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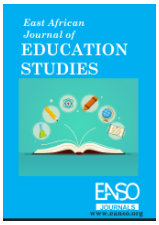

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Original Article

Organisational Factors as Predictors of Research Productivity: Evidence from Selected Universities in Uganda

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Research Emphasis, Research Productivity, University Affluence, University, Autonomy, University Reputation, & University Size.

ABSTRACT

The pivotal role that research play in knowledge generation within higher education institutions has attracted the attention of many scholars. These have mainly looked at ways of improving research productivity in such institutions. In this study, the aim was to examine whether organisational variables in Bean's model jointly predict research productivity of a PhD-holding academic staff member in a university in Uganda. The organisational variables were university research emphasis, university reputation, university size, university affluence, and university autonomy. Employing a positivist approach and using a predictive, cross-sectional survey design, 217 PhD-holding academic staff members from three universities in Uganda, namely, Bishop Stuart University, Makerere University, and Uganda Christian University provided data by completing SAQs. We tested the study hypotheses using both Pearson's linear correlation and standard multiple linear regression. Both bivariate and multivariate results indicated that there was no significant prediction between research productivity and the organisational variables. We concluded that the organisational variables in Bean's model do not jointly significantly positively predict research productivity of a PhD-holding academic staff. Because the prediction of research productivity by most of the organisational variables individually were not statistically significant, we recommend that university administrators address these factors in unison to enhance research productivity of their PhD-holding academic staff.

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INTRODUCTION

The aim of this study was to examine whether organisational variables in Bean's model jointly predict research productivity of a PhD-holding academic staff. John Paul Bean introduced his model (*Figure 1*) at an annual American Educational Research Association meeting in New York in 1982. This model culminated from an extensive review of literature that encompassed theories of organisational behaviour, organisational effectiveness, and motivation (Bean 1982). According to Bean (1982), research productivity is predicted at two levels, one of which is organisational factors, and the other one is individual factors. This model, however, had some limitations. For example, whereas it had to harmonise the virtues of comprehensiveness and simplicity, it was instead complex with many variables, some appearing more than once. It, therefore, fell short regarding the parsimonious test of the theory. Parsimony of a theory is about whether a theory is stated in the most economical way possible, using few words, concepts, and propositions when describing, explaining, and predicting phenomenon (Fawcett & Downs, 1992). Further, having never tested this model, Bean encouraged researchers to subject the model to empirical scrutiny. This plea has not been adequately heeded, thus laying the groundwork for the current study. For parsimonious reasons, the organisational variables of interest were only university research emphasis, university reputation, university size, university affluence, and university autonomy.

These past studies depict some controversies, and they are associated with various gaps. This study was based on these and hence the necessity to test the following hypotheses:

H_1: University research emphasis significantly positively predicts the research productivity of A PhD-holding academic staff.

H_2: University reputation significantly positively predicts the research productivity of a PhD-holding academic staff.

H_3: University size significantly positively predicts the research productivity of a PhD-holding academic staff.

H_4: University affluence significantly positively predicts the research productivity of a PhD-holding academic staff.

H_5: University autonomy significantly positively predicts the research productivity of a PhD-holding academic staff.

