"Examining the interface factors affecting research output of accounting academics in African universities of technology"

2 authors:

Odunayo Magret Olarewaju
Coventry University

60 PUBLICATIONS **453** CITATIONS

Thabiso Sthembiso Msomi
Durban University of Technology

43 PUBLICATIONS **290** CITATIONS

"Examining the interface factors affecting research output of accounting academics in African universities of technology"

| AUTHORS | Odunayo Magret Olarewaju (iD)
Thabiso Sthembiso Msomi (iD) |

NUMBER OF REFERENCES	NUMBER OF FIGURES	NUMBER OF TABLES
66	2	8

Odunayo Magret Olarewaju, Associate Professor of Accounting, School of Business, Crown College, USA. (Corresponding author)

Thabiso Sthembiso Msomi, Accounting Lecturer, Department of Management Accounting, Durban University of Technology, South Africa.

Odunayo Magret Olarewaju (USA), Thabiso Sthembiso Msomi (South Africa)

EXAMINING THE INTERFACE FACTORS AFFECTING RESEARCH OUTPUT OF ACCOUNTING ACADEMICS IN AFRICAN UNIVERSITIES OF TECHNOLOGY

Abstract

The inadequacy of research engagement among accounting academic staff, who predominantly hold affiliations with professional bodies and exhibit limited interest in research pursuits, has been identified as a significant contributor to suboptimal quality and diminished research productivity within the field. This study aims to investigate the intricate relationships among research attributes, research motivation, research enablers, and the perception of research output among accounting academics in African universities of technology. Drawing on a sample of 92 academics from accounting departments in the top 13 universities of technology in Africa, Partial Least Squares-Structural Equation Modelling is employed to empirically test the formulated hypotheses. Four distinct constructs are derived from the selected items through Exploratory Factor Analysis. The findings reveal that individual researcher attributes and research enablers exert a substantial influence on the perception of research outputs. In contrast, research motivation exerts a significant impact only when fully mediated by research enablers. Consequently, the study recommends the establishment of collaborative initiatives between accounting research, accounting scholarship, and accounting practices. Additionally, policies governing research operations in Universities of Technology should be designed to empower and facilitate researchers in realizing tangible returns from their research findings.

Keywords	SmartPLS, panel least square, structural equation modeling, research outputs, universities of technology, mediation model, accounting, professional bodies
JEL Classification	M40, M41, I20, I21, I23

INTRODUCTION

Research output is a vital metric for assessing productivity and influence in the academic realm, especially in accounting. The impact of rigorous and high-quality research in accounting extends to shaping policymaking, business practices, and the broader economy. However, a concerning trend has emerged in the African context, notably highlighted by Victor and Babatunde (2014), indicating a substantial annual exodus of 23,000 qualified accounting lecturers seeking better employment conditions abroad. This phenomenon stems from the absence of favorable working conditions and incentive mechanisms, resulting in a decline in research productivity as Malik et al. (2017) identified. The challenges faced by African accounting academics go beyond material conditions, encompassing factors such as a lack of ambition, diminished autonomy, job insecurity, non-competitiveness, time constraints, financial burdens, sluggish career progression, and limited decision-making opportunities, as elucidated by Negash et al. (2019). This complex backdrop positions Africa as a significant arena for scrutinizing the research output of accounting academics, considering the intricate interplay of economic intricacies and socio-cultural dynamics.

Existing literature recognizes various factors influencing academic research output, broadly categorized into individual researcher attributes, research motivation, and perceptions about research outputs. Individual researcher attributes, including academic qualifications, years of experience, and personal motivation, significantly impact research productivity (Rhaiem, 2017; Kenny & Fluck, 2018; Cunningham & Miller, 2021). Motivation for research, whether intrinsic or extrinsic, has been linked to the quality and quantity of research output (Subramaniam, 2003; Lubbe, 2014; Wilkinson & Durden, 2015; Dee & Goldhaber, 2017; Eames et al., 2018; Leuz, 2018; Smith & Urquhart, 2018; Tan & Laswad, 2018; Sutcher et al., 2019). Research enablers, such as institutional support, resource availability, and conducive research environments, play a crucial role (Mulu, 2017), while perceptions about research outputs influence productivity (Munung et al., 2014; Gralka et al., 2019). Despite the recognized importance of these factors, there is a scarcity of studies examining them within African universities of technology, particularly in the field of accounting.

1. LITERATURE REVIEW AND HYPOTHESES

The individual researcher attributes play a pivotal role in shaping the research output of accounting academics. These attributes encompass a range of factors that collectively influence the goals and aspirations of accounting academics in their research pursuits (Malik et al., 2017). Among these attributes, individual research ambitions, commitment, motivation, as well as a nuanced understanding of specialized literature and methodology, alongside the publication of research findings and acquisition of research grants, all intricately interplay to impact the research output of accounting academics (Brinkman, 1981; Sulo et al., 2012; Wu et al., 2015; Pastor & Serrano, 2016; Malik et al., 2017; Al Shobaki & Abu-Naser, 2017). Research endeavors fueled by higher research ambitions are consistently associated with increased outputs such as publications and research grants, amplifying the contribution of individual researchers (Cunningham & Miller, 2021). The bedrock of commitment and motivation significantly determines the trajectory of research productivity, wherein factors including workload, institutional support, and intrinsic drive coalesce to shape the dedication and enthusiasm displayed by accounting academics (Yousefi et al., 2019). Researchers who are actively engaged and motivated tend to channel greater time and effort into their research activities, thereby fostering heightened research output (Nguyen et al., 2021).

In the context of rigorous and pertinent research, a robust grasp of existing literature is indispensable (Al Shobaki & Abu-Naser, 2017). Profound familiarity with the specialized literature within their domain equips accounting academics to contribute meaningfully to knowledge creation. However, limitations in accessing relevant literature and exposure to international research can impede the depth and application of literature among African accounting academics. The selection and application of appropriate research methodologies stand as pivotal determinants of both research quality and quantity (Malik et al., 2017). Nevertheless, accounting academics within African universities of technology confront challenges tied to resource availability, data collection, and methodological training (Pastor & Serrano, 2016). The realm of research methods is further constrained by insufficient exposure to diverse approaches and insufficient collaboration between academia and industry, consequently reverberating through the choice of methodologies and, consequently, research output.

The publication of research findings within esteemed journals stands as a pivotal barometer of research productivity. Yet, African accounting academics are confronted with barriers stemming from limited access to high-quality journals, language barriers, and a paucity of mentorship and guidance throughout the publication process (Rhaiem, 2017). These impediments stifle the dissemination of research findings, curtailing the visibility and influence of African accounting research on the global stage. The acquisition of research grants, providing vital financial resources that underpin research activities, also contributes to research output (Al Shobaki & Abu-Naser, 2017). Nevertheless, accounting academics within African universities of technology grapple with

restricted funding avenues, fiercely competitive grant application procedures, and insufficient institutional backing for securing research grants. The absence of research grants serves to delimit the scale and scope of research projects, thereby reverberating through the landscape of research productivity (Yousefi et al., 2019).

