Evaluation of the effectiveness of the collegiate system of administration at Kwame Nkrumah University of Science and Technology, Ghana

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Abstract

In order to ensure synchronisation, decentralisation, and democratisation of operations as well as the devolution of power, the collegiate system of administration was implemented in the Kwame Nkrumah University of Science and Technology (KNUST). It is anticipated that it will assist in the decision-making and execution processes to combat the bureaucratic issues related to the faculty system of administration. The study seeks to evaluate the effectiveness of the collegiate administration system and its associated challenges. The study used a quantitative approach to solicit data. Data was gathered using a structured questionnaire from senior management within the colleges and the university administration and data from secondary sources. Data from each source were analysed descriptively. The study revealed that the collegiate system had cultivated a strong feeling of engagement. The system has helped with academic and administration has been successful in increasing the scope of operations in the colleges.

Keywords: Decentralisation, Decision-making, Administrative Perspective and Effective Administration.

Introduction

As a public sector reform strategy, decentralising administration has drawn significant interest on a global scale. The majority of nations have taken official action in the last ten years to encourage governmental institutions and organisations to adopt the idea of decentralisation to assist those institutions and organisations in achieving their stated aims. (Smoke, 2015). The decision to decentralise an institution's administrative system has received support in Sub-Saharan Africa because it is seen as an effective, efficient, accountable, and democratic system of administration (Gershberg & Winkler, 2004). Additionally, a decentralised administrative system may eliminate the bureaucracy, inefficiencies, and financial waste of a centralised administrative system and provide a structure that leads to greater accountability, responsiveness, and transparency. The majority of decentralisation choices, according to critics, are made to disperse financial responsibilities (Hanson, 1997).

It is necessary to constantly monitor the system to ensure an equal impact on our social, economic, and political structures and organisations. The institution or organisation may become irrelevant to the circumstances of the day and eventually fail if it does not adapt to the demands of a complex, quickly changing society. Every academic institution's performance is mostly dependent on two factors: the effectiveness of the management system and the standard of instruction. Due to these factors, every educational institution strives to provide effective and efficient services to its stakeholders. Public universities, like any other organisation, constantly search for more effective ways to carry out their administrative duties in accordance with these principles. Therefore, the majority of well-known public universities throughout the globe are switching from the conventional centralised style of administration to a more decentralised system, which is why certain public institutions in Ghana have implemented the collegiate system (Hanson, 1998).

The collegiate system is a common administrative practice found mostly in the system of administration in higher education. A collegiate system means that a university is split into a number of different colleges that form smaller academic communities. Each college has its own distinctive character and opportunities, which offer students a deep sense of identity and community whilst at University. All staff and students become members of a college when they join the University. College administration plays an important role in the long-term development of colleges and universities. The collegiate structure fosters a deep sense of identity by drawing together leading scholars and students from various disciplines and year groups, as well as from various cultures and nations (Billups, 2011). Since colleges are comparatively limited in number, the direct and positive personal focus may be given to individual student's academic growth and well-being (Leithwood et al., 2007). Effective decentralised higher education administration, as epitomised under the collegiate administrative set-up, not only gives full play to the value of university resources but also makes the implementation of the rules and regulations effective (Mok. 2011).

However, from the current point of view of Castro (2016) many universities as a higher education system, are undergoing a series of contextual changes. The main trends are the expansion and diversification of the systems of teaching and learning, student heterogeneity, incorporation of new technologies, new forms of governance and financing, and redefinition of the competency of graduates. Additionally, there is a growing demand for accountability, as well as the development of global networks for student mobility and collaboration, and interagency cooperation within the framework of globalisation (Atria, 2012). Many universities in Ghana had a faculty or a centralised system of administration. However, due to the new trends, expansion, and diversification of the university system, there was a need for the decentralisation of the administrative system. It is in this regard that the Kwame Nkrumah University of Science and Technology (KNUST) decided to institutionalise the collegiate system of administration.

The Kwame Nkrumah University of Science and Technology succeeded the Kumasi College of Technology, which was created on October 6, 1951, by a Government Ordinance. Until it became a full-fledged university in 1961, the University expanded and underwent significant changes, with the establishment of the School of Engineering and the Department of Commerce in 1952. The Departments of Pharmacy and Agriculture were also established in 1953, and the Department of Architecture, Town Planning and Building in 1957, and later the Faculty of Applied Science in 1965 (Essel and Lamptey, 2020). As the college grew in size, the government agreed to transform it into a pure science and technology institution. As a result, the Kumasi College of Technology was elevated to the status of a university.

