

WHAT IS THE ROLE OF PRODUCT INNOVATIONS AND PERFORMANCE OF PUBLIC UNIVERSITIES IN KENYA?

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ABSTRACT

Product innovation research is seen as an enabler of organizational performance. In spite of this perspective, not much research is being done on product innovation in academic contexts. This study sought out to investigate how product advancements impacted Kenya's public universities' performance. The resource-based theory and the balanced scorecard methodology were both applied in this study. A cross-sectional study methodology was employed. The target participants in this study were the 31 public universities in Kenya. The sample frame for this investigation included 10 public universities. 100 responses from the population were chosen. Respondents were chosen from Kenya's 10 public universities using a stratified random sample method. The sample size for the 80 respondents was determined using the Israel (2009) formula. Primary data were gathered using structured questionnaires that included both closed- and open-ended questions. The questionnaire items were assessed using a Likert-type scale. The study's respondents were the administration and administrative personnel of Kenya's public universities. The survey's participants included the deputy vice-chancellors, directors, deputy directors, managers, and senior administrators. While the validity of the research instrument was assessed by academic researchers and business specialists, Cronbach Alpha coefficients were employed to test the reliability of the research instrument. The outcomes of the descriptive statistics and linear regression method analysis of the data were displayed in tables and figures. The results of Kenya's public universities were shown to be strongly correlated with product innovations ($F, 64.0 = 59.9, p 0.000$). According to the study's findings, product improvements can properly explain performance at public universities. For better performance in Kenya's public universities, the report advises universities to give priority to product development. In theory, management practice, and decision-makers like the Commission for University Education and the Kenyan Ministry of Education, it is implied that the results of this study will have a significant impact.

Keywords: Product Innovations and Performance of Public Universities.

1.0 BACKGROUND OF THE STUDY

Universities in particular are thinking about strategic innovations to maintain their relevance in the higher education service industry in the dynamic and unpredictably changing business

environment (Allen & Seaman, 2013). Organizations all across the world are doing the same. Strategic innovation is the process of redefining corporate, business, strategic, and operational techniques within the firm to generate greater performance (Aswani, 2013). Strategic innovation, according to Brynjolfsson and McAfee (2011), may be regarded from multiple angles, including the use of appropriate technology and significant advancements in service delivery procedures. Strategic innovations are procedures that result in the creation of new products as well as ongoing improvements to existing ones in order to satisfy customers (Guday & Kilic, 2011).

Strategic innovations are techniques that improve new customer service methods and digitize processes to increase corporate performance and efficiency (Gupta & Malhotra, 2013). According to Jakovljevic (2020), a number of initiatives aimed at enhancing the total customer service delivery experience can be linked to strategic innovations in the university setting. In addition to forcing a reevaluation of strategic innovations, the globalization of higher education services has also forced the development of fresh approaches to increasing customer lifetime value (King'oo, 2014). Innovation is regarded as an essential part of carrying out a strategy. It is also regarded as the sole tool that businesses, and particularly universities, may use to achieve their objectives in the challenging business environment (Kiptoo & Koech, 2019).

According to Odhiambo (2013), innovations in higher education institutions are viewed as methods for creating new economic prospects with specific risk mitigation strategies, value addition, and reduction. Any higher education institution's ability to compete globally depends on product innovation (Nikolai, 2017). Product innovations can aid government agencies, particularly universities, in providing services more effectively and efficiently (Selwyn et al., 2014). It is inevitable to improve the efficiency of the university's product innovations (Valentina, Olga, & Boris, 2017). According to the literature on strategic management, any firm that successfully adopts product innovations will perform better (Upadhaya, Munir, and Blount, 2014).

According to researchers from the USA, product innovations have a significant impact on how well higher education institutions perform globally (Brynjolfsson & McAfee, 2011; Christensen & Eyring, 2011; Allen & Seaman, 2013; Brunner, 2013). Similar to this, academics from the region think that universities can accomplish their goals more quickly and successfully if they automate their service delivery models, train staff in computer skills, digitize documents, integrate technology into teaching, and provide financial services (Jakovljevic, 2020). Furthermore, according to a different analysis from Egypt's National Management Institute (2019), the success of product efforts affects how well higher education institutions perform.

