her own ability to carry out a certain task (Orakcı *et al.*, 2023). In this study, self-efficacy has been considered as the confidence academics have in undertaking research activities. RSE results from the relationship between academics'

characteristics, behavioral patterns and environmental factors (Wood and Bandura, 1989). Thus, it does not develop by itself.

Based on SCT, self-efficacy results from mastery of experience, verbal persuasion, vicarious experience and physiological state (Mason *et al.*, 2021; Matos *et al.*, 2021). Previous personal performances provide mastery experiences, where success increases self-efficacy while failure decreases it (Petko and Sivo, 2020). Academics who have had their work accepted for publication may have strong sense of RSE, whereas those who have had their articles rejected repeatedly may doubt their abilities and have low RSE. On the other hand, individuals can increase their self-efficacy through modeling and social comparisons (Bagdi and Bulsara, 2023). RSE of a junior academic for example may be influenced by a senior member of staff who has been successful in research. Verbal persuasion refers to the feedback that individuals receive from respectable sources regarding the completion of particular tasks, where, if good, it helps to reinforce the belief that one is capable of performing a certain activity properly (Bandura, 1997). Academics who are encouraged to strive and persevere are more likely to develop their research abilities and self-efficacy views. Lastly, the mood state of an individual before and during the accomplishment of a certain task also provides information for self-efficacy growth (Matos *et al.*, 2021).

2.2 RSE and RPR
Literature has acknowledged the significance of RSE in influencing RPR. However, the findings on this relationship are inconclusive (Ocampo *et al.*, 2022; Zhang, 2022). Other researchers, on the other hand, have recommended for further research on the influence of RSE on other research outcomes, such as productivity, to provide a more implication in higher education (Zhang, 2022; Hemmings and Kay, 2009; Jang and Shin, 2011). Additionally, the empirical evidence relating to this relationship in developing countries is scant (Adekunle, 2022; Uwizeye *et al.*, 2021). Thus, to contribute to the existing gap, it appears worthwhile to examine the influence of RSE on RPR in developing countries such as Tanzania.

Generally, self-efficacy is viewed as a motivation tool that defines why individuals engage in particular behaviors, how much effort they expend and how persistent they are (Gaoat, 2022). Thus, it is identified to be a good predictor of performance in different work-related settings (Sousa *et al.*, 2012; Wood and Bandura, 1989). Similarly, in higher education context, RSE is more likely to predict academics' engagement on research activities (Livinți *et al.*, 2021). This is due to the fact that, it increases commitment, endeavor and persistence (Supervía *et al.*, 2022; Hayat *et al.*, 2020). Academics with high self-efficacy are confident on their abilities and they are more likely to consider difficult tasks such as research as challenges to be dealt with than avoiding them (Supervía *et al.*, 2022; Matos *et al.*, 2021). On the other hand, academics with confidence in their abilities to undertake research activities can utilize resources such as time effectively which can help them engage and produce more research output (Abun, 2021). Therefore, given the importance of RSE in predicting research related outcomes in higher education and the limited empirical evidence on its influence on RPR in developing countries, the current study focuses on examining the influence of RSE on RPR in higher education in Tanzania. Hence, it is worth to hypothesize that:

H₁. RSE positively and significantly influences academics' RPR in higher education institutions.

3. Methodology
3.1 Study area and research design
The study was carried out in Tanzania in four Public Higher Education Institutions which are the University of Dar es Salaam, Muhimbili University of Health and Allied Sciences, Sokoine

University of Agriculture and Nelson Mandela Institution of Science and Technology. The choice of these institutions based on the age of institution as well as the nature and uniqueness of programs offered (TCU, 2021). Subsequently, a quantitative research approach was employed in this study as the study focused on hypothesis testing. Also, the study used a cross-sectional survey design since data were collected only once (Setia, 2016). This design is considered as efficient and cost-effective since it enables the collection of a large volume of data in a short period of time (Saunders *et al.*, 2019). Furthermore, this design is appropriate because the goal of this study is to ascertain the current state of the variables being investigated rather than to track changes over time (Kiyabo and Isaga, 2020).

3.2 Sampling and data collection

The targeted population of this study consisted of 971 academics from four selected institutions. The list was obtained from the current respective institutions' prospectus. The sampling frame consisted of academics who are lecturers, senior lectures and associate professors. These groups were selected because, despite other criteria, research and publication carries much weight for academics to be promoted from one rank to another (TCU, 2019). Additionally, the sample size of the study was calculated using the Yamane formula, which resulted in a total of 283 respondents. Thereafter, a simple random sampling procedure was used to obtain a representative sample of academics from each institution.