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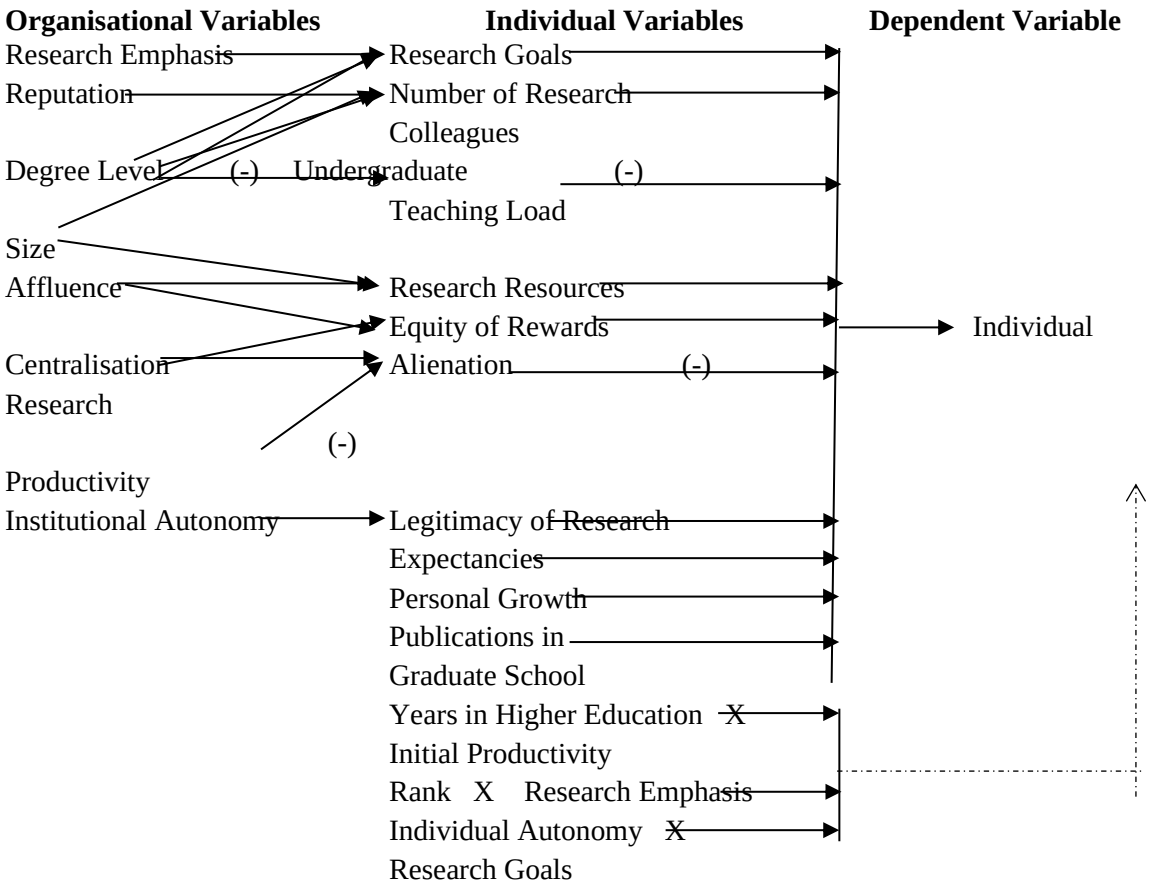
Figure 1: Bean's (1982) Model of Research Productivity



Note. From Bean, J. P. (1982, March 19-23). A causal model of faculty research productivity. Annual meeting of the American Educational Research Association, New York, NY. https://files.eric.ed.gov/fulltext/ED216661.pdf (p. 33). All predictions are positive except those with negative signs on arrows linking variables.

RELATED LITERATURE

Numerous researchers have explored the intricate relationship between specific organisational variables and their impact on research productivity of academic staff members. Some (Fuentes, 2021; Jalal, 2020; Snowball & Shackleton, 2018) empirically studied how research emphasis predicted research productivity of academic staff. Fuentes (2021) sought to discover the determinants of RP in a state university. They discovered that research productivity depended on research culture in a university. However, Fuentes (2021) expressed regret over the limitation of their study to a single university, which might have affected the generalisability of the findings. Jalal (2020) analysed the individual and institutional factors that influenced RP of academic staff members in different academic disciplines. Among the institutional factors, there existed research funding, financial incentives for conducting research, research reward system, and a research-focused culture all of which represent research emphasis. Snowball and Shackleton (2018) sought to, among others, find out the barriers to research productivity of lecturers at Rhodes University. They realised that the barriers to research productivity belonged to four categories. One category related to institutional factors and it had absence of research emphasis as one of the factors. However, Snowball and Shackleton (2018) regretted having studied academic staff members in only a research-intensive university.

Others (Heng et al., 2020; Mantikayan & Abdulgani, 2018; Sanmarino & Karimah, 2021; Uwizeye et al., 2021) have conducted literature reviews to establish what past researchers found out between the predictions of research

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productivity by research emphasis. Institutional research policies are one of the factors that Heng et al. (2020) found from their literature review to predict research engagement and productivity of academic staff members. Such policies show the emphasis that an institution puts on research. They, however, pointed out that most studies they reviewed were mainly carried out in Western contexts, and emerging economies. Mantikayan and Abdulgani (2018) sought to establish the main determinants of research productivity. After reviewing 46 articles on research productivity, they found research emphasis to be among the factors that predicted research productivity. Sanmarino and Karimah (2021) reviewed the literature to determine the mechanisms that improved RP among academic staff members. Sanmarino and Karimah used a model that had 13 constructs like points and bonuses.

