A benefits realization management building information modeling framework for asset owners

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ABSTRACT

An asset owner’s decision to implement Building Information Modeling (BIM) can enable strategic business outcomes. For an asset owner the implementation of BIM should not be seen as a discrete information technology project, but a business change program that can potentially impact their ‘value proposition’. Benefits realization recognizes that technology alone cannot deliver business outcomes and that the process of its implementation is proactively managed to ensure that the organization obtains the results it expects. This paper presents a novel framework that asset owners can use to ensure that they can obtain ‘value’ from investing in BIM. It is proffered that the benefits realization process should be viewed as a learning process that enables the asset owner to constantly question and measure the benefits of BIM.

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1. Introduction

“Nowadays people know the price of everything and the value of nothing”  
[(Oscar Wilde, 1891)]

Building information modeling (BIM) is an emerging technology focused methodology that can be used to improve the performance and productivity of an asset’s design, construction, operation and maintenance process [1]. The benefits of implementing BIM processes and technologies have been widely espoused and include: a reduction in construction costs, improved quality of design information, integration of project systems, data and teams, a reduced propensity for change orders, improved interoperability, and whole life-cycle asset management [2–5]. While the benefits of implementing BIM during the design and construction process have been readily observed in practice, particularly in terms of its use by contractors to control and manage projects cost and schedule [3], such benefits are marginal when the duration of asset’s life cycle is considered. The benefits that can be acquired during design and construction process albeit as a result of technology, has been the impetus for BIM adoption rather than those that can be acquired during an asset’s operation and maintenance. This scenario is vitally critical as there is significantly growing evidence linking BIM benefits to Facilities Management (FM), not least demonstrated through the recent United Kingdom (UK) government’s mandate for its use in public sector projects [6]. Moreover, governments such as those in the UK are driving to define BIM standards for the handover of facilities management data in the form of Construction Operations Building Information Exchange (COBie) and the Facilities Management (FM) Handover Model View Definition (MVD) [7]. Nonetheless, many asset owners are still skeptical about the value of adopting and integrating BIM technologies and processes into their existing organizational infrastructure and operations. Such view deserves exploring as it is the asset owner who is ultimately best positioned to realize the benefits that can be derived by implementing a BIM strategy.

An asset owner’s decision to implement BIM can enable strategic business outcomes [1]. Such outcomes are not possible without technology, although its cost constitutes only a fraction of the total investment the organization must make to achieve their desired outcomes [8,9]. For an asset owner the implementation of BIM should not be seen as a discrete information technology (IT) project, but a business change program that can potentially impact the organization’s ‘value proposition’. Thus, simply identifying and estimating the benefits of BIM are not sufficient as attention should focus on ‘how’ benefits will materialize and over what period of time. Benefits realization recognizes that technology alone cannot deliver business outcomes and that the process of its implementation is proactively managed to ensure that the organization obtains the results it expects [10–12].

So, ‘how’ then can an asset owner obtain business ‘value’ from investing in BIM? Resolving the question of ‘value’ is a business imperative for asset owners’ executives and managers. The implementation of BIM is far more complicated than simply implementing an IT project. Most of the issues associated with BIM implementation from an asset...
owners' perspective are akin to those that are faced with enterprise management systems such as Enterprise Resource Planning (ERP) and Customer Relationship Management (CRM) [1]: it is essentially a process of change management. The construction of an asset to Level of Development (LOD) 500, for example, and the subsequent transfer of the developed model by the project team to the asset owner is the point where ‘real’ implementation commences. Fundamentally, the integration of the developed model into the asset owners business will require changes to existing strategic management methods and practices to ensure that benefits are realized. In fact, the model may need to be run in parallel with existing processes unless it is the first asset the owner has ever managed, or they intend to create retrospectively BIMs for all their existing stock. While emerging handover standards such as COBie and FM Handover MVD provide a structure for how information should be gathered over the project lifecycle, they do not support the asset owner with what to populate this structure with.