Enabling research involves a variety of institutional, infrastructural, and support mechanisms that bolster the research endeavors of academics. These facilitators can take the form of funding accessibility, provision of cutting-edge research facilities, efficient administrative processes, collaborative opportunities, and industry partnerships. Academics are primarily entrusted with two key responsibilities: teaching and research. Yet, the interaction and reciprocal impact of these two duties have sparked considerable debate (Malik et al., 2017). The argument often revolves around the notion that diminishing teaching commitments can potentially enhance research productivity. Ankomah-Asare et al. (2020) lends credence to this idea, pointing to a negative relationship between the time committed to teaching and research output. They suggest that reducing the teaching burden provides academics with more time to engage in research pursuits. In contrast, De Rassenfosse and Williams (2015) present a different perspective, arguing that a balanced teaching-research nexus could enhance both teaching quality and research output. Institutional support is crucial for research productivity. According to Garavan et al. (2021), universities that offer support in the form of funding, time, and facilities tend to have higher research output. The study by Booysen (2002) on South African universities corroborates this, emphasizing that institutional support significantly influences research output. The availability of resources, such as access to research databases, funding, and research assistants, is a significant determinant of research output (Cunningham & Miller, 2021). A study by De Smul et al. (2018) demonstrated that improved access to resources significantly increases the likelihood of publication. A conducive research environment plays a significant role in fostering research output. According to Wu et al. (2015), a supportive environment that promotes collaboration, intellectual exchange, and critical thinking enhances research productivity. This supports the findings

of Jung (2014), who found a positive association between a collegial and supportive environment and research output. Research sabbatical leave is often seen as a catalyst for enhancing research productivity (Malik et al., 2017). Sabbatical leave provides academics with a break from their teaching and administrative duties, allowing them to focus solely on research, which can lead to increased output (Leuz, 2018). The availability of co-authors, particularly in departments, can enhance research output. Collaboration in research has been found to increase productivity, foster innovation, and enhance the quality of research (Smith & Urquhart, 2018). A study by Baporikar (2020) found that co-authored papers are often more highly cited than single-authored papers, indicating their higher impact.

Research motivation, a driving force underlying an individual's engagement in research activities, is a complex interplay of multifaceted factors (Izuagbe et al., 2021. These influences encompass personal ambition, the pursuit of career advancement, intellectual curiosity, financial incentives, institutional support, and the esteemed recognition within the academic realm (Leylak et al., 2021; Fealing et al., 2017). The significance of research motivation is underscored by prior research that consistently reveals a positive correlation between heightened motivation levels and both amplified research output and the caliber of publications (Doğan, 2017; Peng & Gao, 2019). This symbiotic relationship is evident across various academic disciplines, with studies elucidating the constructive interplay between research motivation and research productivity. Within the domain of accounting academics, the potency of research motivation becomes even more pronounced. Academics propelled by high motivation levels exhibit a proclivity for greater research engagement, producing a larger volume of publications and generating research outputs distinguished by their superior quality (Stewart et al., 2019). Such driven researchers are predisposed to not only discern research gaps but also engage in thorough data analysis, thereby introducing innovative concepts to their respective fields.

Ryan and Deci's (2000) self-determination theory illuminates the duality of research motivation, categorizing it as either intrinsic or extrinsic. Intrinsic motivation springs from an individual's genuine

interest and enjoyment in the research endeavor itself, while extrinsic motivation emanates from the pursuit of external rewards or acknowledgment. Smeby and Try (2005) argue in favor of the affirmative impact of intrinsic motivation, rooted in intellectual curiosity and a desire to contribute to the academic domain. A counter perspective surfaces through Bentley and Kyvik's (2012) proposition, asserting that extrinsic motivations such as the yearning for professional advancement or academic prestige can also catalyze heightened productivity. The multifaceted nature of motivation becomes especially pivotal within the context of research output, particularly in the face of challenging working conditions (Mouton, 2011). This assertion is corroborated by Oyelaran-Oyeyinka and Adebowale (2012) exploration of Nigerian universities, revealing that even in the midst of institutional and infrastructural constraints, intrinsic motivation significantly influences research output. Beattie and Goodacre (2004) shed light on how research motivation within the accounting realm often stems from the impetus to address practical challenges and influence policy. This orientation inevitably shapes both the essence and impact of the resulting research output, steering it toward actionable outcomes.

The Perception about Research Outputs encompasses a myriad of pivotal elements, with factors such as the alignment of promotion criteria, the impact of administrative duties on research time, and the weight of published works on the promotion prospects of accounting academics all coming into play (Munung et al., 2014; Gralka et al., 2019). This perception, which encompasses the perceived value and societal impact of research, stands as a critical determinant of research productivity. Promotion criteria alignment pertains to how well the evaluation standards for academic promotions in African universities of technology harmonize with the research achievements of accounting academics. Previous research underscores the significance of transparent and coherent promotion criteria that duly recognize and reward research accomplishments (Baporikar, 2020; Cunningham & Miller, 2021). Nevertheless, there is evidence indicating that mismatches between promotion criteria and research output could hinder the advancement of accounting academics' careers. Instances where heavy emphasis falls on teaching or admin-

istrative responsibilities may inadvertently lead to the devaluation of research outcomes, potentially curbing the promotion prospects of these academics. Administrative duties are intrinsic to academic roles, but when not accompanied by proper support and acknowledgement, they can substantially encroach upon research time. Poorly managed administrative commitments can result in time constraints, diminished publication outputs, and limited avenues for research collaboration. In this light, academic institutions and departments must strategize methods to harmonize administrative obligations with research time allocation, fostering both enhanced research output and career progression for accounting academics.

The significance of publishing research outputs looms prominently in the trajectory of accounting academics' promotions. Published works not only bolster an academic's standing but also contribute to the advancement of knowledge in the accounting domain. African universities of technology must extend robust resources and support to facilitate research publication, encompassing access to pertinent databases, funding for research pursuits, and structured mentorship initiatives. Furthermore, the review process and the caliber of publications must adhere to principles of fairness and transparency, ensuring that accounting academics have equitable chances for promotion based on their published endeavors. The appointment of accomplished researchers to lead accounting departments carries implications, both positive and negative, for research output. On the one hand, a departmental leader who boasts research prowess can cultivate a research-centric culture, offer mentorship, and establish avenues for collaborative research. Conversely, the administrative responsibilities attached to departmental leadership can potentially divert focus and time from research activities. Universities need to strike a judicious balance, recognizing the achievements of accomplished researchers while ensuring that the leadership role doesn't impede their research productivity. This study hinged on self-determination theory and intelligence theory.

Extrinsic motivation and intrinsic motivation are two forms of motivation defined by Self-Determination Theory (SDT). Extrinsic motivation involves engaging in an activity for external
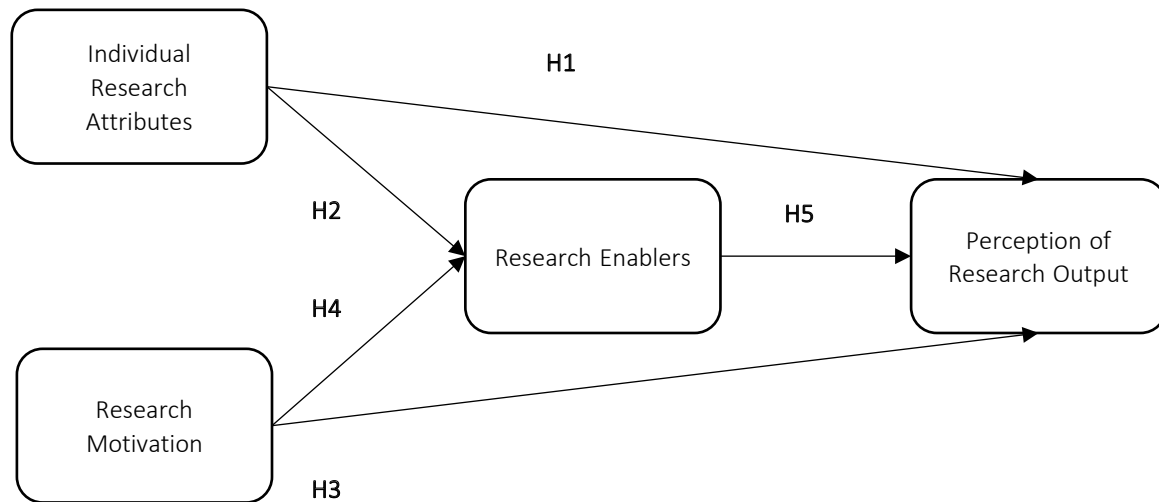
Figure 1. Conceptual framework guiding the study

