The key performance indicators of the BIM implementation process

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The question of what the best method of adopting BIM has not been answered yet. By identifying a standard method that will benchmark the different BIM adoption cases and comparing the efficiency gains in these cases, a standard benchmarking method can be developed.

This paper explains the live experience of BIM adoption in a KTP (Knowledge Transfer Partnership) project, undertaken between the University of Salford and John McCall Architects practicing in the housing and regeneration fields, with a particular focus on a set of KPIs that have been developed and tested through the action research strategy in the project. Weighting of these KPI’s has been developed from an architectural business perspective.

In regard to company KPIs, there are two sets of performance indicators; i) how well the adoption of the BIM concept, ii) how beneficial the adoption of BIM to the business. Both are important. But to justify a business case for BIM adoption, the business related KPIs need to be established.

BIM implementation strategy and subsequent expected efficiency gains from BIM adoption may have variation depending on the needs, requirements and the envisioned scope for improvements in the business. The main characteristics of BIM implementation strategy and the subsequent efficiency gains are clarified after the detail review and analysis of current practice. This includes i) process mapping of current practice at JMA, ii) conducting soft system analysis, iii) stakeholder review and analysis and finally iv) identification of competitive advantages from BIM implementation.

Gains identified:
Short Term Gains
The quality, speed and cost of the services JMA provides
Automatic low-level corrections when changes are made to the design through the use of parametric relationship between objects
Generate accurate and consistent 2d drawings throughout the design
Visualizations to allow checking against design intent
Discovering design errors before construction

Medium Term Gains
Information sharing
Greater flexibility to satisfy customers
Better financial control
Simultaneous work by multiple disciplines
In order to derive the KPIs, it is necessary to understand the organizational inputs, outputs, and desired outcomes and these KPIs should be as closely linked as possible to the top-level goals of the business. Specifically with BIM, there has been a lack of consistent fiscal benchmarking to evaluate the business improvements and gains from BIM adoption (Gerber & Rice, 2009). Using the diagnostic material from stage 1 and 2 of the BIM implementation approach, the following attributes are sought for the definition of KPIs:

Does the KPI motivate the right behavior?
Is the KPI measurable?
Is the measurement of this KPI affordable (cost-effective)?
Is the target value attainable?
Are the factors affecting this KPI controlled by you?
Is the KPI meaningful?

The following steps have been undertaken in the KPI identification.
Step 1: conducting brainstorming sessions in JMA and interviewing the external stakeholders JMA collaborates:
Step 2: Filling out the KPI design form for all the potential KPIs collated from the brainstorming sessions and the interview with the external partners
Step 3: Evaluation and assessment of the potential KPIs from step 2 to filter them against the checklist above recommended by Gerber & Rice, (2009)

This process has led to finalized identification of the KPIs for the evaluation of the business improvement in JMA and subsequently the assessment and measure the extent of the success of BIM adoption.

In simplistic terms the architectural business can be described as delivering on a promise. BIM is a consumable commodity, not a capital investment. It is of value only to the extent that it enables organizations to fulfill their mission. The technology, process and organizational investments required to implement BIM are considerable and costly. Thus, the return on investment needs to be justified. Therefore, KPIs should be measures of risk to annual goals or strategic objectives.

It has been realized that KPIs enable to structure and present information in a systemic way in order for accurate measurement and observation of business improvements from BIM adoption. As a result, KPIs can form a method of comparing the success of different BIM adoptions in terms of:

Measuring the quality of projects
Standardizing information and measurement process throughout the community
Setting appropriate benchmarking targets
Recording effectiveness of action