A total number of 283 questionnaires were distributed whereby out of the returned questionnaires only 247 questionnaires had complete responses. This accounts to a response rate of 87.3% which was adequate for final data analysis. A structured questionnaire was used as a major tool for data collection. Questionnaires provide a useful and practical means for measuring subjective ideas and feelings (Kim *et al.*, 2016). Hence, a questionnaire is a suitable tool for gathering data on views of academics on their confidence in undertaking research related activities as well as their productivity in research. The tool was pre-tested and changes were made based on the obtained feedback. The themes considered in designing the questionnaire based on Bandura's SCT and other previous studies (Kozhakhmet *et al.*, 2022; Sharp *et al.*, 2011, 2013; Holden *et al.*, 1999; Kahn and Scott, 1997).

3.3 Measurement of variables

The measurement scales used in the study were adapted from the existing literature and have been validated and utilized in prior research. Specifically, RSE was measured using a scale by Holden *et al.* (1999). Using a five-point Likert scale ranging from "*1- strongly disagree to 5- strongly agree*," academics were asked to rate their confidence on their abilities to do research-related activities. RPR, on the other hand, was measured using a scale by (Khan and Scott, 1997). This scale encompasses a wide range of both recent and current research activities (Kozhakhmet *et al.*, 2022; Wester *et al.*, 2019).

3.4 Data analysis

The structural equation model (SEM) was used to assess the data and determine the strength of the relationship between the exogenous and endogenous variables. SEM was used as it is an appropriate robust multivariate technique for analyzing relationships between constructs with latent and observed variables (Hair *et al.*, 2010). Therefore, confirmatory factor analysis (CFA) was employed first to evaluate the degree to which the measurement model fit well the data (Hooper *et al.*, 2008). So, CFA results were used to analyze the reliability and validity of the measured scales and assessing the measurement model fit indices. The second step involved the assessment of the structural model which was useful in testing the formulated hypothesis so as to obtain results on the influence of RSE on RPR.

3.5 Reliability and validity

The internal consistency of the study was examined using Cronbach's alpha (α), and the results are presented in Table 1. α is the most often used internal consistency metric in the social and organizational sciences (Bonett and Wright, 2015). All values of α were higher above the permissible range of 0.7 hence internal consistency reliability is attained (Cronbach, 1951). Likewise, Table 1 demonstrates that all of the study's constructs had composite reliability (CR) values higher than 0.7, demonstrating the weighted reliability of the measurements (Hair *et al.*, 2010). Furthermore, statistics in Table 1 demonstrate that all constructs' average variance extracted (AVE) values are higher than the suggested threshold of 0.5, signifying that convergent validity was attained (Hair *et al.*, 2010). Correspondingly, the findings in Table 2 show that discriminant validity was attained as the results of the square root of AVE (bolded and italics) are higher than the values of the inter-construct correlations for each construct in the study (Fornell and Larcker, 1981).

3.6 Ethical clearance

This research has been granted ethical clearance by the University of Dodoma as per research and postgraduate guidelines.

Constructs and items	Loadings	α	CR	AVE
RSE		*0.963*	*0.961*	*0.738*
Effective electronic database searching of the scholarly literature (RSE1)	0.872			
Using various technological advances to effectively carry out research (RSE2)	0.870			
Review a particular area of theory and research, and writing a comprehensive literature review (RSE3)	0.829			
Formulate a clear research question/testable hypothesis (RSE4)	0.880			
Choose a research design that will answer a set of research questions and/or test a set of hypotheses (RSE5)	0.916			
Design and implement the best sampling strategy possible for your study (RSE6)	0.854			
Design and implement the best measurement approach possible for your study (RSE7)	0.794			
Design and implement the best data analysis strategy possible for your study (RSE8)	0.881			
Effectively present your study and its implications (RSE9)	0.829			
RPR		*0.882*	*0.884*	*0.525*
Number of published manuscripts authored in refereed journals (RPR1)	0.684			
Number of unpublished empirical manuscripts authored (RPR2) *	–			
Number of articles you have submitted to referred journals (RPR3) *	–			
Number of manuscripts currently in the process of preparing to submit for publication (RPR4)	0.791			
Number of presentations currently in the process of preparing to submit for presentation, i.e. writing an abstract (RPR5)	0.804			
Number of local, regional or national research conferences attended (RPR6)	0.646			
Number of intensive case studies of clients, groups or consultations you conducted (RPR7)	0.579			
Number of program evaluations you participated (RPR8)	0.781			
Number of informal comparative counseling outcomes studies you participated (RPR9)	0.755			

Note(s): *Denotes Items that were dropped during CFA
Source(s): Survey data (2022)

3.7 Common method variance

Since self-reported data were collected from individual academics in higher education institutions, common method bias may be a concern. As a result, the study used a Harman single factor technique to assess whether there was a significant common method bias problem. Results indicated that a single factor in the model may account for about 39.87% of the variance hence common bias was not a significant concern as the value is less than 50% (Podsakoff *et al.*, 2003).