rewards, whereas intrinsic motivation stems from genuine curiosity and satisfaction derived from the activity itself. Intrinsic motivation is considered higher quality as it promotes student success, deep learning, and overall well-being. SDT posits that enhancing intrinsic motivation can achieve these goals. Intrinsic motivation is described as "doing something out of an internal drive to continue in an activity for the intrinsic pleasure of the activity itself" (Ryan & Deci, 2019). For instance, a lecturer might engage in research because it is exciting or rewarding. There are three types of intrinsic motivation: to learn, to achieve goals, and to feel stimulation (Sun et al., 2017). Researchers who pursue intrinsically driven behaviors become more self-determined, leading to better learning outcomes (Lee & Zentall, 2015). The SDT will be used to assess research motivation by examining the influence of intrinsic and extrinsic motivations on accounting research output.

The Theory of Intelligence is based on the concept of intelligence as the ability to achieve success according to personal goals and socio-cultural context. Sternberg's triarchic theory outlines three dimensions of intelligence: analytical, imaginative, and practical (Sternberg, 1985). Recent studies have focused on the relationship between intelligence and academic performance (Asrar-ul-Haq et al., 2017). The correlation between intelligence and performance suggests that intelligence tests impact scholastic success alongside factors like training, course content, and academic outcomes (Richards et al., 2019). Moreover, employees with high emotional intelligence perform better in their roles compared to those with lower emotional intelligence. Thus, intelligence is concluded to influence research output in universities (MacCann et al., 2020). The Theory of Intelligence will be utilized to examine how individual academic attributes and research enablers affect accounting research output.

Accounting academics' research productivity is influenced by personal motivations, institutional support, and an alignment of promotion criteria with research outputs. Factors such as intrinsic motivation, familiarity with literature, access to grants, and supportive environments significantly enhance output, but challenges like heavy administrative duties and limited resources can hinder productivity. Both Self-Determination Theory and Intelligence Theory suggest that motivation, whether intrinsic or extrinsic, combined with intelligence, shapes the success of accounting research initiatives. According to this, the study aims to investigate the intricate relationships among research attributes, research motivation, research enablers, and the perception of research output among accounting academics in African universities of technology.

From the conceptual framework (Figure 1), the following hypotheses will be tested:

H_1:   A statistically significant relationship exists between individual research attributes and perception of research output.

H_2:   *There is a statistically significant association between individual research attributes and research enablers.*

H_3:   *The linkage between research motivation and perception of research output is statistically significant.*

H_4:   *There is a statistically significant relationship between research motivation and research enablers.*

H_5:   *Research enablers and perception of research output have a statistically significant association.*

2. METHODOLOGY

This study, being a quantitative study, falls under the positivist paradigm. This research paper employs the primary data collected using a 4-Likert scale closed-ended questionnaire. The population of this study comprised all the 13 UoTs in Africa (Wiredbugs, 2018). Using census sampling, the academic staff in accounting departments whose email addresses are on their university websites were used. The research instrument was pre-tested using five academic staff in the accounting cluster at Durban University of Technology to check the questionnaire and the reliability of the questions was ascertained. A total of 140 email addresses of academic staff were available on the university websites and they were the selected respondents. These 140 respondents were contacted via email

and only 100 respondents completed the questionnaire using Question Pro (Table 1).

After screening, it was discovered that only 92 respondents completed the questionnaire correctly and completely; thus, 92 formed the analyzed sample.

This study used four constructs named as Individual Research Attributes, Research Motivation, Research Enablers and Researcher Perception about Research Output. The constructs were derived from the instrument used in the collection of data, after conducting an exploratory factor analysis (EFA). The EFA was used to screen the gathered data and pool together the items that move together to form the construct. According to Hadi et al. (2016), EFA provides clarity on factors that are moving together via factor extraction. Items with loadings of 0.50 upwards were retained for this study. Using the Kaiser-Meyer-Olkin (KMO) method, the sample size adequacy was ensured; 0.5 was suggested as the threshold for the KMO, the value between 0.9 and above are considered excellent; 0.8 and 0.9 are considered great value; 0.7 and 0.8 are good and 0.5 and 0.7 are considered average (Ganiyu et al., 2020). From the EFA, ambitious research pursuit, understanding of literature, personal motivation to research, commitment to research, keen to complete research, strive to publish and contribute to the body of knowledge, understanding methodologies and communication of findings are the items that formed the Individual Research Attributes construct from the Personal Research Output attribute scale. The

Table 1. Data on respondents

University Name	Country	Sample	Responded
Durban University of Technology (DUT)	South Africa	20	16
Cape Peninsula University of Technology (CPUT)	South Africa	11	10
Tshwane University of Technology (TUT)	South Africa	12	10
Central University of Technology (CUT)	South Africa	09	07
Mangosuthu University of Technology (MUT)	South Africa	12	09
Vaal University of Technology (VUT)	South Africa	10	10
Federal University of Technology, Minna (FUTMinna)	Nigeria	08	07
Federal University of Technology, Akure (FUTA) and Owerri (FUTO)	Nigeria	12	04
Haramaya University of Technology	Ethiopia	10	06
Accra Technical University (ATU)	Ghana	13	05
Takoradi Technical University	Ghana	08	03
Mombasa Technical University	Kenya	06	06
Technical University of Kenya (TUK)	Kenya	09	07
Total		140	100

Research Motivation construct was captured by items such as provision of sufficient budget, research financial support, allocation of budgets and adequate funding for research support from Research funding scale. From the Institutional Administrative Structures scale, the Research Enablers' construct comprised of items such as promotion criteria alignment, reduced administrative duties, lecturer's promotion chances and accomplished researcher as head of department. From Personal Research Output attribute scale, Researcher Perception about Research Output's construct was formed, and this comprised of items such as reduced teaching load, research sabbatical and availability of co-authors. All other items except the ones that formed the construct were discarded and counted as irrelevant to the achievement of the objective of this study. Please note that the discarded items are not up to 20% of the scales. The Cronbach's Alpha coefficient test of reliability was used to justify the reliability of the research instrument. Cronbach's Alpha is a measure used to assess the strength of internal consistency or reliability of a set of scale or test items. The generally accepted threshold is set to be 0.7 (Taber, 2018). The Cronbach Alpha coefficients for the scales used in this study are 0.921, 0.889, 0.863, and 0.791, respectively, for Individual Research Attributes, Research Motivation, Research Enablers and Researcher Perception about Research Output. The result shows that the instruments are excellent and of greatest reliability.

The second approach to structural equation modelling (SEM), Partial Least Squares (PLS), which focuses on the analysis of variance, was used to test the hypotheses of this study. The SmartPLS tool was used for the SmartPLS Path Modelling technique. According to Vinzi et al. (2010), PLS, which is an emerging path modeling approach, is a soft modeling approach to SEM with no assumptions about data distribution. Therefore, PLS-SEM is a good technique to consider when the sample size is small, there are limited participants, the data distribution is skewed and applications have little available theory (Hwang et al., 2010; Wong, 2010; 2013). The Average Variance Extracted (AVE) as recommended by Kline (2015) was used to conduct the variance analysis. AVE explains the total variance of each observable variable within the construct evaluation process. Specifically, the AVE was used to evaluate the discriminant validity analysis, meanwhile the discriminant validity is used to determine whether the constructs in the model measure what they are meant to measure or they measure other constructs.

