EBMgt™

EVIDENCE-BASED MANAGEMENT GUIDE

Empirical management for software organizations

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OVERVIEW

Over the last 15 years, software development organizations have been superficially described as value-generators. In fact, the increasingly common cost-cutting practice of outsourcing development to external organizations supports an opposite view. To some extent, the adoption of agile has supported this perception gap.

Organizational agility is often thought of as the practices used by individual teams and the techniques used to coordinate work across those teams. In some cases, focus is on improving practices without fully considering why those practices are being used in the first place. For instance, Scrum Teams monitor success by delivering potentially shippable Increments of work, but do those Increments contribute to the value of the overall organization?

Without measuring value, the success of any agile initiative is based on nothing more than intuition and assumption. Scrum.org's Evidence-Based Management for Software Organizations (EBMgt™) approach measures value as evidence of organizational agility. This approach enables software organizations to make rational, fact-based decisions, elevating conversations from preferences and opinions to logic and insight.

Software Organizations are Struggling to Prove their Value

Over the past two decades, many organizations have built software through the Scrum framework and the application of agile principles. Consequently, management efforts in software organizations often focus directly on the practices used rather than the outcomes produced. Managers in software organizations often seek to answer questions such as:

While the answers to these questions may be interesting, unfortunately they are irrelevant to organizational value. Monitoring only the direct use of practices does not provide the best evidence of their effectiveness. For instance, tracking a Development Team's velocity is irrelevant to a Product Owner who is responsible for maximizing the value of the product.

Outcomes Provide Evidence of Value and Ways to Improve

Increasingly, software and business intelligence has driven sustainability and competitive advantage for most organizations. As a result, decision-makers are looking to IT to improve the use of data and analytics. Measuring outcomes, such as value, provides a clearer lens through which to evaluate practices currently in use.

If tweaking a practice improves value, then there is evidence that the change was beneficial to the organization. This evidence is an opportunity for empirical analysis of investments and initiatives. The software organization can now plan and execute as other business units, through fact and insight.

EVIDENCE-BASED MANAGEMENT FOR SOFTWARE

Consider a potential investor looking for unambiguous evidence of a software organization's value. Revenue is often suggested, but the expense of acquisition affects the credibility of revenue. Profit is interesting, but financial decisions such as deferred expenditures, recent acquisitions, or sale of assets may affect profit. Strategic measurement of the software organization's value and agility is missing.

Where to Focus

Organizations should focus on the following Key Value Areas (KVA) categories:
1. Current Value
2. Time-to-Market
3. Ability to Innovate

Current Value

Current Value reveals the organization's actual value in the marketplace. Current Value establishes the organization's current context, but has no relevance on an organization's ability to sustain value in the future.

Time-to-Market

Time-to-Market evaluates the software organization's ability to actually deliver new features, functions, services, and products. Without actively managing Time-to-Market, the ability to sustainably deliver value in the future is unknown.

Ability to Innovate

The Ability to Innovate is necessary but often a luxury. Most software is overloaded by non-valuable features. As low-value features accumulate, more of the organization's budget and time is consumed maintaining the product, reducing its available capacity to innovate.

Organizations without strength in all three KVAs may have short-term value, but will not be able to sustain it. The Current Value of any organization must be accompanied by evidence of its ability to

meet market demand with timely delivery (Time-to-Market) while being able to sustain itself over time (Ability to Innovate.)

What to Measure

Within the KVAs, there are eleven Key Value Measures (KVMs). Each stands on its own and is unambiguous. Other proposed measures were discarded because they were intermediate measures or because their interpretation was contextual.

Figure 1: EBMgt's 11 Key Value Measures to organizational value

KVA: Current Value

KVM	Measuring:
Revenue per Employee	Gross Revenue / #employees
Product Cost Ratio	All expenses in the organization that develops, sustains, provides services, markets, sells, and administers the product or system.
Employee Satisfaction	Engaged employees that know how to maintain, sustain and enhance the software systems and products are one of the most significant assets of an organization.
Customer Satisfaction	Sound management, solid software, and creative, fulfilled employees.

KVA: Time to Market

KVM	Measuring:
Release Frequency	The time needed to satisfy the customer with new, competitive products.
Release Stabilization	The impact of poor development practices and underlying design and code base. Stabilization is a drag on competition that grows with time.
Cycle Time	The time (including stabilization) to satisfy a key set of customers or to respond to a market opportunity competitively.

KVA: Ability to Innovate

KVM	Measuring:
Installed Version Index	The difficulty customers face installing a new release .The relatively low value of new releases, or even the # of customers that are evaluating alternatives.
Usage Index	Determines a product that is burdensome and difficult to use and excess software that must be sustained even though it is rarely used.
Innovation Rate	Growth of technical debt caused by poorly designed and developed software. Budget is progressively consumed keeping the old software alive.
Defects	Measures increasingly poor quality software, leading to greater resource and budget to maintain it and potential loss of customers.