4. Findings and discussions

4.1 CFA results

CFA as presented in Figure 1 was employed to assess the reliability and validity of data and the fitness of the measurement model. The CFA results provide model fit indices that can be used to determine whether or not the model provides an adequate fit to the data. In this study, the model fit indices were GFI = 0.905, NFI = 0.937, RFI = 0.924, TLI = 0.957, IFI = 0.965, CFI = 0.965, RMSEA = 0.069, SRMR = 0.035 and Chi-square/df = 2.182. Similarly, a Chi-square value of 216.001 was reported, with a df = 99 at $p < 0.001$. As a result, according to the CFA findings, all model fit indices were within the recommended ranges (Hooper *et al.*, 2008), proving that the model accurately represents the data.

4.2 Structural model

The path coefficients and p-values were employed to analyze the structural model as well as testing the hypothesis as presented in Figure 2. It should be noted that, the model fit indices of the structural model as presented in Table 3 are within the acceptable threshold (Hooper *et al.*, 2008). Besides, the study confirmed the formulated hypothesis, H_1 as the results in Table 3 demonstrate that, RSE has a positive and significant influence on RPR ($\beta = 0.657$ and $p < 0.001$). These findings imply that, a unit increase in RSE contribute to RPR by 65.7%. Therefore, the findings support the notion that RSE is an important predictor of RPR (Gaoat, 2022; Zhang, 2022; Livinți *et al.*, 2021). This suggests that RSE is a fundamental requirement for academics to become successful researchers (Niehaus *et al.*, 2018). The findings provide a unique contribution to the literature by adding empirical evidence of the role of RSE on RPR in the unexplored context of Tanzania.

Research is a difficult, skill-intensive and energetic activity that takes a significant amount of time (Callaghan, 2014). It involves several stages such as developing an idea, data collection, data analysis, presentation of results, discussion as well as dissemination of the findings (Hemmings and Kay, 2010). As a result, it requires the commitment, energy and interest of an individual. RSE helps academics to develop interest in research related activities (Odacı and Erzen, 2021). This is due to the fact that, with higher levels of RSE, academics are more likely to be confident in their capabilities to undertake research. On the other hand, RSE encourages academics to engage in research by enhancing their commitment, effort and perseverance (Supervía *et al.*, 2022). Academics with high levels of self-efficacy choose and effectively complete demanding activities such as research with

