

# Predictors of Research Productivity of Academic Staff in Kyambogo University: An Empirical Study Based on Mantikayan and Abdulgani's (2018) Model

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## Abstract

The research productivity (RP) of academic staff is of utmost significance as it contributes to the advancement of knowledge, enhances institutional reputation, facilitates funding opportunities, improves teaching quality, and enhances societal impact. In this research we aimed to investigate the predictors of RP among academic staff at Kyambogo University (KyU). Based on Mantikayan and Abdulgani's (2018) model, we had four study objectives: to examine whether ascriptive, individual, leadership, and institutional factors predicted RP. Using a positivist research paradigm and a predictive cross-sectional survey design, data was collected through a questionnaire survey from 165 academic staff. Multiple linear regression was employed for data analysis. The findings revealed that ascriptive, leadership and institutional factors did not significantly predict RP. However, under the individual factor, it was found that only the constructs of motivation and research skills were significant and positive predictors of RP. The study concluded that Mantikayan and Abdulgani's model lacked a comprehensive explanation of RP among academic staff at KyU. Therefore, there is a need for further research to develop a more inclusive model or framework that can capture the diverse factors influencing RP within the specific context

of KyU. To enhance RP, KyU should emphasise motivation, research skills, and adopt a holistic leadership approach, while considering factors beyond ascriptive and institutional influences.

**Keywords:** *Kyambogo University; Mantikayan and Abdulgani's (2018) model; Predictor; Regression; Research productivity.*

## Introduction

Research productivity (RP) of academic staff encompasses their ability to generate research outputs such as publications, citations, student supervision and research grants (Aydin, 2017). It serves as a crucial indicator of their scholarly impact, dedication to advancing knowledge and contribution to their fields. The history of RP of academic staff can be traced back to the emergence of modern universities and the establishment of academic disciplines (Altbach, 2008). Universities were founded as institutions dedicated to research and knowledge creation, with scholars specialising in specific fields during the enlightenment and scientific revolution, laying the foundation for increased RP. The formalisation of the scientific method in the 19th and early 20th centuries allowed scholars to conduct empirical studies and experiments, further contributing to knowledge generation (Zainab, 1999). The development of academic journals and publishing houses played a vital role in promoting RP by providing platforms for sharing findings and contributing to the collective body of knowledge. The availability of research funding and institutional support has varied throughout history, with systems like government funding and institutional support playing roles in supporting research projects and infrastructure (Slowe, 2018).

Research productivity of academic staff holds immense importance for knowledge advancement, institutional reputation, funding opportunities, teaching quality and societal impact. Academic staff drive knowledge advancement through research, generating new ideas, theories, methodologies and discoveries (Guraya et al., 2016). RP serves as a key metric for evaluating academic reputation, attracting talented researchers and students (Guraya et al., 2016). The ability to secure external funding is closely linked to RP, as funding agencies prioritise researchers with a proven track record of productivity (Kosten, 2016; Webber, 2011). RP enhances the teaching environment by incorporating cutting-edge knowledge, and by providing research opportunities and mentorship (Mantikayan & Abdulgani, 2018). Moreover, research dissemination fosters collaboration, inspires new research directions, and influences policy and practice (Kosten, 2016; Nakanjako et al., 2017). It drives economic growth, improves healthcare outcomes, advances education, promotes social equity and contributes to career progression within academia (Guraya et al., 2016; Mantikayan & Abdulgani, 2018).

Despite the recognised importance of RP, the academic staff at Kyambogo University (KyU) has demonstrated low levels of productivity in this domain. This is evident through various

indicators, such as the limited acquisition of research grants, a low university ranking in terms of research output, and an underutilisation of available research funds (Kyambogo University, 2020a, 2020b; Times Higher Education, 2021). This hampers the university's research capacity, emphasising the need for a deliberate strategy to enhance research capabilities. Therefore, this study aims to examine whether ascriptive, individual, leadership and institutional factors predict the RP of academic staff at KyU, following the model proposed by Mantikayan and Abdulgani (2018). The study will test the following hypotheses:

**H1:** Ascriptive factors are significant predictors of research productivity of academic staff.

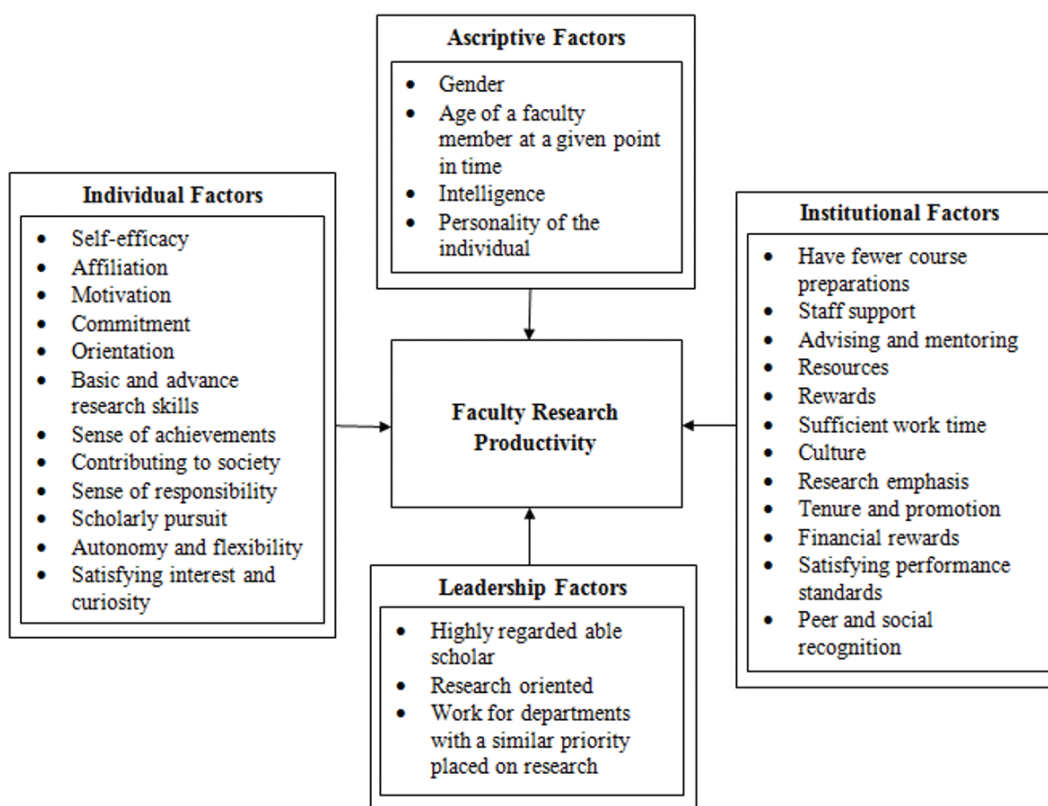
**H2:** Individual factors are significant predictors of research productivity of academic staff.

**H3:** Leadership factors are significant predictors of research productivity of academic staff.

**H4:** Institutional factors are significant predictors of research productivity of academic staff.

### Theoretical Underpinning

This study was guided by Mantikayan and Abdulgani's (2018) model of research productivity of academic staff, as depicted in Figure 1.



**Figure 1:** Mantikayan and Abdulgani's (2018) model of research productivity of academic staff

**Note:** Sourced from Mantikayan and Abdulgani, 2018, p. 12, Figure 1.

The main variable in the model depicted in Figure 1 is research productivity (RP). However, Mantikayan and Abdulgani (2018) did not provide a general definition of RP. Aydin (2017) defines RP as the ability of academic staff to produce research outputs. According to Mantikayan and Abdulgani's model, RP is influenced by four ascriptive factors, 12 individual factors, three leadership factors, and 12 institutional factors. While Mantikayan and Abdulgani do not offer a general definition of ascriptive factors, Teodorescu (2000) defines them as characteristics (e.g. age, gender) of an individual that are beyond their control. Individual factors, as defined by Wills et al. (2013), encompass personal qualities (e.g. communication and writing skills, research skills, time management skills) that individuals can control. Similarly, although Mantikayan and Abdulgani do not provide a general definition of leadership factors, Haizam and Tarmizi (2018) describe them as the perception of followers regarding their leader as a role model, particularly in terms of possessing a research-oriented culture. Finally, institutional factors, as described by Bland and Schmitz (1986), refer to elements related to the work environment (e.g. resources, rewards, workload, autonomy) that are controlled by the organisation's management.

We selected Mantikayan and Abdulgani's model due to its status as an informal theory, meaning that it has either not been tested or has only been applied in a limited number of studies (Turner et al., 2018). Therefore, it is necessary to validate Mantikayan and Abdulgani's (2018) model in diverse academic contexts over time before it can be considered a supporting theory for specific academic environments. Based on this background, our research aims to verify the validity of Mantikayan and Abdulgani's (2018) model in the present study.

## Related Literature

### Ascriptive factors as predictors of research productivity

Several studies have examined the role of ascriptive factors, including gender and age, as predictors of research productivity (RP). We review three key literature reviews (Mairesse & Pezzoni, 2015; Obuku et al., 2018; Wills et al., 2013) that collectively encompass 58 studies on this topic. Wills et al. (2013) conducted a meta-analysis of 25 studies focusing on accounting academics and identified over 70 factors influencing RP. Surprisingly, their analysis did not find a significant association between gender and researcher productivity, suggesting that gender may not be a strong predictor in this context. Similarly, age was found to have no impact on RP. However, the reviewed studies were limited in their international derivation, which could have influenced the identified factors, as noted by Wills et al. (2013). Another review by Mairesse and Pezzoni (2015) concentrated on the gender gap in scientific productivity. Their critical analysis of 14 studies published between 1985 and 2011 indicated a bias in favour of men regarding productivity, supporting the view that gender is an important ascriptive factor influencing RP. Nevertheless, Mairesse and Pezzoni also observe that the reviewed studies provided heterogeneous, unrelated and sometimes contradictory results, resulting in inconclusive evidence regarding the main sources of the gender productivity gap. These

findings highlight the empirical gap and the need for further research to generate clearer conclusions. In addition, Obuku et al. (2018) conducted a systematic review specifically focusing on the RP of post-graduate students in low- and middle-income countries. Their analysis of 14 articles published between 2007 and 2017 revealed that younger students were more likely to publish, indicating age as a significant predictive factor. However, they also noted a limitation in the reviewed studies, as only one study reported on the determinants of RP, highlighting a lack of research examining factors influencing RP among post-graduate students in low- and middle-income countries.