2. Benefits realization management

Definitions of benefits realization management (BRM) that have been propagated in the normative literature vary [13]. For example, Farbey et al. define benefits management as the process that realizes the benefits that are achieved and manages the unexpected ones [14]. Similarly, Bradley [15] defines BIM as “the process of organizing and managing, so that potential benefits arising from investment in change are actually achieved” (p.23). Fundamentally, BRM is a process that is enacted to ensure that the expected benefits of capital investments, such as BIM, are realized [16–18]. During the investment appraisal process many benefits associated with technology are overstated to ensure its adoption [16–18]. According to Peppard et al. [18] many of the benefits described in the business case are often not expected to materialize of implementing IT. This viewpoint negates the notion of whether the organization is effectively utilizing the technology and if its delivering expected business benefits [18]. Peppard et al. [16,18] analysis of the normative literature revealed five underlying principles for realizing the benefits of implementing IT. Consequently, it is suggested that such principles underpin the process of realizing the business value of BIM as:

1. **BIM technology has no inherent value:** Having BIM technology in place will not confer any benefit or create value for an asset owner. The adoption of such technology is a cost, not only to an asset owner but also to the project team, and benefits only arise from its effective use. However, the typical BIM workflow that is often adopted by asset owners, presented in Fig. 1, is deemed to be inefficient and ineffective for the purposes of FM. Generally, asset owners do not engage in the design and engineering of a new project and therefore the operations and management of the facility are not considered in the formative stages. Instead, asset owners tend to focus on the location of their site and its actual construction costs rather than those that arise during operations and maintenance. The initial engagement of a design and engineering consultant is made with the combination of a quantity surveyor to undertake a feasibility study and propose a cost of the project. Then, a lead consultant is appointed and a consulting team is employed to design the asset. At this point they consider design and engineering requirements that are directly attributed to the asset (e.g., size, shape, and building system performance) not its operation and maintenance requirements. A three dimensional (3D) model is typically created (for example, LOD 300), though the quality of this information provided by

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<td>Cranfield Process Model</td>
<td>• Business change needed to address strategy</td>
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<td>Benefits Realization Approach (BRA)</td>
<td>• Relationship between change and benefits</td>
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<td>Process of Active Benefits Realization</td>
<td>• Potential benefits are identified, plan devised for their realization, plan is executed and results reviewed and evaluated</td>
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<td>• Diagnose why some projects are successful in delivering benefits</td>
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<td>• Competencies are enacted through and define by practices which are underpinned by knowledge, skills, experience and behaviors</td>
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 specifications. This viewpoint negates the notion of whether the organization is effectively utilizing the technology and if its delivering expected business benefits [18]. To ensure that the benefits of IT can be realized several approaches to BRM have been developed (Table 1). A common concept that is central to all approaches that have been developed is the inclusion of the Plan-Do-Check-Act (PDCA) cycle where feedback provides the impetus for a process of evaluation and learning [19,20]. Moreover, all the approaches identified in Table 1 acknowledge that benefits change over time and that they are determined by business and strategic contexts. Thus, all outcomes of an IT investment represent a potential source of value to which an organization must be proactive in ensuring that considerable benefits are realized [16–21].
consultants and inputted into the model will significantly vary. Information contained with the model is usually passed on to a contractor who will reuse, only if the client has specified the need to do so. Invariably, the model is reused for the purposes of clash detection and producing a project schedule. Then the subcontractors create their ‘As-Built’ documentation and shop drawings in different formats, which therefore render the consultants BIM redundant and inaccurate as it is not field verified. The contractor then submits to the client shop drawing, an obsolete consultant BIM, which may be combined using Autodesk® Navisworks® (or a similar package such as Solibri), a database of PDFs of maintenance manuals and mechanical specifications and in some instances a separate database of geospatial data. The asset owner will then collate all the ‘As-Built’ information for their FM team and incorporate into their proprietary database which will be used to establish their BAS, CMMS, and ERP CAFM systems individually. At this point the design data and models are outdated and inaccurate. The BAS organization is used to redraw the facility in their tool of choice and then creates links to operation manuals and database. Moreover, this process is also replicated for the GIS and CMMS. Such systems function independently from each other therefore resulting in inefficient and ineffective operations and maintenance processes that are integrated with the asset owner’s FM packages (CMMS/CAFM).

Considering the prevailing inefficiencies, it is therefore imperative that BIM workflows and processes are developed during the evaluation process of an assets life cycle, as denoted in Fig. 2. This is to enable an integration of facility data during the operations and maintenance phases to be considered. In particular, the use of Construction

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**Fig. 1.** Typical BIM workflow for an asset owner.