3. RESULTS

The first section of the data analysis presents the descriptive and correlation analysis of the data as shown in Tables 2 and 3. The descriptive analysis reveals the mean, standard deviation, and the number of samples. From the correlation analysis, both the Pearson Correlation and correspondence one-tailed test at a 5 percent level of significance was used. The one-tailed test was used because the possibility of a relationship in one direction is tested, while the possibility of a relationship in the other direction is completely disregarded. Moreover, the one-tailed test provides more power to detect an effect in one direction by not testing the effect in the other direction.

The descriptive analysis revealed that the total sample is 92, while the mean and standard deviation revealed that the data are not widely dispersed. The mean, which is essentially a model of the data set and the only measure of central tendency where the sum of the deviations of each value from the mean is always zero, ranges from 8.8370 for research enablers to 12.5109 for perception about research output. These values reveal the lowest amount of errors from all other values in the data set. In the same manner, standard devia-

Table 2. Descriptive statistics

Constructs	Mean	Std. Deviation	N
Researcher Perception of Research Output	12.5109	2.44273	92
Individual Researcher Attributes	25.8261	4.62104	92
Research Enablers	8.8370	2.10847	92
Research Motivation	9.1196	3.17906	92

Note: N stands for the number of respondents.

Table 3. Correlation analysis

		Researcher's Perception	Ind. Res. Attributes	Res. Enablers	Res. Motivation
Pearson Correlation	Researcher's Perception	1.000	0.444	0.573	−0.261
	Ind. Res. Attributes	0.444	1.000	0.356	−0.108
	Res. Enablers	0.573	0.356	1.000	−0.389
	Res. Motivation	−0.261	−0.108	−0.389	1.000
Sig. (one-tailed)	Researcher's Perception	−	0.000**	0.000**	0.006**
	Ind. Res. Attributes	0.000**	−	0.000**	0.153
	Res. Enablers	0.000**	0.000**	−	0.000**
	Res. Motivation	0.006**	0.153	0.000**	−

Note: Critical *t*-values. * 1.96 (p < .05); ** 2.58 (p < 0.01).

tion, which is a statistical term used to measure the amount of variability or dispersion around an average, reveals that the data are lowly dispersed.

Using the rule of thumb that a coefficient less than −0.7 or greater than +0.7 is deemed a strong correlation, a coefficient between −0.3 and +0.3 is deemed a weak correlation, and a coefficient between +0.3 and +0.7 or between −0.3 and −0.7 is deemed moderate correlation, all the correlation coefficients range from −0.108 to 0.573. Specifically, the correlation between individual research attributes, research enablers, and the researcher's perception of the output is significantly positive and moderate, with 0.444 and 0.573 coefficients, respectively. Meanwhile, the correlation between research motivation and the researcher's perception of the output is significantly weak and inverse,

with a −0.261 coefficient. The correlation between research enablers and individual research attributes is significantly positive and moderate, with a 0.356 coefficient, while an insignificant inverse and weak correlation exists between research motivation and individual research attributes, with a −0.108 coefficient. Also, there exists an inverse and moderate correlation between research motivation and research enablers with a −0.389 coefficient.

The structural model mirrors the paths hypothesized in the framework of the study. It is assessed based on the R^2, Q^2, and significance of the paths. According to Briones Peñalver et al. (2018), the model's goodness is ascertained by the strength of each structural path confirmed by R^2 value for the dependent variable (perception of research output in this study). The acceptable value for R^2

Table 4. Validity and reliability of constructs

Constructs	Path	Items	Loadings	AVE	CR	R^2	Q^2
Individual Researcher Attribute	IRA1	Ambitious research pursuit	0.879	0.646	0.922	−	−
	IRA2	Understand literature	0.841				
	IRA3	Motivated to research	0.833				
	IRA4	Commitment to research	0.809				
	IRA5	Keen to complete research	0.799				
	IRA6	Strive to publish	0.768				
	IRA7	Understand methodologies	0.754				
	IRA8	Communicate findings	0.739				
Research Motivation	RM1	Provision of sufficient budget	0.887	0.750	0.889	−	−
	RM2	My research financial support motivates	0.883				
	RM3	Allocation of budgets motivate	0.867				
	RM4	Adequate funding for research support	0.824				
Perception about Research Outputs	PRO1	Promotion criteria alignment	0.872	0.615	0.791	0.414	0.219
	PRO2	Administrative duties reduce time for research	0.817				
	PRO3	Published lecturer's promotion chances	0.724				
	PRO4	Accomplished researcher head of department	0.712				
Research Enablers	RE1	Reduced teaching load	0.912	0.787	0.864	0.270	0.199
	RE2	Research sabbatical	0.875				
	RE3	Availability of co-authors	0.874				
SRMR		0.090			−		

should be equal to or over 0.1 (Falk & Miller, 1992). As shown in Figure 1, this study found the R^2 values for research enablers and perception of research output at 0.270 (27%) and 0.414 (41%), respectively, to be above 0.1. This implies that 27% of the change in research enablers is influenced by individual research attributes and research motivation, while 41% of the variation in the perception of research output is attributable to individual research attributes, research motivation, and research enablers. Therefore, the predictive capacity of the model is established. Additionally, a Q^2 above 0 indicates that the model has predictive relevance. The results indicate that there is significance in the prediction of three of the four constructs (see Table 4). Finally, the model fit was assessed based on the standardized root mean square residual (SRMR). Henseler et al. (2014) introduced the SRMR as a measure of the goodness of model fit for PLS-SEM to avoid model misspecification. SRMR is the difference between the observed correlation and the model-implied correlation matrix. Consequently, it allows for the measurement of the average magnitude of the differences between expected and observed correlations as an absolute measure of the model fit criterion. The value of SRMR reported in this study was 0.090, which is below the maximum requisite value of 0.10, indicating an acceptable model fit (Hair et al., 2016).