Among the primary goals were to promote teaching, learning and research, as well as to produce the required and requisite manpower for Ghana's science and technological advancement. According to Essel and Lamptey, 2020, the University operated under the Departmental and Faculty based administration from 1965 to 2004 before the establishment of the collegiate system. The then university structure in terms of teaching, learning, and science infrastructure could not match with upsurge in University's enrolment. The attending problems ranging from academic, administrative, and financial challenges, hence, the need to be pragmatic with an

Evaluation of the effectiveness of the collegiate system of administration

administrative system that are decentralised in order to meet the demands of the increasing student population. To achieve synchronisation, decentralisation, and democratisation of operations as well as the devolution of power, the collegiate system of administration was formed at KNUST.

The collegiate system of administration was adopted by KNUST in December 2004 under Professor Kwasi Andam's administration as Vice-Chancellor. One of his visions after assuming office as Vice-Chancellor of KNUST in October, 2002 was to restructure and re-organise the University's faculties into six (6) colleges, to enable them to become more effective and focused in the conduct of university business. Prior to the implementation of the collegiate system, a situational evaluation was performed to determine the University's strengths and weaknesses. The main weaknesses were insufficient funding and inefficient budget distribution for academic programmes. As a result, facilities, remuneration and operating conditions for workers, housing, staffing, and inter-faculty cooperation have all been affected.

The KNUST Strategic PLAN2K14 aimed to streamline the University into six compact and focused colleges (KNUST Strategic PLAN2K14-25). The collegiate system took effect officially, in December 2004, and the Plan aimed to address the University's academic and administrative challenges. These colleges included Agriculture and Natural Resources, Architecture and Planning, Art and Social Sciences, Engineering, Health Sciences and Science. As stated in the PLAN2K14, the colleges are "the building blocks of the university". They constitute the main pillars for the realisation of the University's strategic objectives, which are human resource development, training, research and innovation, physical infrastructure development, expansion and application of ICT, and financial resource mobilisation and management.

Administrators at colleges and universities play an important role in administrative management and development (Billups, 2011). Effective management not only maximises the efficiency of university services but also ensures that laws and regulations are followed. University administrators have long had mixed emotions about the success of the collegiate structure and its significance in the university environment. Some administrators believe the collegiate system has received little to no priority in the university environment (Billups, 2011). The University had decentralised its composite administrative tasks out of necessity. After fifteen years of implicit decentralisation, this collegiate system that promotes the granting of autonomy to different colleges is worth investigating. In order to assess the innovation and development of university administration, it is necessary to conduct a thorough study of the collegiate system of the University with the aim of assessing the efficiency of the system in KNUST.

The success of the collegiate system and its significance in the university setting has long been the subject of conflicting opinions in the university administration. KNUST was the first University in Ghana to have started the collegiate system of administration. Currently, there are other public universities, like the University of Ghana, and University of Cape Coast, that have opted for the collegiate systems. Studies by Ogunsanwo (1983), Ogunmodede (1985), and Olutade (2005) showed that research on university administration has centred mostly on isolated administrative styles, such as the use of the committee system and other systems approach, among others. There has been little or no thorough investigation on the administrative process evident in the collegiate system in the universities that have operated the system since its introduction in 2005 in Ghana.

Therefore, this study seeks to evaluate the effectiveness of the collegiate system of administration in KNUST by assessing its ability to accelerate the decision-making and implementation process and identifying challenges that impede its improvement. The significance of this study lies in its potential to provide recommendations for improving the administrative system for management in universities and other educational institutions and regulatory bodies in Ghana, such as the Ghana Tertiary Education Commission. Furthermore, this research will aid policy development for higher education in Ghana by providing solutions to the issues present in the general administration of universities and will act as a reference point for public and private universities, including university actors, in maintaining an effective collegiate administrative system.