The institutional factors which Uwizeye et al. (2021) found commonly appearing in literature were research funds, encouraging networking, and institutional support, all translating to research emphasis. Conversely, some scholars did not find research emphasis to be predictive of research productivity. Teodorescu (2000) investigated the publication patterns in ten countries and the causes of such patterns. Their investigation revealed nuanced variations in the influence of factors like time allocation for research, administrative duties, and teaching responsibilities on research productivity. Considering time spent on research by an academic staff member to be the research emphasis, they found that in Hong Kong, those who spent more time on administrative duties also performed highly when it came to research, while in Japan, those who spent more time teaching performed poorly when it came to research. They, however, concentrated on developed countries.

Researchers (Baltaru, 2018; Kim et al., 2011; Way et al., 2019; Williamson & Cable, 2003) who looked at how the university reputation predicted research productivity discovered contrasting results. Baltaru (2018) investigated the relationship between the professional staff and its performance. Using regression, they found university reputation to be the main determinant of university performance. However, they only studied members who were working in the United Kingdom, a developed country. Kim et al. (2011) sought to clarify whether the RP of a member academic staff trained outside the United States differed from that of an academic staff trained in the United States. They found that academic staff who worked at less selective institutions were less likely to publish articles than those in highly selective institutions. However, they only looked at academic staff working in the USA, a developed country. Way et al. (2019) investigated the determinants of research productivity, specifically looking at the role of the training institution the academic staff member attended and their current work environment. After studying early career academics at 205 PhD-granting computer science departments in the US and Canada, they found that the prestige of the current work environment for an academic staff influenced RP of that staff. Prestige of the institution is equivalent to the UR.

Williamson and Cable (2003), on the other hand, found contrasting results in the prediction of research productivity by university reputation. These investigated the factors for reducing uncertainty when selecting researchers, focusing on the scholarly output and the public reputation of the department a professor belonged to. They obtained the publication counts and presentation counts for each professor. After using regression, they found that the public reputation of the department in which a professor was placed hardly significantly correlated with the research productivity of a professor, both regarding presentation and publication counts. However, they regretted studying professors only in the management field, whose conditions could differ from those in other fields.

Some researchers (Horta & Lacy, 2011; Lamari, 2013; Zhang et al., 2017) have looked at how university size predicts research productivity through empirical studies. Horta and Lacy (2011) sought to establish the impact of the research unit

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size in which an academic staff member belonged to their researcher productivity. They conducted a nationwide online survey that entailed lecturers who held PhDs and worked in Portuguese universities that conferred more than 10 PhDs between 2005 and 2007. Lamari (2013) studied the determinants of research productivity for academic staff in the education field in seven universities in Canada. They studied 194 researchers establishing their publications and citations for a period of eight years. They found that size significantly affected RP. Zhang et al. (2017) sought to evaluate research productivity of physicians in the academic radiation-oncology departments and the factors responsible for such. They studied 1,191 physicians from 75 radiation-oncology departments, extracting their publication data from Scopus. They established the *h*-index and the *m*-index for each physician. They found a strong correlation between the number of senior physicians at an institution and their median *h*-index and *m*-index. They, however, only used Scopus as a source of publications, which was problematic.

Others (Aboagye et al., 2021; Heng et al., 2020) looked at what past researchers have found out in relation to the prediction of research productivity by university size. Aboagye et al. (2021) found from their literature review that research group size predicted research productivity, where the two varied directly. Even Heng et al. (2020) found from their literature review that research engagement and productivity of academic staff members was predicted by department size.

Contrasting results regarding the prediction of research productivity by university size exist in some studies (Abramo et al., 2012; Bonaccorsi et al., 2021). Abramo et al. (2012) investigated the relationship between the productivity of a research group and the size of that group. They analysed productivity data for scientists in 183 disciplines in 77 Italian universities for a period that ran from 2004 through 2008. In most of the fields, there was constant returns to size, while in a few fields, there was increasing returns to size. Even Bonaccorsi et al. (2021) found no significant effect of the university size on research productivity. This study, having concentrated on science, engineering, computer science, agriculture, and medicine fields, social sciences and humanities were neglected, yet there are disciplinary differences.

