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Optimizing benefits realization in Ghanaian public universities: The role of portfolio management practices, strategic resource alignment and institutional culture

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Abstract

This paper examines how portfolio management practices influence benefits realization in Ghanaian public universities, focusing on the mediating role of strategic resource alignment and the moderating role of institutional culture. It provides empirical evidence on how structured portfolio systems support institutional performance and strategic outcomes. A quantitative cross-sectional design complemented by qualitative insights was used. Data were collected from 76 professionals across three public universities through structured questionnaires. Partial Least Squares Structural Equation Modeling (PLS-SEM) and PROCESS analysis tested the proposed relationships, while thematic analysis examined open-ended responses. Findings showed that portfolio management practices significantly enhance benefits realization both directly and indirectly through strategic resource alignment, although the mediation was not statistically significant. Institutional culture did not moderate the relationship but shaped the environment supporting effective portfolio practices. Qualitative findings revealed issues such as delayed funding and weak governance, with suggested remedies like centralized portfolio management and improved accountability. The study focused on three public universities, which may limit generalizability. Future research should adopt longitudinal and multi-institutional designs to validate these findings across broader higher education contexts.

Keywords: *portfolio management practices, benefits realization, strategic resource alignment, institutional culture, higher education*

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1. Introduction

Universities today are operating in a landscape where stakeholders, including students, governments, donors, and communities, expect more than just infrastructure or programs; they expect measurable outcomes. Strategic initiatives are no longer optional; they are central to how public universities demonstrate value, accountability, and relevance. In this environment, managing multiple projects and portfolios becomes essential, especially in institutions with limited resources and high demands. For example, research shows that institutions with strong project portfolio governance tend to allocate resources more effectively and demonstrate greater institutional performance (Zwikael & Huemann, 2023; Ali, 2026; Mews, 2025; Martinsuo et al., 2024; Tuominen & Martinsuo, 2024; Zaman et al., 2020; Lappi et al., 2019).

In Ghana, public universities face distinct challenges. Many such institutions are implementing numerous strategic projects, yet the link between investment and sustained outcomes often remains weak. Projects may be completed on time or under budget, but their contributions to teaching quality, research capacity, or community engagement are rarely assessed or tracked. Studies of Ghanaian education reveals that weak governance structures, delayed funding, and fragmented decision-making often impede the translation of project efforts into institutional transformation (Adamba, 2023; Appau et al., 2025; Awotwe et al., 2020). This gap between project delivery and benefits realization is a critical concern not only for Ghanaian universities but also for other public higher-education institutions in resource-constrained environments.

Although the literature on project and portfolio management has grown in recent years, empirical research within the context of sub-Saharan African higher education, particularly with an integrated focus on strategic alignment and institutional culture, is still scarce. Few studies explore how portfolio management practices, when combined with strategic resource alignment and adaptive institutional culture (Antwi, 2023), impact benefits realization in this specific sector.

Most institutions continue to manage projects in an uncoordinated and reactive manner, and without strategic alignment or benefit realization processes (Too & Weaver, 2014). Hence, projects at completion do not deliver sustained value, and resources are poorly aligned to institutional priorities. Institutional culture plays an important role in shaping the adoption and sustenance of portfolio management practice by universities. In the Ghanaian public university

sector, organizational culture is largely hierarchical, risk-averse, and slow to change (Schein, 2017).

Recognizing this research gap is important because public universities in Ghana and similar contexts must do more than deliver projects; they must convert them into sustainable institutional value. This study, therefore, seeks to examine how portfolio management practices influence benefits realization in Ghanaian public universities, with emphasis on the mediating role of strategic resource alignment and the moderating influence of institutional culture. By applying the Resource-Based View (RBV), Contingency Theory, and Dynamic Capabilities perspectives, the research offers both theoretical and practical contributions.

This study is significant for several reasons. Firstly, it will give practical lessons to university administrators, policymakers, and project managers on how to structure and execute strategically aligned and culturally accepted portfolios. It is also significant in the sense that it contributes to the largely underexplored portfolio management literature in African higher education institutions by incorporating organizational dynamics that are often neglected. Third, it provides conceptual and empirical bases for subsequent reforms and interventions for increasing efficiency, transparency, and value creation in the public university system of Ghana.

2. Literature Review

2.1 The Relationship between Portfolio Management Practices and Benefits Realization in Public Universities

The integration of portfolio management practices and benefits realization has emerged as a critical factor in ensuring the success of strategic initiatives in public universities. According to the Project Management Institute (2017), portfolio management involves the centralized management of processes, methods, and technologies that enable project managers to collectively analyze and manage current or proposed projects. Its ultimate goal is to ensure that institutions invest in the right projects, those aligned with long-term objectives and capable of delivering value to stakeholders. Conversely, benefits realization focuses on identifying, planning, and realizing measurable improvements that projects are expected to produce (Ward & Daniel, 2012). While portfolio management provides the structure for selecting and prioritizing initiatives, benefits realization ensures that these initiatives deliver the intended outcomes, such as improved infrastructure, academic quality, and research capacity.

From a theoretical standpoint, the Resource-Based View (RBV) (Barney, 1991) provides a useful lens for understanding the relationship between these two concepts. RBV posits that organizations derive sustained competitive advantage from the effective deployment of valuable, rare, inimitable, and non-substitutable resources. Within universities, portfolio management practices represent such a strategic capability, enabling the institution to coordinate its financial, human, and technological resources toward the realization of long-term goals. When these resources are systematically aligned and managed, they create the conditions necessary for benefits realization. Therefore, under the RBV framework, portfolio management acts as an enabler that transforms institutional resources into tangible outcomes, reinforcing the argument that effective PMP directly enhances benefits realization.