Of course, practitioners may choose to monitor additional measures of value and outcomes. However, EBMgt prescribes these measures for empirical analysis of an organization's value or **Agility Index™.**

Agility Index™

Scrum.org's patent-pending Agility Index™ is a composite number representing the current value an organization derives from software and its ability to continue deriving value going forward. It is the Key Indicator (KI) of a single organization's health in overall agility. The Agility Index also includes standard industry code and organization size, so that it may be compared to similar organizations.

Figure 2: The Agility Index is the Key Indicator of overall agility

How to Improve Empirically through EBMgt

The simple act of monitoring KVAs is a great start toward managing with evidence, but not enough to change the way agility is managed. The EBMgt approach enables organizations to constantly learn and improve the value derived from software investments. Its iterative, incremental approach to guided change helps organizations control the risk of disruption, and to compete through their software capabilities.

Figure 3: To produce genuine and long lasting improvements, establish a learning loop
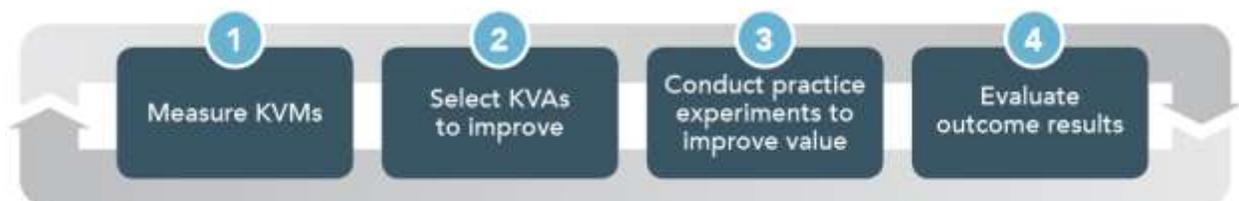
1. Measure KVMs

The first step in the EBMgt learning loop is to establish initial values for the KVMs that contribute directly to the Agility Index™. This step provides an initial view of organizational value.

In Figure 4, KVMs are displayed in a radar graph that helps visualize relative strengths and weaknesses. In the example, the organization's ability to bring new features, functions and products to its customers is strong, but its capacity to innovative is weak.

Figure 4: A baseline understanding of an organization's agility

2. Select KVAs to Improve

With a clear view of current organizational value and an understanding of the measures that reveal it, managers of software organizations can now make informed decisions about which KVAs would be most valuable to change.

Care should be exercised in trying to affect too many KVAs within a single learning loop. Small, incremental changes performed in small learning loops is the most effective way to make sustainable improvements to an organization's overall agility.

3. Conduct Practice Experiments to Improve Value

After understanding desired KVAs to improve, practitioners select a single or small set of practices to use in an experiment. For example, a software organization may want to increase quality to reduce the Defects KVM. A related experiment may be to implement test-first practices in development teams. Making this change in a time-boxed experiment allows observation on the impact of these practices on overall organizational value.

While there is practically an endless catalog of practices from which to choose to affect change in agile development, Scrum.org maintains a list of several hundred generally understood and accepted practices to assist in improving the KVAs.

4. Evaluate Results

The key to understanding results and impact of an experiment is to monitor the trend of value over time. Understanding the changes of the KVMs prepares the organization for its next learning loop.

Figure 5: Analyze the results of experiments

Remember that the experiment performed in the learning loop is rarely the only factor affecting changes in KVMs during the cycle. Additional factors reflected in changed values may include:

- Marketplace competition
- Internal policy change, such as new HR processes
- Release of an update that improves functionality and quality of an existing release

Metric values and their affected KVIs change even when the cause is unknown, as is the way of the market. As these changes are recorded, management can use this data to discuss impact, consequences, and prepare potential responses.

An advantage for organizations that track changes periodically across time is the opportunity to learn from the patterns that emerge.

LEARN MORE

If you are interested in learning more about Scrum.org's EBMgt framework and how your software organization can measure, diagnose, and improve the value delivered, we can help.

Scrum.org has a community specifically trained to help you get the most value from EBMgt through their expertise and Scrum.org resources.

Visit us at
ebmgt.org

Email us at
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About Scrum.org
Scrum.org is committed to improving the profession of software development. We specialize in community, education, and thought leadership for software development professionals.

We provide training, assessments, and credentials for developers, managers, product specialists, and practitioners. Our guiding principles are based on Scrum. EBMgt encapsulates those principles to help organizations maximize their value.

Scrum.org is led by Ken Schwaber with offices in Boston, Seattle, Winnipeg, and Antwerp. We have a worldwide community of 130 skilled and highly effective Scrum experts, coaches, developers, and consultants that help organizations succeed.