The collegiate system originated in Western Europe (Cobban & Cobban, 1975) and is extensively used in universities worldwide (Tianxiang et al., 2018). The collegiate system is so popular because the system enhances the adherence and vitality of the institution and provides practitioners with a unique viewpoint on managing student services (Tianxiang et al., 2018). The collegiate system is an innovative educational reform approach more consistent with developing students' potential and abilities (Tianxiang et al., 2018). Collegiality is a current, efficient and practical form of administration that interacts with other modes of administration (Sahlin & Eriksson-Zetterquist, 2016). According to Sahlin and Eriksson-Zetterquist (2016), some parts of the collegiate system include the formal framework that makes up a collegial decision-making system, which involves the function of academic leaders and how they are selected, as well as the use of peer review for advancement, research funding, and publishing. For efficiency and performance, the collegiate administrative system offers a nexus for integrating institutional choices within its policy implementation framework. The results support maintaining the collegiate system because it promotes operational synergy, improved productivity, and group behavioural dynamics in university administration (Itakpe, 2012).

The universities of Oxford and Cambridge in England, initially established without colleges, have since developed successful collegiate systems that contribute to their unique student experiences. Oxford's self-governing colleges have a federal relationship with the University, providing valuable support, resources, and a vibrant student environment (Oxford-University, 2021). Similarly, Cambridge University's structure includes independent colleges with their own rules and regulations, offering students the opportunity for renowned small-group teaching sessions and college supervision (Cambridge University, 2021). The University of London, a federal university, consists of constituent institutes and member colleges that handle various functions semi-independently, contributing to the University's growth (University-of-London, 2021). The University of London also has Central Academic Bodies under its direct jurisdiction, including the School of Advanced Study, the University of London Institute in Paris, and the University of London Worldwide (University-of-London, 2021).

According to Urbanek (2020), One of the most significant developments in the reforms of the Polish higher education system has been the redefining of the function of the University's governing bodies under the collegiate system. The system has strengthened the rector's position. It upholds the idea of institutional autonomy, which implies that universities can freely develop chosen components of their system, particularly those linked with the principles of basic unit functioning (Urbanek, 2020). Tianxiang et al. (2018) believe the Collegiate system benefits certain institutions. However, some residual issues persist in collecting and manipulating student information, rendering the system ineffective. Even though big data and artificial intelligence are rapidly developing, the increased number of departments and staff members under the system makes it difficult to manage and even reduces administrative efficiency. Again, Okoli and Orinya (2020) state that there appears to be a tradition of management-faculty relationships that undermine the collegial culture, weakening institutional autonomy and academic freedom.

Burnes and Wend (2015) argued that a new form of collegiality for the twenty-first century should be developed to create a win-win situation where administrators can implement their decisions more effectively. Collegialism, which relates to the concept of peer academic leadership, is one of the most renowned and cherished values of the university community in Nigeria (Okoli & Orinya, 2020). This is an operational concept in a perfect university, where professors and academia are vested in institutional decision-making. The collegiate system is crucial in democratising the legal system, combating corruption, advancing judgmental justice, and developing people's potential. However, it has issues including using more resources for litigation, needing to be more effective, deteriorating members' feeling of duty, and a tendency toward adventurism, which might lower the trial standard. Therefore, we should narrow the extent of the application of the collegiate system, choose outstanding members with a strong sense of duty, and, most importantly, change the appropriate tools to rein in those who take advantage of it.

Methodology Study Design

A cross-sectional descriptive research design was adopted in this study to assist in describing the collegiate administrative system in the selected colleges of Kwame Nkrumah University of Science and Technology, Kumasi. Descriptive analysis was used to understand the demographic characteristics of the study sample . A cross-sectional research design involves selecting diverse groups of individuals with different characteristics, such as age, race, and socioeconomic status, but share important criteria for the study. One disadvantage of using this research design is that it becomes difficult to interpret associations identified among the participants and may be used only once, not for long-term examination of actions. However, this paper adopted this research design because it is relatively quick and easy to conduct, and information on all participants is collected once.

Study Population

The target population for the study comprised the Provosts / Distance Learning Director, Deputy/Senior Registrars, Deputy/Senior Finance Officers, Deputy Librarians, Deans, and Heads of Academic Departments in the University. The target population is summarised in the table below.

Rank	Number
Provosts / Distance Learning Director	7
Deputy/Senior Registrar	20
Deputy/Senior Finance Officer	6
Deputy Librarians	3
Deans	18
Heads of Department	97
Total (N)	151

Sampling technique

According to Kumekpor (2002) and Seidu (2007), sampling is the purposeful selection of a subset of a larger group to extract specified attributes or features via description or estimate. It entails selecting a representative unit from among a population. In this research, participants with in-depth knowledge and experience in the collegiate administrative system were chosen using purposive sampling. This sampling technique chose participants based on their unique traits or qualities pertinent to the study's goal. Their years of experience in their various positions, their active engagement in collegiate decision-making processes, and their understanding of the weaknesses and advantages of the system were all considered as the selection criteria.