Empirically, Serra and Kunc (2015) confirm that organizations integrating benefits realization into their portfolio processes achieve higher strategic success and project performance. Similarly, Too and Weaver (2014) assert that when institutions adopt a value-oriented portfolio mindset rather than one narrowly focused on project execution, they are more likely to achieve sustainable transformation. In resource-constrained environments like Ghana, this integration becomes particularly crucial**.** Too and Weaver (2014) observed that Ghanaian public universities often operate in silos, with projects managed independently without a coherent strategy or benefits-tracking mechanism. Consequently, many completed initiatives fail to translate into institutional improvement. For instance, infrastructure projects may meet cost and time targets but have little measurable impact on learning or research outcomes (Serra & Kunc, 2015).

Recent studies on educational management and development further reinforce these concerns within higher education settings. For example, Awotwe et al. (2020) report that weak governance structures and limited strategic coordination significantly undermine institutional performance in public higher education institutions. Similarly, Unger et al. (2012) find that the absence of integrated strategic management systems constrains universities' ability to translate projects and initiatives into sustained organizational benefits. These findings align with the present study's argument that effective portfolio management and strategic alignment are essential mechanisms for improving benefits realization in public universities.

At the same time, the Contingency Theory (Donaldson, 2001) reinforces the idea that the effectiveness of portfolio management practices depends on the fit between internal management processes and contextual factors such as institutional culture and governance

structures. Universities with adaptive and collaborative cultures are better able to integrate portfolio and benefits realization frameworks, while rigid bureaucracies tend to prioritize compliance and output over impact. This theoretical perspective explains why institutions facing similar resource constraints may still differ in benefits realization outcomes: the success of PMP depends not only on the existence of processes but on their alignment with cultural and structural contexts.

Moreover, Jenner (2014) cautions that without deliberate benefits management, institutions risk focusing solely on outputs such as buildings or systems rather than outcomes and impacts. This is particularly relevant for universities, where success should be measured not only by what is delivered but by how those outputs contribute to academic excellence, innovation, and societal value. Integrating benefits realization into portfolio practices also strengthens accountability, ensuring that public investments yield demonstrable returns. According to the PMI (2017), institutions that adopt structured benefits-tracking systems experience greater transparency, stakeholder confidence, and long-term sustainability.

In human terms, this integration bridges the gap between vision and reality. It encourages university leaders to initiate projects based on strategic relevance rather than funding opportunity, and to engage stakeholders, academic staff, students, and administrators in defining and measuring success.

The relationship between portfolio management and benefits realization is both strategic and contextual. Supported by the RBV, portfolio management provides the resource-based capability for value creation, while Contingency Theory underscores that the effectiveness of this relationship depends on cultural and structural alignment. For Ghanaian public universities facing limited resources and increasing expectations, integrating these concepts provides a practical and theoretically grounded pathway toward achieving strategic impact and institutional transformation. Given these arguments, this study posits that:

H1: *Portfolio management practices have a significant positive effect on benefits realization in public universities in Ghana.*

2.2 Strategic Alignment of Resources as a Mediator

The RBV, as proposed by Barney (1991), posits that an organization's competitive and sustainable advantage arises from its ability to effectively deploy valuable, rare, inimitable, and non-substitutable resources. Within public universities, these resources include human

expertise, research capacity, technological infrastructure, and financial capital. The way these resources are organized and aligned with institutional strategies determines how well universities achieve their goals. Hence, aligning key resources with strategic objectives is not merely an administrative process but a strategic mechanism that drives long-term value and institutional performance.

From the RBV perspective, Portfolio Management Practices (PMP) provide the structural and decision-making framework through which institutions can optimize resource allocation. Effective PMP ensures that scarce resources are systematically prioritized toward projects that best support the university's mission and long-term vision. This structured prioritization enhances transparency, reduces duplication, and prevents the dispersion of effort across non-strategic initiatives. As Jonas (2010) and Grant (2016) argue, resource alignment acts as the vital bridge between project execution and strategic performance, transforming managerial intent into measurable institutional benefits.

Recent African studies provide supporting evidence for this perspective (i.e. Shao et al., Chitongo & Zhanda, 2025; Kamili et al., 2024). For instance, Kambuga (2025) highlights that strategic management in Tanzanian higher education institutions often fails because resources and priorities are poorly aligned with institutional missions. Similarly, Cele and Adewumi (2024) found that inequalities in resource distribution and weak governance frameworks in South African universities limit their ability to translate strategic goals into tangible institutional outcomes. These findings underscore that strategic alignment is not only a managerial necessity but also a contextual challenge shaped by governance quality and institutional culture dynamics that mirror those of Ghanaian public universities.

Building upon RBV, the Dynamic Capabilities Theory further strengthens this logic by explaining how organizations develop the ability to reconfigure and adapt their resources in response to changing conditions. In this view, portfolio management practices represent a strategic capability that enables universities to coordinate resources toward long-term goals. This adaptability ensures that project portfolios remain relevant and value-driven, even in the face of funding volatility or policy shifts typical of the Ghanaian higher education landscape.

In practice, strategic alignment of resources serves as the mediating link between PMP and benefits realization. While PMP provides the tools and governance structures for decision-making, alignment ensures that those decisions translate into outcomes that advance institutional goals. In the resource-constrained environment of Ghanaian public universities,

where budgets are tight and competing priorities abound, effective resource alignment ensures that limited inputs produce maximum educational, research, and societal returns. Thus, in RBV and Dynamic Capabilities terms, strategic alignment acts as the process that converts organizational resources coordinated through PMP into sustainable institutional benefits.

Through this mediating mechanism, portfolio management practices enhance the alignment of resources, which in turn strengthens benefits realization by ensuring that projects contribute directly to the university's strategic mission and long-term impact. Hence, this study argues that:

H2*: Strategic alignment of resources mediates the relationship between portfolio management practices and benefits realization.*

2.3 Institutional Culture as a Moderator

Drawing from Contingency Theory (Donaldson, 2001), this study recognizes that there is no single formula for success in all organizational environments. What works in one university may fail in another depending on internal dynamics such as leadership style, hierarchy, communication, and openness to change.

