

Employee Development System and Valorization of Academic Research in Chartered Universities in Kenya

Peter Kiprotich Cheruiyot

kiprotich.cheruiyot@gmail.com

School of Business and Entrepreneurship, Jomo Kenyatta University of Agriculture and Technology, Kenya

Dr. Kabare Karanja

kabarekaranja@gmail.com

School of Business and Entrepreneurship, Jomo Kenyatta University of Agriculture and Technology, Kenya

Dr. Daniel Wanyoike

dwanyoike@jkuat.ac.ke

School of Business and Entrepreneurship, Jomo Kenyatta University of Agriculture and Technology, Kenya

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Abstract – Universities have now assumed a third mission of adding value to research for societal benefit. Academic researchers are thus the engine of valorization of research though they are influenced by the existing HRM system in their universities. The purpose of this study was to establish the influence employee development system on valorization of academic research in chartered universities in Kenya. The study employed an explanatory design and targeted 372 respondents using self-administered questionnaires. Data collected was analyzed with the help of Statistical Package for Social Sciences and the findings presented in tables. The study established that employee development system had a moderately strong and positively correlation with valorization of academic research. The study concluded that employee development system significantly influenced valorization of academic research. We recommend the need for universities in Kenya to strengthen their employee development system in line with the need to enhance valorization of academic research. We also recommend the establishment of standard university metrics for valorization of academic research in Kenya so as to stimulate and enhance the valorization agenda.

Keywords – Employee Development System, Valorization of Academic Research

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1 Introduction

Universities nowadays are at the center of the knowledge economy where they are expected to innovate, and use the knowledge they generate to serve the public, contribute to economic growth and enhance competitiveness (Holloway & Herder, 2019). In developed countries, studies report that valorization of university research contributes immensely to economic growth, with many studies indicating a positive correlation between academic research and economic growth (Ismael *et al.*, 2021; Therien, 2017; Munaretto *et al.*, 2022). Despite its current popularity in university policies in western Europe and the larger north America, much is still unknown about valorization of research in the Kenyan context (Chepkorir *et al.*, 2022). For example, to what extent academic research is actually brought to market, how long the valorization process takes, which factors exert a hampering or stimulating influence on the speed of the valorization and specifically, which human resource systems acts as enablers or disruptors of the valorization process (Lietner *et al.*, 2021).

Valorization of research involves actions aimed at strengthening knowledge with the potential to be transferred to society and the market either through patenting, management of internal and external financing for the readiness of technologies, establishment of relationships with potentially interested external organizations, and concept tests with potential users of knowledge (Bonaccorsi *et al.*, 2022). The creation of value is conditioned by the manner in which knowledge resources are deployed and managed through appropriate processes coherent with organization's strategy. Universities have now assumed a third mission of adding value to research for societal benefit (Fonseca *et al.*, 2021). Academics play a significant role in this third mission as they actively generate ideas, nurture the research process and add value to research outputs by translating their strategic priorities into reality for societal benefits (Marques *et al.*, 2019). Academic researchers are thus the engine of valorization of research though they are highly influenced by the existing HRM system in their universities (Zhang, 2023).

While universities in developed countries have established metrics of measuring valorization of academic research, there is limited if any evidence on such metrics locally. Local studies are largely focused on knowledge management systems and where knowledge transfer studies have been undertaken, the focal point has been business incubation. University research will be beneficial to society if the results can be converted into products and services (Chepkorir *et al.*, 2022). However, less than 60% of the academic staff disseminated their research results and that only about 28% of university lecturers developed research products (CUE, 2018). Some of the reasons cited for low rates of valorization of research include lack of funding, business expertise; low understanding of valorization, lack of appropriate human-capital and lack of mentoring and educational support for new entrepreneurs.

Similarly, these studies have generalized constraints to valorization of academic research in Kenyan universities to include resource constraints,

institutional constraints, cultural constraints and human capital constraints. In particular, all these studies point out the importance of human resource factors in enhancing valorization of academic research (Kendagor, 2018). As opined by Chepkorir et al., (2022), universities should balance teaching workload to ensure that academics have balanced hours for both teaching and research. Furthermore, a focused employment development system would play a significant role in enhancing the valorization capabilities of academics. However, there is little or no evidence locally of any empirical study that has investigated the link between employee development system and valorization of academic research.