While the literature offers a limited direct exploration of the influence of university affluence on research productivity, insights from various studies indirectly underscore this. Notably, works (Barber et al., 2021; Haq et al., 2020; Lamari, 2013) have tried to point at the influence of university affluence on research productivity. In Barber et al.'s (2021) study, they looked at how the financial stand of the institution in the wake of the challenges brought about by Covid-19 impacted research productivity. They found that researchers in institutions that were vulnerable to the shocks realised low research productivity. Haq et al. (2020) analysed research productivity of academic staff in health-related disciplines in Saudi Arabia. Haq and colleagues found that the significant increase in publications was attributed to sufficient budget allocations. They, however, regretted only using Scopus database as source of publication data. In Lamari's (2013) study on determinants of research productivity of academic staff in an education field in Canada, they found that academic funding from grants and university research fund contributed significantly to research productivity. The institutional financial stand, sufficient budget allocations, and funding from grants and university research grant altogether represent the university affluence, which Bean (1982) suggested as one of the predictors of research productivity. Some like Uwizeye et al. (2021), carried out literature reviews. They reported that internet connectivity and financial incentives, which fit in the university affluence variable, were among the factors that influenced research productivity. However, the studies that Uwizeye and colleagues reviewed used different methodological approaches.

Just like for university affluence, literature offers a limited direct exploration of the influence of

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university autonomy on research productivity. Nevertheless, empirical studies by a few scholars (Hedjazi & Behravan, 2011; Sutton & Brown, 2016) have tried to point at the influence of university autonomy on research productivity. Specifically, Hedjazi and Behravan (2011) investigated the prediction of research productivity by university autonomy. These analysed the relationship between three broad categories of characteristics: individual, institutional, and demographic characteristics and research productivity. They surveyed 280 academic staff members in Iranian universities using questionnaires. Their analyses indicated that autonomy significantly predicted research productivity of staff members. Sutton and Brown (2016) empirically used an exploratory case study design to study 16 lecturers in two faculties. They used open-ended, semi-structured interviews and observation to collect data. They found out that autonomy motivated researchers into the action of producing more research. Sutton and Brown, however, studied participants in only two research units.

Apart from empirical studies, some, like Mantikayan and Abdulgani (2018) carried out literature reviews. Mantikayan and Abdulgani (2018) examined 46 articles from Google and Google Scholar databases. They categorised the determinants of research productivity into four main categories, among which individual factors were part. Within this category, Mantikayan and Abdulgani (2018) suggested the presence of autonomy and flexibility as some of the factors that affect the research productivity of an academic staff. However, Mantikayan and Abdulgani (2018) looked at autonomy as an individual variable.

METHODOLOGY

Aligning with a positivist paradigm, the research adhered to a perspective that focuses on observable social realities, aiming to deduce law-like generalisations by the conclusion of the investigation, as articulated by Saunders et al. (2009). Using a quantitative approach, we collected numerical data and subjected it to statistical analysis. Ultimately, a predictive, cross-sectional survey design was suitable for this study. The parent population for this study consisted of academic staff members within Ugandan universities holding PhD qualifications, presumed to possess a cognizance of the advantages associated with research productivity, as asserted by Reddy et al. (2021). Further, a PhD degree builds research knowledge, experience, and network which helps one to be research-competent and confident while carrying out research-related activities (Heng et al., 2020). The estimated size of the parent population was 1,956 individuals (National Council for Higher Education [NCHE], 2019). The sampled population was PhD-holding academic staff members from Bishop Stuart University (BSU), Makerere University (Mak), and Uganda Christian University (UCU). These universities were among the chattered universities with a reasonable number of academic staff members that possessed PhDs by 2017/18 (NCHE, 2019) and provided programmes that led to award of PhD qualifications. The sampled population size was 1,059 PhD-holding academic staff members.