Institutional culture, therefore, moderates the strength and direction of the relationship between portfolio management practices and benefits realization. A supportive, collaborative, and adaptive culture can reinforce alignment efforts and accelerate the path from portfolio design to value creation. In contrast, a rigid or siloed culture, which is unfortunately common in many Ghanaian public universities, can weaken this relationship by resisting innovation, discouraging cross-departmental collaboration, or prioritizing tradition over strategy.

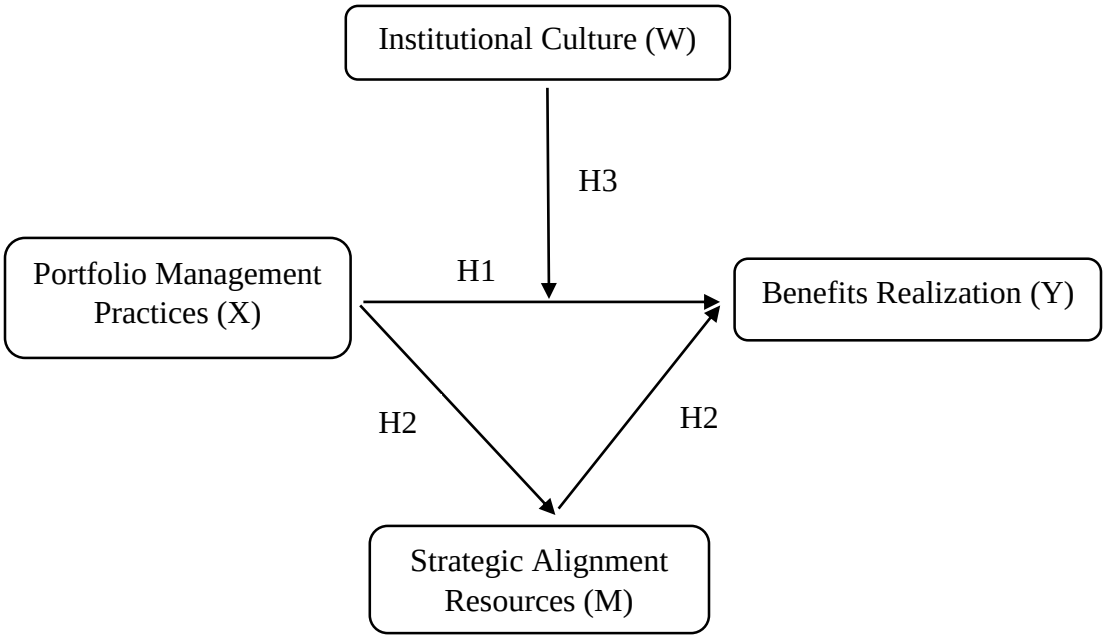
Crawford and Helm (2019) highlight that even well-formulated strategies can fail in environments that are not culturally ready to embrace them. Contingency Theory helps explain that institutions must tailor their governance and management approaches to their specific cultural and structural realities. In this view, culture is not just a backdrop it actively shapes how portfolio strategies are interpreted, implemented, and sustained**.** Therefore, this study argues that:

H3: *Institutional culture moderates the relationship between portfolio management practices and benefits realization, such that the relationship is stronger in institutions with adaptive and collaborative cultures.*

2.4 Conceptual Framework Diagram

Figure 1

Conceptual framework



Source: Author's Construct (2025).

The conceptual framework for this study is based on the premise that effective portfolio management practices can significantly improve benefits realization in Ghanaian public universities. However, as supported by literature (PMI, 2017; Too & Weaver, 2014), this relationship depends on how well projects are aligned with institutional goals and how effectively they are governed. Strategic alignment of resources, the fit between resources and strategic priorities, is positioned as a mediating variable, based on evidence from Jonas (2010), which suggests that without alignment, even well-managed portfolios may not deliver expected value.

Additionally, the framework considers institutional culture as a moderating factor. Drawing from Schein (2017), the study acknowledges that a university's culture, whether supportive or resistant to innovation, can strengthen or weaken the impact of portfolio management. Thus, the model integrates both internal processes (resource alignment) and contextual conditions (culture) to explain how universities can improve project outcomes and strategic performance.

3. Methodology

3.1 Research Design

This study adopted a quantitative cross-sectional research design, which enabled the collection of standardized data at a single point in time. This approach is well-suited for examining how portfolio management practices influence benefits realization in public universities, particularly when considering the roles of strategic resource alignment and institutional culture. By using a quantitative approach, the study applies statistical tools to analyze patterns and test the strength of relationships between variables. As Creswell (2014) explains, this type of design offers objectivity and allows findings to be generalized across similar institutions.

The research is grounded in a positivist paradigm, which assumes that reality is observable and measurable, and that valid knowledge can be obtained through empirical investigation. This aligns well with the use of structured questionnaires and statistical models to explore the study's hypotheses.

3.2 Population of Study, and Sampling Technique

The target population for this study comprised individuals involved in the planning, management, or oversight of strategic projects within public universities in Ghana. These included project and portfolio management officers, university administrators, directors, and senior academic leaders such as deans and heads of departments. These individuals were selected because of their informed perspectives on how project portfolios are managed and how institutional objectives are pursued through strategic resource planning.

The study employed a purposive sampling technique, which is a non-probability sampling method where participants are deliberately selected based on their knowledge, expertise, or specific characteristics relevant to the study objectives. This approach ensures that the data collected is rich, relevant, and drawn from those best positioned to provide meaningful insights. Participants were selected from three key public universities in Ghana. Within these institutions, respondents were drawn from planning offices, directorates, academic departments, and project management units. A total of 76 valid responses were recorded and used for the analysis.

Table 1. Presents the demographic profile of respondents, outlining their involvement in university projects, current roles, and years of experience. This background information

provides context for interpreting the study's findings, as it highlights the diversity of positions and expertise represented in the sample.