Table 5 notes the AVE values for all the constructs above the 0.5 threshold. Specifically, the values of 0.804 for Individual Researcher Attribute, 0.866 for Research Motivation, 0.784 for Perception of Research Output, and 0.887 for Research Enablers further confirm the validity of the construct and indicate that the constructs measured what they were meant to measure.
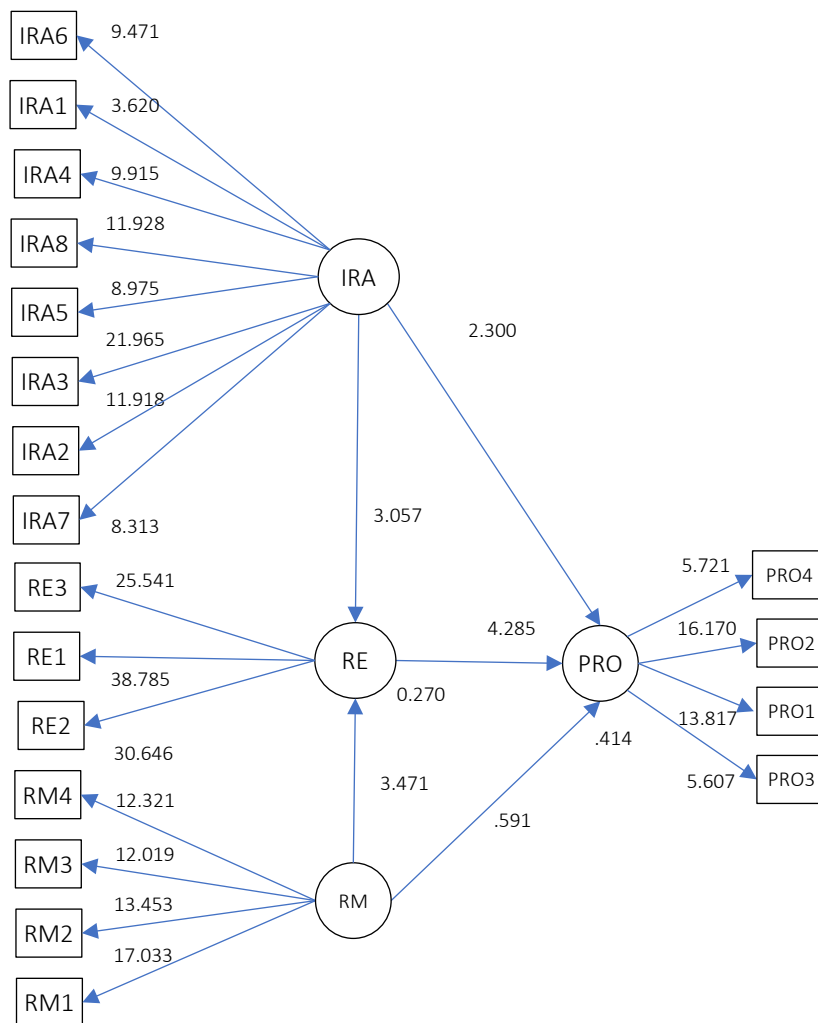

Figure 2. Structural model with path coefficient

Table 5. Discriminant validity (Fornell and Larcker criterion)

Constructs	1	2	3	4
Individual Researcher Attributes	0.804	–	–	–
Research Motivation	−0.118	0.866	–	–
Perception of Research Output	0.452	−0.276	0.784	–
Research Enablers	0.376	−0.400	0.591	0.887

Note: Values on the diagonal (bolded) are the square root of the Average Variance Extracted (AVE) of the latent variables and indicate the highest in any column or row, while the off diagonals are correlations.

Table 6. Discriminant validity (Heterotrait-Monotrait (HTMT) criterion)

Variable	Ind. Res. Attributes	Research Motivation	Perception of Res. Output	Research Enablers
Ind. Res. Attributes	–	–	–	–
Research Motivation	0.175	–	–	–
Perception of Research Output	0.525	0.309	–	–
Research Enablers	0.404	0.450	0.685	–

The HTMT criterion reveals that there are low correlations among the latent variables as they are less than 1 (table 6). This means that there is good discriminant validity among the variables (Kline, 2015; Gold, Malhotra & Segars, 2001).

For further assessment of the model's goodness of fit, the hypotheses (see Table 7) were tested to determine the significance of the associations. H_1 appraises whether individual research attributes significantly influence the perception of research output. The results showed that individual research attributes significantly influenced the perception of research output (β = 0.270, t = 2.331, p < 0.05). Therefore, H_1 was supported. The additional assessment revealed that H_2, which evaluated whether individual research attributes significantly impacted research enablers, was supported (β = 0.334, t = 3.175, p < 0.01). H_3, on the other hand, which evaluated the relationship between research motivation and perception of research output, revealed a negative and non-significant impact (β = −0.057, t = 0.574, p > 0.05). Hence, H_3 was not supported. This negates the postulations of the SDT, which

states that both intrinsic and extrinsic motivation influence behavior. According to Ryan and Deci (2019), intrinsic motivation is described as doing something out of an internal drive to continue in an activity for the intrinsic pleasure of the activity itself, practically, a lecturer who participates in research because it is exciting or rewarding to do because of its advantages. These findings negate the findings of Doğan (2017) and Peng and Gao (2019), Tus (2020), Wan, Lee and Hu (2021), who found that research motivation is a predictor of academic achievement in Turkey, China, the Philippines and Hong Kong respectively. Ma (2019) posits that high level of motivation is a strong force directing people to act in a more determined manner to reach goals. Having an indirect relationship with output perception among accounting academics in African UoTs is a sign that the staff needs to be enlightened more on the fact that new discoveries can only be possible when there is intense research. The university's efforts to motivate by providing a sufficient research budget and adequate funding for research support are not maximized to yield output. More effort should be geared to-

Table 7. Hypotheses testing results

Hypotheses	B	Std. Dev	T	P-Values
Ind. Res. Attributes → Perception of Output	0.270	0.116	2.331	0.020*
Ind. Res. Attributes → Research Enablers	0.334	0.105	3.175	0.002**
Research Motivation → Perception of Output	−0.057	0.100	0.574	0.566
Research Motivation → Research Enablers	−0.361	0.108	3.339	0.001**
Research Enablers → Perception of Output	0.467	0.116	4.036	0.000**

Note: Critical t values. * 1.96 (p <.05); ** 2.58 (p < 0.01). The bolded hypothesis was not supported. Std. Dev stands for Standard Deviation; T stands for T-statistics; P-Values stands for Probability Values.

Table 8. Mediation analysis results

	Total Effects	T	Sig.	Direct Effects	Sig.		Effect	T	Sig.
IRA − PRO	0.425	3.780	0.000**	0.270	0.020*	IRA-RE-PRO	0.156	2.521	0.012**
RM −PRO	−0.226	3.339	0.028*	−0.057	0.566	RM-RE-PRO	−0.168	2.510	0.012**

*Note: Critical t values. * 1.96 (p <.05); ** 2.58 (p < 0.01); PRO stands for Perceived Research Output; IRA stands for Individual Research Attributes; RE stands for Research Enablers; RM stands for Research Motivation; Sig stands for Significant Values; T is the T-statistics.*

wards linking research output to awards, promotions, and other motivating factors in addition to funding support.

However, H_4, which assessed whether the linkage between research motivation and research enablers was significant, revealed that research motivation has a negative but significant influence on research enablers (β = −0.361, t = 3.339, p < 0.01). Therefore, H_4 was supported. While H_4 was supported, the negative effect of research motivation on research enablers is that the more academic staff have reduced teaching load, are open to research sabbatical, or have access to collaborate with co-authors, the less motivated they are to conduct research. This negates the postulations of the theory of intelligence as people tend to use their intellect to generate more output when conjuncted with other factors such as training, review courses, and webinars (Richards et al., 2019). Also, the findings negate those of a study by De Smul et al. (2018) conducted in Belgium, which found that accounting academics conduct successful research when they have reduced teaching loads and are open to external collaborations. Fealing et al. (2017) averred those adaptive motivational beliefs and behaviors are found to effectively anticipate engagement, efficiency, and prolonged quest for academic pursuits. Motivation is said to be a powerful force that helps people to behave more determinedly to achieve their goals (Ztürk & Uzunkol, 2013). Having an inverse impact on research enablers shows there is the need for proper enabling structures and other incentives to ensure research is of interest to accounting scholars apart from the reduction in teaching load and availability of sabbatical or collaborators.

Finally, H_5, assessing the relationship between research enablers and perception of research outputs, revealed that research enablers have a direct and significant influence on perception of research outputs (β = 0.467, t = 4.036, p < .01). This is in line with the theory of intelligence and the findings of Malik et al. (2017) in a study conducted in Pakistan, which found that performance in scholarly work is influenced by research training and skills, financial support, technical and logistical support, mentoring and team cohesion and balanced workload, among many other factors.