We used a self-administered questionnaire (SAQ) to collect data. The SAQ had a section on background variables of an academic staff member: gender, age, academic rank, among others. It had a section on RP with twelve items most of which were from already-made instruments (Ibegbulam & Jacinta, 2016; Kim et al., 2007) like *Books I have published as a single author, Books I have co-authored, articles in conference journals I have solely authored* among others. These were specifically what a PhD-holding academic staff had realised in a five-year period before the current survey. The SAQ had a section on the five organisational variables. Research emphasis (RE) had nine items from authors (Kim et al., 2007; Kotrlik et al., 2002) with items like, *this university offers merit pay for publishing*. The university reputation (UR) had nine items from Telci and Kantur (2014) that included, *this university has an outstanding student profile.*

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The university size (US) had one item from Bland et al. (2005), which was *the number of faculty in my department is sufficient to accomplish our research goals.* The university affluence (UA) had five items, mainly from Hartley et al. (2016), which included, *this university facilitates staff to travel for research issues.* The university autonomy (Au) had seven items, mainly from Lane (1979), which included, *this university determines its courses and programmes.* All items on organisational variables were on a five-point Likert scale. Apart from items of RE whose Likert scale ran from 1, representing very rarely, to 5 representing very often and then those of Au, whose scale ran from 1, which represented never, to 5 that represented always, those of UR, US, and UA ran from 1, which represented strongly disagree, to 5 that represented strongly agree.

With the help of IBM SPSS Statistics, data analysis was both descriptive, and inferential. Inferentially, data analysis was at bivariate level using simple linear regressions (SLR) and at multivariate level using multiple linear regression (MLR). This helped in testing the study hypotheses.

RESULTS

The aim in this study was to examine whether organisational variables in Bean's model jointly predict research productivity of a PhD-holding academic staff. From this objective, there were five hypotheses (H1 – H5) for testing both at bivariate and multivariate levels using Pearson's linear correlation coefficients (PLCCs) and regression analysis, respectively. A total of 257 PhD-holding academic staff members from the universities provided data by responding to the self-administered questionnaires. This facilitated computation of PLCCs for the research productivity (RP), research emphasis (RE), university reputation (UR), university size (US), university affluence (UA), and university autonomy (Au). According to the results in *Table 1*, each organisational variables positively linearly correlated with research productivity.

Table 1: PLCC Output from IBM SPSS Statistics on RP, RE, UR, US, UA, and Au

Construct	RP	RE	UR	US	UA	Au
RP	1					
RE	0.050 0.428	1				
UR	0.113 0.070	0.502** 0.000	1			
US	0.006 0.925	0.261** 0.000	0.272** 0.000	1		
UA	0.109 0.083	0.411** 0.000	0.074 0.238	0.241** 0.000	1	
Au	0.089 0.156	0.263** 0.000	0.493** 0.000	0.254** 0.000	0.033 0.595	1

*Note. ** Correlation is significant at the 0.01 level (2-tailed).*
RP represents research productivity, RE represents research emphasis, UR represents university reputation, US represents university size, UA represents university affluence, and Au represents university autonomy.

In *Table 1*, results show that there was no significant prediction between research productivity and the organisational variables. This is because the *r* values were associated with high *p*-values (all $p > 0.05$). Specifically, research emphasis displayed an *r* of 0.050, *p* of 0.428; university reputation had an *r* of 0.113, *p* of 0.070; US showed an *r* of 0.006, *p* of 0.925; university affluence had an *r* of 0.109, *p* of 0.083; and university autonomy demonstrated an *r* of 0.089, *p* of 0.156. Since all of the computed *p*-values were greater than the popular significance (*p*) value of 0.05 ($p > 0.05$), it implied that the computed *r*s were small and, therefore, the prediction of research productivity by organisational variables, though positive, was not statistically significant. We used correlation coefficients to detect any potential

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multicollinearity among the organisational variables. Because all were below 0.85, there was no multicollinearity among the organisational variables, as in line with Bukhari's (2020) assertion. Conducting a MLR analysis helped to verify the bivariate analysis results. This was through using the multiple linear regression model (MLRM), specifically relating the scores on research productivity as being predicted by the scores on RE, UR, US, UA, and Au (Expression c). We also tested the null hypothesis (Expression a)

H_0: Organisational variables in Bean's model did not jointly, significantly positively predict research productivity of a PhD-holding academic staff (a)

against the research hypothesis (Expression b)

H_1: Organisational variables in Bean's model jointly significantly positively predicted research productivity of a PhD-holding academic staff (b)

$$RP = a + b_1RE + b_2UR + b_3US + b_4UA + b_5Au \quad (c)$$

In Expression c, 'a' represents the intercept, 'b1' through 'b5' denotes the regression coefficients associated with RE, UR, US, UA, and Au.

