

**Examining Benefits Realization Management in University Capital Projects:
A Summarization of Early Observations of Current Practices**

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Abstract

This document is a summary of a study that provides preliminary observations of the state of **Benefits Realization Management (BRM)** in the context of university capital projects. The study uses a survey tool to seek i) evidence that universities are using Benefits Realization Management methods; and ii) evidence that universities may be facing challenges to obtaining strategic benefits from their capital construction projects. By interpreting the survey data and employing a linear regression model, early observations suggest that universities are only sparingly using BRM, and that the delivery of benefits is a problem for university capital projects. These findings suggest the need for additional research focused on developing a statistically predictive model for benefits realization and identifying best practices for Benefits Realization Management (BRM) within the university setting.

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1. INTRODUCTION

Universities routinely embark on capital construction projects. Capital construction projects involve the design and construction of new buildings, large renovations, and major infrastructure like roads and heating plants. These capital projects pose a significant risk to the university. A McKinsey Institute study found that almost all large projects around the world suffer cost overruns of more than 30% and most are at least 40% late (Changali et al., 2015).

Universities need an effective mechanism to evaluate the benefits of a project against the risks. One approach to solve this problem is the use of appraisal tools. Examples of appraisal tools include cost-benefit analysis, Strength-Weakness-Opportunity-Threat (SWOT) analysis, and the Balanced Scorecard. These appraisal tools evaluate project cost and risk against benefits and are often used to provide a justification for expending resources. A significant recent development in this field is the emergence of Benefits Realization Management (BRM). BRM evolved as a project management process that enhances the appraisal process beyond project initiation. It employs a systematic approach that defines the benefits, measures the benefits, and then ensures those benefits are being realized during and following a project's completion (Ward & Daniel, 2012).

Research Objectives

The objective of this research is to conduct an exploratory analysis of the application of Benefits Realization Management in the delivery of capital projects at universities. It seeks to answer two questions:

1. Is there evidence that universities are using Benefits Realization Management methods in their capital construction projects?
2. Is there evidence that universities are facing challenges in obtaining strategic benefits from their capital construction projects?

This investigation serves as a foundational step to assess the feasibility of conducting further research at the doctoral level on this subject.

Methodology

This study began by contacting experts in the field of university capital projects to clarify this subject in the university context, and to focus the research into a limited set of research objectives.

Concurrent to the expert consultations, a review of the existing literature was completed, which resulted in the discovery that there is very little academic literature directly on the topic of BRM in university capital projects. However, there is a body of literature available on the general surrounding topics of i) strategic management of capital projects; ii) BRM as a project management tool, and iii) university capital project literature that is related to these two topics. The literature review for this study is constructed at the intersection of these three distinct bodies of literature.

The expert consultation also revealed that the data gathered might not positively portray the universities who participated. This posed a difficulty in freely soliciting information directly from universities, and this could also introduce bias. To help mitigate this risk, an anonymous survey was selected as the data collection method. This survey was structured to measure the key ideas around strategic management and BRM that were gathered from the literature review.

Next, the survey was conducted at a professional convention. A sample was gathered from a population of university project experts who participated in the survey anonymously.

Finally, the data underwent trend analysis and a linear regression to identify any statistically significant predictors. The results of this analysis and regression were

compared with findings from the literature review, and then synthesized in a conclusion that addresses the research questions and proposes areas for advanced research at the doctoral level.

Scope and Limitations

This study is limited to universities located in northeastern Canada and the United States and is also constrained by the small collection of academic literature on this precise topic. The intent of the research is to obtain early observations on the application of Benefits Realization Management in the delivery of capital projects at universities. Although the findings are not conclusive, they are intended to act as an initial investigation to inform the trajectory of subsequent research efforts.

2. ABBREVIATED LITERATURE REVIEW

Due to the limited literature on the topic of Benefits Realization Management in the university capital project context, a wider literature review was necessary to situate this research in the body of literature. This review divides the literature into three swim lanes: i) strategic management methods as they apply to capital projects; ii) project management methods as they apply towards BRM; and lastly, iii) university capital project context literature related to the two other streams. This structure is summarized visually in Figure 1. For brevity, this summary focuses on the university capital project context. The complete literature review can be found in the text of the full thesis.

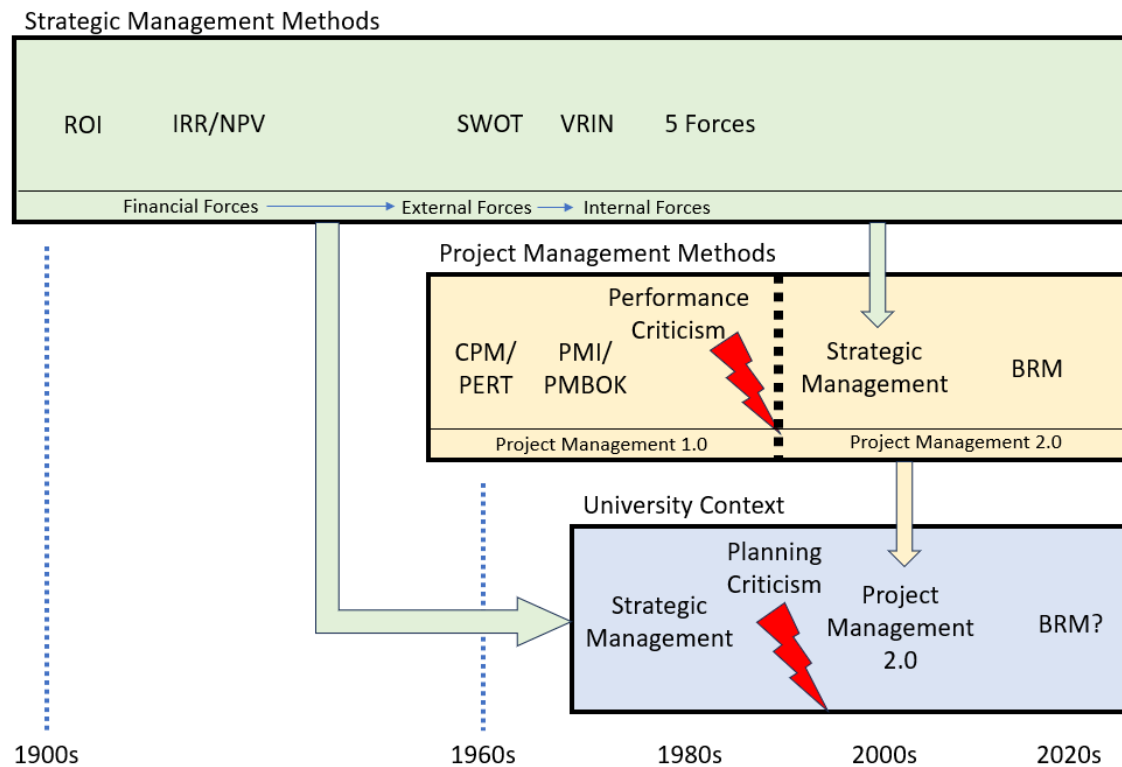


Figure 1- Literature Review Structure

Strategic Management in the University Context

In 1981, John Pearce identified “Strategic management is increasingly being acknowledged by corporate executives as their principal approach to determining and directing the efforts of their firms for the long term.” (Pearce II, 1981). During the same period, the concept of corporate strategy began influencing those studying university governance. This is because universities were experiencing challenges due to an economic downturn and decreased government support in the early 1980s.