In contrast to universities that employ traditional models of service delivery deemed inefficient and ineffective, those that continuously improve their models of service delivery to adapt to shifting consumer trends in the turbulent business environment are more likely to achieve global competitiveness (King'oo, 2014). Organizational research on product innovation is important because it drives global competitiveness (Najmaei, 2010). However, it is apparent from the literature on strategic management that product innovation research is underrepresented in the university environment, necessitating further study to clarify the relationship between product innovations and the performance of institutions of higher

learning. Product innovation is the creation of a brand-new product or the improvement of an existing one (Keller, 2010). Product innovation is seen as an investable strategy among competitive organizations when considering the psychometric approach of product evaluation by individual consumers. A company's creation of entirely new products and services not only boosts sales but also improves the company's reputation in the marketplace (Polder, Leeuwen, Mohnen & Raymond, 2013).

According to Najmaei (2010), organizations can increase consumer loyalty by creating new items and raising the standards of their existing ones. Companies could think about creating new goods or services to break into a new market or compete with rival branding (Nybakk & Jenssen, 2012). To keep customers loyal, innovative product development is being funded by competitive businesses functioning in a dynamic business environment (Namusonge, Muturi, & Olaniran, 2016). Systemic inertia is the failure of the company to produce goods that meet the needs and desires of customers. Product innovation is a necessary practice for the strategic survival of competitive organizations (Micheline & Reinhilde, 2012). According to Sawhney, Wolcott, and Arroniz (2016), an organization's innovations can be assessed in terms of restructuring, retraining employees, re-engineering service delivery models, and fostering bottom-up and top-down communication mechanisms. According to Polder, Leeuwen, Mohnen, and Raymond (2013), organizations can substitute innovative approaches for traditional ones by creating an environment that encourages employee creativity and innovation. In order to enter new markets, increase client base in the current market, and provide the company a competitive edge, one of the main elements of growth strategies is strategic innovation (Nybakk & Jenssen, 2012).

The different financial measures that operationalize the multidimensional concept of organizational performance include sales, net asset value, and profit, to name just a few. Additionally, customer satisfaction, market share, and employee morale are non-financial criteria used to evaluate organizational effectiveness. Organizational performance cannot be accurately evaluated unless both financial and non-financial measures are taken into account (Zahra, 1993). According to Guday and Kilic (2011), evaluating an organization's performance in relation to its short- and long-term objectives constitutes organizational performance. According to Upadhaya, Munir, and Blount (2014), three distinct aspects of a firm's performance—financial performance, product market performance, and shareholder return on investments—are accounted for by organizational performance. The financial performance includes investments, return on assets, and earnings produced during a specific time period. According to Verma and Jayasimha (2014), product market performance refers to the quantity of goods or services a firm can sell within a specific time period as well as the total number of customers using the products and services the company produces during that time period.

This study plans to evaluate performance in the university setting using certain measures, such as effectiveness, efficiency, customer loyalty, and policy implementation. There is a need for more study to look into the combined effects of organizational, marketing, product, and technological innovations on the performance of universities since, despite the relevance of strategic innovations on organizational growth, there is little research in this area. According to the Commission for University Education's 2018 report, public universities are regarded as institutions of higher learning that were created by the University Act and wholly governed by the government. All Kenyans must have access to education, research, and training under the

universities' mandate. The higher education services industry has undergone enormous growth since the country's declaration of independence in 1963. The demand for higher education has caused a significant expansion in the number of universities. 31 public universities have been founded, but there are still 6 universities operating as constituent colleges under interim letters, making Nairobi University College the only institution in Kenya that offers higher education services (Waithaka, 2014). The rise in the number of students enrolling in various academic programs is blamed for the expansion of the higher education services industry.

The Kenyan government has established quality assurance regulatory organizations like the Commission for University Education (CUE) to ensure that services are delivered effectively at institutions (Inter-University Council for East Africa (IUCEA), 2014). According to Wambui (2011), the higher education system is undergoing significant changes due to fierce competition from private universities and overseas universities. Universities have also reconsidered alternate strategies for raising performance as a result of changes in technology, industry restrictions made by the ministry of education, and student demands. Investment in innovations is viewed as a driver of global competitiveness for the relevance of any institution of higher learning, and universities in particular (Shisia, Sang, Matoke & Omwario, 2014).