Sample size determination

The Taro Yamane method for sample size calculation, formulated by the statistician Tara Yamane in 1967, was adopted to determine the sample size. This is calculated as

$$n = \frac{N}{(1 + Ne^2)}$$

The confidence level of 95% was adopted, allowing for a margin of error of 5% Where N is the population under study, e is the margin of error which is 0.05, and n is the sample size to be used for the study.

$$n = \frac{151}{1 + 151(0.05)^2}$$
$$n = \frac{151}{1 + 151(0.0025)}$$
$$n = \frac{151}{1 + 0.3775}$$

n=109.6189

Hence, the sample size for this study is estimated to be approximately 110.

Data Collection

The Collegiate System of Administration Assessment Scale (CSAAS), a structured questionnaire, served as the primary research tool for the study. The instrument was created to enable it to assess the institutions' collegiate administrative systems thoroughly. The questionnaire was created to get respondents' opinions on the effectiveness of the collegiate administrative system in decentralising university affairs, delegation of authority and responsibility, devolution of powers, etc. There were two sections on the questionnaire: "A" and "B. "Section "A" contains information on the demographic characteristics of participants included in the study. "Section "B" comprises elements derived from research questions on the effectiveness of the collegiate system of administration, challenges and recommendations. The effectiveness was categorised into 1–5 and organised on a scale grading of Not Sure, Not Effective (NE), Fairly Effective (FE), Effective (E), and Very Effective (VE). The reason for choosing this scale is to assign higher values to positive responses to make arguments with the average rankings. Participants were requested to indicate the level of effectiveness of the collegiate administrative system, such as; "To what extent is the collegiate system of administration effective in the decentralisation of university operations?", "To what extent is the collegiate system of administration effective in the delegation of authority and responsibility?, etc.

Pre-testing

A pilot study was administered at the Kwame Nkrumah University of Science and Technology, Kumasi, to 5 participants to determine the reliability of the questionnaire. The reliability value for the collegiate administrative system was tested using Cronbach's alpha as used by DeVellis, R. F. (2006) and the value was found to be 0.71.

Data analysis method

SPSS version 26 was used in this study investigation to calculate the means and standard deviations of the variables. Out of the estimated total sample of 110, only 106 responses were received for this study. The analysis and results were presented in tables and figures. The frequency distribution and percentages were the data analysis techniques utilised to ascertain the percentage of respondents who selected the various responses. Pimentel (2019), formula for calculating the mean score and categorising Likert scale responses was used. Below is the calculation of interval level and mean scores.

The interval level = $\frac{\text{Maximum value} - \text{Minimum value}}{\text{number of categories}}$

$$=\frac{5-1}{5}=\frac{4}{5}=0.80$$

Mean Score	Criteria	Interval Scale
1.00-1.80	Not sure	1
1.81-2.60	Not effective	2
2.61-3.40	Fairly effective	3
3.41-4.20	Effective	4
4.21-5.00	Very effective	5

Limitations

The context in which this research was conducted was limited to KNUST. Therefore, generalising the findings may not apply to other institutions, and the effectiveness of the collegiate system may vary depending on size, geographical location, and policies. The study primarily focuses on the perspectives of specific administrative personnel. Although their opinions are unquestionably insightful, it is crucial to understand that various stakeholders may impact the collegiate system's effectiveness.

Reliability of instruments

Cronbach's alpha is a commonly used measure of reliability for assessing the internal consistency of a scale or questionnaire. It is typically used to evaluate how well a set of items in a questionnaire or scale measures a single construct.

The formula for Cronbach's alpha is

$$\alpha = (\frac{k}{k-1})(1 - \frac{\sum \sigma_i^2}{\sigma_v^2})$$

in which y is a multi-item scale, k is the number of items in that scale, $\sum \sigma_i^2$ is the sum of the variances for the individual items, and σ_i^2 is the variance.

The reliability of the collegiate administrative system questionnaire was tested using 106 participants. The reliability value on the post-tested instrument for the collegiate administrative system was found to be 0.757. The close relation between the pre-testing and post-testing reliability values indicates that the questionnaire is consistent and can be used for this study.