Philip Kotler and Patrick Murphy (1981) highlighted strategic planning as a crucial element for navigating challenging periods in university management. They made the connection to university strategy from the previous strategic management literature of Chandler and Drucker to introduce internal and external analysis as a means to build strategy (Kotler & Murphy, 1981).

Building on this same theme, George Keller published his book *Academic Strategy* in 1983, which asserted that “a new era of conscious academic strategy is being born” (Keller, 1983). Keller applied strategic concepts from earlier scholars using case studies of universities. These case studies helped identify the specific strategic forces impacting universities during that period. He translated the business terminology of strategic management into a university context, using terms like “the evolving needs of students as clients,” “changing faculty roles,” and “increasing government regulation” (Peterson, 1984).

Further analysis of the Keller model was undertaken by Barker and Smith in their book *Innovative Higher Education* (1997). They compare the Keller model to a planning process described by William King and David Cleland (King & Cleland, 1987). While Keller’s model tends to focus on the topics for strategy, the King and Cleland model gives a systematic process to create the process (Barker & Smith, 1997).

Both the Keller and King models are important starting points for Benefits Realization Management in the university context, and they are further expanded later in later sections of this study. Also important to this study is the criticism that was later levelled against strategic management in the university context.

Criticism of Strategic Management in University Context

Keller's work was well received when strategic planning came into the mainstream of university governance throughout the 1990s (Barker & Smith, 1997; Temple, 2018). However, this application of strategic management in the university context also gained its critics. Robert Birnbaum criticized strategic planning at universities as falling prey to "management fads" (Birnbaum, 2000). For Birnbaum, strategic management might be advertised as a "quick fix," but it is not suited to university culture. He posits that strategic planning is derived from a corporate culture that is formalized and hierarchical. In contrast, academic culture is a loosely coupled system of individual experts that are not well suited to creating or implementing strategic plans. He suggests that these practices are adopted to align with contemporary trends, which he calls fads, rather than for genuine operational benefits. To Birnbaum, this leads to a cycle of adoption and abandonment that distracts and degrades from academic activities (Birnbaum & Snowdon, 2003).

Henry Mintzberg also critiques strategic planning, arguing that the terminology is an oxymoron (Mintzberg, 1994). For Mintzberg, strategy cannot be planned, because planning requires making accurate forecasts that are not possible in academic environments. He suggests that universities fall into the "planning fallacy" by creating strategies using planning tools. Instead, Mintzberg believes strategy must be "emergent" based on circumstances, and not planned. After a strategy is selected, the tools of strategic management are valid, but he renames them strategic programming – a term he considers more appropriate than strategic management (Mintzberg, 1994).

Larry Jones (1990) argued that the frequent failures of strategic planning at universities during the 1980s were due not to the concept of strategic management itself, but to its improper application in the academic context. He posits that strategic planning fails in a university context primarily because the leadership, personified in the university president, is reluctant to take on the role of chief planner. Additional problems include inadequate training for those involved in planning, lack of support from trustees and key stakeholders, unrealistic timelines, and insufficient communication of the institution's goals (Jones, 1990).

These general criticisms of strategic management applied to the university context have corollaries later in the literature review of problems with project management success.

Strategic Management Applied to University Capital Construction Projects

Academic research on strategic management's role in university capital construction projects is limited. There are a few scholars who have emphasized the importance of integrating facilities management with institutional goals. Their work advocates a need for a strategic approach in capital projects that enhance university operations and financial sustainability.

Jerome Roberson's doctoral dissertation (Roberson, 2016) identified a problem with the perception of facilities management departments in university environments, including the perception of the strategic necessity of facility management. Roberson argued that there was lack of strategic alignment between facilities management and the university's core business. He concluded that there was "generally a positive attitude towards the role of facilities management," that "facilities management was still struggling to determine the role of facilities management within the organization" (Roberson, 2016).

A simple study of South African private universities determined that about half of these universities were using some form of net present value to calculate an internal rate of return (IRR) on construction projects (Naidoo, 2011). Although there was no connection

made to the strategic value of these projects, the study showed that there was some uptake in using these methods for assessing capital construction.

Senior managers of Facilities Management departments have also written articles that advance the strategic value of their departments within the university. William Daigneau, in his work *Planning and Managing the Campus Facilities Portfolio*, categorizes projects into two groups: those essential for maintaining university operations and those of strategic significance that promote the institution's mission and goals (Daigneau, 2003a). Similar to Keller (1983), Daigneau extends the concept of Return on Investment (ROI) at a university beyond traditional corporate metrics to include factors like increased enrollment and teaching capacity (Daigneau, 2003b).

Daigneau also notes that the ROI of a university project may not compare favorably to a corporate ROI. Despite the lower returns, using an ROI assessment is still a valid way of measuring success, and to compare options. Daigneau proposes that this approach will develop a coherent and prioritized capital plan that is connected to the strategy of the university (Daigneau, 2003b).

Donald Guckert wrote for the Association of Physical Plant Administrators (APPA – Leadership in Educational Facilities) about the need to understand the value of a project as the total cost of ownership (TCO) (Guckert, 2006). TCO includes long-term operational costs, as well as the cost of decommissioning the building. Echoing Daigneau's broader approach to calculating Return on Investment, Guckert recommends employing the Total Cost of Ownership to guide project managers beyond the traditional constraints of scope, schedule, and budget. To Guckert, this approach encourages a facilities manager to adopt an attitude of stewardship, ensuring that capital project decisions are aligned with the overarching goals of the institution (Guckert, 2006).

3. The Emergence of Benefits Realization Management

Benefits Realization Management begins to be referenced in project management literature as a planning tool for Information Technology (IT) projects (Aubry et al., 2021; Ika & Pinto, 2022). As early as 1999, Roger Atkinson (1999) wrote on the inadequacy of the iron triangle approach in measuring IT project success upon completion. Among other factors, he focused on the need for project managers to see their projects in terms of the benefit they bring to the success of the business, which he defined as success factors measured one to two years after project completion (Atkinson, 1999).

John Ward (1996) also studied the benefits delivered by IS/IT projects and connected this to concepts of strategic management (Ward & Daniel, 2012; Ward & Peppard, 2002). Ward wrote a summary of his model of BRM in his 2012 book *Benefits Management: How to Increase the Business Value of Your IT Projects* (Ward & Daniel, 2012). Ward and Daniel defined BRM as “The process of organizing and managing such that the potential benefits arising from the use of IS/IT are actually realized” and then elaborates: “The purpose of the benefits management process is to improve the identification of achievable benefits and to ensure that decisions and actions taken over the life of the investment lead to realizing all the feasible benefits (Ward & Daniel, 2012).”

Studies and a model for BRM also emerged in various publications from PMI. Thomas Lechler and John Bryne’s *Mindset for Creating Project Value* (Byrne & Lechler, 2011) was written to respond to the critique of planning, and strongly advocated connecting the project’s outputs to strategic business values.

In 2016, PMI published a series of reports that connected project management to the concepts of strategic management, and introduced benefits management as a methodology (PMI, 2019). This also included the creation of the *Benefits Realization Management Framework*, 2016), which provided the basic foundation to define BRM in

the context of PMI’s “Program and Portfolio Management” (*The Standard for Portfolio Management*, 2024) referenced earlier.