2 Literature Review

2.1 Concept of Valorization of Academic Research

Valorization of research involves actions aimed at strengthening knowledge with the potential to be transferred to society (Bonaccorsi *et al.*, 2022). Despite the fact that nearly all universities carry out technology transfer activities, the distribution of successful valorization of academic research is highly skewed among universities (Holloway & Herder, 2019). In general, North American associations appear to provide the most widely used metrics including: number of invention disclosures, number of patent applications, number of publications, number of licenses executed, total income from licenses, number of start-up companies formed (AUTM, 2020). Other metrics include the value of sponsored research expenditures, number of patents issued, number of active licenses, total income from royalties, number of full-time professionals in TTOs and legal expenditures on protection of IP. In addition, some TTOs also consider the ability to retain distinguished, entrepreneurial faculty, average faculty salary, ability to attract outstanding graduate students and contribution to the institutional reputation.

Some metrics used in Europe include the annual knowledge transfer office operational budget, number of confidential disclosure agreements executed, number of material transfer agreements, number of licenses executed, number of technical services executed and revenues deriving from these services, number of public collaborative research project proposals, spin-offs that have realized a capital, spin-offs that have ceased operation and number of revenue generated from companies and other entities (Jotaba *et al.*, 2022). Other indicators include income from service contracts, licenses, royalties and trials, joint research publications with industry, the number of patents, joint patents with industry, number of spin-offs averaged over three years, patent citations to research publications, revenues from continuous professional development, average number of start-up firms established and percentage income from knowledge exchange such as licensing agreements, research contracts and copyrights. In Africa, and particularly in Kenya, valorization is still at its infancy and there seems to be no standard metrics applicable and thus customizing both the North

American and European metrics to the local context would seem appropriate.

2.2 Employee Development System and Valorization of Academic Research

The HRM system and specifically the deliberate efforts deployed by universities to develop and expand employee capacity is key to valorization of academic research. According to Twesige (2020) who investigated the effect of employee training and development on public institution performance in Rwanda found that employee training and development significantly influenced performance of public institutions. Their study adopted a descriptive research design and targeted 250 employees using self-administered questionnaires. Their findings indicated that when employee training and development evaluation was done well it positively influenced decentralized entities performance. Obeng (2021) examined the effects of employee training and development on the performance of senior staff of University of Energy and Natural Resources, Ghana and found that that training programs were not administered regularly. Their study employed a descriptive survey design and collected data using questionnaires. Their findings revealed that universities predominantly used on-the-job training method which is mostly facilitated through job rotation and that job performance increased whenever training was provided.

According to Leseiyo and Mwikya (2019) in their study on the influence of staff training on performance of public universities in Kenya, staff training had a strong positive correlation with organization performance. Their study used a descriptive case study research design and targeted 200 staff using questionnaires. They noted that enhanced performance comes once the employees provide the required services in the right way. Consequently, service delivery increases the customer's goodwill which in turn leads to better organization results in terms of achievement of targets and overall organization performance. Rwothumio *et al.*, (2021) opined that universities are implementing various HRM practices in an effort to improve on lecturer performance in Uganda; however, ineffective teaching, low research and low publication continue to prevail. Their study investigated the relationship between staff training and teaching and research outputs of academic staff in selected public universities. A mixed-method design using convergent parallel approach was employed to collect data from 1127 full-time academic staff in four universities. Their findings indicated a moderate positive correlation between staff training and academic staff teaching output and a weak positive relationship between staff training and research output. We can thus suggest the hypotheses:

H₀₁: Employee development system has significant influence on valorization of academic research in universities in Kenya.

3 Research Methodology

An explanatory design with a cross-sectional approach was employed. The target population comprised all lecturers teaching in chartered public and private universities in Kenya. According to CUE (2019), there are 31 chartered public universities and 18 chartered private universities who have a total of 5,138 lecturers. Using statistical formulae, a sample size of 372 respondents was obtained. A mixed sampling technique was employed; firstly, proportionate stratified sampling was used to allocate the sample of 372 in the 31 public (305 respondents) and 18 private chartered universities (67 respondents). Secondly, in each of the universities, simple random sampling technique was adopted. A self-administered questionnaire was used to collect data. Data analysis was then undertaken with the aid of Statistical Package for Social Sciences (SPSS) descriptively and inferentially; and the results were presented in tables.

4 Research Findings and Discussion

The researcher administered 372 questionnaires to all the respondents of which 287 questionnaires were returned representing a response rate of 77.7%. The study sought to find out the distribution of the respondents according to their gender, age bracket and their work experience. From the findings, 72.8% of the respondents were male and 27.2% were female. This implies that amongst academic staff universities in Kenya is dominated by the male gender. Gender is an important factor to in assessing valorization of academic research. As reported by Muia and Oringo (2016), after passing the age of about 38 years, women tend to receive, on average reduced funding for research than men, and are generally less productive in terms of research outputs. Furthermore, their study noted that in spite the fact that women in academia have made recent and significant gains, they still comprise a third of the faculty in many institutions and still main remain underrepresented in many departments and institutions.