Results

The study's main objective is to review the effectiveness of the collegiate administrative framework as a tool for decision-making and identify challenges that impede the improvement of the university collegiate administrative system.

Respondent's demographic information

Table 1 shows 106 respondents, with 74.5% male and 25.5% female. In relation to the highest educational level, nearly half of the respondents (48.1%) had completed a PhD, indicating a significant proportion of individuals with advanced academic qualifications. Additionally, 45.3% of the respondents had achieved a MA/MBA/MSc./MPhil degree, highlighting a substantial number of individuals with postgraduate-level education. Specialised qualifications like ACCA (3.8%) and ICA (0.9%) are present, indicating a variety of professional backgrounds that contribute to the administration system.

The breakdown of respondents according to staff category is also included in the table. With 53.8% of the respondents, it is clear that teaching staff make up the slight majority, while non-teaching personnel account for 46.2% of the respondents. This proportion implies a relatively equal share of people working directly in education and those offering support services. Only 9.4% of respondents said they would disagree with the

system, compared to 90.6% who said they would. This overwhelmingly favourable reaction shows that individuals working in the colleges have a favourable opinion.

Variable	Frequency (N=106)	Percentage (%)		
Gender				
Male	79	74.5		
Female	27	25.5		
Highest Educational Level				
MA/MBA/MSc. /MPhil	48	45.3		
PhD	51	48.1		
ICA	1	0.9		
ACCA	4	3.8		
Staff Category				
Teaching staff	57	53.8		
Non-teaching staff	49	46.2		
Would you recommend the collegiate				
system of administration				
Yes	96	90.6		
No	10	9.4		

Table 1: Respondent's demographic information

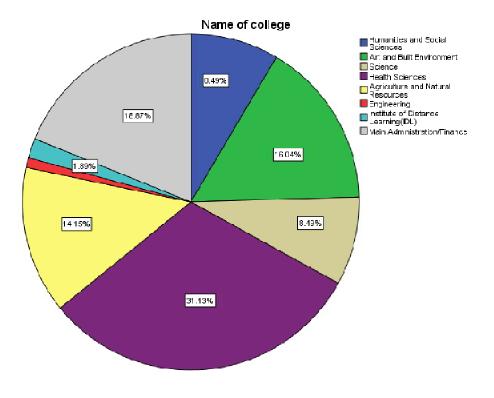


Figure 1: Pie chart showing the percentage of respondents from each college

Evaluation of the effectiveness of the collegiate system of administration

Figure 1 reveals how respondents were distributed throughout the university system. With 31.1% respondents, the College of Health Sciences has the most presence. This is followed closely by Main Administration/Finance and Art and Built Environment, accounting for 18.9% and 16.04%, respectively. The Colleges of Humanities and Social Sciences, and Science each account for 8.5% of the respondents. The Institute of Distance Learning (IDL) and College of Engineering have the lowest percentages, with 1.9% and 0.9%, respectively.

Effectiveness of the Collegiate Administrative System

The study evaluated the system's impact on decentralisation, delegation, devolution of powers, decision-making, implementation of decisions, enhancement of the University's image, pursuit of academic objectives, coordination of programmes, and management of finances. The results indicate that the collegiate administrative system effectively decentralises university operations. With a mean value of 3.755 and a standard deviation of 0.766, the system demonstrates a reasonably positive impact on the distribution of decision-making and authority. Similarly, the collegiate system is seen as effective in delegating authority and responsibility, with a mean value of 3.83 and a standard deviation of 0.856. This suggests that the system successfully empowers individuals within colleges to take charge of their respective domains while maintaining a balanced level of oversight.

The study reveals that the collegiate system is moderately effective in devolving powers. The mean value of 3.651 and a relatively high standard deviation of 0.986 suggest varying opinions among respondents. While some perceive the system to be successful in transferring decision-making powers to the collegiate level, others may have experienced limitations. The collegiate system is perceived as effective in accelerating the decision-making process, as indicated by a mean value of 3.708 and a standard deviation of 0.85. This implies that the system enables quicker decision-making by empowering individuals at the college level, minimising bureaucratic delays, and facilitating timely resolutions. The collegiate system is viewed as highly effective in the implementation of decisions. With a mean value of 3.934 and a low standard deviation of 0.772, it suggests that the system promotes efficient execution and follow-through on decisions made, enhancing the overall effectiveness of the administration. Respondents perceive the collegiate system to be very effective in enhancing the University's image. With a mean value of 4.189 and a standard deviation of 0.829, the system contributes significantly to building a positive reputation, fostering academic excellence, and attracting stakeholders.