Variables/Statistics	MSV	RSE	RPR
RSE	0.299	*0.859*	
RPR	0.299	0.547	*0.724*

Table 2. Discriminant validity

Source(s): Survey data (2022)
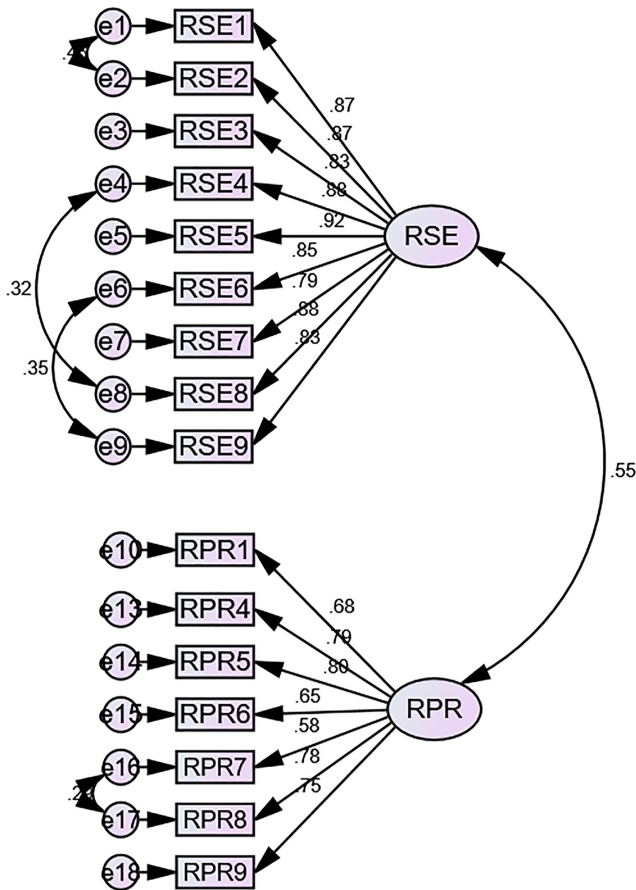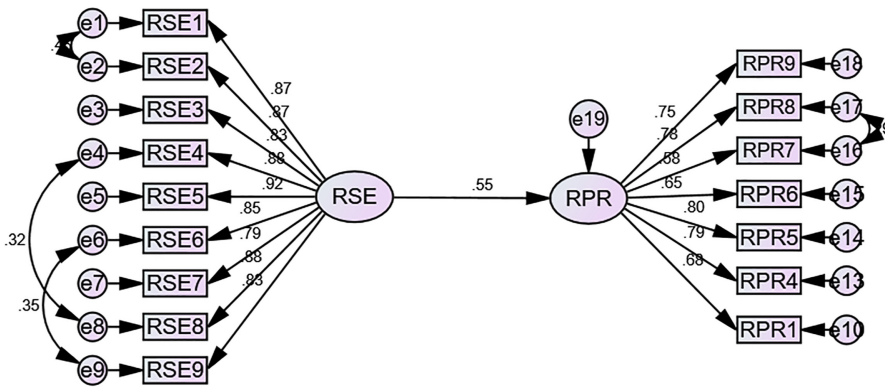
Source(s): Survey data (2022)

Source(s): Survey data (2022)

confidence. They perceive setbacks, such as having their publications rejected, as challenges to be surmounted rather than obstacles to be avoided. In contrast, to those with low levels of RSE, academics with high RSE exert more efforts and work harder to complete their research tasks, resulting in greater output. Since the results of the study revealed that RSE is important in enhancing RPR, higher education institutions in developing countries should focus on helping academics improve their RSE.

5. Conclusion and study implications

5.1 Conclusion
This study employed SCT to examine the influence of RSE on academic' RPR in higher education in Tanzania. The results reveal a strong and positive relationship between RSE and RPR, signifying that academics with high self-efficacy in research are more likely to achieve higher levels of RPR. These findings have a significant implication for both theoretical and practical aspects of academic research.

5.2 Practical implications
The study's findings undoubtedly influence Tanzanian higher education settings in terms of research development. The findings suggest that the most crucial factor that higher education institutions must carefully consider in enhancing academics' RPR is RSE. According to prior claims, self-efficacy beliefs can influence academics' psychological health and performance, their ability to handle stress and their thought patterns, all of which can alter how they behave and lead to increased RPR. Therefore, higher education institutions should focus on creating a favorable work environment which fosters academics' RSE. This may be done by ensuring that there are enough resources which facilitate academics to engage in different research activities. On the other hand, training and capacity building programs relating to research should be emphasized in higher education. This will help academics develop their skills and abilities related to undertaking different research activities.

5.3 Theoretical implications
This study examined the influence of RSE and RPR in developing countries. The results extend the scant literature on RSE and RPR in higher education institutions in developing countries such as Tanzania. Additionally, the study responded to the calls from other researchers who recommended more research on the relationship between RSE and RPR. In a similar manner, the study responds to the call from researchers who suggested more investigation on RPR in African countries which has been identified to be still low and demanding. However, unlike previous studies, the current study examined RPR by considering several aspects where most of previous studies only concentrated on the number of scholarly publications. The findings of the study thereby, proved a positive and significant influence of RSE on RPR in higher education institutions.

Variables	Estimate	S.E.	C.R.	p	Decision
RPR < — RSE	0.657	0.088	7.489	***	Accepted

Note(s): Model fit indices: X^2/df = 2.182, CFI = 0.965, GFI = 0.905, NFI = 0.937, RFI = 0.924, IFI = 0.965, TLI = 0.957, SRMR = 0.035, RMSEA = 0.069
Source(s): Survey data (2022)

Table 3.
Structural path analysis

6. Limitations and recommendations for further studies

The findings of this study posed some limitations which might offer opportunities for future research. First, this study adapted a measure for RSE that included unidimensional aspects hence other studies may include the multidimensional aspects of RSE to supplement the current findings. Secondly, the current study focused only on three groups of academics who are lecturers, senior lecturers and associate professors however, to ensure generalizability of the findings future studies may extend the sample to include academics from all ranks. Moreover, this study used a cross-sectional design to assess the influence of RSE on RPR. Future studies may apply a longitudinal design to provide a more insight on the influence of these variables over time. Lastly, future studies should focus on investigating more on factors that could foster RSE in higher education in developing countries.