Table 1

Demographic characteristics of the participants

Background Information	Frequency	Percentage
Involved in University Projects		
Yes	76	100%
Role/Position		
Project Manager	16	21.1%
Director	12	15.8%
Dean	6	7.9%
HoD	11	14.5%
Other	31	40.7%
Years of Experience in this Role		
Less than 2 years	19	25%
2–5 years	22	28.9%
6–10 years	18	23.7%
More than 10 years	17	22.4%

The respondent profile shows that all participants (100%) had direct experience with university projects, ensuring that the study's findings are grounded in practical knowledge. The majority were Project Managers (21.1%), followed by Directors (15.8%), Heads of Department (14.5%), and Deans (7.9%), while 40.7% fell into other key operational roles such as program coordinators and administrative staff. This distribution highlights that project delivery in universities involves both leadership and support-level professionals. In terms of experience, respondents were well distributed across categories, with a mix of early-career and highly experienced personnel. Overall, this diversity in roles and experience strengthens the credibility of the findings by reflecting a wide range of perspectives on project and portfolio management within Ghanaian public universities.

3.3 Data Collection Methods

Data were gathered through a structured questionnaire, carefully designed to cover all the core themes of the research, namely portfolio management practices, benefits realization, strategic resource alignment, and institutional culture. To increase accessibility and response

rates, the questionnaire was made available in online format, allowing participants to answer conveniently. The survey was administered over 5 weeks.

During the data collection period, it was observed that administrative and academic leaders were more responsive when approached through official university communication channels. Respondents appreciated the clarity and structure of the questionnaire, and the open-ended responses provided deeper contextual insights that complemented the quantitative data. Despite the structured approach, several challenges were encountered. The initial response rate was low, as many potential participants were occupied with office and academic responsibilities, which caused delays and necessitated follow-up reminders. Additionally, securing participation from certain key personnel in strategic units required multiple points of contact and additional validation to assure them of the academic purpose and confidentiality of the study. Time limitations further constrained the data collection process, restricting opportunities for in-person follow-up or extended engagement with respondents. These challenges were mitigated through persistent follow-ups, personalized communication, and strong assurances of data privacy and academic intent.

3.4 Instrumentation

The questionnaire comprised both closed-ended and open-ended items, primarily employing a five-point Likert scale. Respondents were asked to indicate their level of agreement with various statements ranging from “Strongly Disagree (1)” to “Strongly Agree (5),” and the degree of truth from “Not at all true (1)” to “Completely true (5).” This design allowed for both quantitative measurement and qualitative insights, ensuring a more comprehensive understanding of the study variables.

Each major construct in the study was measured using multiple items carefully adapted from validated instruments in previous research. Section B, which focused on Portfolio Management Practices, drew from the Project Management Institute’s (2017) framework. Items in this section examined how projects are selected, prioritized, resourced, and monitored at the portfolio level within public universities.

Section C assessed Benefits Realization, drawing on the work of Serra and Kunc (2015). This section evaluated how institutions plan, monitor, and track the realization of project outcomes and long-term benefits, emphasizing whether project results contribute to institutional effectiveness and stakeholder value.

Section D captured Strategic Alignment of Resources, with items adapted from Grant (2016). Respondents were asked to rate the extent to which critical resources such as financial, human, and technological assets are aligned with their university's broader strategic objectives.

Section E focused on Institutional Culture, using dimensions derived from Schein's (2017) model of Organizational Culture and Leadership. These items were modified to reflect the unique operational realities of academic institutions, including norms, values, leadership style, and openness to change.

Finally, Section F included an open-ended question inspired by Too and Weaver (2014). This part explored participants' perceptions of the challenges faced in aligning projects and resources to institutional strategies and their suggestions for improving benefits realization within the public university context.

3.5 Data Analysis Techniques

Data analysis was conducted using SmartPLS software. The analysis followed a structured, multi-phase approach to ensure the accuracy, reliability, and validity of the study's findings. Descriptive statistics were used to summarize the demographic characteristics of the sample and to provide general insights into participant responses. Measures such as frequencies, percentages were computed. Meanwhile, Cronbach's alpha was used to assess the internal consistency of the items under each construct. A threshold of 0.70 or higher was considered acceptable for confirming scale reliability.

Confirmatory Factor Analysis (CFA) was conducted using SmartPLS to validate the measurement model and confirm the factor structure of the constructs. This involved assessing how well the observed variables represented the latent variables: portfolio management practices, benefits realization, strategic resource alignment and institutional culture. CFA results were evaluated based on factor loadings (with a minimum threshold of 0.70), composite reliability (CR), and average variance extracted (AVE).

To establish convergent validity, the study assessed the AVE for each construct during the CFA. Convergent validity indicates the extent to which multiple items measuring the same construct are in agreement. An AVE value of 0.50 or higher was considered acceptable, meaning that the construct explains at least 50% of the variance in its observed variables. Additionally, standardized factor loadings for each item were reviewed, with a minimum

acceptable threshold of 0.70, to ensure items contribute meaningfully to the underlying construct.

Prior to testing the structural relationships, the reliability and validity of the measurement model were assessed to ensure the robustness of the study's constructs. Internal consistency reliability was evaluated using Cronbach's alpha and composite reliability, while convergent validity was assessed through average variance extracted (AVE), in line with established PLS-SEM guidelines. These indicators were examined during the measurement model evaluation stage to confirm that all constructs demonstrated acceptable levels of reliability and adequately captured their underlying dimensions. Only constructs that met the recommended threshold values were retained for subsequent mediation and moderation analyses. This procedure ensured that the structural model results were based on sound and reliable measurements, thereby strengthening the credibility of the study's findings.