The adjusted *R* square (below *Table 2*) was 0.015, implying that collectively, the five organisational variables accounted for 1.5% of the variation in the research productivity. The *F* statistic was important in testing the significance of the MLRM (Expression c) and hence establishing whether the organisational variables were collectively significant predictors of research productivity. According to *Table 2*, the *F* statistic which was 1.769, was not statistically significant. This is because its corresponding Sig. value of 0.120 was greater than the popular significance (*p*) value of 0.05 ($p > 0.05$). This, therefore, did not qualify the model as a good one. Hence, at the 5% level of significance, it implied that the computed *F* was small and, hence, justified acceptance of the null hypothesis (Expression a) and rejection of the research hypothesis (Expression b). Therefore, the organisational variables in Bean's model did not jointly significantly positively predict research productivity of a PhD-holding academic staff. *Table 2* also shows the respective betas and their corresponding Sig. (p) values.

Table 2: Sample IBM SPSS Output on MLRM of RP on RE, UR, US, UA, and Au

	Unstandardised Coefficients (b)	Standardised Coefficients (β)	Significance (p-value)
Constant	1.626		0.000
RE	- 0.079	- 0.105	0.188
UR	0.155	0.152	0.060
US	0.000	0.000	0.996
UA	- 0.051	- 0.075	0.289
Au	0.038	0.039	0.594

Note. Dependent Variable: Individual Research Productivity (RP).
Predictors: RE, UR, US, UA, and Au.
Adjusted $R^2 = 0.015$
$F = 1.769$, $p = 0.120$
RE represents research emphasis, UR represents university reputation, US represents university size
UA represents university affluence, and Au represents university autonomy.

Using results in *Table 2*, the MLRM (Expression c) became

$$RP = 1.626 - 0.079RE + 0.115UR + 0.000US - 0.051UA + 0.038Au \quad (d)$$

Results in *Table 2* indicate that university research emphasis possessed a negative beta (-0.079), which suggests that university research emphasis negatively predicted research productivity. University reputation possessed a positive beta (0.155), which suggests that university reputation positively predicted research productivity. University size possessed a zero beta (0.000), which suggests that university size did not predict

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research productivity. University affluence possessed a negative beta (-0.051), which suggests that university research emphasis negatively predicted research productivity. University autonomy possessed a positive beta (0.038), which suggests that university research emphasis positively predicted research productivity.

The magnitude of the coefficients of organisational variables guided the decision as to whether these variables were individually significant predictors of research productivity or not. The magnitudes were -0.105 for university research emphasis, 0.152 for university reputation, 0.000 for university size, -0.075, and 0.039. Since the significance (*p*) value of university research emphasis (0.188) was greater than the popular significance (p) value of 0.05 ($p > 0.05$), at the 5% significance level, the corresponding coefficient (-0.105) was small. This suggests that the prediction of research productivity by university research emphasis was not statistically significant. Hence, using regression analysis results, H1 was not supported. Since the significance (*p*) value of university reputation (0.060) was greater than the popular significance (*p*) value of 0.05 ($p > 0.05$), at the 5% significance level, that the corresponding coefficient (0.152) was small. This suggests that the prediction of research productivity by university reputation was not statistically significant. Hence, from the regression analysis results, H2 was not supported. Similarly, since the significance (*p*) value of university size (0.996) was greater than the popular significance (*p*) value of 0.05 ($p > 0.05$), at the 5% significance level, the corresponding coefficient (0.000) was small. This suggests that the prediction of research productivity by university size was not statistically significant. Hence, using regression, H3 was not supported.

Furthermore, the significance (*p*) value of university affluence (0.289) was greater than the popular significance (*p*) value of 0.05 ($p > 0.05$), and at the 5% significance level, the corresponding coefficient (-0.075) was small. This suggests that the prediction of research productivity by university affluence was not statistically significant. Hence, using regression, H4 was not supported. Finally, the significance (*p*) value of university autonomy (0.594) was greater than the popular significance (*p*) value of 0.05 ($p > 0.05$), and at the 5% significance level, the corresponding coefficient (0.039) was small. This suggests that the prediction of research productivity by university autonomy was not statistically significant. Hence, using regression, H5 was not supported. Since all p values in *Table 2* were greater than the popular significance ($p > 0.05$), then at the 5% significance level, all the coefficients were small.