References

Aboagye, E., Jensen, I., Bergström, G., Brämberg, E.B., Pico-Espinosa, O.J. and Björklund, C. (2021), "Investigating the association between publication performance and the work environment of university research academics: a systematic review", *Scientometrics*, Springer International Publishing, Vol. 126 No. 4, pp. 3283-3301, doi: 10.1007/s11192-020-03820-y.

Abun, D. (2021), "Employees' self-efficacy and work performance of employees as mediated by work environment", *SSRN Electronic Journal*. doi: 10.2139/ssrn.3958247.

Adekunle, A.P. (2022), "DigitalCommons @ university of Nebraska - Lincoln research self-efficacy and research productivity of doctoral students in universities in Ogun state", No. May.

Amirian, S.M.R., Ghaniabadi, S., Heydarnejad, T. and Abbasi, S. (2022), "The contribution of critical thinking and self-efficacy beliefs to teaching style preferences in higher education", *Journal of Applied Research in Higher Education*, Vol. 15 No. 3, doi: 10.1108/JARHE-11-2021-0441.

Azila-Gbettor, E.M., Mensah, C., Abiemo, M.K. and Agbodza, M. (2022), "Optimism and intellectual engagement: a mediating moderating role of academic self-efficacy and academic burnout", *Journal of Applied Research in Higher Education*, Vol. ahead-of-print, doi: 10.1108/JARHE-01-2022-0003.

Bagdi, H. and Bulsara, H.P. (2023), "Understanding the role of perceived enjoyment, self-efficacy and system accessibility: digital natives' online learning intentions", *Journal of Applied Research in Higher Education*, Vol. ahead-of-print, doi: 10.1108/JARHE-09-2022-0302.

Bandura, A. (1977), "Self-efficacy : toward a unifying theory of behavioral change", Vol. 84 No. 2, pp. 191-215.

Bonett, D.G. and Wright, T.A. (2015), "Cronbach's alpha reliability: interval estimation, hypothesis testing, and sample size planning", *Journal of Organizational Behavior*, Vol. 36 No. 1, pp. 3-15, doi: 10.1002/job.1960.

Callaghan, C.W. (2014), "Research productivity and values", *Mediterranean Journal of Social Sciences*, Vol. 5 No. 1, pp. 453-465, doi: 10.5901/mjss.2014.v5n1p453.

Cronbach, L.J. (1951), "Coefficient alpha and the internal structure of a test", *Psychometrika*, Vol. 16, pp. 297-334.

Delbari, S., Rajaipour, S. and Abedini, Y. (2020), "Investigating the relationship between career development and productivity with the mediating role of self-regulation among university staff", *Journal of Applied Research in Higher Education*, Vol. 13 No. 3, pp. 759-781, doi: 10.1108/JARHE-06-2019-0153.

Fatima, S., Ali, M. and Saad, M.I. (2022), "The effect of students' conceptions of feedback on academic self-efficacy and self-regulation: evidence from higher education in Pakistan", *Journal of Applied Research in Higher Education*, Vol. 14 No. 1, pp. 180-199, doi: 10.1108/JARHE-07-2020-0209.

Forester, M., Kahn, J.H., Hesson-mcinnis, M.S., Kahn, J.H. and Hesson-mcinnis, M.S. (2004), "Factor structures of three measures of research self-efficacy", *Journal of Career Assessment*, Vol. 12 No. 3, doi: 10.1177/1069072703257719.

Fornell, C. and Larcker, D.F. (1981), "Evaluating structural equation models with unobservable variables and measurement error", *Journal of Marketing Research*, Vol. 18 No. 1, p. 39, doi: 10.2307/3151312.

Gaoat, M.P. (2022), "Relationship of research self-efficacy, perceptions of the research training environment and interest in research among business education students", Vol. 7 No. 6, pp. 183-190, doi: 10.11648/j.her.20220706.11.

Gaoat, M.P., Magbitang, T.D., Bumanglag, J.D. and Ramirez, J.F.M. (2023), "Research self-efficacy among business education students of a higher education institutional in northern Philippines", *American Journal of Interdisciplinary Research and Innovation*, Vol. 2 No. 1, pp. 7-12, doi: 10.54536/ajiri.v2i1.1145.