The findings of Wills et al. (2013) and the limitations identified by Mairesse and Pezzoni and Obuku (2018) have important implications for future research on ascriptive factors affecting RP. While Wills et al. did not find a significant association between gender and research productivity, the inconclusive evidence reported by Mairesse and Pezzoni suggests that there may still be a gender productivity gap in academia. Consequently, further studies are needed to investigate whether these findings apply to other academic contexts. Addressing these gaps in research can contribute to a better understanding of the factors influencing RP and inform the development of strategies to foster equitable and inclusive research environments.

### **Individual factors as predictors of research productivity**

Existing studies have explored individual factors as predictors of research productivity (RP). We have reviewed two reviews, conducted by Cerasoli et al. (2014) and Moore et al. (2016), and one empirical study (Joseph & Waller, 2018) to examine these factors. Cerasoli et al. conducted a systematic review, analysing 154 articles published between 1971 and 2012. They found that intrinsic motivation and extrinsic incentives jointly contributed to performance, emphasising the importance of motivation as an individual factor influencing RP. However, they identified limitations in the reviewed studies, specifically regarding the lack of causal relationships between variables. This highlights the need for further research to examine the causal links between factors in RP. Moore et al. in a narrative review, synthesised factors that facilitate RP and categorised them into different groups, including individual-level intrinsic factors such as self-efficacy, research motivation and academic rank. They also identified gaps in the literature, particularly related to the significance of policy and systemic barriers in influencing RP. Consequently, Moore et al. recommended additional research to validate new and emerging models in this field. Conducting thorough and comprehensive research to address the identified gaps will provide higher education stakeholders with valuable insights and practical recommendations to enhance RP among academic staff. It is crucial for future studies to prioritise certain aspects, including the validation of new models. By validating new models, we can assess their applicability in explaining and predicting RP. This will allow scholars to refine existing frameworks and develop more accurate models that capture the multifaceted nature of RP. Joseph and Waller (2018) conducted research to investigate the relationship between individual vitality characteristics and RP among occupational and physical therapy faculty in public health science research universities in the US. Their study utilised a positivist

research approach and included a sample of 500 participants. The findings revealed several individual characteristics that were significantly associated with high research productivity, including academic rank, the opportunity to pursue research interests, internal motivation for research, sufficient time allocated for research activities, protected time for research work, being up to date in various research aspects, and understanding the requirements for career advancement and goal direction. However, it is important to note that the study's focus on a specific discipline and its sample drawn from academic staff in public health within the US limits the generalisability of their conclusions to different academic contexts and disciplines.

### **Leadership factors as predictors of research productivity**

The impact of leadership factors on RP has been examined in previous studies. However, in the field of postdoctoral nursing, Hafsteinsdóttir et al. (2017) conducted a systematic review that revealed a significant gap in the literature. Their review did not identify any studies investigating the relationship between leadership or leadership programmes and RP. This study aims to address this gap by investigating the role of leadership in relation to RP. Furthermore, Heng et al. (2020) conducted a meta-synthesis of 65 articles and found that a participative leadership style was positively associated with research engagement and productivity among academic staff. However, Heng et al. also acknowledged limitations in the reviewed studies, including their focus on developed countries and the presence of contradictory findings regarding factors influencing RP. This empirical gap highlights the need for further investigation into whether leadership factors, such as being highly regarded as a scholar and having a research-oriented approach, predict RP. Lase and Hartijasti (2018) investigated the impact of leadership characteristics on RP in the Faculty of Economics and the Faculty of Languages and Arts at the University of X in Jakarta. They used a positivist research approach and a sample of 100 participants. Surprisingly, their findings revealed that leadership characteristics did not have a significant influence on the RP of academic staff. The leadership characteristics examined in their study encompassed being highly regarded, being an able scholar, having a research orientation, being capable of fulfilling leadership roles and being a participative leader. However, the researchers acknowledged certain limitations in their study. They expressed uncertainty regarding the quality of their research instrument and recognised the relatively small sample size used in their research. It is important to note that Lase and Hartijasti's study had contextual limitations as well. Their focus was confined to two specific disciplines, namely economics and languages, and their sample was limited to academic staff from a single university in Jakarta. Therefore, the generalisability of their findings is constrained.