Mediation and moderation effects were examined using the bootstrapping procedures embedded in SmartPLS. While the analytical logic of conditional process analysis informed the interpretation of indirect and interaction effects, all statistical estimations were conducted within the PLS-SEM framework to ensure model consistency and suitability for the study's sample size. SmartPLS was treated as the primary analytical platform, as it allows simultaneous estimation of measurement and structural models and is robust for complex models with moderate samples. Any references to PROCESS analysis reflect the conceptual approach to mediation and moderation testing. This approach provided a comprehensive understanding of how portfolio management practices influence benefits realization through strategic resource alignment, under varying institutional cultural contexts**.**

3.6 Ethical Considerations

This study was committed to upholding the ethical standards throughout the research process. Participation was entirely voluntary, and all respondents were provided with clear information about the purpose of the study before giving their consent. Participants had the right to withdraw at any point without any consequences.

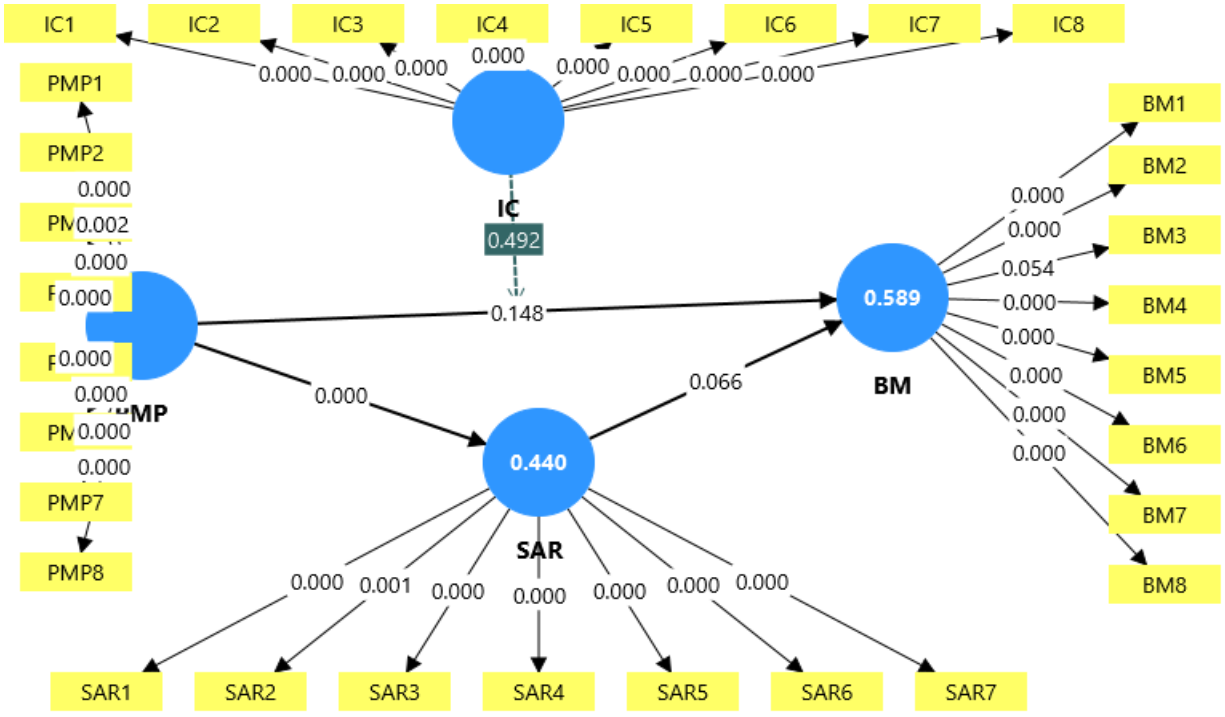
To ensure privacy, all responses were kept strictly confidential and used solely for academic purposes. No names or identifying information were published. The data was stored securely and was only accessible to the research team.

4. Findings

Figure 2 presents the structural model results.

Figure 2

Structural model analysis



The structural model analysis using SmartPLS revealed several significant relationships among the study variables. Portfolio management practices (PMP) demonstrated a strong and statistically significant direct effect on benefits realization (BM) ($\beta = 0.589$, $p < 0.001$), confirming **H1.** This indicates that improvements in PMP are likely to result in substantial gains in the realization of project benefits within Ghanaian public universities.

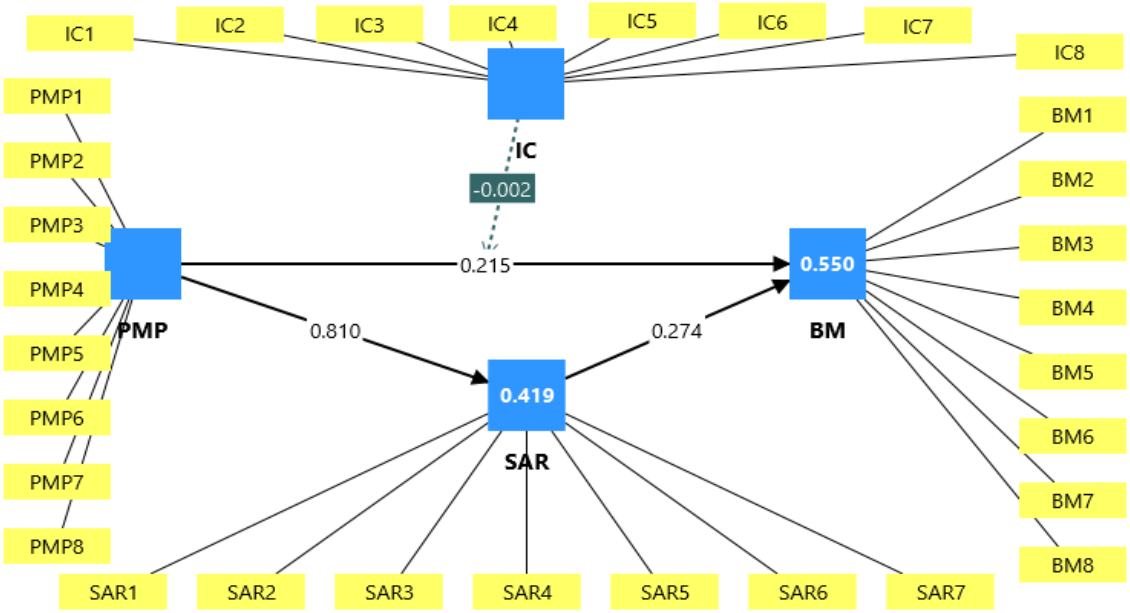
PMP also exerted a significant positive effect on the strategic alignment of resources (SAR) ($\beta = 0.440$, $p < 0.001$), suggesting that effective portfolio practices are closely linked to better alignment of human, financial, and technological resources with institutional goals. SAR, in turn, had a smaller but statistically significant direct effect on BM ($\beta = 0.066$, $p < 0.001$). This provides partial support for **H2,** indicating that SAR mediates the relationship between PMP and BM, although its contribution to BM is more modest compared to the direct influence of PMP.