Mediation analyses were performed to evaluate the mediating influence of research enablers between individual researcher attributes, research motivation, and perception of research output among accounting academics in African UoTs. The results (see Figure 1 and Table 8) revealed the partially significant (p < 0.05) mediating role of research enablers (*H2a:* β = 0.156, t = 2.521, p < 0.05) between individual researcher attributes and perception of research output. This implies that when research enablers are considered, individual researcher attributes will significantly impact the perception of research output among accounting academics. Also, research enablers are significantly (*H3a:* β = −0.168, t = 2.510, p < 0.05) fully mediated between research motivation and perception of research output. Even though it has a negative impact, it implies that when research enablers are taken into consideration, there will be a strong significance of research motivation on the perception of research output among accounting scholars in African UoTs.

CONCLUSION

This study aims to explore the complex relationships between research attributes, motivation, enabling factors, and perceptions of research output among accounting academics in African universities of technology. The outcomes regarding the influence of individual research attributes on the perception of research output unveiled a notable impact (β = 0.270, t = 2.331, p < 0.05). Similarly, examining how

individual research attributes affect research enablers demonstrated a substantial association ($\beta = 0.334$, $t = 3.175$, $p < 0.01$), thus providing validation. In contrast, the interaction between research motivation and the perception of research output exhibited an insignificant yet adverse effect ($\beta = -0.057$, $t = 0.574$, $p > 0.05$), defying the expectations set forth by the Self-Determination Theory (SDT), which asserts the influence of intrinsic and extrinsic motivations on behavior. This contradicts the prevailing belief that internal satisfaction-driven intrinsic motivation serves as a driving force for activities such as research involvement. These findings deviate from earlier research that suggested a predictive role of research motivation in academic attainment.

Exploring the correlation between research motivation and research enablers, the analysis revealed a substantiated negative influence ($\beta = -0.361$, $t = 3.339$, $p < 0.01$), implying that the inclination towards research enablers diminishes as research motivation intensifies. This contradicts the theory of intelligence, which suggests that combining intellectual abilities with factors like training enhances overall output. The implication here is that research is fortified not solely by reduced teaching loads and collaborations but also necessitates broader enabling structures. Regarding the interrelation between research enablers and the perception of research outputs, the findings indicated a direct and substantial impact ($\beta = 0.467$, $t = 4.036$, $p < 0.01$), aligning with the theory of intelligence. This underscores the significance of research training, support, mentorship, and a balanced workload in influencing scholarly performance. It is on this premise that this study recommends the following.

Collaboration between industries and accounting academics is essential. Research from universities of technology should be practically applied to encourage more companies to seek academic insights. Accounting research should enhance practice, similar to how medical research advances medicine. Effective standards, once tested, should be issued by the accounting profession, ideally with a strong input from practical research.

Accounting scholars should prioritize developing solutions that advance the field rather than focusing solely on publication records. Universities should organize seminars and conferences to foster collaboration and tackle core issues. Research policies should empower scholars to benefit from their findings, and writing retreats should be available for faculty and students to hone research skills.

There's also a need for accessible data resources in African universities, as the difficulty of primary data collection often deters researchers. Finally, research motivation affects perceptions of output quality, especially when supported by strong research enablers. Future studies should replicate this research across traditional and technical universities for broader insights.

In conclusion, for accounting scholars in African UoTs, individual researcher attributes and research enablers significantly affect the perception about research outputs, while research motivation only significantly affects perception about research outputs when fully mediated by research enablers. The only limitation of this study was the inability of accounting academics at all UoTs to complete the questionnaire. However, this in no way affects the potency of the research results. Future researchers are strongly recommended to conduct this same study to compare the findings from both traditional universities and UoTs.

AUTHOR CONTRIBUTIONS

Investigation: Odunayo Magret Olarewaju, Thabiso Sthembiso Msomi.
Methodology: Odunayo Magret Olarewaju, Thabiso Sthembiso Msomi.
Project administration: Odunayo Magret Olarewaju, Thabiso Sthembiso Msomi.
Resources: Odunayo Magret Olarewaju, Thabiso Sthembiso Msomi.
Software: Odunayo Magret Olarewaju, Thabiso Sthembiso Msomi.
Supervision Odunayo Magret Olarewaju, Thabiso Sthembiso Msomi.
Validation: Odunayo Magret Olarewaju, Thabiso Sthembiso Msomi.
Visualization: Odunayo Magret Olarewaju, Thabiso Sthembiso Msomi.
Writing – original draft: Thabiso Sthembiso Msomi.
Writing – review & editing: Odunayo Magret Olarewaju.

REFERENCES

1. Al Shobaki, M. J., & Abu-Naser, S. S. (2017). The Role of the Practice of Excellence Strategies in Education to Achieve Sustainable Competitive Advantage to Institutions of Higher Education-Faculty of Engineering and Information Technology at Al-Azhar University in Gaza a Model. *International Journal of Digital Publication Technology, 1*(2), 135-157. Retrieved from https://philpapers.org/archive/ALSTRO-9.pdf

2. Ankomah-Asare, E. T., Yao, H., Dzidzornu, A. A. K., & Antwi, H. A. (2020). A Multi-Attribute Assisted Performance Deduction and Related Value in Triple Helix Innovation Networks. *Pakistan Journal of Statistics & Operation Research, 16*(4), 751-760. https://doi.org/10.18187/pjsor.v16i4.2814

3. Asrar-ul-Haq, M., Anwar, S., & Hassan, M. (2017). Impact of emotional intelligence on teachers' performance in higher education institutions of Pakistan. *Future Business Journal, 3*(2), 87-97. https://doi.org/10.1016/j.fbj.2017.05.003

4. Baporikar, N. (2020). Understanding Entrepreneurial University: A Framework for Emerging Economies. In Daniel, A. D., Teixeira, A. A. C., & Preto, M. T. (Eds.), *Examining the Role of Entrepreneurial Universities in Regional Development* (pp. 93-112). IGI Global. https://doi.org/10.4018/978-1-7998-0174-0.ch005

5. Beattie, V., & Goodacre, A. (2004). Publishing patterns within the UK accounting and finance academic community. *The British Accounting Review, 36*(1), 7-44. https://doi.org/10.1016/j.bar.2003.08.003

6. Bentley, P. J., & Kyvik, S. (2012). Academic work from a comparative perspective: A survey of faculty working time across 13 countries. *Higher Education, 63,* 529-547. https://doi.org/10.1007/s10734-011-9457-4

7. Booysen, F. (2002). An overview and evaluation of composite indices of development. *Social Indicators Research, 59,* 115-151. https://doi.org/10.1023/A:1016275505152

8. Brinkman, P. T. (1981). Factors affecting instructional costs at major research universities. *The Journal of Higher Education, 52*(3), 265-279. https://doi.org/10.2307/1981035

9. Briones Peñalver, A. J., Bernal Conesa, J. A., & de Nieves Nieto, C. (2018). Analysis of corporate social responsibility in Spanish agribusiness and its influence on innovation and performance. *Corporate Social Responsibility and Environmental Management, 25*(2), 182-193. https://doi.org/10.1002/csr.1448

10. Cunningham, J. A., & Miller, K. (2021). Entrepreneurial university business models: core drivers, challenges and consequences. In *A Research Agenda for the Entrepreneurial University* (Chapter 7). Edward Elgar Publishing. https://doi.org/10.4337/9781788975049.00014

11. De Rassenfosse, G., & Williams, R. (2015). Rules of engagement: measuring connectivity in national systems of higher education. *Higher Education, 70,* 941-956. https://doi.org/10.1007/s10734-015-9881-y