### **Institutional factors as predictors of research productivity**

Various studies have examined institutional factors as predictors of RP. In our review, we analysed two reviews (Borkowski et al., 2016; Wood et al., 2018), encompassing a total of 47 relevant studies and one empirical study (Mody et al., 2018). Borkowski et al. (2016)

conducted a systematic review to investigate the factors influencing the research culture and capacity in allied health. They analysed data from 15 studies published between 2008 and 2015, sourced from 11 e-databases. The findings indicated that the research culture in allied health was characterised as low, attributed to constraints such as limited time, skills, resources, and organisational support. The authors acknowledged limitations in the reviewed studies, including a predominant focus on Australia, which limits the generalisability of the findings to other contexts like Uganda. Methodological shortcomings, such as non-random sampling and low response rates, were also noted, highlighting the need for further research in this area. Wood et al. (2018) did a systematic review of the literature to identify initiatives used by graduate medical education programmes to increase the scholarly activity of interns, residents or fellows in graduate medical education disciplines. Through a meta-analysis of 32 articles, they found mentoring, research curricula and protected time to be the most commonly employed initiatives associated with RP. However, Wood et al. critiqued the reviewed studies by noting a lack of reporting on the statistical significance of improvements in RP, which introduced uncertainty regarding the actual impact of these initiatives. Furthermore, Wood et al. highlighted a methodological gap in the reviewed studies, specifically the utilisation of small sample sizes. Mody et al. (2018) examined the institutional determinants of RP among hospitality and tourism management faculty in US institutions. Through a quantitative study with a sample size of 98 participants, they identified three key institutional characteristics that significantly influenced the quantity of publications: the number of publications required for tenure, the number of doctoral committees chaired by faculty members per year, and the availability of research assistants in terms of hours per week.

## Method

### Research approach and design

In this study, we adopted a positivist philosophical stance, influenced by the ideas of Auguste Comte. Comte emphasised that scientific knowledge is tentative and can be verified through empirical testing (Park et al., 2020). Accordingly, this study aligns with the positivist philosophy by seeking to empirically verify the utility of Mantikayan and Abdulgani's (2018) model in predicting research productivity. To achieve this, data was collected using a questionnaire and analysed using statistical procedures, adhering to the empirical methodology associated with the positivist approach. A predictive, cross-sectional survey design was employed to gather information from a random sample of academic staff at KyU, allowing for generalisation to the entire population. This design facilitated a faster and cost-effective study by collecting data at a specific point in time. By employing a predictive design, the study aimed to examine the ability of the factors proposed by Mantikayan and Abdulgani's model to predict research productivity.

## Population and sample

The target population of this study was the full-time academic staff at KyU. As of February 2019, the university had a total of 418 full-time academic staff (Kyambogo University, 2019). The choice to focus on academic staff was driven by their pivotal role in fulfilling the university's primary objectives of teaching, research and community engagement. Although the initial plan was to collect data from 297 academic staff based on the sample size determination provided by Krejcie and Morgan (1970), the actual sample utilised in this study consisted of 165 academic staff from Kyambogo University.

## Instrument

For data collection, we utilised a self-administered questionnaire incorporating existing instruments previously employed by other researchers. Table 1 provides an overview of the variables included in the questionnaire, the constructs associated with each variable, the number of items used for each construct, the source instrument from which the items were adapted, the reliability of the items and the Cronbach's alpha values for the valid items.

**Table 1:** Variables in the instrument, their sources and reliabilities

Variables	Construct	Number of Items Adapted	Source of Instrument, Number of Items and their Reliability ( $\alpha$ )	Cronbach Alpha ( $\alpha$ ) for Valid items
Research Productivity	Written scholarly products	5*	Blackburn & Bentley 1993 (7 items; $\alpha = 0.81$ )	0.796
	Research presentations	2	Blackburn & Bentley 1993 (2 items)**	0.600
	Conversation regarding research	2	Blackburn & Bentley 1993 (2 items)**	0.857
Ascriptive Factors	Gender		NA	
	Age		NA	
	Personality of the individual		Lachman & Weaver, 1997	
	Openness to experience	5	(7 items; $\alpha = 0.77$ )	0.801
	Conscientiousness	3	(4 items; $\alpha = 0.58$ )	0.798



Individual Factors	Self-efficacy	5	Chen et al., 2001 (8 items; $\alpha = 0.86$ )	0.749
	Motivation		Amabile et al., 1994	
	Enjoyment	5	(7 items; $\alpha = 0.83$ )	0.656
	Challenge	4	(8 items; $\alpha = 0.89$ )	0.741
	Outward Orientation	4	(10 items; $\alpha = 0.79$ )	0.740
	Compensation	3	(5 items; $\alpha = 0.73$ )	0.759
	Commitment		Allen & Meyer 1990	
	Affective commitment	7	(8 items; $\alpha = 0.87$ )	0.873
	Continuance commitment	4	(8 items; $\alpha = 0.75$ )	0.839
	Normative commitment	4	(8 items; $\alpha = 0.79$ )	0.665
	Research orientation	5	Khan et al., 2018 (5 items; $\alpha = 0.76$ )	0.730
	Research skills	4	Bland et al., 2005 (4 items)**	0.807
Leadership Factors	Regard as a scholar	4	Wilson, 1999 (4 items)**	0.816
	Research orientation	5	Khan et al., 2018 (5 items; $\alpha = 0.76$ )	0.817
Institutional Factors	Mentoring	5	Bland et al., 2005 (6 items)**	0.868
	Resource support		Jungnickel & Creswell, 1994	
	Financial support	2	(4 items; $\alpha = 0.70$ )	0.717
	Staff support	4	(3 items; $\alpha = 0.67$ )	0.780
	Physical facilities support	2	(2 items; $\alpha = 0.82$ )	0.774
	Rewards	2	Bland et al., 2005 (3 items)**	0.804
	Sufficiency of work time	3	Bland et al., 2005 (4 items)**	0.848
	Culture	3	Bland et al., 2005 (3 items)**	0.742
Emphasis on research	2	Bland et al., 2005 (4 items)**	0.881	