In the next year, the 2017 *PMI Pulse of the Profession* report (PMI, 2017) presented a survey that showed a correlation between conventional project success and the maturity of the organization’s BRM activities, as defined by the BRM Framework. In 2019, PMI published a practical model for applying BRM in the *Benefits Realization Management: A Practice Guide* (PMI, 2019). This guide defined BRM as the “day-to-day organization and management of the effort to achieve and sustain potential benefits arising from the investment in portfolios, programs, and projects” (PMI, 2019).

The BRM Project Management Method

The BRM process is described in similar terms as the PMI project management phases of initiating, planning, executing, monitoring, and controlling, and closing (Fernandes & O’Sullivan, 2021; PMI, 2013). Ward and Daniel (2012) elaborate on this five-phase process more specifically to BRM, which is summarized in Table 1 (Fernandes & O’Sullivan, 2021; Ward & Daniel, 2012).

Table 1 – BRM Process Summarized

Phase 1: Initiate - Identify and structure benefits.
Identify the strategic drivers that determine investment objectives for the project.
Identify the benefits that will result by achieving the objectives and how they will be measured.
Establish which stakeholders in the organization owns the benefit.
Identify changes required by the stakeholders to realize the benefit.
Produce a business case that justifies the risks and resources expended in return for the benefits.
Build a map of the benefits showing how the benefits are related (benefits dependency map – see Figure 10).

Phase 2: Plan Benefits Realization
Finalize the identification of all benefits, including their measurements and related organizational change requirements.
Obtain agreement of all stakeholders to responsibility and accountabilities.
Summarize all the work of Phase 1 and 2 in a written benefits plan, focusing on benefits as an ROI business case.
Phase 3: Execute
Project manage the implementation of the benefits with the project team throughout the design, procurement, and construction.
Phase 4: Monitor and Control
Engage the project team in the continuous measurement of the benefits at each stage in the project execution.
Implement changes as required to maximize the benefit realization.
Identify Lessons Learned.
Phase 5: Close and Establish Potential for Further Benefits
Perform final measurements, at least one year after construction completion.
Review Lessons Learned.
Identify additional improvements.
Identify future benefits.

Benefits Realization Management Literature in the University Context

While Project Management is generally and widely associated with all capital construction projects, literature specific to capital construction projects in the university context is sparse (Pramen & Fernane, 2017). Noted previously the Fernandes and O’Sullivan (2021) study of BRM at a university is a rare example. There are also a few

studies of university projects that tend to focus on the project management performance metrics of scope, schedule, and budget, also known as the “iron triangle.”

For example, Shrestha Pramen and James Fernane (2017) studied the performance of design-build project method against design-bid-build delivery method, using university project data from universities in 10 different states. They compared the cost, schedule, and scope performance data against other similar studies. Their study concluded that the design-build projects performed better in the university environment. They also noted that there were no other studies of this type using university project data (Pramen & Fernane, 2017).

Nathaniel Olatunde and Oluwaseyi Alao (2017) conducted an analysis of the "iron triangle" performance of university capital projects within Nigeria, encompassing both public and private institutions. Their study revealed that 65% of the projects exceeded their budget, while at least 80% did not meet their scheduled timelines. The performance discrepancy between public and private universities was minimal. The researchers concluded that, similar to studies of other emerging nations, their study supports the broader findings highlighted by researchers like Flyvbjerg (2017), indicating a prevalent underperformance of public sector projects, including university projects (Olatunde & Alao, 2017).

Research by Majed Alzara highlighted that university projects in Saudi Arabia experienced significant delays, ranging from 50% to 150% beyond their planned schedule (Majed Alzara et al., 2016). The study also discussed a project management approach developed by Dean Kashiwagi, known as the Best Value Procurement/Performance Information Procurement System (BVA/PIPS) (Kashiwagi & Byfield, 2002). Although BVA/PIPS was not exclusively designed for university capital projects, Alzara's findings suggested its potential to mitigate delays in such projects (Majed Alzara et al., 2016).

Gaps in the Literature

Benefits Realization Management is a recent area of research, and there are noticeable gaps in the literature regarding its use in university capital projects. This literature review has established links between the broader body of work on strategic management and BRM, and further attempts to relate these concepts to discussions specific to universities.

However, the literature is sparse on the direct implementation of BRM in the context of university capital projects. As an example, the Fernandes & O'Sullivan (2021) research is a study of BRM specific to the university context, but not related to capital projects. Conversely, the studies pertaining to university capital projects (Majed Alzara et al., 2016; Olatunde & Alao, 2017; Pramen & Fernane, 2017) do not reference BRM.

The purpose of this study is to provide early observations to begin to fill this gap, and to provide a direction for more intense future study of this specific area of knowledge.

4. Benefits Realization Management Applied to a University Context

This section will outline the Benefits Realization Management model, as it may be applied to a university capital project context. The model presented is a combination of the methods presented by Ward and Daniel (Ward & Daniel, 2012) and PMI (PMI, 2019). This description synthesizes examples of the model's application in the university context, as a lead-up to the content of the survey. The following sections are structured on three core BRM concepts:

Core concept #1 - Realization of Strategy in the University Context: Benefits can only be defined within the context of the organization's existing strategy. This section outlines the methods universities commonly use to create their strategy.

Core concept #2 - Realization of Return on Investment in the University Context: Capital Projects are created to deliver benefits that justify the investment. This section provides a list of common appraisal methods that universities employ to measure a return on investment from capital projects.

Core concept #3 - Realization of Change in the University Context: The delivery of benefits results in a transformation of an organization's capabilities. This transformation necessitates change across multiple levels of the organization, including adjustments to physical infrastructure, operational processes, staffing, and organizational culture. This section delineates the essential steps involved in this implementation of Benefits Realization Management (BRM) as part of a change management processes.

Core Concept #1: Strategy in the University Context

The first key concept of Benefits Realization Management is that benefits exist in the context of strategy. The sources of strategy in a university context are derived from the strategic management section of the literature review. Keller (1983) and Peterson (1984) list the major factors of university strategy to be 1) traditions, values, and aspirations, 2)

academic and financial strengths and weaknesses, 3) leadership abilities and priorities, 4) environmental trends, 5) market conditions, and 6) the competitive situation (Keller, 1983; Peterson, 1984). King and Cleland created Figure 6, which shows how a typical university would structure its strategic plans.

A System of Plans for an Educational System
[Source: Cleland and King (1983), p. 49]