On age, the study established that 44.3% were over 55 years, 40.4% were between 46 and 55 years while 15.3% were between 36 and 45 years. The findings implies that a large percentage of academic staff in Kenyan universities are approaching the retirement age which may negatively impact valorization of academic research. On work experience, 50.9% of the respondents had over 10 years working experience, 38.3% of the respondents had between 5 to 10years working experience, 9.4% of the respondents had between 2 to 5 years working experience while 1.4% of the respondents had less than 2 years working experience. As noted by Chepkorir *et al.*, (2022), work experience has a statistically positive relationship with the quality and quantity of academic research outputs. Therefore, understanding the work experience of academic staff in universities would be a pointer to their ability in valorization of academic research. We therefore suggest that demographic characteristics of academics in some way relates to their valorization capabilities.

4.1 Employee Development System

The descriptive findings for valorization of academic research in terms of percentages based on a 5-point Likert scale where SD=Strongly Disagree, D=Disagree, N=Neutral, A=Agree and SA=Strongly Agree are presented in Table 1.

Table 1: Descriptive Statistics for Employee Development System

Statement	SD (%)	D (%)	N (%)	A (%)	SA (%)
I use knowledge and behaviors learned in training to enhance value creation.	0	7	5.2	32.8	55.1
My university helps me develop skills needed for successful value addition	1.4	2.4	27.2	51.6	17.4
My university invests in my development promoting my growth thus empowering me on valorization.	2.8	1.7	34.5	39.7	21.3
Training is often evaluated and is oriented towards empowering me towards adding value to outputs.	0	2.8	31.4	42.2	23.7
My university stimulates learning and application of knowledge generated through research work.	0	8	24.7	43.6	23.7
In my university, training needs are identified periodically and systematically and planned intervention taken.	0	12.5	19.2	55.7	12.5
The HR systems, especially on training is aligned to my needs enabling me to add value to my research work	5.6	8	28.2	51.9	6.3
My personal development is taken seriously which motivates me to invest in enhancing research value addition	5.6	7.3	37.6	41.8	7.7

From the findings, the respondents agreed that can they used knowledge and behaviors learned in training at work to enhance value creation of research work (87.9%), that their university helped them develop the skills needed for the successful value creation and addition of research undertaken (69%) and that their university invested in their development and education promoting their personal and professional growth in a broad manner which had empowered them on valorization of academic research (61%). Furthermore, the respondents agreed that training was often evaluated and was oriented towards empowering me towards adding value to university outputs (65.9%), that their university stimulated learning and application of knowledge generated through research work (67.3%), that training needs were identified periodically and systematically and planned

intervention taken (68.2%), that the HR systems especially on training was aligned to their needs enabling them to add value to their research work (58.2%) and that their personal development was taken seriously by the university which motivated them to invest in enhancing value addition of their research (49.5%). The findings tally with those Mamy *et al.*, (2020) found a strong relationship between employee training and development with employees' performance. Furthermore, Odhiambo (2018) established that employee development programs significantly influenced employee performance.

4.2 Valorization of Academic Research

The descriptive findings for valorization of academic research in terms of percentages based on a 5-point Likert scale where SD=Strongly Disagree, D=Disagree, N=Neutral, A=Agree and SA=Strongly Agree are presented in Table 2.

Table 2: Descriptive Statistics for Valorization of Academic Research

Statement	SD (%)	D (%)	N (%)	A (%)	SA (%)
The number of research and agreements signed with research partners has been increasing	2.1	14.6	40.4	39	3.9
Licensing income earned from my research activities within the university have increased	13.2	28.2	46.7	10.5	1.4
The number of spin-outs formed annually arising from my research have also been increasing steadily	11.1	15	52.3	17.4	4.2
The numbers of patents generated from my research work have been increasing significantly.	10.5	40.8	37.6	7	4.1
The number of publications done individually or in conjunction with others has increased.	4.2	13.2	20.9	47	14.7
Research funding awarded to me on the basis of research ideas and projects have been increasing.	9.8	18.8	57.4	9.8	4.2
The number of collaborative research projects undertaken with other agencies have increased	9.4	17.4	47.7	11.8	13.7
Contractual agreements with other entities to undertake economic activity has also increased.	10.5	22	46.7	11.4	9.4
The value of material and equipment inflows from my research and partners have increased	10.5	35.2	35.2	15.7	3.4
The number of consultancy firms	8.4	20.6	50.4	19.2	1.4

developed or which am directly involved in as a result of research work undertaken has increased					
The number of invention disclosures arising from my research activities have also increased	10.8	22.3	45.6	17.1	4.2