**Fig. 2.** Proposed BIM lifecycle workflow.
Source: CSI Global Services.
Operations Building Information Exchange (COBie) can help capture and record important project data at the point of origin, including equipment lists, product data sheets, warranties, spare parts lists, and preventive maintenance schedules. This information is essential to support operations, maintenance and asset management once the constructed facility is in service. COBie is technology neutral, and therefore enables an asset owner to integrate the developed model with their existing IT infrastructure. However, the asset manager must take responsibility for what information is required in a COBie file and how this will integrate with their existing systems. This should be done at the project outset, as identified in Fig. 2, and communicated to all parties through the BIM Execution Plan in the form of Employers Information Requirements [28]. COBie is an iterative process with four defined ‘data drops’ occurring at key stages in the project lifecycle [29]:

- **Drop 1** (i.e. akin to the Royal Institute of British Architects (RIBA) Stage B). This is intended as a mechanism for approving the outline business case and so data extracted from the models at this stage would include project details such as site location, and representations, including function and performance of individual spaces.
- **Drop 2** (RIBA Stage D). This is intended as a gateway for selection of the main contractor and so the COBie data at this drop will be extracted from models that represent a technical solution that can be built. In addition to the data from drop 1 the COBie spreadsheet will now also contain a list of furniture and equipment for each room (including doors and windows). Data provision for drops 1 and 2 is the responsibility of the lead designer.
- **Drop 3** (RIBA stage F). Data extracted for this drop should enable the approval of an “agreed maximum price” and should be derived from models that are a fully coordinated technical solution. The data in drop 3 should reflect any differences between designed and installed equipment.
- **Drop 4** (RIBA Stage K). The COBie spreadsheet should now contain the information necessary for the operations and management of the facility, including information such as warranties and spares. It should represent the building “as built” and contain all the information about systems and equipment as actually installed. Data provision for drops 3 and 4 is the responsibility of the main contractor.

While the data collated at each drop differs, the process of generating and validating the drop is generally the same at each point. In most instances it is likely that the data required will be derived from multiple models. COBie mandates that the data must be collated into a single COBie file for each facility with no duplication of assets or geometry [29]. In particular the management of spaces requires some attention in this respect, as spaces (or rooms) often exist in multiple models and must be de-duped before final collation of the COBie file. Fig. 3 shows the process involved at each COBie drop. In effect COBie can be used as a mechanism for auditing models throughout the design and construction phases of a project to ensure that asset data is provided in a timely and useable format suitable to the needs of the asset owner.

2. BIM benefits arise when it enables people and organizations to do things differently: Benefits associated with BIM emerge only when individuals, project team members and the asset owner perform their roles in more efficient and effective ways. At a project level, integrated project delivery (IPD) or relational contracting strategies are adopted to support collaborative working and the better utilization...
of information. For an asset owner the adoption of BIM may change their value proposition as intra and inter organizational processes may need to be re-designed to facilitate new work practices. According to Love et al. [30] an asset owner whose business focuses on production of raw materials, for example, can use a building information model developed to LOD 500 to improve workflow, inventory, maintenance, production capacity, and safety.

3. Only business managers and users can release the benefits of BIM: The benefits that can be derived from BIM materialize through changes and innovations in ways of working so only managers, users and customers and suppliers with an asset owner’s supply chain can make these changes. Therefore, IT managers and project team members involved in delivering the building information model cannot be held accountable for realizing its business benefits [16]. Fundamentally, staff involved with using the building information model to conduct daily business activities must take responsibility for ensuring that benefits materialize [30]. Getting business staff to acknowledge this principle is a key way to ensure that they become involved with investment in a BIM.

4. All BIM projects have outcomes, but not all outcomes are benefits: There are a number of examples where technology enabled projects produce negative outcomes for asset owners. The abundance of ERP failures that have been experienced by organizations such as Fox-Meyer Drug, Hersey, Shane Co, and Public Health Foundation Enterprises provides convincing testimony of purchasers being swept away by the advertised benefits of implementing software applications espoused by vendors [5]. An asset owner must recognize that the introduction of BIM may cause profound changes to work practices. Therefore they must ensure that negative outcomes are avoided and that positive outcomes deliver explicit business benefits [16]. Needless to say, direct benefits include:

- FM labor utilization savings (e.g. through shorter work order time);
- utility costs reduction (e.g. by making informed choices through simulation of options in relation to energy efficiency);
- fuel and material savings (e.g. by facilitating less travel and waste);
- comfort management (e.g. by promoting improved productivity);
- data accuracy (e.g. there is no need to re-survey for ‘As-Built’);
- regulations compliance (e.g. auto-checking building and safety codes);
- space optimization (e.g. smart algorithms);
- improved inventory management (e.g. spare parts); and
- configuration management (e.g. impact/functional conflicts).