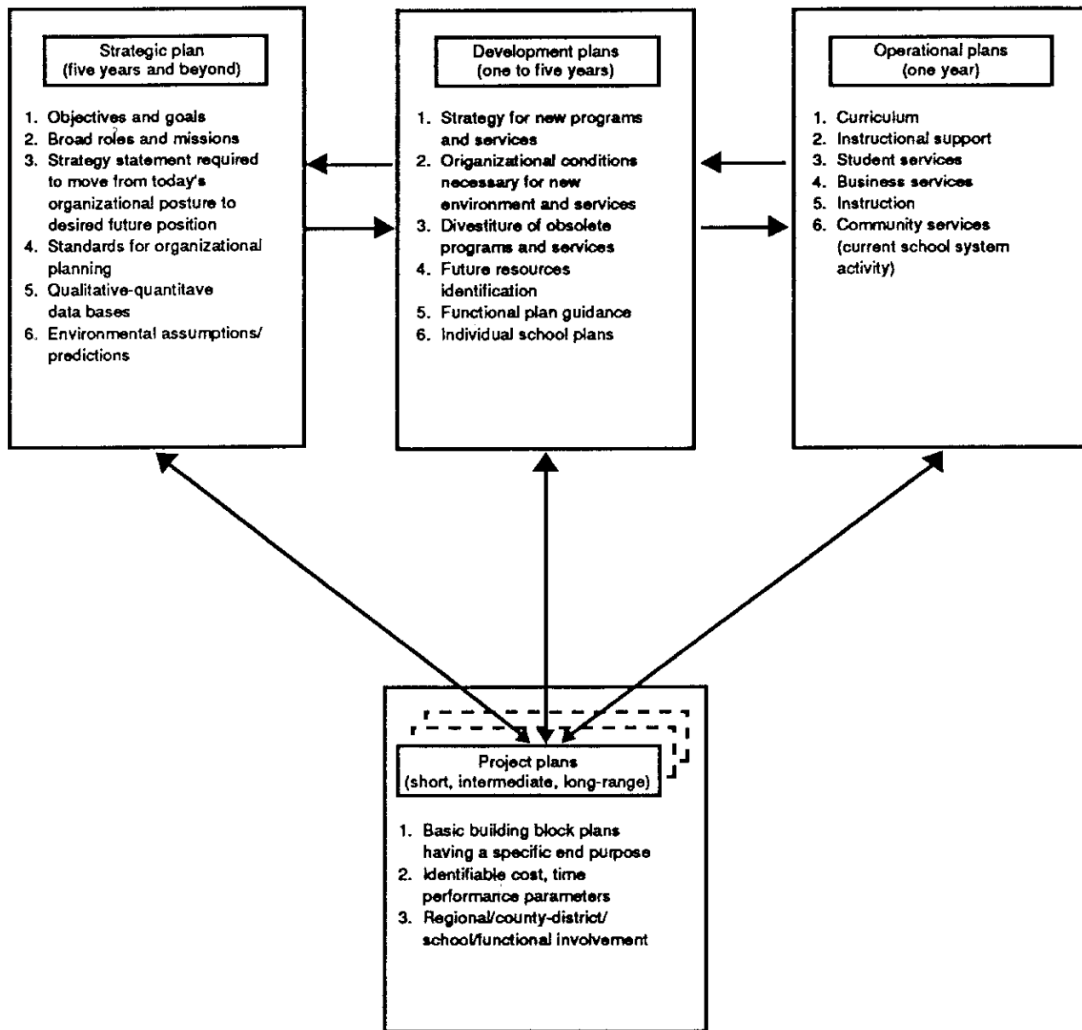


Figure 2 - (King and Cleland, 1983) - Sample Strategic Planning Document Structure at a University

During the strategic planning process, the planning tools identified in the literature review may often be brought to bear, including this common sampling:

- Balanced Scorecard (Kaplan & Norton, 2005)
- Porter's Five Forces (Porter, 1979)
- Strength Weakness Opportunity Threat (SWOT) analysis (Steiner, 2010)
- Valuable Rare Inimitable, Non-substitutable (VRIN) analysis (Barney, 1991)

The resulting strategic planning documents can readily be found on most university websites. One study of Turkish universities identified that the contents of these planning documents frequently revolve around common themes of preparing students for the workforce (59%), research functions (33%), and community service (18%) (Ozdem, 2011). In the context of BRM, these themes become the building blocks that connect university strategy to specific benefits delivered by capital projects.

Strategic Planning and University Stakeholders

Universities often have a diverse range of stakeholders. Their needs and constraints form a significant consideration in the realization of any strategic objectives. Ward and Daniel (2012) emphasize the need to conduct extensive stakeholder analysis as part of the preparation for BRM implementation. A common tool is the Power / Interest Stakeholder Analysis Grid (PMI, 2013). Examples are shown in Figure 8 and Figure 9 of the Core Concept #3 section. A key factor in this analysis is to assess each stakeholder's benefits from the project against the degree of change they will have to undertake to realize those benefits. There is also the possibility that the project will impose new constraints on some stakeholders in a university, and they will lose benefits as a result. Stakeholders may also have different levels of risk tolerance and risk capacity. This analysis will be critical to the change management portions of the BRM process (Ward & Daniel, 2012).

Strategic Planning and University Culture

While there is no specific reference in any of the BRM literature to university culture, the strength and impact of university culture is implied in the strategic planning and stakeholder analysis. The university culture acts as a stakeholder, with its own power and interests, as well as risk tolerance and capacity.

Peter Drucker is often credited, without citation, for the popular saying, “Culture eats strategy for breakfast (*Culture Eats Strategy for Breakfast – Quote Investigator®*, 2017).” Mintzberg, who was critical of the “planning fallacy” in the literature review (Mintzberg, 1994), also dedicates considerable weight to the power that culture, which he calls “ideology” (Mintzberg, 1989). However, defining this culture is made difficult by its essentially diverse and heterogenous nature. Burton Clark, a sociologist who studied academic culture, summarized as follows:

“The basic trend in academic culture is fragmentation, brought about by a proliferation of parts that operate under the centrifugal force of a growing number of differing needs and interests (Clark, 1980).”

PMI has loosely referenced some tools to help Project Managers understand culture, such as mind-mapping (Byrnes, 2010) and SWOT (Maculley, 2003). Direct observation and practical experience will likely play the most crucial roles in understanding university culture (PMI, 2013).

Core Concept #2: Return on Investment in the University Context

Upon establishing a strategic context, the second key concept of Benefits Realization Management (BRM) is that a project’s value must be assessed by the return on investment against those benefits. Universities commonly use the same strategic management tools as private industry, like net present value (NPV) to calculate an internal rate of return (IRR). However, the minimum acceptable ROI in a university, also called the “hurdle,” can be significantly lower than a corporate ROI (Daigneau, 2003b).

In general, the methods used by universities to evaluate capital construction projects fall into the categories of financial appraisals, risk and impact appraisals, strategic business analyses, a strategic alignment analysis. Most of these methods have already been discussed in detail in the literature review and are summarized in the following.

Financial Appraisal Methods:

1. Simple Payback, which calculates the time needed to recoup the initial investment.
2. Net Present Value (NPV), which discounts future cash flows to their present value to reflect the time value of money.
3. Internal Rate of Return (IRR), which is the profit of an investment represented by reducing the net present value of all cash flows to zero using a discount rate. The discount rate can then be meaningfully compared to other market investments, such as bonds and stocks.
4. Profitability Analysis creates a model that projects the success of an investment.
5. Lifecycle Cost Analysis, which evaluates the total cost of ownership (TCO) across an asset's life, including acquisition, operation, maintenance, and disposal.

Risk and Impact Appraisal Methods:

Risk appraisal methods aim to evaluate project outcomes against potential risks, employing various tools including:

1. The *Risk Register* identifies and prioritizes real and potential risks the project may have on university strategy.
2. *Scenario Analysis* models the impacts of different possible project outcomes against the university strategy.
3. *Sensitivity Analysis* determines the effect of varying key factors as they impact the future strategic goals of the university.
4. *Decision Trees* graphically represent how decisions about the key project factors will, when combined in every possible combination, produce different outcomes for the university.

5. *Sustainability certifications* like Leadership in Energy and Environmental Design (LEED), Energy Star, and the WELL Building Standard, are also forms of risk and impact appraisals for the environmental and health impacts presented by the project.