Public universities' current situation is related to financial limitations, and their inability to offer courses that are driven by the market is linked to their unwillingness to innovate (Melchorita, 2013). Graduates lack the requisite skills as a result of universities' aversion to modern technologies and slow economic growth (CUE, 2018). The adoption of strategic innovations is regarded to be a stimulant for university performance if adequately managed for the strategic survival of universities in the globalized higher education industry (Melchorita, 2013). Additionally, a practice ingrained in a culture of transformative leadership that prioritizes product innovations as a means of attaining university objectives more effectively and efficiently is what makes the institution's vision a reality, not the number of years it has been in existence.

1.2 Statement of the Problem

Despite the crucial role that public universities play in the development of higher education services in Kenya through teaching, research, and training (Nikolai, 2017), these institutions face a variety of difficulties that have a negative impact on their performance (King'oo, 2014). Stakeholders are concerned about challenges such as financial limitations, service gaps, a sluggish response time to shifting business trends, and the inability to execute Commission for University standards (Mbuchi, 2013). Given these obstacles, rethinking product innovations can help institutions not only perform better but also compete more fiercely on a global scale in the higher education services market (Aswani, 2013). Numerous studies have shown that, when properly adopted, product innovations can have a favorable impact on an organization's performance (Guday & Kilic, 2011; Aswani, 2013; Jin, Hewitt & Thompson, 2013). Despite the studies' conclusions, there are still gaps in the evidence about the relationship between strategic innovations and organizational success, demanding further academic study to close these gaps. Therefore, while some studies have established discrepancies in the relationship between the variable (Shisia, Sang, Matoke & Omwario, 2014; Namusonge, Muturi & Olaniran, 2016), others have shown a strong correlation between product innovations (Jin et al., 2013; Kiptoo & Koech, 2019).

Based on the contentious findings of earlier studies, it is crucial for a study to consider how product developments impact university performance in order to gauge the degree of collaboration of the findings. However, a number of studies (White, M. & Bruton, 2011, Zhou & Wu, 2010, & Slivko, 2013) have only comprehensively and singularly examined the study's variables. Furthermore, other researchers have assessed the product innovations using other metrics, necessitating additional research to identify the barriers to operationalizing product innovations in various situations. Gaps in contextual research are clear from earlier empirical studies. The scope of a study by Namusonge et al. (2016) was restricted to Nigerian Stock Exchange companies. A different study by Kiptoo and Koech (2019) was restricted to Kenyan manufacturing companies. Kirabo, Gregory, and Mike (2020) investigated the strategic performance and innovation of Rwandan telecommunications businesses.

A study by Jin (2014) sought to ascertain the relationship between Chinese manufacturing companies' success and their level of innovation, whereas a study by Simiyu (2013) focused only on Kenyan commercial banks. The new study, which focuses on the university context in Kenya, will bridge the geographical and social research gaps identified by previous studies. Additionally, it is evident from the empirical studies described that several research approaches were employed. For instance, Kirabo et al. (2020) used questionnaires and interview schedules in their study. A study by Jin et al., 2013, used an exploratory research design, whereas Maroa and Namusonge (2019) used a case study research approach. There is a need for a study to be undertaken employing a cross-sectional research design, stratified random sampling approach, and inferential statistics to assess the coherence of the results in light of these methodological research gaps. This study is also informed by contextual and methodological research gaps from earlier empirical studies.

1.3 Research Objective

To evaluate the influence of product innovations and performance public universities in Kenya.

2.0 THEORETICAL REVIEW

This study was grounded in resource-based theory and supported by the balanced scorecard model

2.1.1 Resource-based Theory

Barney developed the resource-based perspective of the firm in 1991, and it offers an explanation for how companies might preserve their competitive advantage in the face of unpredictability. According to this idea, a corporation is a business with unique resources and skills that may be applied to meet stakeholder demands (Barney, 1991). Resources are collections of readily accessible parts that a business owns or controls and can use to create finished products or services. The ability of the company to use organizational procedures and resources, usually in combination, to produce the desired outcome is known as capability. According to Ali and Marjan (2012), resources must be valued, uncommon, imitable, and incomparable in order for sustainable competitive advantage to be realized. When properly managed, resources like assets, capabilities, organizational procedures, firm attributes, information, and knowledge can lead to increased operational effectiveness and efficiency (Muraguri, Kimencu, & Thuo, 2014). Based on the idea that universities may use their

knowledge and resources, both material and intangible, to improve performance, this hypothesis guides this study. Therefore, universities can better explain performance by using product innovations including patenting academic programs, creating new academic, and automating services.