Institutional culture (IC) emerged as another key factor in benefits realization, showing a substantial direct effect on BM ($\beta = 0.492$, $p < 0.001$). Moreover, IC moderated the PMP → BM relationship ($\beta = 0.148$), confirming **H3.** This means that the positive effect of PMP on BM is stronger in universities with a supportive and adaptive culture.

The model's explanatory power was strong, accounting for 44% of the variance in SAR and 58.9% of the variance in BM. Collectively, these results highlight that while PMP is the most powerful driver of benefits realization, its effectiveness is enhanced when supported by both strategic resource alignment and a conducive institutional culture.

Figure 3

PROCESS mediation and moderation analysis



The PROCESS analysis was conducted to examine the specific indirect and moderating relationships proposed in this study. This allowed the research to go beyond simply identifying direct effects and instead explore the "how" and "when" portfolio management practices (PMP) translate into benefits realization (BM).

The mediation analysis focused on the role of strategic alignment of resources (SAR) as a linking mechanism between PMP and BM. The results showed a very strong and statistically significant relationship between PMP and SAR ($\beta = 0.810$), indicating that better portfolio management practices are closely associated with improved alignment of human, financial, and technological resources with institutional goals. In turn, SAR significantly

influenced BM (β = 0.274), suggesting that when resources are aligned to strategy, projects are more likely to deliver measurable and meaningful benefits.

The calculated indirect effect (PMP → SAR → BM) was approximately 0.222, meaning that nearly a quarter of PMP's total influence on BM operates through the pathway of strategic resource alignment. Importantly, the direct effect of PMP on BM (β = 0.215) remained significant even after accounting for the indirect effect, confirming that this is a partial mediation. In practical terms, this means PMP works in two ways: first, by directly improving the chances of realizing project benefits; and second, by indirectly boosting benefits through better alignment of resources. This reinforces the argument that technical project governance processes must be complemented by deliberate and strategic resource deployment to achieve optimal results.

The moderation analysis examined whether institutional culture (IC) changes the strength or direction of the relationship between PMP and BM. The interaction term (PMP × IC) was negative but negligible (β = –0.002) and statistically non-significant. This suggests that, in this specific dataset and model, IC does not significantly amplify or weaken the effect of PMP on BM. While earlier bootstrapping results hinted at a modest moderating effect, the PROCESS test did not confirm this.

This does not mean institutional culture is unimportant. In fact, other parts of the analysis revealed a strong direct effect of IC on BM, underscoring its role as a foundational enabler of successful project outcomes. What the moderation finding does suggest is that in the sampled Ghanaian public universities, PMP appears to have a fairly consistent positive effect on BM regardless of variations in institutional culture although culture still influences benefits through its direct pathway.

The explanatory power of the PROCESS model was strong, accounting for 41.9% of the variance in SAR and 55% of the variance in BM. These figures indicate that the combination of PMP, SAR, and IC provides a substantial basis for understanding what drives benefits realization in public universities.

In addition to the quantitative survey data, respondents provided open-ended feedback on two key areas: 'Challenges' their institutions face in aligning projects and resources to strategic goals within a portfolio management framework, and 'Actions' they believe would enhance the realization of project benefits.

The qualitative responses from the open-ended questions were analyzed using a thematic analysis approach. Initial open coding was conducted to identify recurring ideas and patterns across responses. Similar codes were then grouped into broader themes reflecting common challenges and suggested actions related to benefits realization and portfolio management. To enhance credibility, the coding process was iterative, with themes reviewed and refined to ensure consistency and alignment with the study's objectives. A thematic analysis of these responses revealed several recurring patterns.

Theme 1: Challenges in Aligning Projects and Resources

Eight major sub-themes emerged from the analysis of the first open-ended question:

Inadequate and misaligned resources. Respondents frequently cited limited funding, late release of funds, and resource allocation that does not match project needs. Staffing gaps and competition for the same resources across projects were also noted.

"Budgeting cycles don't always align with strategic project timelines."

Weak strategic alignment and oversight. Projects are sometimes initiated without verifying their fit within the broader institutional strategy, and shifting priorities with leadership changes disrupt alignment.

"We often start projects before confirming if they fit the big picture."

Siloed operations and poor collaboration. Departments often operate independently, resulting in duplication of effort and poor coordination.

"Administrative and academic silos hinder resource allocation."

Ineffective leadership and governance. This includes political interference, reactive decision-making, and a lack of standardized project evaluation.

"Some projects are politically driven, not strategically planned."

Communication gaps and limited stakeholder involvement. Poor information sharing and exclusion from early planning stages weaken alignment and buy-in.

"We are rarely involved in the planning stage."

Inadequate data and tools for decision-making. The absence of real-time data, structured portfolio tools, and performance metrics hinders effective alignment.