From Table 2, the respondents agreed that in the past 5 years there had been an increase in the number of research and developments agreements signed with research partners (42.9%) and that the number of publications undertaken individually or in conjunction with others had increased (61.7%). However, 45.2% of the respondents disagreed that in the past 5 years the value of material and equipment inflows from their research and had increased. Furthermore, the respondents were unsure in the past 5 years that licensing income earned from their research activities within the university had increased (46.7%), that the number of spin-outs formed annually arising from their research had also been increasing steadily (52.3%), that the numbers of patents generated from their research work had been increasing significantly (51.3%), that research funding awarded to them on the basis of research ideas and projects had been increasing (57.4%), that the number of collaborative research projects undertaken with other agencies had increased (47.7%), that the number of contractual agreements with other entities to undertake economic activity together had also increased (46.7%), that the number of consultancy firms developed or which am directly involved in as a result of research work undertaken had increased (50.4%) and that the number of invention disclosures arising from their research activities have also increased (45.6%). The findings mirror those of Kendagor (2018) who opined that universities and other stakeholders should identify other ways of dissemination research outputs other than publications.

4.3 Regression Analysis

In this study, a univariate regression between valorization of academic research and employee development system was undertaken and the model summary findings are presented in Table 3.

Table 3: Model Summary

Indicator	Coefficient
R	.520
R Square	.270
Adjusted R Square	.267
Standard Error of the Estimate	.59267

The findings in Table 3 indicate that employee development system had a strong and positively correlation ($r=0.52$) with valorization of academic research. The findings tally with those of Agoi (2017) and Brescia *et al.*, (2016) who reported significant importance of training and development in

enhancing valorization of research. From the findings, the R-square value of 0.270 indicates that employee development system explains 27% of variation in valorization of academic research. Table 4 shows the analysis of variance (ANOVA) findings.

Table 4: ANOVA: Employee Development System and Valorization of Academic Research

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	37.036	1	37.036	105.438	.000 ^p
	Residual	100.108	285	.351		
	Total	137.144	286			

The findings in Table 4 suggested a statistically significant model ($F=105.438$, $p=.000$). The findings on the regression coefficients are presented in Table 5.

Table 5: Regression Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.697	.217		3.211	.001
	Employee Development System	.584	.057	.520	10.268	.000

From Table 5, it was established that employee development system significantly influenced valorization of academic research ($B=.584$, $p=.000$). This implied that one-unit increase in the level of employee development system would lead to an increase of 0.584 units in valorization of academic research. From Table 5, it was found that the calculated t-value= 10.268 and $p=.000 < .05$. We thus concluded that employee development system significantly influenced valorization of academic research. The findings tally with those of Rwothumio *et al.*, (2021) who found a moderate positive correlation between staff training and academic staff teaching output and a weak positive relationship between staff training and research output.

5 Conclusion and Recommendations

The study concluded that employee development system had a significant influence on valorization of academic research in universities in Kenya. The study recommended the need for universities in Kenya to strengthen their employee development system in line with the need to enhance valorization of academic research. Particular areas of concern include: developing academic staff skills needed for the successful value creation and addition of academic research, stimulate learning and application of knowledge generated through research work, structured, systematic and planned training on valorization of academic research, enhancement of personal

development plans and creating networks and linkages with relevant stakeholders to enable academic staff acquire valorization skills from industry. Ultimately, the strengthening of these employee development aspects will result in improved valorization of academic research. In particular, it is recommended that universities should enhance their fund mobilization activities not only to cater for research but value addition of research, incorporate value addition training in their academic staff programs, create avenues for knowledge sharing on the valorization agenda, encourage value-addition collaborations with external partners and agencies, prioritize coordination of research activities in order to minimize duplication, develop resource sharing arrangements for successfully valorized activities and actively support achievers in academic research valorization.

6 Authors

Peter Kiprotich Cheruiyot, Corresponding Author and Part-Time Lecturer in the School of Business and Economics, Jomo Kenyatta University of Agriculture and Technology, Kenya

Dr. Kabare Karanja, PhD, Senior Lecturer in the School of Business and Economics, Jomo Kenyatta University of Agriculture and Technology, Kenya

Dr. Daniel Wanyoike, PhD, Senior Lecturer in the School of Business and Economics, Jomo Kenyatta University of Agriculture and Technology, Kenya.

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