Garnasih, R.L., Primiana, I., Effendi, N. and Joeliaty (2017), "Through research culture implementation", *Journal of Management and Marketing Review*, Vol. 2 No. 4, pp. 19-26.

Haider, Z. and Dasti, R. (2021), "Work – life balance and psychological well-being of doctoral program students", No. 2012, doi: 10.1108/IJMCE-07-2020-0036.

Hair, J.F., Black, W.C., Babin, B.J. and Anderson, R. (2010), *Multivariate Data Analysis*, 7th ed., Pearson, New York, NY.

Hayat, A.A., Shateri, K., Amini, M. and Shokrpour, N. (2020), "Relationships between academic self-efficacy, learning-related emotions, and metacognitive learning strategies with academic performance in medical students: a structural equation model", *BMC Medical Education*, Vol. 20 No. 1, pp. 1-11, doi: 10.1186/s12909-020-01995-9.

Hemmings, B. and Kay, R. (2009), "Lecturer self efficacy : its related dimensions and the influence of gender and qualifications", Vol. 19 No. 3, pp. 243-254.

Hemmings, B. and Kay, R. (2010), "University lecturer publication output: qualifications, time and confidence count", *Journal of Higher Education Policy and Management*, Vol. 32 No. 2, pp. 185-197, doi: 10.1080/13600800903575520.

Holden, G., Barker, K., Meenaghan, T. and Rosenberg, G. (1999), "Research self-efficacy", *Journal of Social Work Education*, Vol. 35 No. 3, pp. 463-476, doi: 10.1080/10437797.1999.10778982.

Hooper, D., Coughlan, J. and Mullen, M.R. (2008), "Structural equation modelling: guidelines for determining model fit", *Electronic Journal of Business Research Methods*, Vol. 6 No. 1, pp. 53-60.

Ismayilova, K. and Klassen, R.M. (2019), "Research and teaching self-efficacy of university faculty: relations with job satisfaction", Vol. 98 August, pp. 55-66, doi: 10.1016/j.ijer.2019.08.012.

Jang, D.H. and Shin, I.S. (2011), "The relationship between research self-efficacy and other research constructs: synthesizing evidence and developing policy implications through meta-analysis", *KEDI Journal of Educational Policy*, Vol. 8 No. 2, pp. 278-301.

Kahn, J.H. and Scott, N.A.. (1997), "Predictors of research productivity and science related career goals among counseling psychology doctoral students", *The Counseling Psychologist*, Vol. 25 No. 1, pp. 38-67, doi: 10.1177/0011000097251005.

Kim, H., Ku, B., Kim, J.Y., Park, Y.J. and Park, Y.B. (2016), "Confirmatory and exploratory factor analysis for validating the phlegm pattern questionnaire for healthy subjects", *Evidence-Based Complementary and Alternative Medicine*, Vol. 2016, doi: 10.1155/2016/2696019.

Kiyabo, K. and Isaga, N. (2020), "Entrepreneurial orientation, competitive advantage, and SMEs' performance: application of firm growth and personal wealth measures", *Journal of Innovation and Entrepreneurship*, Vol. 9, doi: 10.1186/s13731-020-00123-7.

Kozhakhmet, S., Moldashev, K., Yenikeyeva, A. and Nurgabdeshov, A. (2022), "How training and development practices contribute to research productivity: a moderated mediation model", *Studies in Higher Education*, Taylor & Francis, Vol. 47 No. 2, pp. 437-449, doi: 10.1080/03075079.2020.1754782.

Litson, K., Blaney, J.M. and Feldon, D.F. (2021), "Understanding the transient nature of STEM doctoral students' research self-efficacy across time: considering the role of gender, race, and first-

generation College status", *Frontiers in Psychology*, Vol. 12 January, doi: 10.3389/fpsyg.2021. 617060.

Livinți, R., Gunnesch-Luca, G. and Iliescu, D. (2021), "Research self-efficacy: a meta-analysis", *Educational Psychologist*, Routledge, Vol. 56 No. 3, pp. 215-242, doi: 10.1080/00461520.2021. 1886103.

Manitzas Hill, H.M., Zwahr, J. and Gonzalez, A., III (2022), "Evaluating research self-efficacy in undergraduate students: experience matters", *Journal of the Scholarship of Teaching and Learning*, Vol. 22 No. 1, pp. 67-80, doi: 10.14434/josotl.v22i1.31203.