The collegiate system is considered effective in pursuing academic objectives, with a mean value of 4.04 and a standard deviation of 1.039. This implies that the system facilitates the alignment of college-level programmes and initiatives with the broader academic goals of the University, promoting a cohesive approach to education. The data shows that the collegiate system is perceived as effective in coordinating various programmes or faculties within the colleges. With a mean value of 3.991 and a standard deviation of 1.091, the system facilitates collaboration and synergy among academic units in ensuring effective education delivery. While the collegiate system is considered effective in managing the University's finances, the mean value of 3.443 and a standard deviation of 1.079 indicate a relatively lower effectiveness level than other variables. This suggests room for improvement in the system's financial governance and resource allocation.

Variable	Mean	Std. dev.	Measurement
To what extent is the collegiate system of administration effective			
in the decentralisation of university operations?			
	3.755	0.766	Effective
To what extent is the collegiate system of administration effective			
in the delegation of authority and responsibility?			
	3.83	0.856	Effective

Table 2: Effectiveness of the Collegiate Administrative System

To what extent is the collegiate system of administration effective			
in the devolution of powers?			
	3.651	0.986	Effective
How effective is the collegiate system of administration in			
accelerating the process of decision-making?			
	3.708	0.85	Effective
How effective is the collegiate system of administration in the			
implementation of decisions taken?			
	3.934	0.772	Effective
Is the collegiate system of administration effective in the			
enhancement of the image of the University?			
	4.189	0.829	Effective
To what extent is the collegiate system of administration in the			
pursuit of academic objectives of the University?			
	4.04	1.039	Effective
How effective is the collegiate system of administration in the			
coordination of various programmes or faculties in the colleges?			
	3.991	1.091	Effective
How effective is the collegiate system of administration effective			
in the management of the finances of the University?			
	3.443	1.079	Effective

The collegiate administrative system appears to successfully promote decentralisation, delegation, devolution of powers, decision-making, implementation of decisions, enhancement of the University's image, pursuing academic objectives, coordinating programmes, and managing finances. While there may be some variations in perceived effectiveness across these areas, the collegiate system demonstrates its value in fostering effective governance and administration within academic intuitions (Barnes, 2020). The Colleges in KNUST have invested heavily in facilities, including extensive infrastructure, resources and services. Decision-making in the administrative system has improved. Previously, decisions affecting units like the library, audit, procurement, and estate affairs in the faculties (as was the case) were taken by the faculty board in most cases with no representation from the units. With the adoption of the collegiate system, the College unit matters have been brought to the fore and are now considered among top priorities in the agenda of all faculties and colleges. The improvement has also affected the budgetary allocation of the units. The collegiate system over the years has triggered a series of restructuring and expansion works. This has affected the provision of college services to support teaching, learning and research. This evaluative research reveals that the system has gained roots, structures continue to be improved, and challenges are being overcome.

Conclusion

Higher education is a comprehensive process that provides college students with adequate support to identify the courses that meet their requirements. It also includes helping students with time and fee management and ensuring their college education is completed without issues. The collegiate system of approach has helped academic and administrative leadership, which deserves a more concentrated focus. The collegiate style of administration has successfully increased the scope of operations in the colleges. After 15 years, the collegiate system in KNUST has been effective, as was the vision of the former Vice-Chancellor, Prof. Kwasi Andam, who instituted it.

The collective achievement of the colleges spells out the achievement of the University. Therefore, each college must define its role in the context of the University's strategic plan and position itself to contribute to the realisation of the University's goals. The study recommends that support is needed for periodic review of the collegiate system. Such reviews will ensure that most created and anticipated impediments are managed and

Evaluation of the effectiveness of the collegiate system of administration

resolved. There should be total decentralisation and standardisation of administrative and financial procedures and processes, which is essential for the success of the collegiate system of administration. Regular communication and collaboration between the colleges and the central administration is needed to ensure that the activities of the colleges are aligned with the strategic objectives of the University. Improvement of infrastructure and facilities at the college is also needed to enhance the quality of teaching and research and to attract funding and partnerships from local and international organisations. Finally, the central administration should delegate more powers to the colleges, particularly in student affairs and academic programmes, to enable them to respond more effectively to the needs of their students and to attract and retain quality staff.

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