Theme 2: Actions to Enhance Benefits Realization

Analysis of the second open-ended question produced the following sub-themes:

Establish a Centralized Portfolio/Project Management Office (PMO). Respondents overwhelmingly emphasized the need for a dedicated Project or Portfolio Management Office to coordinate all institutional projects. Such a unit would ensure strategic alignment, prevent duplication of efforts, and provide a unified governance framework for monitoring project performance. A centralized PMO would also facilitate consistent reporting and knowledge sharing across departments, thereby improving transparency and accountability. As one respondent noted, "*There should be a centralized project management office to coordinate all projects and ensure alignment with strategic objectives*." This structure would help transform fragmented project execution into a coherent, strategy-driven portfolio management system.

Strengthen strategic alignment and accountability. Participants also highlighted the importance of aligning project selection and resource allocation with institutional goals. Strengthening strategic alignment requires rigorous evaluation of project proposals to ensure they contribute directly to the university's mission and vision. Furthermore, introducing clear Key Performance Indicators (KPIs), standardized approval processes, and regular performance reviews would enhance accountability and benefits tracking. One participant suggested, "*Projects should only be greenlit if they clearly show how they contribute to at least one strategic goal*." These measures would ensure that project portfolios not only deliver outputs but also generate measurable outcomes tied to strategic priorities.

Build institutional capacity and benefits tracking systems. Finally, respondents underscored the need to build internal capacity in project governance, strategic planning, and benefits management. Training programs and continuous professional development for academic and administrative staff would improve the quality of project execution and evaluation. In addition, implementing systematic benefits tracking mechanisms such as digital dashboards and post-project reviews would help universities assess the real value created by

completed initiatives. This approach moves institutions beyond project delivery toward evidence-based performance improvement and long-term sustainability.

The qualitative findings reinforce and enrich the quantitative results from the PLS-SEM and PROCESS analyses. The most frequently mentioned challenge**,** inadequate and misaligned resources, mirrors the statistical finding that SAR plays a meaningful but partial mediating role between PMP and BM. Respondents' emphasis on funding delays, staffing gaps, and misallocation explains why SAR's effect on BM was weaker than PMP's direct impact.

The recommendations from respondents align closely with the study's theoretical framing. Calls for a centralized portfolio management office**,** stronger accountability systems**,** and clearer strategic alignment in project selection directly address the governance and cultural enablers identified as crucial in the Resource-Based View and Contingency Theory.

5. Discussion

The findings from this study provide strong and compelling evidence that PMP are not just administrative tools but are central to unlocking the strategic potential of projects in Ghanaian public universities. The strong direct link between PMP and benefits realization (BM) ($\beta = 0.589$ in the initial model) confirms H1 and reinforces earlier work by Too and Weaver (2014) and Serra and Kunc (2015), who argue that without a structured approach to project selection, prioritization, and monitoring, institutions risk investing in projects that fail to deliver meaningful value.

In the Ghanaian public university context, where resources are often stretched thin and expectations from stakeholders are high, PMP acts as the anchor that keeps projects aligned to strategic objectives. This study shows that when PMP processes are robust, meaning projects are carefully selected, resources are assigned deliberately, timelines are realistic, and monitoring mechanisms are clear, universities are much more likely to see tangible outcomes, such as improved infrastructure, enhanced research capabilities, and better student and staff experiences. In other words, PMP is the "engine room" of strategic delivery.

The relationship between PMP and the SAR was also found to be strong ($\beta = 0.440$ in the PLS model; $\beta = 0.810$ in the PROCESS mediation model). This confirms H2 and aligns with the Resource-Based View (Barney, 1991), which emphasizes that the way resources are deployed can determine an institution's long-term competitive advantage. In practical terms, this means that even the best project management processes will struggle to achieve their full

potential if resources, financial, human, and technological, are not carefully aligned with strategic goals. However, while SAR significantly influenced BM (β = 0.066 in the PLS model; β = 0.274 in the PROCESS model), its contribution was relatively modest compared to PMP's direct effect. This pattern suggests that resource alignment is happening, but perhaps not yet at the scale or depth required to fully maximize benefits realization. Previous research by Too and Weaver (2014) and Awotwe et al. (2020) provides a likely explanation: resource allocation in Ghanaian public universities is often constrained by bureaucratic processes, budget limitations, and siloed operations, which can weaken the impact of alignment efforts. This means that while PMP sets the strategic direction, resource alignment remains a partially untapped lever for delivering value.

Institutional culture (IC) emerged as another powerful factor in this study. The strong direct effect of IC on BM (β = 0.492) reinforces Schein's (2017) view that culture is not a passive backdrop but an active driver of organizational performance. A culture that fosters collaboration, openness to innovation, and accountability can create an enabling environment for PMP to thrive. Conversely, a rigid, hierarchical, and risk-averse culture can undermine even the most technically sound portfolio processes. Interestingly, while earlier bootstrapping results suggested that IC might modestly moderate the PMP → BM relationship, the PROCESS analysis did not confirm this effect (β = –0.002, non-significant). This suggests that, in the sampled institutions, PMP has a relatively stable positive impact on BM regardless of cultural variations, but culture still plays its own independent and important role. This finding also aligns with Contingency Theory (Donaldson, 2001), which highlights that organizational performance depends on the fit between management practices and contextual factors.

Although the PLS-SEM analysis indicated a statistically significant moderating effect of IC on the relationship between portfolio management practices and benefits realization, the conditional PROCESS analysis did not yield consistent significance. This discrepancy may be attributed to differences in estimation techniques, bootstrapping algorithms, and sensitivity to sample size across analytical approaches. Given the study's reliance on an integrated SEM framework and the suitability of SmartPLS for the model structure, greater interpretive weight was placed on the PLS-SEM findings. Nonetheless, the results suggested that institutional culture plays a contextual role in shaping benefits realization, even when its moderating influence is not uniformly detected across methods.