Notes: \* = Three of the items were valid; for all other constructs all the adapted items were valid

\*\* = No alpha reported

NA = Not applicable

## Data analysis

We analysed the data at descriptive and inferential levels, respectively. At the descriptive level, we analysed the data using percentages, means and medians. At the inferential level, we tested each of the four hypotheses using multiple linear regression.

## Results

### Research productivity

In this study, research productivity was operationalised using three constructs: written scholarly products, research presentations and conversations regarding research. These constructs were assessed using a five-point Likert scale, with scores ranging from 1 (at most one) to 5 (five and above). The overall means for the three constructs were 1.42, 1.76 and 2.69, indicating that respondents reported an average of one written scholarly product, two research presentations and three instances of sharing research with colleagues in the previous two years. The mean of the overall average index of RP, calculated as the sum of the three construct means divided by 3, was 1.98. This mean, close to 2, suggests that the respondents rated themselves relatively low in terms of research productivity.

### Description of ascriptive factors

The study examined ascriptive factors, including gender, age and personality. In terms of gender, the majority of respondents identified as male (64.0%) while females accounted for 36.0% of the sample, indicating a higher proportion of male academic staff at KyU. In terms of age, the mean and median ages of the respondents were both 47.0, suggesting that they were middle-aged. Personality was assessed in two dimensions: openness to experience (OE) and conscientiousness (Cons). Using a five-point Likert scale, with higher scores indicating higher levels, the overall mean for OE was 4.04, indicating that respondents rated themselves as having a high level of openness to experience. The overall mean for Cons was 4.44, suggesting that the respondents rated themselves as highly conscientious. The mean of the overall average index of personality, calculated as the average of OE and Cons, was 4.24, indicating that the respondents perceived their personalities to be good.

### Description of individual factors

The study examined individual factors consisting of five constructs: self-efficacy, motivation, commitment, research orientation and research skills. All items within each construct were measured using a five-point Likert scale. For self-efficacy, the overall mean was 4.24, indicating that the respondents agreed they possessed the necessary attributes to conduct research. Motivation has two aspects: intrinsic motivation (IM) and extrinsic motivation (EM). The overall mean for IM was 4.11, suggesting that the respondents were often intrinsically motivated to conduct research. The overall mean for EM was 3.54, indicating that the respondents were often extrinsically motivated. The mean of the overall average index of motivation, calculated as the

average of IM and EM, was 3.82, suggesting that the respondents were generally motivated to conduct research.

Commitment was assessed through three aspects: affective commitment (AC), continuance commitment (CC) and normative commitment (NC). The overall mean for AC was 3.82, indicating agreement with commitment to KyU in terms of affective commitment. The overall mean for CC was 2.93, suggesting uncertainty regarding commitment in terms of continuance commitment. The overall mean for NC was 3.73, indicating agreement with commitment to KyU in terms of normative commitment. The mean of the overall average index of commitment, calculated as the average of AC, CC and NC, was 3.52, suggesting agreement with commitment to KyU overall. Research orientation had an overall mean of 4.20, indicating agreement with being research-oriented. Research skills had an overall mean of 3.75, suggesting agreement with being up to date in terms of research skills.

### **Description of leadership factors**

The study examined leadership factors consisting of two constructs: the regard of the leader as a scholar and the research orientation of the leader. Both constructs were measured using a five-point Likert scale. The mean for the leadership factor of regard for a leader as a scholar was 3.30, indicating that the respondents were undecided about their head of department as a scholar and whether they viewed him or her as a role model. The mean for research orientation of the leader was 3.81, suggesting that the respondents agreed their head of department was research-oriented and served as a role model in that aspect.