Mason, S., Merga, M. and Mason, S. (2021), "Communicating research in academia and beyond: sources of self-efficacy for early career researchers", *Higher Education Research and Development*, Vol. 0 No. 0, pp. 1-14, Taylor & Francis, doi: 10.1080/07294360.2021.1945545.

Matos, M., Iaochite, R.T., Sharp, J.G. and Iaochite, R.T. (2021), "Lecturer self-efficacy beliefs: an integrative review and synthesis of relevant literature ABSTRACT", *Journal of Further and Higher Education*, Routledge, pp. 1-21, doi: 10.1080/0309877X.2021.1905155.

Mensah, C., Azila-Gbettor, E.M., Nunyonameh, C.R., Appietu, M.E. and Amedome, S.N. (2023), "Research methods anxiety, attitude, self-efficacy and academic effort: a social cognitive theory perspective", *Cogent Psychology*, Cogent, Vol. 10 No. 1, doi: 10.1080/23311908.2023.2167503.

Muriithi, P., Horner, D., Pemberton, L. and Wao, H. (2018), "Factors influencing research collaborations in Kenyan universities", *Research Policy*, Elsevier, Vol. 47 No. 1, pp. 88-97, doi: 10.1016/j.respol. 2017.10.002.

Nafukho, F.M., Wekullo, C.S. and Muyia, M.H. (2019), "Examining research productivity of faculty in selected leading public universities in Kenya", *International Journal of Educational Development*, Elsevier, Vol. 66 January, pp. 44-51, doi: 10.1016/j.ijedudev.2019.01.005.

Nazari, N., Salahshoor, M.R., Özdenk, G.D., Zangeneh, A., Lebni, J.Y., Foroughinia, S., Kianipour, N., Fattahi, E., Azizi, S.A. and Ziapour, A. (2021), "A study of the components of research self-efficacy in postgraduate students at Kermanshah University of Medical Sciences in 2018", *Journal of Public Health (Germany)*, Vol. 29 No. 5, pp. 1243-1250, doi: 10.1007/s10389-020-01194-2.

Nguyen, N.L. (2022), "The effects of leader expectation and coworker pressure on research engagement in higher education: the moderating role of achievement value", *Journal of Applied Research in Higher Education*, Vol. 14 No. 3, pp. 1114-1126, doi: 10.1108/JARHE-04-2021-0123.

Niehaus, E., Garcia, C. and Reading, J.N. (2018), "The road to researcher: the development of research sel-efficacy im higher education scholars", *Journal for the Study of Postsecondary and Tertiary Education*, Vol. 3, pp. 1-20.

Ocampo, L., Aro, J.L., Evangelista, S.S., Maturan, F., Yamagishi, K., Mamhot, D., Mamhot, D.F., *et al.* (2022), "Research productivity for augmenting the innovation potential of higher education institutions : an interpretive structural modeling approach and MICMAC analysis", pp. 1-25.

Odacı, H. and Erzen, E. (2021), "Attitude toward computers and critical thinking of postgraduate students as predictors of research self-efficacy", *Computers in the Schools*, Routledge, Vol. 38 No. 2, pp. 125-141, doi: 10.1080/07380569.2021.1911554.

Orakcı, Ş., Yüreğilli Göksu, D. and Karagöz, S. (2023), "A mixed methods study of the teachers' self-efficacy views and their ability to improve self-efficacy beliefs during teaching", *Frontiers in Psychology*, Vol. 13 January, pp. 1-12, doi: 10.3389/fpsyg.2022.1035829.

Pasupathy, R. and Siwatu, K.O. (2014), "Higher Education Research & Development an investigation of research self- efficacy beliefs and research productivity among faculty members at an emerging research university in the", No. January 2015, pp. 37-41, doi: 10.1080/07294360.2013. 863843.

Petko, J.T. and Sivo, S.A. (2020), "Mentoring experiences of doctoral students in counselor education", *The Journal of Counselor Preparation and Supervision Volume*, Vol. 13 No. 1, 3.

Platania, S. and Paolillo, A. (2022), "Validation and measurement invariance of the Compound PsyCap Scale (CPC-12): a short universal measure of psychological capital", *Anales de Psicología*, Vol. 38 No. 1, pp. 63-75, doi: 10.6018/analesps.449651.

Podsakoff, P.M., MacKenzie, S.B., Lee, J.Y. and Podsakoff, N.P. (2003), "Common method biases in behavioral research: a critical review of the literature and recommended remedies", *Journal of Applied Psychology*, Vol. 88 No. 5, pp. 879-903, doi: 10.1037/0021-9010.88.5.879.