12. De Smul, M., Heirweg, S., Van Keer, H., Devos, G., &Vandevelde, S. (2018). How competent do teachers feel instructing self-regulated learning strategies? Development and validation of the teacher self-efficacy scale to implement self-regulated learning. *Teaching and Teacher Education, 71,* 214-225. https://doi.org/10.1016/j.tate.2018.01.001

13. Dee, T. S., & Goldhaber, D. (2017). Understanding and addressing teacher shortages in the United States. *The Hamilton Project, 5,* 1-28. Retrieved from https://www.brookings.edu/wp-content/uploads/2017/04/es_20170426_understanding_and_addressing_teacher_shortages_in_us_pp_dee_goldhaber.pdf

14. Doğan, G. (2017). The effect of gender and l2 proficiency on learners' motivational dispositions and vision. *International Journal of Language Academy, 5*(3), 66-83. http://dx.doi.org/10.18033/ijla.3585

15. Eames, M., Luttman, S., & Parker, S. (2018). Accelerated vs. traditional accounting education and CPA exam performance. *Journal of Accounting Education, 44,* 1-13. https://doi.org/10.1016/j.jaccedu.2018.04.004

16. Falk, R. F., & Miller, N. B. (1992). *A primer for soft modeling.* University of Akron Press.

17. Fealing, K. H., Lane, J. I., King, J. L., & Johnson, S. R. (Eds.) (2017).

Introduction and motivation. In *Measuring the Economic Value of Research: The Case of Food Safety* (pp. 1-10). Cambridge University Press. Retrieved from https://www.cambridge.org/core/books/abs/measuring-the-economic-value-of-research/introduction-and-motivation/A20B7E9DFB3E55FAE-49B4E71A8CD7BF2

18. Ganiyu, I. O., Fields, Z., Atiku, S. O., & Derera, E. (2020). Measuring the effectiveness of work–life balance strategies in the manufacturing sector. *SA Journal of Human Resource Management, 18*(1), 1-10. Retrieved from https://sajhrm.co.za/index.php/sajhrm/article/view/1216/2065

19. Garavan, T., McCarthy, A., Lai, Y., Murphy, K., Sheehan, M., & Carbery, R. (2021). Training and organisational performance: A meta-analysis of temporal, institutional and organisational context moderators. *Human Resource Management Journal, 31*(1), 93-119. https://doi.org/10.1111/1748-8583.12284

20. Gralka, S., Wohlrabe, K., & Bornmann, L. (2019). How to measure research efficiency in higher education? Research grants vs. publication output. *Journal of Higher Education Policy and Management, 41*(3), 322-341. https://doi.org/10.1080/1360080X.2019.1588492

21. Hadi, N. U., Abdullah, N., & Sentosa, I. (2016). An easy approach to exploratory factor analysis: Marketing perspective. *Journal of Educational and Social Research, 6*(1), 215-223. Retrieved from https://www.richtmann.org/journal/index.php/jesr/article/view/8799

22. Hair Jr, J. F., Sarstedt, M., Matthews, L. M., & Ringle, C. M. (2016). Identifying and treating unobserved heterogeneity with FIMIX-PLS: part I – method. *European Business Review, 28*(1), 63-76. https://doi.org/10.1108/EBR-09-2015-0094

23. Henseler, J., Dijkstra, T. K., Sarstedt, M., Ringle, C. M., Diamantopoulos, A., Straub, D. W., Ketchen, D. J., Hair, J. F., Hult, G. T. M., & Calantone, R.

J. (2014). Common Beliefs and Reality about Partial Least Squares. *Organizational Research Methods, 17*(2), 182-209. https://doi.org/10.1177/1094428114526928

24. Hwang, H., Malhotra, N. K., Kim, Y., Tomiuk, M. A., & Hong, S. (2010). A comparative study on parameter recovery of three approaches to structural equation modeling. *Journal of Marketing Research, 47*(4), 699-712. https://doi.org/10.1509/jmkr.47.4.699

25. Izuagbe, R., Olawoyin, O. R., Nkiko, C., Ilo, P. I., Yusuf, F., Iroaganachi, M., Ilogho, J., & Ifijeh, G. I. (2021). Impact analysis of e-Databases' job relevance, output quality and result demonstrability on faculty research motivation. *Library Hi Tech, 40*(5), 1402-1421. https://doi.org/10.1108/LHT-03-2020-0050

26. Jung, C. G. (2014). *Aion: Researches into the Phenomenology of the Self*. Routledge.

27. Kenny, J., & Fluck, A. E. (2018). Research workloads in Australian universities. *Australian Universities' Review, 60*(2), 25-37. Retrieved from https://files.eric.ed.gov/fulltext/EJ1188994.pdf

28. Lee, J., & Zentall, S. S. (2017). Reading motivation and later reading achievement for students with reading disabilities and comparison groups (ADHD and typical): A 3-year longitudinal study. *Contemporary Educational Psychology, 50,* 60-71. https://doi.org/10.1016/j.cedpsych.2015.11.001

29. Leuz, C. (2018). Evidence-based policymaking: promise, challenges and opportunities for accounting and financial markets research. *Accounting and Business Research, 48*(5), 582-608. https://doi.org/10.1080/00014788.2018.1470151

30. Leylak, D., Çatal, E., & Say, S. (2021). Examining the Primary-School Teachers' Motivation Levels during the COVID-19 Pandemic. *The Turkish Online Journal of Educational Technology, 2021,* 64-72. Retrieved from https://files.eric.ed.gov/fulltext/ED617688.pdf

31. Lubbe, I. (2014). Educating professionals: Describing the knowledge agency of Accounting academics. *Meditari Accountancy Research, 22*(1), 107-127. https://doi.org/10.1108/MEDAR-02-2014-0031

32. Ma, L. (2019). Money, morale, and motivation: a study of the Output-Based Research Support Scheme in University College Dublin. *Research Evaluation, 28*(4), 304-312. https://doi.org/10.1093/reseval/rvz017

33. MacCann, C., Jiang, Y., Brown, L. E., Double, K. S., Bucich, M., & Minbashian, A. (2020). Emotional intelligence predicts academic performance: A meta-analysis. *Psychological Bulletin, 146*(2), 150. https://doi.org/10.1037/bul0000219

34. Malik, N. A. A., Björkqvist, K., & Österman, K. (2017). Factors associated with occupational stress among university teachers in Pakistan and Finland. *Journal of Educational, Health and Community Psychology, 6*(2), 1-14. Retrieved from https://core.ac.uk/download/pdf/324200016.pdf

35. Mouton, J. (2011). Doctoral production in South Africa: Statistics, challenges and responses. *Perspectives in Education, 29*(3), 13-29. Retrieved from https://www.ajol.info/index.php/pie/article/view/76971

36. Mulu, N. K. (2017). The Links between Academic Research and Economic Development in Ethiopia: The Case of Addis Ababa University. *European Journal of STEM Education, 2*(2), 5. https://doi.org/10.20897/ejsteme.201705

37. Munung, N. S., Vidal, L., & Ouwe-Missi-Oukem-Boyer, O. (2014). Do students eventually get to publish their research findings? The case of human immunodeficiency virus/acquired immunodeficiency syndrome research in Cameroon. *Annals of Medical and Health Sciences Research, 4*(3), 436-441. Retrieved from https://pmc.ncbi.nlm.nih.gov/articles/PMC4071747/

38. Negash, M., Lemma, T. T., & Samkin, G. (2019). Factors impacting accounting research output in

developing countries: An exploratory study. *The British Accounting Review, 51*(2), 170-192. https://doi.org/10.1016/j.bar.2018.09.003