2.1.2 Balanced Scorecard Model

Norton and Kaplan proposed this concept in 1997. The academics' four suggested viewpoints—internal business operations, financial perspectives, innovation and learning, and consumer perspective—are used to assess success in enterprises. The capacity of the company to deliver products and services that satisfy customer needs and preferences is known as the customer viewpoint. It involves the business's capacity to create goods and services that are focused on what clients want. The ability of the company to generate enough cash in the form of earnings and dividends to shareholders is known as its financial perspective. The financial perspective also includes how much an organization can increase income by implementing appropriate, more effective, and efficient tactics. Internal business processes consider how effectively and efficiently a firm can use the appropriate technology. It refers to how much an organization reinvents itself and uses new technologies. This study will use this paradigm to clearly show how training personnel in new information technology skills and investing in cutting-edge equipment are both efforts to improve an organization's overall performance. According to this concept, colleges can evaluate their success via product innovations just like other enterprises.

2.2 Empirical Review

2.2.1 Product Innovations and Organizational Performance

Onikoyi (2017) investigated how organizational performance in oil manufacturing enterprises is impacted by product innovation. Product innovation was found to have a significant and positive impact on the performance of oil manufacturing enterprises using a sample size of 340 respondents from the oil firms. It was also shown that product innovation was directly related to the market share and corporate financial health. The study found that top management in the company should develop and inspire employees to innovate products effectively. Additionally, it was highlighted that market competition, advantageous industry rules, and the organization's financial stability were all factors in product creation. The current study, which intends to look into the relationship between product innovation and the performance of public institutions in Kenya, addressed the gaps in the previous research.

Kamakia (2014) concentrated on the relationship between product innovation and Kenya's financial institutions' performance. Product innovations were found to have a significant and positive correlation with the performance of financial institutions using a census technique and a sample size of 43 commercial banks. The study found that the performance of commercial banks was significantly impacted by re-modification, re-invention, and re-introduction. Using factors including image, product range, customer service, processes, branch networks, locations, and fees, product improvements in the banking industry were evaluated. Rapid product developments are essential for commercial banks to compete globally, according to the study's findings. By attempting to quantify product innovation using indicators like new academic programs, service digitization, and patenting academic programs, the current study sought to fill research gaps.

On how innovation and product development impact corporate success in Nigeria, Udegbe and Udegbe (2013) performed research. A significant and positive relationship between product development and the performance of manufacturing and service groups was discovered using a sample size of 120 enterprises. It was discovered that organizational performance could explain product innovation characteristics including size, shape, color, and packaging. The study concluded that constant product improvement and change is important for businesses to increase consumer loyalty. The creation of new products is essential for survival in the current competitive economy. Although product innovation has a significant impact on organizational performance, it was highlighted that little is known about how it may be used to account for university performance.

According to a 2012 study by Iranian researchers Hamid and Mohammad, the success of any new product created by an organization depends on a variety of criteria. The study found that customer research and investment in new technology are necessary for any new product to flourish. Companies can increase their revenue streams and hence increase the firm's financial stability by developing new products. Product innovation is seen as a trait of businesses that compete on a global scale. Any company that fails to innovate its products will not only be hindered from taking advantage of market opportunities but will also lose market share to rivals. According to the study's findings, a company can operate better if its products are continuously modified and new ones are created.

2.3 Conceptual Framework

As depicted in Figure 1, it was conceptualized that university performance is influenced by product innovations. Indicators used to measure product innovations variable include; new academic program, patenting academic programs and service differentiation. Finally, the dependent variable which is university performance is evaluated using four metrics, namely; efficiency, effectiveness, customer loyalty, and policy implementation.