Strategic Business Analysis

Strategic business appraisals ensure a project's alignment with an organization's strategic management. These tools have already been covered previously, and include tools like SWOT analysing, VRIN, market analysis, competitive forces analysis, etc.

Strategic Alignment Analysis

Strategic alignment appraisal methods verify that a project's deliverables align with the strategic objectives of an organization (Keller, 1983; King & Cleland, 1987). Usually, universities will have a list of strategic goals, sometimes called a strategic register, that has goals in these common key areas:

1. Academic Goals, which focus on educational outcomes including teaching quality and departmental growth.
2. Research Goals, targeting specific research objectives such as the expansion of key research areas or the creation of new research capabilities.
3. Financial Goals, aimed at economic efficiency and growth, including enrollment, student housing, and ancillary functions.
4. Community outreach goals, including collaboration and contribution to the surrounding environs of the university, or to a specific community partnership around the world.
5. Social, Ethical, and Sustainability Goals, such as promoting student and faculty diversity, providing opportunities for lower income students, and climate change commitments.

All the above methodologies are examples of how universities can appraise capital projects for a return on their investment.

Core Concept #3: Realization of Change in the University Context

The third critical concept of Benefits Realization Management is its distinct approach to altering stakeholder involvement. This approach aims to both harmonize and encourage stakeholders to embrace the change required to achieve the return on investment. Figure 7 below from Ward and Daniel (2012) highlights the connection between identifying and measuring benefits, and the organizational change that is required to realize those benefits.

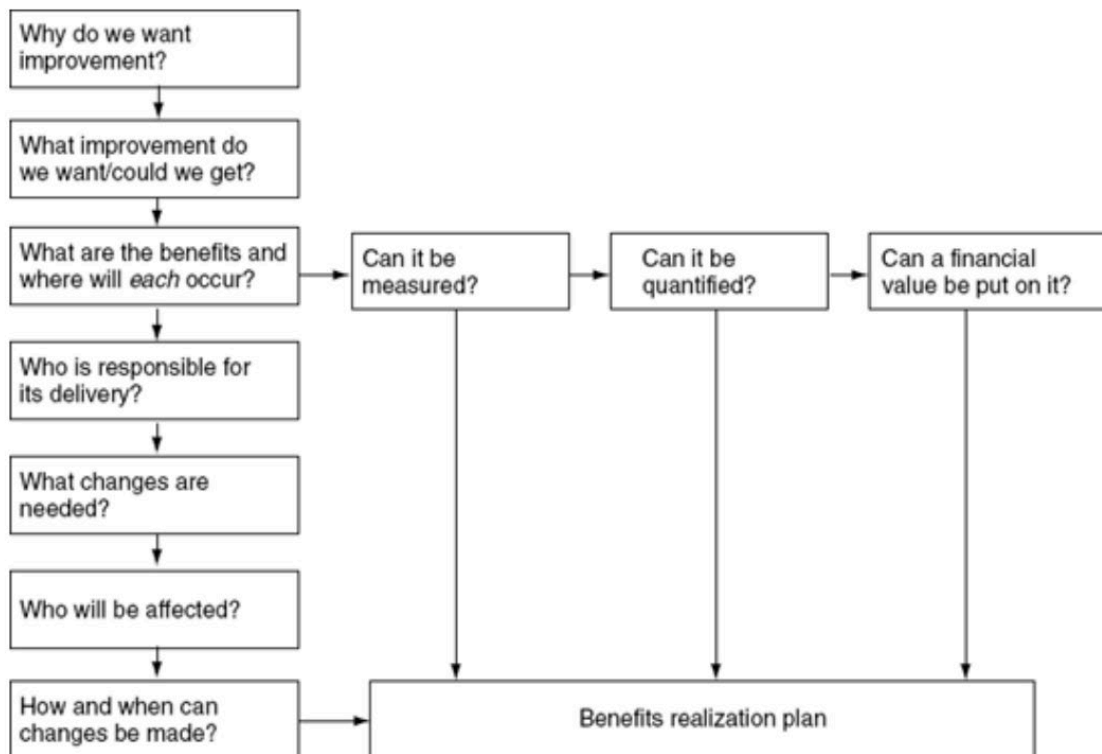


Figure 3 - Ward and Daniel (2012) - Key Questions in Developing a Benefits Plan Showing Change Management

Identification of Stakeholder Ownership of Benefits

The success of identifying benefits largely hinges on correctly identifying the perceived benefits by each stakeholder, and then engaging their commitment to achieving the project's objectives in a collaborative and informed manner. Since the entire project effort

will involve changing some significant part of the organization, considerable time and effort must be invested by management into this activity.

Benefit Identification Process

In the most general terms, the identification process should answer the following questions about each benefit:

1. Why it matters: The significance of benefits is determined by their contribution to strategic objectives of the university.
2. Where the benefit occurs in the institutional environment: Benefits realization occurs within the broader institutional environment, usually in the department that is most closely associated to the end-product. Benefits are not realized by the project itself, nor are they realized by the project team. For example, a brand-new residence building has no benefit sitting empty, regardless of whether it was delivered under budget and on time. The benefits are only realized when the Residence Department fills the building with students.
3. How the benefit can be measured: Measurement can be through quantitative methods, such as growth in enrollment income. Or benefits can be measured using qualitative methods, such as student experience indicators or the advancement of research.
4. Who is responsible for delivery: Accountability for delivering benefits is assigned to specific stakeholders who will also be responsible for change within their community. This will usually include the stakeholders identified in the second point above.
5. Risk: The benefit is subject to analysis to determine the feasibility of its attainment considering all constraints. This risk assessment includes evaluating the key stakeholder's capability for change.

The risks identified in the benefits register also need to be mitigated within the university context. Ward and Daniel (2012) suggest the use of stakeholder management tools,

adjusted from the PMI PMBOK (2013). This includes the use of a benefits vs change stakeholder matrix (Figure 8) and a stakeholder analysis (Figure 9).

Benefits received	High	NET BENEFITS Should champion the project – but must be aware of implications for others and use their influence <i>Collaborators</i>	BENEFITS BUT... Will be positive about benefits but concerned over changes needed – ensure sufficient enabling changes are identified to offset any resistance <i>Compromisors</i>
	Low	FEW BENEFITS BUT... Must be kept supportive by removing any inertia/apathy that may influence others <i>Accommodators</i>	NET DISBENEFIT Likely to resist changes – must ensure all aspects of resistance dealt with by enabling projects <i>Resistors</i>
		Low	High
		Changes required	

Figure 4 - Ward and Daniel (2012) – Stakeholder Assessment Matrix for Benefits vs Change

Stakeholder group	Perceived benefits or disbenefits	Changes needed	Perceived resistance	Commitment (Current & Required)				
				Anti	None	Allow it to happen	Help it happen	Make it happen
Finance director	Improved cash control and info	New KPIs and Controls	None				C → R	
Finance controller and accounts staff	Fewer errors, better control	New systems and procedures	Extensive retraining			C	Action → R	
Operations director	Reduced stock costs	New planning processes	None				C → R	
Production manager and staff	Fewer production problems	New systems and technology	Fear of new technology and lack of skills			C	Action → R	
Purchasing manager and buyers	None	Inventory-driven procurement system	Reduced discretion and tougher KPIs		C		Action → R	
Product managers	Better cost info and accurate grower payments	New grower system and inventory KPIs	Risk that grower needs will not be met			C	Action → R	
Production planners	None – fewer planners needed	More automated scheduling	Fear of job losses	C			Actions → R	

Figure 5 - Ward and Daniel (2012) – Sample Stakeholder Analysis for Change Management

Plan Benefits Realization to Include University Stakeholder Change

After the benefits are identified, the benefits next need to be structured into a plan. Both Ward and Daniel (2012) and PMI (2019) provide examples of creating a Benefits Register. The register is a simple enumeration of all the benefits with their details such as measurements, ownership, and risk.