### **Description of institutional factors**

The study examined institutional factors consisting of six constructs: mentoring, resource support from the institution, rewards, sufficiency of work time, culture and emphasis on research. These constructs were measured using a five-point Likert scale. The mean for mentoring was 3.14, indicating that respondents were undecided about the extent to which KyU enhanced their research productivity (RP) through mentoring services. Resource support from the institution had three aspects: financial support, staff support and physical facility support. The means for these aspects were 2.89, 2.45 and 3.08, respectively, suggesting that respondents were undecided about the institution's support in enhancing their RP through these resources. The overall mean index of resource support from the institution was 2.80, indicating uncertainty regarding the level of support provided. The mean for rewards was 2.90, implying the respondents were undecided about the extent to which KyU enhanced their RP through reward systems. Sufficiency of work time had a mean of 2.85, indicating uncertainty about the institution's provision of sufficient time for research. The mean for culture was 3.32, suggesting the respondents were undecided about KyU having a research culture. Emphasis on research had a mean of 3.71, indicating agreement that KyU places emphasis on conducting research.

## Testing the hypotheses

Using multiple linear regression, we tested the four hypotheses (H1–H4). The first, hypothesis (H1), proposed that ascriptive factors of gender, age and personality would significantly predict research productivity (RP). To analyse the influence of gender on RP, a dummy variable (Gdummy) was created. Males were assigned a value of 1, representing the comparison group, while females were assigned a value of 0, representing the reference group. This conversion from categorical to numerical allowed for regression analysis. Previous research (Mairesse & Pezzoni, 2015; Joseph & Waller, 2018) have indicated that female academic staff generally exhibit lower RP compared to their male counterparts. The findings indicate that the three ascriptive factors explained 0% of the variation in RP (adjusted  $R^2 = -0.002$ ). This means that the regression model was insignificant ( $F = 0.901$ ,  $p = 0.442 > 0.05$ ). Each of the three ascriptive factors, namely gender dummy ( $\beta = -0.084$ ,  $p = 0.319$ ), age ( $\beta = 0.029$ ,  $p = 0.728$ ) and personality ( $\beta = 0.100$ ,  $p = 0.237$ ) insignificantly ( $p > 0.05$  for all three constructs) predicted RP.

As for the second hypothesis (H2), the five individual factors (self-efficacy, motivation, commitment, research orientation, research skills) explained 14.0% of the variation in RP (adjusted  $R^2 = 0.140$ ). This means that the regression model was significant ( $F = 5.044$ ,  $p = 0.000 < 0.05$ ). Out of the five individual factors, two, namely motivation ( $\beta = 0.215$ ,  $p = 0.025$ ) and research skills ( $\beta = 0.246$ ,  $p = 0.008$ ), significantly ( $p < 0.05$  for both constructs) predicted RP. Finally, the magnitudes of the respective betas suggest that research skills more significantly predicted RP than motivation. The remaining constructs of self-efficacy, commitment and research orientation did not significantly ( $p > 0.05$  for the three constructs) predict RP. Thus, two sub-hypotheses (H2.2 & H2.5) were supported, while the three others (H2.1, H2.3 and H2.4) were not supported.

Regarding the third hypothesis (H3), the two leadership factors (regarding the leader as a scholar, research orientation of the leader) explained 01.1% of the variation in RP (adjusted  $R^2 = 0.011$ ). This means that the regression model was insignificant ( $F = 0.225$ ,  $p = 0.799 > 0.05$ ). Each of the two leadership factors, namely regard for the leader as a scholar ( $\beta = 0.021$ ,  $p = 0.863$ ) and research orientation of the leader ( $\beta = 0.040$ ,  $p = 0.743$ ), insignificantly ( $p > 0.05$  for both constructs) predicted RP. Thus, neither of the two sub-hypotheses (H3.1 & H3.2) was supported. Regarding the fourth hypothesis (H4), the six institutional factors (mentoring, resource support, rewards, sufficiency of work time, research culture, emphasis on research) explained 02.1% of the variation in RP (adjusted  $R^2 = -0.021$ ). This means that the regression model was insignificant ( $F = 0.510$ ,  $p = 0.800 > 0.05$ ). Each of the six institutional factors, namely mentoring ( $\beta = -0.019$ ,  $p = 0.853$ ), resource support from the institution ( $\beta = -0.022$ ,  $p = 0.822$ ), rewards ( $\beta = 0.031$ ,  $p = 0.748$ ), sufficiency of work time ( $\beta = 0.126$ ,  $p = 0.205$ ), culture ( $\beta = -0.048$ ,  $p = 0.676$ ) and emphasis on research ( $\beta = 0.096$ ,  $p = 0.328$ ), insignificantly ( $p > 0.05$  for all the six constructs) predicted RP. Thus, none of the six sub-hypotheses (H4.1, H4.2, H4.3, H4.4, H4.5 and H4.6) was supported.

## Discussion

### **Ascriptive factors as predictors of research productivity**

The first hypothesis (H1) aimed to assess whether gender, age and personality, as ascriptive factors, significantly predicted the RP of academic staff at KyU. However, the findings did not support this hypothesis, which contradicted the findings of Mairesse and Pezzoni (2015), who emphasised the influence of gender on RP. Additionally, these results diverged from the model proposed by Mantikayan and Abdulgani (2018), which suggested a role for age in RP. They also conflicted with the systematic reviews of Obuku et al. (2018), which indicated that older students had lower publication rates compared to younger students. Furthermore, the findings challenged Mantikayan and Abdulgani (2018), which proposed a relationship between personality and RP. In conclusion, the findings indicated that gender, age and personality were not significant predictors of RP among academic staff at KyU. Therefore, interventions and strategies aimed at enhancing RP should not focus on these factors.