DISCUSSION

The objective in this study was on examining whether organisational variables in Bean's model jointly predict research productivity of a PhD-holding academic staff. Based on this objective, there were five hypotheses in this study. Bivariate results (Table 1) showed that there was no significant prediction between research productivity and the organisational variables. Regarding research emphasis, the bivariate result was in congruence to results of the multivariate analysis. Further, after regressing each of the organisational variables onto individual research productivity, results deviated from what Bean (1982) alluded to in his model. The finding in the current study was in agreement with that of Teodorescu (2000) who did not find a significant relationship between the research emphasis and research productivity. It, however, differed from those of other scholars (Heng et al., 2020; Mantikayan & Abdulgani, 2018; Sanmarino & Karimah, 2021; Snowball & Shackleton, 2018; Uwizeye et al., 2021) who found university research emphasis to be significantly related to research productivity.

Reasons behind such variances in results, however, also need to be examined. Whereas the current study was conducted in three universities, which were BSU, Mak, and UCU, all in Uganda, some of these scholars (Fuentes, 2021; Snowball & Shackleton, 2018) used lecturers in one

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university. Fuentes (2021) used one state university, Snowball, and Shackleton (2018) studied lecturers in Rhodes University, as Heng et al. (2020) conducted a literature review using studies on western, developed contexts, and emerging economies. Secondly, there were also some variations in the approaches between those used by previous scholars and the one in the current study. Snowball and Shackleton (2018) used mixed methods approach unlike the current study that employed a quantitative approach. Further, some of them (Heng et al., 2020; Mantikayan & Abdulgani, 2018; Sanmarino & Karimah, 2021; Uwizeye et al., 2021) conducted literature reviews, unlike the current study. Lastly, there were differences between the productivity period that previous scholars used and the one in the current study. Fuentes (2021) used a two-year period, but in the current study, however, it was a five-year period.

Regarding university reputation, the bivariate analysis result was in congruence to those of the multivariate analysis. Further, after regressing each of the organisational variables onto research productivity, results were in congruence to what Bean alluded to in his model, where the high university reputation was likely to lead to high research productivity. This finding differed from those of other previous scholars (Baltaru, 2018; Kim et al., 2011; Way et al., 2019) who found that university reputation positively predicted RP. Variances in findings can be explained by some methodological and some contextual differences. For example, whereas the current study took a cross-sectional survey design and looking at PhD holders from a myriad of fields in three universities in Uganda, this diverged from the mentioned studies. Kim et al. (2011) studied RP of academic staff members in the USA and obtained their data from two national data sets: the Survey of Doctorate Recipients and the Integrated Postsecondary Education Data System. Baltaru (2018) used data on academic staff members from 100 universities in the United Kingdom, but just like Kim et al. (2011), they got their data other two datasets: The Complete University Guide (CUG) and the Higher Education Statistics Agency (HESA). Way et al. (2019) studied early career academics at 205 PhD-granting computer science departments in the USA and Canada.

For the university size, the bivariate analysis result was in congruence to those of the multivariate analysis. However, after regressing each of the organisational variables onto research productivity, the result differed from what Bean (1982) alluded to in his model, where an increase in university size was likely to lead to increase in research productivity. This finding was partly in congruence with that of Abramo et al. (2012), who found that in most academic fields in Italy, there were constant returns to size, while in a few fields, there existed increasing returns to size. In other words, according to Abramo et al.'s (2012) finding, in most fields, RP of academic staff members did not change with change in number of academic staff in the field while in a few fields, the research productivity increased with increase in number of academic staff in the field. Reasons for some congruence in results might be because Abramo et al. (2012) studied academic staff members in more than one fields and in more than one university, just like the current study was.