Benefits must be actively managed so that they can be obtained: The benefits of BIM will not arise if asset owners do not carefully plan and manage against known pitfalls (e.g., integration with existing EMS, BAS and ERP systems). Benefits such as reduced capital costs due a reduction in scope changes and clash detection will be readily identifiable, but those of strategic and organizational nature may not come to fruition early in project life [1,31]. Consequently, managing for the benefits does not stop when the technical implementation is completed. For the asset owner BIM benefits management is a continuous process whereby benefits will constantly change throughout a facility’s life-cycle. For this reason, asset owners need to employ a performance measurement system, such as a ‘Balanced Score Card (BSC)’ or ‘Workflow Measurement Model’ [32], to measure the overall business results that emanate from a building information model that is used to manage and maintain the asset.

As the strategic alignment between the proposed investment in BIM and the asset owner’s business strategy becomes stronger, the outcome is likely to enhance perceptions on the potential benefits and ameliorate the likelihood that the feasibility is securely grounded in a strong business case. In order to achieve this, the foundations of a benefits realization approach need to be in place [12–18]. As shown in Fig. 4, these foundations are identified as governance, change management, performance measurement and stakeholder management. An appropriate way to implement this is for asset owners to proactively manage the BIM implementation process as it may impact a number of business functions and resources they require. This requires a disciplined approach to portfolio management [23] to determine the optimal resource mix for delivery and to schedule activities to best achieve the asset owner’s operational and financial goals while also considering customer constraints.

A governance perspective whereby the building information model is integrated with projects, programs and portfolios throughout the asset’s life cycle is required. Such governance should be explicit about accountability so as to ensure that business sponsorship of programs and effective performance measurement systems are put in place [23]. This should be undertaken in conjunction with internal and external stakeholders (e.g. maintenance contractors). An asset owner, with no previous experience with BIM should consider initially piloting a BIM project so as to learn ‘how best’ to implement. It is suggested that this should be undertaken using a series of stage gates. These stage gates should occur throughout the life of a project from the initial design to the realization of the potential benefits that can arise from the asset.

At each stage gate, the value case of BIM should be reviewed by addressing a series of questions, which will be identified and examined hereinafter. For example, there should be a number of decision options: continue as is; continue with some changes; or stop. Each LOD could be used as a point of reference for benefits realization to determine whether to continue to develop the intended model. With suitable governance structure in place managers should be encouraged to continually review and modify the BIM initiative so as to reduce risks and increase benefits. Accountability is essential for ensuring effective governance [23]. A number of conditions should be met if accountability is to be effective, which include [23]:

- a clear mandate and scope (e.g. BIM execution plan);
- explicit lines of accountability (e.g. IT department can be accountable for the implementation and integration of a building model into the organization but not the benefits);
- performance measurement (e.g. identify the outcomes to measure and determine how they will be measured and take action based upon measurements through the governance process); and
- alignment with a reward/incentive schema.

![Fig. 4. Cornerstones for BIM benefits realization for asset owners.](Adapted from [23]).
Asset owners will only realize the benefits of BIM through change, which will need to be sustained as managers and employees may be required to change their behaviors to adopt new work practices. While there are plethora tools and techniques that can be used to manage change, they should be regarded as a means to an end and not the end itself. Essentially, the change management process should be based upon the needs of the specific asset owner. Having a strategy for implementing and integrating BIM into an asset owner's business is critical for its successful adoption. Part of the benefits realization process is the determination of the business value that BIM will afford the asset owner. In the next section of this paper, a framework for realizing the value of BIM for asset owners is presented and discussed.

3. Framework for realizing the value of BIM

There are a plethora of theoretical prescriptions as to how the planned benefits of IT might be realized [16], though within the context of BIM this is an area that has yet to be explored from the perspective of an asset owner. While acknowledging the absence of a theory for realizing the benefits of BIM, it is suggested that a resource-based view (RBV) of the firm can be drawn upon to provide asset owners with the capability to realize its benefits. The RBV initially put forward by Wernerfelt [33] suggests that the basis of a firm's competitive advantage lies primarily in the application of interchangeable and intangible and tangible resources at their disposal. Thus, asset owners should invest in those resources that they believe will best assist them to successfully acquire a sustainable competitive advantage when they adopt BIM. Resources, competencies and practices are concepts that are deeply embedded within a RBV and are deemed to be key to the theoretical constructs needed to deliver specified benefits from the IT investment [16,33,34]. In Fig. 5 the aforementioned constructs are presented to produce a framework to ensure the benefit realization of BIM. Each of the constructs identified is discussed hereinafter.