### **Individual factors as predictors of research productivity**

The second hypothesis (H2) aimed to investigate the predictive power of individual factors (self-efficacy, motivation, commitment, research orientation, research skills) on the research productivity (RP) of academic staff at Kyambogo University (KyU). The results indicated that among the examined individual factors, motivation and research skills were significant predictors of RP among academic staff at KyU. These findings align with Cerasoli et al.'s (2014) review, highlighting the influential role of intrinsic motivation and extrinsic incentives on performance. The findings also align with those of Joseph and Waller (2018), who investigated the correlation between individual vitality characteristics and high levels of RP among occupational and physical therapy faculty. Their study revealed that being up to date in various aspects of research was significantly associated with high RP. Thus, it is recommended that KyU managers prioritise efforts to enhance the research skills of academic staff to ensure their competence in conducting research activities. However, self-efficacy, commitment and research orientation were not found to be significant predictors of RP, contrary to the expectations set by Mantikayan and Abdulgani's (2018) model. This unexpected outcome highlights the need for further research to understand the complex nature of self-efficacy's influence on RP. Similarly, the finding contradicts the proposition that commitment directly impacts RP, suggesting that other factors may mediate this relationship. Consequently, in the context of KyU, it implies that efforts to improve RP should not solely rely on the commitment level of academic staff. Additionally, the finding does not support the relationship between research orientation and RP as proposed by Mantikayan and Abdulgani's (2018) model. Therefore, practical conclusions drawn from this study indicate that university managers should not prioritise research orientation when making decisions to improve RP among academic staff at KyU. These results highlight the importance of critically evaluating the proposed relationships and considering context-specific factors when designing interventions to enhance RP.

### **Leadership factors as predictors of research productivity**

The third hypothesis (H3) aimed to examine the predictive power of leadership factors, specifically regarding the leader as a scholar and the research orientation of the leader, on the research productivity (RP) of academic staff at KyU. The finding tallied with that of Lase and Hartijasti (2018), who investigated the influence of leadership characteristics on RP of the lecturers in the University of X in Jakarta and found that the leadership characteristic of highly regarded able scholar had no significant influence on RP of academic staff. However, the findings contradicted the expectations set by Mantikayan and Abdulgani's (2018) model. The unexpected outcome suggests that regarding the leader as a scholar is not a significant factor in determining RP at KyU, leading to an inconclusive conclusion. Further research is necessary to better understand the relationship between regarding the leader as a scholar and RP, as this finding challenges the proposed relationship. In the context of improving RP among academic staff, it is recommended that academic managers at KyU should not prioritise this specific leadership factor. The conclusion drawn from this finding is that the research orientation of the leader alone is not sufficient to explain RP among academic staff at KyU. Therefore, the management at KyU should not solely focus their efforts on this aspect when striving to improve RP. It is essential to consider other factors and approaches that may have a more significant impact on enhancing RP among academic staff.

### **Institutional factors as predictors of research productivity**

The fourth hypothesis (H4) aimed to assess the impact of various institutional factors on the research productivity (RP) of academic staff at KyU, including mentoring, resource support, rewards, sufficiency of work time, research culture and emphasis on research. However, the findings did not support the hypothesis, suggesting that these institutional factors may not have significant roles in predicting the RP of academic staff at KyU. These findings contradict the expected relationships proposed by Mantikayan and Abdulgani's (2018) model. The findings also contradicted the results of Wood et al. (2018), who conducted a meta-analysis study of 32 articles and established that mentoring and protected time for research were among the most effective interventions to increase the scholarly activity of interns, residents or fellows in the field of graduate medical education. Furthermore, the findings were inconsistent with those of Borkowski et al. (2016), who conducted a systematic review of 15 articles and found that allied health research culture was generally low and associated with a lack of resources. Additionally, the findings did not align with those of scholars such as Mody et al. (2018), who found that the availability of research resources significantly and positively influenced research productivity. Further qualitative research is needed to explore possible explanations for the relationship between resource support and RP, indicating that management at KyU should focus on enhancing RP regardless of the level of resource support provided by the institution. From a theoretical standpoint, the conclusion drawn is that the sufficiency of work time may not significantly predict RP, suggesting that all academic staff at KyU should be

encouraged to engage in research regardless of time constraints. Similarly, the finding did not support the expected relationship between research culture and RP, indicating inconclusive evidence on whether research culture predicts RP. Therefore, the authorities responsible for improving RP at KyU should not prioritise research culture when making decisions to enhance RP. Furthermore, the finding contradicted the expected relationship between emphasis on research and RP. In the context of KyU, management should focus on improving RP among academic staff regardless of the emphasis placed on research.