Sacre, H., Akel, M., Haddad, C., Zeenny, R.M., Hajj, A. and Salameh, P. (2023), "The effect of research on the perceived quality of teaching: a cross-sectional study among university students in Lebanon", *BMC Medical Education*, BioMed Central, Vol. 23 No. 1, pp. 1-14, doi: 10.1186/s12909-023-03998-8.

Saunders, M., Lewis, P. and Thornhill, A. (2019), *Research Methods for Business Students*, 8th ed., Pearson Education, Harlow.

Setia, M.S. (2016), "Methodology series module 3: cross-sectional studies", *Indian Journal of Dermatology*, Vol. 61 No. 3, pp. 261-264, doi: 10.4103/0019-5154.182410.

Sharp, J.G., Hemmings, B. and Kay, R. (2011), "Journal of Further and Higher an application of the revised 'Lecturer Self-Efficacy Questionnaire': an evidence-based route for initiating transformational change", No. November 2014, pp. 37-41, doi: 10.1080/0309877X.2011.645596.

Sharp, J.G., Hemmings, B., Kay, R. and Callinan, C. (2013), "An application of the revised 'Lecturer Self-Efficacy Questionnaire': an evidence-based route for initiating transformational change", *Journal of Further and Higher Education*, Vol. 37 No. 5, pp. 643-674, doi: 10.1080/0309877X.2011.645596.

Silva, C.E.S.D.A., Souza, W.V.B.D.E., Salgado, E.G., Silva, S. and Oliveira, F.L.R.D.E. (2022), "Higher education rankings: Brazilian federal universities", October, doi: 10.14488/ijcieom2022_full_0030_37574.

Sousa, C.M.P., Coelho, F. and Guillamon-Saorin, E. (2012), "Personal values, autonomy, and self-efficacy: evidence from frontline service employees", *International Journal of Selection and Assessment*, Vol. 20 No. 2, pp. 159-170, doi: 10.1111/j.1468-2389.2012.00589.x.

Sukoco, B.M., Putra, R.A., Muqaffi, H.N., Lutfian, M.V. and Wicaksono, H. (2023), "Comparative study of ASEAN research productivity", *SAGE Open*, Vol. 13 No. 1, pp. 1-14, doi: 10.1177/21582440221145157.

Supervía, U.P., Bordás, S.C. and Robres, Q.A. (2022), "The mediating role of self-efficacy in the relationship between resilience and academic performance in adolescence", *Learning and Motivation*, Vol. 78 February, doi: 10.1016/j.lmot.2022.101814.

TCU (2019), "Handbook for standards and guidelines for university education in Tanzania", p. 260.

TCU (2021), "Tanzania commission for universities (TCU) undergraduate admission guidebook for 2020/2021 academic year (for holders of form six qualifications)".

Uwizeye, D., Karimi, F., Thiong'o, C., Syonguvi, J., Ochieng, V., Kiroro, F., Gateri, A., *et al.* (2021), "Factors associated with research productivity in higher education institutions in Africa: a systematic review", *AAS Open Research*, Vol. 4, p. 26, doi: 10.12688/aasopenres.13211.1.

Wester, K.L., Borders, L.D.A., Gonzalez, L.M.L. and Waalkes, P. (2019), "Factors contributing to scholarly productivity of assistant professors in counseling", *Counselor Education and Supervision*, Vol. 58 No. 3, pp. 225-237, doi: 10.1002/ceas.12152.

Wester, K.L., Vaishnav, S., Morris, C.W., Austin, J.L., Haugen, J.S., Delgado, H. and Umstead, L.K. (2020), "Brief report", Vol. 59 December, pp. 316-325, doi: 10.1002/ceas.12191.

Wood, R. and Bandura, A. (1989), "Social cognitive theory of organizational management", *Academy of Management Review*, Vol. 14 No. 3, pp. 361-384, doi: 10.5465/amr.1989.4279067.

Zarei, S. and Mohammadi, S. (2022), "Challenges of higher education related to e-learning in developing countries during COVID-19 spread: a review of the perspectives of students, instructors, policymakers, and ICT experts", *Environmental Science and Pollution Research*,

Vol. 29 No. 57, pp. 85562-85568, Environmental Science and Pollution Research. doi: 10.1007/
s11356-021-14647-2.

Zhang, L.J. (2022), "Influence of mentorship and the working environment on English as a foreign
language teachers ' research productivity : the mediation role of research motivation and self-
efficacy", Vol. 13 June, pp. 1-17, doi: 10.3389/fpsyg.2022.906932.

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