3.1. Resources, competencies and practices

Numerous definitions and interpretations of what is a ‘resource’ have been promulgated in the normative literature. Wernerfelt [33] suggests a resource is anything that is considered to be a strength or weakness of the asset owner. Amit and Schoemaker [34] defined a resource as “stocks of available factors owned or controlled by the firm” (p.36). Resources are transformed into final products or services by using a wide range of assets and bonding mechanisms such as technology, management information systems, trust between management and labor and incentive schemes and so on [34]. Such resources, inter alia, are not all equally valuable as an asset owner’s primary source of a competitive advantage will invariably be derived from those resources that are simultaneously important, are imperfectly imitable and non-substitutable [35]. Resources alone do not create value [16]. Instead, the process of value creation is initiated by an asset owner’s ability to mobilize, assemble and utilize these resources through the application of capabilities and competencies [16,35,36]. Therefore, an asset owner will only attain a sustainable competitive advantage if they can establish a set of competencies that can be applied consistently and where competitors find it difficult to imitate [35].

Considering this reasoning, the realization of benefits that can be derived from BIM can be applied here. Yet Ashurst et al. [16] contend that asset owners should develop a benefits realization capability, irrespective of if IT (in this instance BIM) is the source of the competitive advantage. As previously mentioned, this capability cannot be solely developed within the confines of the IT department as an enterprise-wide approach that is dependent on cooperation, collaboration and commitment across all business functions is required to realize benefits of BIM within the asset owners business [3,18,31,37].

![Fig. 5. Framework for realizing the value of BIM for asset owners. Adapted from [15,16,23].](image-url)
In creating and delivering value through BIM, the key resource is not the technologies themselves but the processes used to create information and knowledge that will be distributed throughout the asset owner’s business. Thus, the challenge for an asset owner in this instance is to ensure that they develop an asset and facilities management (FM) execution plan that specifies their ‘data needs’ for the operation and maintenance of the facility at the outset of the project (Fig. 2). This is to ensure that the Facility Data Integration Tool (FDIT) can provide the required data to existing systems (e.g. EMS, BAS, and ERP). An example of BIM being effectively applied to FM is the University of Southern California (USC) School of Cinematic Arts, which is using the software EcoDomus FM. The developed model can be used as a ‘live virtual facility’ used for FM decision making and building operations troubleshooting, incorporating maintenance information, documents, and real-time data from the building automation system. An example of an operations and management (O&M) portal for equipment servicing can be seen in Fig. 6. In this instance, the portal opens as a 3D view of the equipment that needs to be serviced. Similarly, in the case of an emergency service request due to a burst pipe, for example, a search can be performed to locate the emergency shut-off value, as identified in Fig. 7.

While RBV is drawn upon to enable benefits realization, a distinction between competence and capability needs to be made explicit at this point. Ashurst et al. [16] drawing on Amit and Shoemaker [34] suggest that a competence refers to a ‘firm’s capacity to deploy resources, usually in combination, using organizational processes, to effect a desired end’ [p.35]. Competencies refer to skills or knowledge that leads to superior performance. These are formed through an individual/organization’s knowledge, skills and abilities and provide a framework for distinguishing between poor and exceptional performance. Competencies can apply at organizational, individual, team, and occupational and functional levels. Competencies are neither ‘fixed nor static’—they can usually be developed with effort and support over a period of time, though it should be acknowledged that some are harder to develop than others. An asset owner’s employees and respective managers together can identify competencies that would be most helpful to work on to improve the employee’s effectiveness when BIM processes and technology are incorporated into the organization.

Capabilities, however, are a higher level construct [40] and are defined and enacted through the application of competences, as noted in Fig. 5 [16]. In this instance, a capability can be considered to be an asset owner’s ability to effectively utilize resources to perform a set of coordinated tasks in order to achieve a particular end result [16,41]. In
this instance it is a sustainable competitive advantage that is enacted through the implementation of a life cycle building information model with increasing emphasis being placed on FM. Thus, the benefits realization from a BIM investment can be conceptualized as an asset owner’s capability to ensure that the adopted process and technology can consistently generate value. This according to Ashurst et al. [16] is achieved “through the enactment of a number of distinct, yet complementary competencies” [p.354].