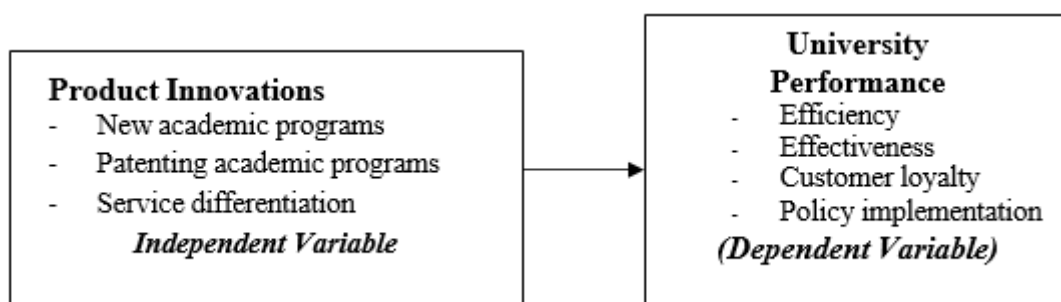


Figure 1: Conceptual Framework

3.0 RESEARCH METHODOLOGY

In this study, a cross-sectional research design was used. 31 public universities operating in Kenya were the study's target population. The examination was limited to public universities that had been in existence for at least 15 years. The sample frame was composed of 10 public colleges due to the magnitude of the target group. Ten participants were chosen by the researcher from each public university. Deputy vice chancellors, directors, deputy directors,

managers, and senior administrators were among the responders. Depending on the type of investigation, probability and non-probability sampling approaches can both be used. This study used 10 public universities that are currently operating in Kenya as its sample frame. A stratified random sampling procedure was used to choose respondents from among the 10 public universities that are active in Kenya. The study's respondents were the administrative employees of Kenya's state universities. The method from Israel (2009) was used to estimate the suitable sample size out of the total population of 100 respondents received from the 10 public universities. In the sampled public universities, 80 management staff members were chosen as the study's sample size. The questionnaires were used to collect first-hand information. There were both closed-ended and open-ended questions. While Cronbach Alpha coefficients were used to test the reliability of the research instrument, the validity of the research instrument was evaluated by academic researchers and business specialists. The data was input into the computer system to allow for quantitative data analysis. In order to analyze the data, SPSS version 21 was used. Descriptive statistics including percentages, mean scores, and standard deviations were employed to evaluate the overall pattern of the data. The linear regression techniques were employed to determine the statistical association between the predictor variables and the dependent variable. R-square was used to evaluate the statistical significance between the variables. T-tests and F-tests with a 95% level of confidence. Tables and Figures were used to show and analyze data. The regression model used in this investigation had the following structure: $Y = \beta_0 + \beta_1 X_1 + \epsilon$

Where;

Y = Performance of Public Universities in Kenya

β_0 = Y-intercept

β_1 = regression coefficients

X1 = Product Innovations

ϵ = other factors not included in the model (Error Term)

4.0 DATA ANALYSIS AND PRESENTATION

Deputy vice chancellors, directors, deputy directors, managers, and senior administrators from Kenyan public institutions served as the study's respondents. 80 participants were chosen for the study's sample from a total of 100 participants. Only 73 of the 80 surveys that were distributed to respondents were actually returned. Two questions were not returned, while five questionnaires were filled out improperly. A total of 73 questionnaires were employed in the research, yielding a 91% response rate, exceeding Fisher (2010)'s proposed cutoff point of 50%.

Table 4.1: Product Innovation

Statements	Mean	SD
The university develops new academic programs annually	1.18	.684

The university has automated library services	4.11	.635
Majority of the students in the university use e-resources	2.11	.644
The university has unique academic programs	2.08	.537
The university offers short courses	1.03	.473
The university offers academic programs that match with that of global universities	4.83	.311
The university reviews the curriculum periodically	4.53	.316
The university trains lecturers on teaching methodologies	4.57	.154
Average Mean Score	3.055	

Source: Research data (2023)

The respondents were questioned about how much their individual universities' success was impacted by product advances. The average mean score for the eight statements was above 3.00, as shown by the data in Table 4.1, indicating that the majority of respondents agreed with the statements. With a mean score of 4.83, it was generally reported that universities were providing academic programs that matched with global needs, lecturers were receiving training in instructional techniques with a mean score of 4.57, the curriculum was routinely reviewed with a mean score of 4.53, and library services were automated with a mean score of 4.11. Additionally, the fact that the average score for the four claims was less than two suggests that some workers did not share the belief that universities were creating new academic programs, that most students were utilizing e-resources, that the courses were distinctive, and that there were short courses. According to Kamakia (2014), Udegbe and Udegbe (2013), Hamid and Mohammad (2012), Salim and Sulaiman (2011), and Udegbe and Udegbe (2013), product innovation can improve an organization's performance if it is properly accepted. Despite the challenges posed by product innovation, the writers concluded that creating new products while also enhancing old ones might give a company a competitive edge to prosper in a fast-paced market.