From a practical standpoint, this means that improving benefits realization in Ghanaian public universities is not just about refining technical processes. It is equally about addressing cultural barriers and resource allocation inefficiencies. University leaders and policymakers should focus on three interlinked priorities:

1. Strengthening portfolio governance frameworks so that project selection and monitoring are transparent, evidence-based, and strategically driven.
2. Developing robust systems to ensure that human, financial, and technological resources are allocated in ways that directly support strategic priorities.
3. Cultivating a culture of collaboration, innovation, and accountability that encourages cross-departmental problem-solving and embraces change.

This shows that while Ghanaian public universities already possess some of the essential building blocks for delivering sustained project benefits, the challenge and the opportunity lie in bringing these elements together in a coordinated way. By integrating strong portfolio management, effective resource alignment, and a supportive institutional culture, universities can not only improve their internal efficiency but also demonstrate greater value to students, staff, government, and society at large.

6. Recommendations

To enhance the alignment of projects with strategic goals and improve benefits realization, Ghanaian public universities should adopt a structured, institution-wide approach grounded in project portfolio management principles. This approach should integrate strong governance, accountability, and inclusivity mechanisms to ensure that all projects directly contribute to institutional performance and long-term strategic transformation. By embedding portfolio management practices into university operations, institutions can move from fragmented project implementation toward a coordinated, strategy-driven model that ensures every initiative adds measurable value.

Several key actions are proposed to operationalize this approach. Universities should establish a centralized Portfolio Management Office (PMO) to coordinate all institutional projects, ensure strategic alignment, prevent duplication, and promote efficient use of resources. Strengthening strategic alignment processes is equally essential. This requires a transparent framework for selecting and prioritizing projects based on their relevance to the university’s mission, vision, and long-term objectives. Improving accountability and

governance structures will also enhance performance by defining clear KPIs, conducting periodic reviews, and undertaking regular audits to monitor benefits realization. Furthermore, universities should promote stakeholder engagement and collaboration by involving faculty, administrative staff, students, and other relevant actors early in project planning and execution to build ownership, communication, and shared responsibility.

Ensuring adequate and timely resource allocation is another key step, as budgets and timelines must be aligned with the scale and strategic significance of each initiative. In addition, universities should build institutional capacity through continuous training and professional development in portfolio management, benefits realization, and strategic planning for both academic and administrative staff. Finally, all project plans should integrate sustainability and inclusivity principles, ensuring that gender equity, environmental sustainability, and social impact considerations are embedded in design, execution, and evaluation.

The implementation of these recommendations should be led by university management and governing councils, working closely with planning offices, project management units, and finance directorates. Academic departments and administrative units, in collaboration with external stakeholders such as the Ministry of Education and the National Council for Tertiary Education, should provide oversight and technical support to align institutional strategies with national priorities. These actions should be incorporated into the next strategic planning cycle and implemented in phases to allow for staff training, resource mobilization, and systems integration. Through this coordinated effort, Ghanaian public universities can bridge the gap between project execution and strategic vision, fostering a more accountable, collaborative, and outcome-oriented institutional culture that enhances the value derived from limited resources and delivers lasting benefits to students, staff, and society.

7. Conclusion

This study examined how portfolio management practices influence benefits realization in Ghanaian public universities, with particular attention to the mediating role of strategic resource alignment and the moderating influence of institutional culture. Using PLS-SEM, the analysis revealed that portfolio management practices are a strong and consistent driver of both strategic alignment and benefits realization. However, while resource alignment

improved with robust portfolio management, its mediating effect on the relationship between portfolio practices and benefits realization was not statistically significant.

Institutional culture emerged as a critical contextual factor shaping benefits realization. Although the PROCESS analysis did not confirm a statistically significant moderating effect, institutional culture demonstrated a strong direct influence on benefits realization. The discrepancy between PLS-SEM and PROCESS findings may be attributed to differences in estimation approaches, bootstrapping sensitivity, and sample size considerations, as stated earlier. The findings further suggest that while portfolio management practices operate robustly across institutional settings, a supportive culture enhances the environment in which such practices generate sustainable benefits.

Complementing these findings, qualitative responses highlighted several practical challenges, including delayed funding, weak stakeholder engagement, duplication of projects, and limited monitoring capacity. Respondents also proposed actionable strategies such as strengthening planning frameworks, enhancing governance and accountability, and ensuring timely resource allocation. Collectively, these insights suggest that while technical portfolio processes are essential, institutional reforms in leadership, transparency, and collaboration are equally critical to maximizing project benefits.

Despite its contributions, this study has limitations. The cross-sectional design restricts causal inference, and the focus on three public universities may limit generalizability. Future research should adopt longitudinal designs to examine how portfolio management practices and benefits realization evolve over time, particularly in response to policy shifts and leadership changes. Comparative studies across countries or higher education systems in sub-Saharan Africa would also provide valuable insights into contextual differences and shared governance challenges. In-depth qualitative case studies could further enrich the understanding of how institutional actors interpret and enact portfolio management frameworks in practice.

In sum, the study underscores the central role of portfolio management in improving project outcomes and strategic impact within universities. For policy and practice, higher education institutions should prioritize establishing centralized project portfolio offices, institutionalizing benefits-tracking mechanisms, and fostering a culture of accountability and evidence-based decision-making. By doing so, Ghanaian public universities can ensure that strategic projects are not only well executed but also deliver measurable, sustainable, and transformative benefits for the academic community and society at large.

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Institutional Review Board Statement

This study was conducted in accordance with the ethical guidelines of the University of Cape Coast, Ghana. Ethical considerations such as informed consent, voluntary participation, anonymity, and confidentiality of respondents were strictly observed throughout the data collection and analysis process.

AI Declaration

The author declares the use of Artificial Intelligence (AI) in writing this paper. In particular, the authors used ChatGPT in searching appropriate literature, summarizing key points, and paraphrasing ideas. The author takes full responsibility in ensuring proper review and editing of content generated using AI.

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