Upon completion of the register, a Benefit Dependency Network (Ward & Daniel, 2012) or Benefit Map (PMI, 2019) can be created to show how the benefits may be interrelated in the context of the project (see Figure 10). Within a university setting, this plan would pinpoint the necessary changes to Departments and their operations to fully achieve the intended benefits toward the broader university strategy.

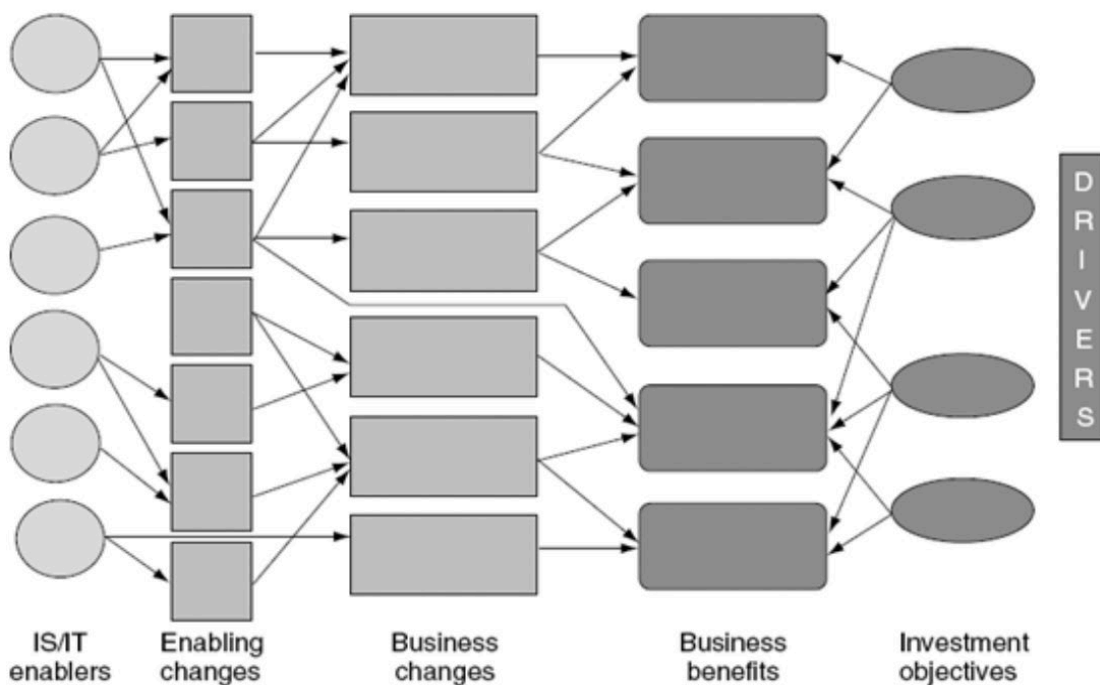


Figure 6 - Ward and Daniel (2012) - Benefits Dependency Network

Measurement of Benefits in a University Context

The strategic management literature significantly underscores the importance of regular performance measurement as a pathway to attaining enhanced performance, as highlighted by Kaplan and Norton (2005). Similarly, the project management literature,

through the works of Shenhar and Dvir (2007) and Ika and Pinto (2022), reinforces the critical role of evaluating key success indicators linked to strategy.

BRM also emphasizes measurement of benefits during the phases of execution, monitoring and controlling, and closing. Project management must constantly be measuring progress towards the benefit at all stages. Measurement must continue until at least one or two years after the end of the capital project (Ward & Daniel, 2012). The need for this type of continuous and long-term measurement of success is a common theme of the literature on “Project Management 2.0” tools like BRM (Ika & Pinto, 2022; Levitt, 2011).

For an example in the university context, consider that a key benefit to a new engineering building is to increase enrollment. The measurement of this benefit could be calculated as the number of classrooms and seats in the building. This metric is set at the initiation of the project by the project team, including the faculty and related administration as a key stakeholder. This measurement is used to calculate the ROI and justify the project budget. Ownership of the benefit is assigned to the related engineering faculty and administration. Next, this benefit is measured by the project team (which includes faculty and administrators) throughout the design and construction. After the building has been used for two years, an actual measurement of increased enrollment is made. The project team would look at how well the building performed to support the benefit, as well as also look at how the faculty and administration managed the to realize the increase in enrollment.

In summary, the key to the BRM process is to remain focused on the need to implement a complete series of institutional changes, including the construction of a new capital project, so that the benefits will be fully realized and sustained (Thorp, 2003; Ward & Daniel, 2012).

5. SURVEY METHODOLOGY

A preliminary review of the existing literature revealed very little study of this topic, so an exploratory research design methodology was chosen. Applied to this study, the exploratory research method starts with a thorough review of existing literature and the collection of insights from subject matter experts. Subsequently, a survey tool was developed to facilitate data collection. The gathered data was then analyzed to identify trends or other indicators that may provide answers to the research questions.

Expert Consultation

While the literature review has been summarized previously, it is also notable that several experts were also consulted as part of the initial exploration into this research. Nonprofit association APPA – Leadership in Educational Facilities organizes a research program called Center for Facilities Research (CFaR) that seeks to consolidate research in educational facilities management (Glazner, 2016). This research was selected to be supported by CFaR by providing access to other experts in the field of capital construction at universities. Various senior leaders in facilities management from across the United States and Canada were solicited for their views on this subject. These conversations were conducted informally, and under agreement of anonymity. They helped guide the direction of this research project and the design of the survey. They also helped identify pertinent literature sources.

Data Collection Methodology

Informed by the literature review, the study created a survey to gather data from universities around the three core components of Benefits Realization Management:

1. Strategy: Benefits can only be defined within the context of the organization's existing strategy.
2. Return on Investment (ROI): Capital Projects are created to deliver benefits that justify the investment.

3. Change Management: The delivery of benefits results in a transformation of an organization's capabilities. Transformation necessitates change across multiple levels, including changes to physical infrastructure, operational processes, staffing, and organizational culture.

Population and Sample

The target population for this study is professionals directly engaged in the planning and implementation of capital projects at universities. This population has been selected for their direct and applied expertise in university capital project delivery. In most cases, this will be project managers and other mid-level to senior leaders in a university facilities management department or capital development department. Also encompassed in the target population are mid-level and senior leaders from various academic or administrative departments who possess the necessary planning and implementation experience as project sponsors, clients, or end-users.

To obtain a sample of this population, this survey was presented at the 2023 annual conference of the Eastern Region Association of Physical Plant Administrators (ERAPPA). ERAPPA, a regional chapter of APPA, encompasses all university facilities managers along the eastern seaboard of the USA as far south as Delaware, and the entire eastern half of Canada, as far west as Ontario. This event attracts facilities management experts from many of the universities in this geographic region, and therefore is likely to have a high concentration of the target population.