39. Nguyen, N. D., Nguyen, T. D., & Dao, K. T. (2021). Effects of institutional policies and characteristics on research productivity at Vietnam science and technology universities. *Heliyon, 7*(1), e06024. https://doi.org/10.1016/j.heliyon.2021.e06024

40. Oyelaran-Oyeyinka, B., & Adebowale, B. A. (2012). University-industry collaboration as a determinant of innovation in Nigeria. *Institutions and Economies, 4*(1), 21-46. Retrieved from https://ijie.um.edu.my/article/view/4841

41. Pastor, J. M., & Serrano, L. (2016). The determinants of the research output of universities: specialization, quality and inefficiencies. *Scientometrics, 109*(2), 1255-1281. https://doi.org/10.1007/s11192-016-2102-3

42. Peng, J. E., & Gao, X. (2019). Understanding TEFL academics' research motivation and its relations with research productivity. *Sage Open, 9*(3), 2158244019866295. https://doi.org/10.1177/2158244019866295

43. Rhaiem, M. (2017). Measurement and determinants of academic research efficiency: a systematic review of the evidence. *Scientometrics, 110*(2), 581-615. https://doi.org/10.1007/s11192-016-2173-1

44. Richards, G., Yeoh, W., Chong, A. Y. L., & Popovič, A. (2019). Business intelligence effectiveness and corporate performance management: an empirical analysis. *Journal of Computer Information Systems, 59*(2), 188-196. https://doi.org/10.1080/08874417.2017.1334244

45. Ryan, R. M., & Deci, E. L. (2019). Brick by brick: The origins, development, and future of self-determination theory. *Advances in Motivation Science, 6,* 111-156. https://doi.org/10.1016/bs.adms.2019.01.001

46. Smeby, J. C., & Try, S. (2005). Departmental contexts and faculty research activity in Norway. *Research in Higher Education, 46,* 593-619. https://doi.org/10.1007/s11162-004-4136-2

47. Smith, S. J., & Urquhart, V. (2018). Accounting and finance in UK universities: Academic labour, shortages and strategies. *The British Accounting Review, 50*(6), 588-601. https://doi.org/10.1016/j.bar.2018.03.002

48. Sternberg, R. J. (1985). Implicit theories of intelligence, creativity, and wisdom. *Journal of Personality and Social Psychology, 49*(3), 607-627. https://doi.org/10.1037/0022-3514.49.3.607

49. Stewart, V. L., Reynolds, K., & Meschitti, V. (2019, December). Women's motivation to lead in social enterprises: a systematic literature review. In *Gender, Work and Organization Conference 2021: Transforming Contexts, Transforming Selves: Gender in New Times.* Retrieved from https://research-portal.uws.ac.uk/en/publications/womens-motivation-to-lead-in-social-enterprises-a-systematic-lite

50. Subramaniam, N. (2003). Factors affecting the career progress of academic accountants in Australia: Cross-institutional and gender perspectives. *Higher Education, 46*(4), 507-542. Retrieved from https://www.jstor.org/stable/3447574

51. Sulo, T., Kendagor, R., Kosgei, D., Tuitoek, D., & Chelangat, S. (2012). Factors affecting research productivity in public universities of Kenya: The case of Moi University, Eldoret. *Journal of Emerging Trends in Economics and Management Sciences, 3*(5), 475-484. Retrieved from http://ir.mu.ac.ke:8080/jspui/handle/123456789/7271

52. Sun, H., Li, W., & Shen, B. (2017). Learning in physical education: A self-determination theory perspective. *Journal of Teaching in Physical Education, 36*(3), 277-291. https://doi.org/10.1123/jtpe.2017-0067

53. Sutcher, L., Darling-Hammond, L., & Carver-Thomas, D. (2019). Understanding teacher shortages: An analysis of teacher supply and demand in the United States. *Education Policy Analysis Archives, 27*(35). http://dx.doi.org/10.14507/epaa.27.3696

54. Taber, K. S. (2018). The use of Cronbach's alpha when developing and reporting research instruments in science education. *Research in Science Education, 48*(6), 1273-1296. http://dx.doi.org/10.1007/s11165-016-9602-2

55. Tan, L. M., & Laswad, F. (2018). Professional skills required of accountants: what do job advertisements tell us? *Accounting Education, 27*(4), 403-432. https://doi.org/10.1080/09639284.2018.1490189

56. Tus, J. (2020). Academic Stress, Academic Motivation, and Its Relationship on the Academic Performance of the Senior High School Students. *Asian Journal of Multidisciplinary Studies, 8*(11). Retrieved from https://www.academia.edu/45074515/Academic_Stress_Academic_Motivation_and_Its_Relationship_on_the_Academic_Performance_of_the_Senior_High_School_Students

57. Victor, A. A., & Babatunde, E. G. (2014). Motivation and Effective Performance of Academic Staff in Higher Education (Case Study of Adekunle Ajasin University, Ondo State, Nigeria). *Online Submission, 1*(2), 157-163. Retrieved from https://files.eric.ed.gov/fulltext/ED580927.pdf

58. Vinzi, V. E., Trinchera, L., & Amato, S. (2010). PLS path modeling: from foundations to recent developments and open issues for model assessment and improvement. In Vinzi, V. E., Chin, W., Henseler, J., Wang, H. (Eds.), *Handbook of partial least squares: Concepts, methods and applications* (pp. 47-82). Springer, Berlin, Heidelberg. https://doi.org/10.1007/978-3-540-32827-8_3

59. Wan, Z. H., Lee, J. C. K., & Hu, W. (2021). How should undergraduate students perceive knowledge as a product of human creation? Insights from a study on epistemic beliefs, intellectual risk-taking,

and creativity. *Thinking Skills and Creativity, 39,* 100786. https://doi.org/10.1016/j.tsc.2021.100786

60. Wilkinson, B. R., & Durden, C. H. (2015). Inducing structural change in academic accounting research. *Critical Perspectives on Accounting, 26,* 23-36. https://doi.org/10.1016/j.cpa.2014.03.002

61. WiredBugs. (2018). *13 Best Universities of Science and Technology in Africa: 4icu Rankings 2018.* Retrieved from https://wiredbugs.com/best-universities-technology-in-africa

62. Wong, K. K. (2010). Handling small survey sample size and skewed dataset with partial least square path modelling. *Vue: The Magazine of the Marketing Research and Intelligence Association, 20,* 20-23.

63. Wong, K. K. K. (2013). Partial least squares structural equation modeling (PLS-SEM) techniques using SmartPLS. *Marketing Bulletin, 24*(1), 1-32. Retrieved from https://marketing-bulletin.massey.ac.nz/v24/mb_v24_t1_wong.pdf

64. Wright, M., Birley, S., & Mosey, S. (2004). Entrepreneurship and university technology transfer. *The Journal of Technology Transfer, 29*(3), 235-246. Retrieved from https://citeseerx.ist.psu.edu/document?repid=rep1&type=pdf&doi=f0d40aacbf46280ad5204beabe01b880df20863a

65. Wu, Y., Welch, E. W., & Huang, W. L. (2015). Commercialization of university inventions: Individual and institutional factors affecting licensing of university patents. *Technovation, 36,* 12-25. https://doi.org/10.1016/j.technovation.2014.09.004

66. Yousefi, R., Tahriri, A., & Tous, M. D. (2019). Factors Affecting Iranian TEFL Postgraduate Candidates' Research Productivity: A Qualitative Study. *International Journal of Education and Literacy Studies, 7*(2), 65-74. Retrieved from https://journals.aiac.org.au/index.php/IJELS/article/view/5353