### Conclusion

Based on the findings and corresponding discussion, it can be concluded that Mantikayan and Abdulgani's model does not adequately explain the RP of academic staff at KyU. Specifically, the ascriptive factors of gender, age and personality did not exert a notable influence on RP, which contradicts previous studies and the proposed Mantikayan and Abdulgani's (2018) model. Therefore, interventions and strategies aimed at enhancing RP should not prioritise these ascriptive factors. On the other hand, individual factors such as motivation and research skills emerged as significant predictors of RP among academic staff at KyU. Intrinsic motivation and extrinsic incentives were found to play crucial roles in performance, while research skills exhibited a significant influence on RP. However, self-efficacy, commitment and research orientation did not demonstrate significant predictive power, challenging the expected relationships and indicating the need for further research in these areas. Regarding leadership factors, the notion of regarding the leader as a scholar and the research orientation of the leader did not exert a substantial influence on RP, suggesting an inconclusive relationship. Therefore, further research is necessary to better understand the impact of these leadership factors on RP. Academic managers should not prioritise them exclusively when striving to improve RP among academic staff. Moreover, institutional factors, including mentoring, resource support, rewards, sufficiency of work time, research culture and emphasis on research, did not play significant roles in predicting RP at KyU. These findings contradict the expected relationships proposed by the model. Consequently, managers should not prioritise mentoring, resource support or research culture as the primary means to enhance RP. Instead, the focus should be on improving RP regardless of the level of institutional support and rewards provided.

### Recommendations

Based on the conclusions drawn from the findings, the following recommendations can be made for Kyambogo University (KyU) to enhance research productivity (RP) among academic staff: Firstly, since ascriptive factors (gender, age and personality) were not significant predictors of RP, it is important for KyU to focus on other factors such as research skills that have a stronger influence on RP. Second, concerning individual factors, we suggest that KyU should prioritise efforts to enhance motivation among academic staff since it has emerged as a significant predictor of RP. This can be accomplished by creating a research environment that fosters intrinsic motivation through recognition, autonomy and a sense of purpose. It is

important to encourage academic staff to set goals, provide regular feedback and recognition for their research contributions, and create opportunities for them to pursue projects aligned with their interests and passion. To further bolster motivation, KyU should offer both intrinsic and extrinsic incentives. Intrinsic incentives can be provided by cultivating a supportive and collaborative research environment, facilitating interdisciplinary research opportunities, and promoting a culture of recognition and appreciation for research accomplishments. Additionally, KyU should consider providing extrinsic incentives such as rewards and career advancement opportunities to acknowledge and incentivise high RP. Besides, we recommend KyU to conduct further research on self-efficacy, commitment and research orientation. Although these factors did not demonstrate significant predictive power in this study, understanding their complex nature and their influence on RP will provide valuable insights. Further exploration of the relationship between commitment and RP, as well as the impact of research orientation, will contribute to a more comprehensive understanding of these factors. Third, since leadership factors were not significant predictors of RP, academic managers at KyU should adopt a holistic leadership approach that goes beyond regarding the leader as a scholar and the research orientation of the leader. Developing leaders who can effectively support and facilitate a conducive research environment, encourage collaboration, provide mentorship and allocate resources appropriately is crucial. By considering the broader aspects of leadership that contribute to research productivity, KyU can create an environment that supports and motivates academic staff to excel in their research endeavours. Lastly, since institutional factors (mentoring, resource support from the institution, rewards, sufficiency of work time, culture and emphasis on research) were not significant predictors of RP, KyU should prioritise efforts to improve RP among academic staff independently of institutional factors. Therefore, the focus should shift towards empowering academic staff, fostering a culture of research, and providing opportunities for engagement and collaboration that promote independent RP. By doing so, KyU can ensure that RP is not solely dependent on the level of institutional support and rewards provided.

### **Limitations of the Study and Areas for Further Research**

While the recommendations provided offer valuable insights into enhancing RP at KyU, it is important to acknowledge the study's limitations and areas for further research. One limitation is the study's narrow focus solely on KyU, which may limit the generalisability of the findings to other academic settings. The reliance on self-reporting data is another limitation. Self-reported data can be subject to biases such as social desirability or recall errors. To obtain a more accurate assessment, future studies could incorporate objective measures or multiple data sources to evaluate RP and its influencing factors. Additionally, the cross-sectional design used in the study captured data at a single point in time. Employing longitudinal design would be beneficial to gain a deeper understanding of the dynamic nature of RP and its determinants.

Going forward, several areas for further research can contribute to a comprehensive understanding of RP. First, investigating the influence of external factors, such as institutional



policies or socio-economic conditions, would provide insights into the complex interplay between individual, organisational and contextual factors. Conducting comparative studies across multiple universities or academic institutions would allow for a broader understanding of the factors predicting RP, identifying similarities and differences that lead to context-specific recommendations. Employing a mixed methods approach integrating qualitative and quantitative methods would provide a richer understanding of the experiences, perspectives and contextual nuances related to RP. Implementing intervention studies aimed at enhancing RP and evaluating their effectiveness would provide practical insights into effective strategies. These interventions could target motivation and research skills.

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