To realize the benefits of technology, such as BIM, the competencies embedded with the asset owner’s organization should be subdivided and underpinned by the skills, knowledge and experiences of employees and possibly external bodies such as a specialist BIM manager that can provide specific domain knowledge with regard to the execution, and integration of a FM building information model into existing systems (Fig. 2). In order to operationalize competencies of a building information model with the asset owner’s organization, a focus on ‘practice’ is required. Practice has been defined by Wenger et al. [42] as “a set of socially defined ways of doing things in a specific domain: a set of common approaches and shared standards that create a basis for action, problem solving, performance and accountability”. Fundamentally, the way in which people actually work needs to be taken into account, as the implementation of a building information model will reside in the accumulated knowledge and experiences of individuals and teams that will utilize the technology in their daily activities [43,44].

3.2. Benefit assessment

A number of questions should be raised by an asset owner when developing a business case for the use of BIM in order to assess its relative value. Thorp [23] has suggested that in order to determine if technology is providing the greatest possible value four key questions need to be addressed:

1. Are we doing the right things? An asset owner should ask themselves why they need to implement BIM to attain a competitive advantage [18]. The definition or redefinition of business addressed in terms of its direction and alignment of programs within the organizations business portfolio needs to be addressed. For example, the integration of the BIM model with an ERP system may lead to a re-structure in procurement practices. Noteworthy, an asset owner needs to fundamentally determine when considering BIM FM [44,45]:
   - if it will be a standalone or extra software package or modules will need to be purchased;
   - the specific or intended services that the system will provide;
   - how legacy systems will be integrated; and
   - will a vendor be required to install, customize and update the software? In addition, who will be responsible for the maintenance of software and data?

2. Are we doing them the right way? Organizational structure and processes and their integration with a building information model should be examined. The Industry Foundation Classes data model (or COBie subset) may need to be considered to facilitate syntactic and semantic interoperability and enterprise application integration with the developed building information model.

3. Are we getting them done well? The organizational capability, the resources available and the supporting infrastructure required to work with the building information model need to be examined. In addition, what changes will be needed to ensure that benefits are materializing?

4. Are we getting the benefits? The benefits realization process is examined to determine if benefits that materialize from operational, managerial, infrastructure, organizational and strategic levels are being
Questions’ one and four address issues relating to the asset owners’ strategic direction and their ability to produce targeted benefit functions of BIM [23]. Question two, however, raises a mix of business and technology integration issues that need to be used to design effective change management programs. Similarly, question three addresses the ability of business units within the asset owner’s organization to deliver change management projects as well as how BIM will be delivered. Each of the above should be used to consistently interrogate the usefulness of a building information model’s ability to generate value and contribute to acquiring a competitive advantage. Fundamentally, the benefits realization process should be viewed as a learning process that enables the asset owner to constantly question and measure the benefits (e.g., through the use of a BSC) of their investment in BIM. The most important thing that an asset owner must do if they are to master the benefits realization process for BIM is to ask the right questions and ask them over and over again [23]. According to Thorp [23] organizations hastily adopt new technology without undertaking a rigorous review and questioning process, until a cost overrun or a problem during implementation arises. Thus, a rigorous questioning process is critical to eliminating issues associated with ‘Silver Bullet Thinking’ (i.e. benefits will automatically happen) and the ‘Red Queen Syndrome’ (i.e. consistent financial investment in technology with no significant benefits). By addressing the aforementioned questions the business and technical challenges associated with implementing and integrating a building information model for the purposes of FM into an asset owner’s organization can be used to explicitly define the roles and responsibilities of stakeholders in the investment decision process.

4. Conclusion

The measurement of the business value of IT investment has been the subject of considerable debate within the normative literature. The difficulties in measuring benefits and costs are often the cause of uncertainty about expected benefits, particularly in the case of BIM. Thus, how can an asset owner obtain business ‘value’ from investing in BIM? In addressing this issue a framework for obtaining value from an investment in BIM is proposed. The cornerstones of the proposed framework are governance, performance measurement, change management and stakeholder management. Each cornerstone plays a pivotal role in enabling a strategic alignment between BIM and an asset owner’s business strategy. In determining business value, resource based theory is drawn upon to ensure that a sustainable competitive advantage can be acquired from implementing a BIM by enacting an asset owner’s resources, competencies and practices. The process of BIM benefits realization, however, is not static. It is dynamic as asset owners should consistently question the BIM implementation process in order to ensure that benefits are materializing at the right time.

The proposed model is conceptual in nature but provides the underpinning foundation for developing a strategy for asset owners to consider how BIM can create value and lead to a sustainable competitive advantage. Research focusing on the determination of the business value of BIM has not been forthcoming and therefore the proposed framework provides impetus for on-going work in this fertile area.

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References


