RESEARCH: SUMMARY SERIES

Factors associated with the software development agility of successful projects

Jim Sheffield and Julien Lemétayer, *International Journal of Project Management* 31 (2013) p459–472

KEYWORDS

- Communities of practice
- Critical success factors
- Process innovation
- Software development agility
- Project success

Article highlight:

The study addresses the need for project managers to exercise leadership skills and business acumen that transcend specific methodologies and process designs. In the modern world of complex project teams, project management is just one aspect of management, and project success is just one aspect of personal, team and organisational success.

What does the paper cover?

This empirical study of successful projects aims to answer the following question: What factors in the project and its environment are indicative of software development agility in successful projects? This is achieved by exploring the issues using literature, local interviews and an international survey, testing two hypotheses:

Hypothesis 1: Factors in the project environment are indicative of software development agility in successful projects. Low values of these factors are associated with a plan-driven approach, while high values are associated with an agile approach.

Hypothesis 2: Factors in the project are indicative of software development agility in successful projects. Low values of these factors are associated with a plan-driven approach.

Methodology:

Following the literature study, two research methods were employed. Firstly, conceptual and empirical uncertainty was reduced by semi-structured interviews conducted with eight project managers in Wellington, New Zealand. Every project manager was given 25 cards, each representing a candidate survey question, then asked to rank in importance those candidate survey questions regarded as important indicators.

The second research method was web-based and short, taking between four and seven minutes to complete. It aimed to answer the research question by gathering data on the factors in the project and its environment that both the literature review and interviews found to be important.

Research findings:

The main finding from the interviews is that organisations do not think objectively about software development agility – this decision is frequently imposed from top management or the same methodology is used on every project. This confirms the importance of including top management attitudes towards software development agility.

Interviewees confirmed that 'experience level of the team, including education level of team members' was an important factor in settling on an appropriate level of agility. It seems that (individual) training and (team) experience are two different things.

Conclusions:

Support was found for both hypotheses. Regarding Hypothesis 1, factor analysis revealed that organisational culture encapsulates three measures of the project environment: agility supported by top management, level of entrepreneurship, and level of risk-taking willingness. It is these variables that indicate the flexibility and adaptability of the project, and the empowerment of the project team to cope with change requests.

One project factor, 'Empowerment of the project team', was indicative of software development agility (Hypothesis 2). This factor has more influence than organisational culture. Factor analysis revealed that 'Empowerment of the project team' encapsulates measures such as agility supported by the customer, procedural empowerment and close customer collaboration.

The study demonstrates that in successful projects, software development agility is aligned with factors in the project and project environment. In other words, a one-size-fits-all approach to software development agility is most inappropriate. This mentality can lead to bad process designs that threaten the chances of project success. Critical reflection by both practitioners and academics on the applicability of their favorite methodology is clearly warranted.

Significance of the research:

In an agile environment, both performance management (a task orientation) and social context (a relational orientation) are important to project success. Empirical studies have yet to positively identify the factors indicative of software development agility in successful projects. The lack of consensus reflects the large number of factors that shape the alignment between the project and its environment, and the lack of empirical studies focusing on the software development agility employed in successful projects.

Analysis of the survey data revealed that software development agility was indicated by a project environment factor (organisational culture) and a project factor (empowerment of the project team). The contents of these factors may assist practitioners to reflect on their development practices and to negotiate change to achieve higher rates of project success.

Comment from the authors:

Our research added practical value by identifying the factors – inside and outside IT – that are associated with successful agile projects. As in *The Agile Manifesto*, our approach focused on project success, not prescriptive detail on proprietary project management methodologies. While the inclusion of factors inside and outside IT was not so common at the time, the dual approach has subsequently been gathering momentum.

For example, Clarke Ching, author of *Rolling Rocks Downhill – The Agile Novel That Never Mentions Agile*, writes: "The number one and number two blockers hobbling most agile teams... live outside IT. Number one is diluted product ownership and number two is C-level scepticism. They cause delays, force rework, and trap enormous amounts of business value inside your customer's backlogs... and many teams give up trying to overcome them and focus on being efficient not effective."

Complete article

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Glossary:

Software development agility	Agile software development refers to a group of software development methodologies based on iterative development, where requirements and solutions evolve through collaboration between self-organising cross-functional teams.
Agile Information Systems Development (ISD)	The continual readiness of an ISD method to rapidly or inherently create change, proactively or reactively embrace change, and learn from change while contributing to perceived customer value (economy, quality, and simplicity) through its collective components and relationships with its environment.