The sample was taken on September 27, 2023, from a group of volunteers who attended an education session titled “Capital Project Management - Are Strategic Benefits Realized?” and who agreed to respond anonymously to the survey questions during the presentation. The sample had 23 participants and is summarized in the Results section.

Ethical Considerations

In conducting the study, the following ethical considerations were made to ensure the integrity and respectfulness of the research process. Transparency was maintained throughout the process by clearly communicating to participants the nature and purpose of the study, ensuring they were fully aware of what was involved. This included indicating that the session was part of a research study both verbally and in writing, as well informing participants that there would be an optional and voluntary interactive component.

In line with this, informed consent was obtained at the beginning of the session, by providing participants with an understanding of the research and the purpose of the survey instrument. The software “Slido” was used which allowed participants to answer the survey anonymously in real time on their mobile devices or computers. To protect participant privacy and encourage candid responses, anonymity was guaranteed; no identifying information was collected, nor was a roll call taken. None of the participants were required to sign-in to the “Slido” system, and all their responses were coded with a non-identifying number.

Lastly, recognizing the importance of autonomy, participants were given the right to withdraw from any part of the study. This meant they had the freedom to choose which questions to answer, resulting in some questions not being answered by everyone.

6. RESULTS

The summary of the survey results is divided into four main parts. The first part includes the questions that identify the sample as part of the desired expert population. The second part looks at how strategic appraisals are used, giving insights into the use of strategic management at the institution. The third set of questions asks about the benefits universities seek and if they track these benefits. The last part directly asks about their experience with the core principles of benefits realization management.

Table 2 - Population Characteristics of Sample Data Results

Poll Question	Poll Option	Count	Total Votes	Results
In the past five years, what roles have you had working directly on capital projects at your institution?				
	Sponsor: Senior leader who approves a project at a senior level	4	19	21%
	Manager: Responsible to the sponsor to implement the project (planning, design or construction)	15	19	79%
	Designer: Architect / Engineer / Other Technical Designer	2	19	11%
	Contractor: Construction Manager / General Contractor / Subcontractor	2	19	11%
	Builder: Supervisor, Foreperson, Tradesperson (Internal to Institution)	0	19	0%
	Do not have a direct role in capital projects.	0	19	0%

In the past five years, on how many capital projects have you been a participant?				
	1-2	3	22	14%
	3-10	9	22	41%
	More than 10	10	22	45%
Weighted Average Response:	7			
In the past five years, what is the combined value of all the capital projects in which you directly participated?				
	Less than \$5M	5	23	22%
	\$5M-\$25M	5	23	22%
	\$25M-\$100M	7	23	30%
	\$100M - \$500M	5	23	22%
	More than \$500M	1	23	4%
Weighted Average Response:	\$110M			

Table 3 - BRM Data Results

Poll Question	Poll Option	Count	Total Votes	Results
Do you have previous experience with Benefits Realization Management (BRM)?				
	No, this is my first time hearing about BRM.	17	23	74%
	Yes, I have been part of a project that used BRM.	0	23	0%
	I know about BRM, but I have not been part of a project that used it.	5	23	22%
	I have used something similar to BRM, but	1	23	4%

	we did not use that name.			
One year after completion, do you think capital projects realize the benefits that justified their investment?				
	Almost all the benefits are realized (80% or more)	3	22	14%
	Most of the benefits are realized (50% - 80%)	9	22	41%
	Some of the benefits are realized (20% - 50%)	10	22	45%
	Few of the benefits are realized (less than 20%)	0	22	0%
Does your institution consider internal change-management as part of the capital project process?				
	Almost Always (More than 80%)	0	19	0%
	Often (50% to 80%)	1	19	5%
	Sometimes (20% to 50%)	6	19	32%
	Rarely (less than 20%)	12	19	63%

Table 4 - Appraisal Data Results

Poll Question	Poll Option	Count	Total Votes	Results
What investment appraisal tools does your institution use to evaluate the approval of capital projects?				
	Financial business cases (Cost-Benefit analysis, Net Present Value, Payback Period etc.)	9	21	43%
	Strategic business analysis (SWOT, market analysis, competitive forces, etc.)	4	21	19%
	Alignment with institutional strategy (measurable progress against strategic goals, social and ethical deliverables, etc.)	18	21	86%
	Impact / Risk Appraisal (risk plans, scenario analysis, etc.)	6	21	29%
	Other appraisal tool not listed	0	21	0%
	Rarely use any appraisal tools.	1	21	5%
How important is an investment appraisal to the approval of a capital project at your organization?				
	Very High Importance - Investment appraisals are always created. They must be rigorously evaluated by multiple levels of the organization before final approval.	1	20	5%

	Moderate Importance - Investment appraisals are usually created for most projects. They are evaluated at the senior level before approval.	10	20	50%
	Minor Importance - Investment appraisals are sometimes requested. They may or may not be reviewed before approval.	8	20	40%
	Low importance - Investment appraisals are rarely created. They are not required for approval.	1	20	5%

Table 5 - Benefit Data Results

Poll Question	Poll Option	Count	Total Votes	Results
Select the five most common benefits that your institution expects in return for an investment:				
	Increase Enrollment	12	20	60%
	Increase Research Capacity	8	20	40%
	Increase Residence Occupants	7	20	35%
	Improve Reputation	11	20	55%
	Improve Student Experience	16	20	80%
	Improve Energy Efficiency / Reduce GHGs	16	20	80%
	Adapt to future demographic or cultural change.	5	20	25%
	Enable a significant Scientific or	1	20	5%

	Technological Breakthrough			
	Adapt to Climate Change	6	20	30%
	Avoid Building System Failure	12	20	60%
How often does your institution require capital projects to have a MEASURED benefit?				
	Almost always have metrics (80%+)	0	18	0%
	Often have metrics (50% - 80%)	1	18	6%
	Sometimes have metrics (20% - 50%)	6	18	33%
	Rarely have metrics (less than 20%)	11	18	61%
How often does your institution measure the benefits AFTER a capital project has been completed?				
	Almost Always (80%+)	0	19	0%
	Often (50% - 80%)	0	19	0%
	Sometimes (20% - 50%)	4	19	21%
	Rarely (less than 20%)	15	19	79%
How often does your institution measure the benefits DURING the capital project process?				
	Almost Always (80%+)	0	18	0%
	Often (50% - 80%)	1	18	6%
	Sometimes (20% - 50%)	0	18	0%
	Rarely (less than 20%)	17	18	94%

7. DISCUSSION

Research Questions Observed

The survey findings offer insights into the research questions posed by this study:

1. Is there evidence that universities are using Benefits Realization Management methods in their capital construction projects?

Regarding knowledge of Benefits Realization Management, a substantial 74% of respondents were unaware of the concept, highlighting a significant gap in awareness and understanding of BRM.

The practice of project appraisal appeared limited, with only 5% of respondents stating that appraisals were always conducted, necessitating input from all stakeholders. A slim majority of 50% deemed appraisals of major importance, necessitating high-level approval such as from the board of governors; 40% viewed appraisals to be of minor importance and only sometimes requested.

When appraising capital projects, strategic alignment emerged as the most frequently utilized method, employed by 86% of respondents. Financial Return on Investment (ROI) was the second most common appraisal method, utilized by 43% of respondents. The use of Strategic Business Analysis tools was 19%.

As for the establishment of metrics for benefits on capital projects, these were rarely established; the weighted average response is 21% of projects have metrics. When metrics are set, there was a general lack of follow-up measurements; only an average of 13% measured progress during the project, and an average of 15% conducted measurements after the project's completion.