Table 4.2: Correlations Coefficients on the Relationship between Product Innovations and Performance of Public Universities in Kenya

Variable	Pearson Statistics	1	Product Innovations	Performance of Public Universities in Kenya
	Sample size	21		
Product Innovations	Pearson Correlation	.152**		
	Significance (2-tailed)	0.000		

	Sample size	21		
	Sample size	21		
Performance of Public Universities in Kenya	Pearson Correlation	0.032	.581**	1
	Significance (2-tailed)	0.000	0.020	73
	Sample size	73	73	

**Correlation is significant at the 0.01 level (2-tailed).

*Correlation is significant at the 0.05 level (2-tailed).

Source: Research Data (2023)

The results in Table 4.2 show that there is a positive significant link between product innovations and performance of public universities in Kenya ($r = .581, p < 0.020$).

Table 4.3: Regression Coefficients on the Relationship between Product Innovations and Performance of Public Universities

Table 4.3 a: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of Estimate	R Square Change	F Change	df1	df2	Sig. F Change
3	.454 ^a	.206	.203	.79191	.206	63.983	1	.247	.000

a Predictors: (Constant), X3

Source: Research Data (2023)

Table 4.3 b: ANOVA

Model		Sum of Square	Df	Mean Square	F	Sig
3	Regression	40.125	1	40.125	63.983	000 ^a

Residue	54.899	247	627
Total	95.023	248	
Predictors: (Constant), X3			
b. Dependent Variable: Performance of Public Universities in Kenya			

Source: Research Data (2023)

Table 4.3 c: Coefficientsa

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
3	Constant	.934	.263		3.553	.000		
	X1	.599	.075	.454	7.999	.000	1.000	1.000
a. Dependent Variable: Performance of Public Universities in Kenya								

Source: Research Data (2023)

The results of regression analysis on product innovations in relation to performance of public universities in Kenya are revealed in Table 4.3. The F-test with an ANOVA technique was used to determine whether there was a relationship between product developments and the performance of Kenya's public universities. The findings showed a substantial positive link between product innovations and the performance of Kenya's public universities (F, 64.0 = 59.9, p 0.000) at a level of significance of 5%. The product innovations index clarifies 20.6% of the changeability in Y, while R=45.4%, according to the resultant goodness of fit, which was R2 = 0.206. These results imply a considerable beneficial relationship between product innovations and Kenyan public university performance.

5.0 SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

5.1 Summary of Findings

The study looked at how product developments affected Kenya's public universities' performance. According to the study, there is a strong correlation between product developments and the performance of Kenya's public institutions. But it seemed to suggest that public colleges were unable to create new academic initiatives. Additionally, it was determined that some students lacked access to electronic resources and that the public universities' course offerings lacked the innovation required to meet industry demands.

5.2 Conclusion

According to the study's findings, if properly adopted, product innovation measures including new academic programs, academic program patenting, and service differentiation can accurately gauge the performance of public universities.

5.3 Recommendations

This study advises management of public universities to support training of academic staff by increasing training resources in order to improve the performance of public universities in Kenya. Public university administrators should adopt a participative leadership style, inspire staff, and encourage a culture of delegating responsibilities. In order to improve university research and worldwide competitiveness, public university administrations should also support inter-university exchange programs. The administration of public institutions should also start developing new academic programs that give students the necessary information and abilities to function in a globalized and industrialized economy. Universities should prioritize the newest educational tools to improve student learning. Public universities must reconsider lean concepts in order to be efficient and effective through benchmarking with top-tier institutions. Universities need to reevaluate their functional strategic alliances with business partners if they want to succeed in the volatile higher education market.

5.4 Suggestions for Further Research

Given that the performance of Kenya's public universities was examined directly in this study, other researchers may also investigate the indirect relationship between product innovations and university performance by including corporate governance as a moderating variable to determine whether the results are converging or diverging. To determine whether the results can be replicated, researchers can examine the study's variables using various indicators in a university setting or other relevant contexts. Comparative research should be done between nations to see whether different outcomes may be obtained.

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