The finding in the current study, however, differed from those reported by previous scholars (Aboagye et al., 2021; Bonaccorsi et al., 2021; Heng et al., 2020; Horta & Lacy, 2011; Zhang et al., 2017) possibly due to a number of reasons. Some scholars (Bonaccorsi et al., 2021; Lamari, 2013; Zhang et al., 2017) confined themselves on academic staff members in a few academic fields. Bonaccorsi et al. (2021), for example, concentrated on STEM and neglected social sciences and humanities, Lamari (2013) concentrated on the field of education, while Zhang et al. (2017) concentrated on physicians in the radiation-oncology department. Secondly, there existed some differences in research approaches these scholars (Aboagye et al., 2021; Heng et al., 2020) used and the one in the current study. Specifically, whereas this current study was quantitative, others (Aboagye et al., 2021; Heng et al., 2020) conducted literature reviews. There were also differences in observation period for

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publications between some of the studies (Lamari, 2013) and the current study. Lamari (2013) used eight-year period while in the current study, it was a five-year period. The other possible reason behind this discrepancy rests in the differences in the contexts. Horta and Lacy (2011) studied academic staff members in universities in Portugal, Lamari (2013) studied those in universities in Canada yet the current study was on those in universities in Uganda.

Regarding university affluence, the bivariate results were congruent to those of the multivariate analysis (*Table 2*), where the resultant MLRM (Expression d) was not a good one. Further, after regressing each of the organisational variables onto research productivity, results were similar to what Bean (1982) alluded to in his model, Such a finding was, however, contrary to that of previous scholars (Barber et al., 2021; Haq et al., 2020; Lamari, 2013; Uwizeye et al., 2021). Reasons for the variances in findings can be explained from both contextual and methodological differences perspective. Contextually, whereas Haq et al. (2020) and Lamari (2013) carried out their studies in Saudi Arabia and Canada, respectively; yet the current study was in Uganda. There were also differences in the productivity observation period used by some of these scholars and the one in the current study, for example, Haq et al. (2020), who used a ten-year period which differs from the five-year period of the current study. There were also some differences when it came to the fields in which the academic staff members belonged. Whereas the members in the current study belonged to many fields, those in the study by Haq et al. (2020) belonged to the health-related disciplines, as even those of Lamari (2013) belonged to the education field. Lastly, Uwizeye et al. (2021) conducted a literature review, yet the current one was an empirical study that took a quantitative cue.

Regarding university autonomy, the bivariate result was congruent to those of the multivariate analysis (*Table 2*), where the resultant MLRM (Expression d) was not a good one. Further, after regressing each of the organisational variables onto research productivity, results were similar to what Bean (1982) alluded to in his model. This finding was, however, contrary to those by previous scholars (Hedjazi & Behravan, 2011; Mantikayan & Abdulgani, 2018; Sutton & Brown, 2016) who found university autonomy to be a predictor of research productivity. The possible reasons for the variances, however, need to be spelt out. Whereas the study of Hedjazi and Behravan (2011) just like the current one was quantitative, that one for Sutton and Brown (2016) was qualitative, as for Mantikayan and Abdulgani (2018), it was a literature review. There also existed some contextual differences between these studies and the current study, for example Hedjazi and Behravan (2011), used academic staff members in Iran yet in the current study, they were academic staff members in Uganda. There were also differences in terms of fields to which the academic staff members belonged for the previous studies and the current study. Sutton and Brown (2016), for example, studied academic staff members only in the social sciences and then that of information systems and technology, yet those in the current study belonged to many fields.

CONCLUSION AND RECOMMENDATIONS

The intention in this study was to examine whether organisational variables in Bean's model jointly predict research productivity of a PhD-holding academic staff. According to our results and the discussion, we concluded that organisational variables: university research emphasis, university reputation, university size, university affluence, and university autonomy do not jointly significantly positively predict research productivity of a PhD-holding academic staff Worth mentioning, however, is that, this study had limitations on whose basis we made recommendations for further research. First, using a cross-sectional design did not guarantee establishment of conclusive data on some of the constructs. Therefore, future researchers could use a longitudinal design such that they can follow on these constructs. Secondly, only PhD-holding academic staff members provided data in the

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current study. There might have been some academic staff members without PhDs, whose RP was much higher than that of those with PhDs and whose insights could have been highly beneficial in the current study. This is typical in health-related disciplines for example, at Makerere University. Therefore, future researchers could consider using all academic staff members regardless of whether they have a PhD or not. Finally, PhD–holding academic staff members that participated in the current study were from only three universities which were Bishop Stuart University, Makerere University, and Uganda Christian University. The organisational attributes existing in these universities might differ from those existing in other universities elsewhere. We therefore recommend conducting of a related study in other universities in Uganda.

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