Lastly, the presence of any change management process was low, with a weighted average of 21% of projects having an associated change management process.

One notable outlier to the general trend is the 86% general use of the strategic alignment method to project appraisals. This implies that many institutions might be preparing for a future BRM process, either intentionally or abductively.

Overall, these indicators point towards a low utilization of BRM methods on university capital projects.

2. Is there evidence that universities are facing challenges in obtaining strategic benefits from their capital construction projects?

On average, this sample population showed that typical university capital projects achieve 55% of their projected benefits. Only 14% of participants indicated that more than 80% of the intended benefits are realized. This data is evidence that universities are experiencing a problem in achieving strategic benefits.

In addition to identifying that this problem exists, a regression analysis on the data suggested a positive link between the measurement of benefits after a project is completed and their attainment. Prioritizing deferred maintenance (DM) benefits and employing strategic alignment assessments may negatively influence the success in achieving benefits. These findings may help direct further study to understand the challenge of achieving benefits on university capital projects.

Interpretation of Results

In addition to providing preliminary information to answer the two research questions, this study's results also shed light on the challenges universities face in achieving the strategic benefits promised by their capital projects. The average benefits realization rate of 55% highlights a significant gap between the goals for the capital projects and the

outcomes achieved. Translating this into financial terms, this implies that university capital construction projects may experience an average 45% decline in their return on investment (ROI) throughout the project's duration. This represents a significant risk to the university, both financially and to the achievement of the broader university strategy.

This problem may remain unobserved due to the infrequent development of metrics at the project's outset (with only 22% of projects establishing metrics). When metrics are established through an appraisal method at project initiation (50% consider appraisals to be moderately important, 5% consider them very important), success is seldom later evaluated, either during the project process (13%), or one year following its completion (15%).

While inadequate project management approaches, including the absence of Benefits Realization Management, may contribute to this shortfall, it is also possible that the initial strategic appraisals are misaligned or excessively optimistic. The regression analysis suggested collinearity between the deferred maintenance variable and the strategic alignment variable. This could mean that either or both variables contribute negatively to benefit realization.

If the strategic alignment approach has a negative relationship to realizing benefits, this result might not surprise critics of strategic planning in higher education such as Birnbaum (2000) and Mintzberg (1994). Given the low rate of benefit realization, and the observation that 86% of universities surveyed use strategic alignment appraisals, there is evidence to suggest that further research into the value of the strategic alignment on capital projects may produce interesting results.

Similar to the case with strategic alignment, placing a high priority on deferred maintenance (DM) benefits could have a negative relationship with realizing benefits. This issue could stem from underlying project management difficulties, or it might suggest that the realization of DM benefits is more complex than originally expected at

the start of the project. Considering that deferred maintenance projects are generally infrastructure projects, this phenomenon could be analogous to infrastructure project studies that resulted in the concepts of the "hiding hand" (Hirschman, 2011) and the "planning fallacy" (Jones, 1990; Mintzberg, 1994).

Determining the root cause of these problems was not the intent of this study, however the results suggest avenues for further exploration. First, the general lack of an understanding of Benefits Realization Management (74%) may indicate that universities have been slow to adopt BRM or other "Project Management 2.0" tools into their management norms. Second, the measurement of benefits after project completion may have a positive impact on the delivery of project benefits. While it is unlikely that measurement alone is causal to success, the discipline of creating metrics and following up with measurements may indicate the presence of a wider array of best-practice strategic management methods for capital projects.

Comparison with Previous Research

As noted in the literature review, there are very few research studies conducted on university capital project management in relation to Benefits Realization Management. It is very difficult to make a direct comparison to any university capital project research that would inform this study. However, the outcomes of this study do have some comparators in the general literature review.

Assuming universities may be slower to adopt Project Management 2.0 methods like BRM, this study can be indirectly compared to initial investigations into the broad adoption of BRM. The 2010 study by Marnewick and Labuschagne revealed that, although many organizations were not tracking benefits, a small number of BRM practices were gradually making their way into general practice with positive outcomes (Marnewick & Labuschagne, 2010). Similarly, Breese and colleagues' observations in 2015 suggest that the spread of BRM concepts and the adoption of its practices might be gradually occurring abductively across institutions (Breese et al., 2015).

The negative correlation of benefits to strategic alignment assessments and deferred maintenance benefits may have some comparators in the literature. In addition to the Birnbaum (2000) and Mintzberg (1994) criticism of strategic planning, noted earlier, a distant comparison could also be made to Breese (2015) and Aubry's (2021) research on the human complexities and "hidden challenges" involved in identifying benefits.

Also, this study suggests a positive correlation between measuring performance and the achievement of success. This finding is reflected extensively in the existing literature on project management success (Kashiwagi & Byfield, 2002; Shenhar & Dvir, 2007; Wang & Gibson, 2008; Zwikael & Smyrk, 2012).

Limitations of the Study

As a preliminary exploration, this study is limited by the small sample size relative to the large population of universities that complete capital projects. Also, the small sample size of the survey limits the depth and scope of statistical analysis that can be conclusively conducted. There is also a lack of granularity in data that restricts this study from achieving robust statistical results.

A further limitation surrounds the challenges associated with data collection on this subject, especially in instances where the findings might not align with the interests of the universities that provide the data. This limitation was recognized early in the process after a few failed attempts to gather information directly from universities. The final survey maintained the anonymity of respondents to obtain candid feedback. However, the anonymous approach complicates the examination of direct cause-and-effect relationships inside the dataset, as well as the assessment of biases or regional variations within the data. Anonymity also makes it difficult to obtain any follow-up data.

Implications for Further Research

This study serves as an early exploration into Benefits Realization Management within the context of university capital projects. Its purpose is to offer a broad overview of the

status of BRM in this context and to locate potential problem areas that could benefit from additional research. As a collection of preliminary observations, the study has successfully identified two directions for future research.

First, the significant gap in achieving benefits presents a valuable opportunity for further investigation. By enlarging the sample size and utilizing multiple samples, the model of the factors affecting benefits realization could improve. The outcomes of this research could offer practical insights for project managers and senior leaders in universities. For example, a direct relationship between measuring benefits and benefit realization could support resources that identify and measure benefits.

Additionally, this study could assist in the choice of assessment tools, such as evaluating the effectiveness of strategic alignment as an assessment method, and the impact of deferred maintenance projects.

Second, the study revealed that there is a small quantity of universities who are successfully achieving benefits. This creates a promising avenue to study the methods employed by these universities. Such an inquiry could yield a compilation of best practices specifically designed for the unique environment of university capital projects.

8. CONCLUSION

This study provides initial observations on the application of Benefits Realization Management (BRM) within university capital construction projects. The study finds that while universities are utilizing strategic management tools to assess capital projects, they are often not identifying and measuring project benefits. This conclusion is further supported by the observation of a lack of awareness of BRM among respondents. An analysis of this preliminary information suggests that there may be a linkage between post-project benefit measurements and the successful realization of benefits.

This study also suggests that certain practices, like prioritizing deferred maintenance benefits and employing strategic alignment assessments, might have a negative impact on benefit achievement. These insights offer guidance to direct future research towards refining the predictive model for benefits realization. Additionally, this future research may equip project managers and senior leaders with best practice tools designed to significantly enhance the realization of project benefits and mitigate the associated risks to the institution.

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