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A framework for developing portfolios of improvements projects in manufacturing

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Abstract

The outcome of improvement programmes such as Lean Manufacturing or Six Sigma is only partially determined by the success or failure of its individual projects. Also of significance is how well the programme and its projects are aligned to the company's strategy. Frequently practitioners will select projects on their individual merits, rather than with proper reference to their contribution to business strategy. In this manner, it is therefore possible to build portfolios of projects that are at best suboptimal and at worst counter to the company's overall strategic direction. The construction of project portfolios is thus a critical step in effective programme management and this would suggest that organizations would benefit from a framework to assist them with the selection of projects and portfolios that are aligned with the company's overall strategy. While tools such as Critical to Quality Flow-down are available to translate the voice of the customer to metrics and goals, practitioners do not have a structured approach to construct and assess portfolios.

In this paper we present a framework to assist programme managers to develop portfolios of improvement projects targeted to fulfil their company's strategic needs and also align with the organisation's objectives and measures. Consideration is given to quantitative and qualitative aspects of strategy and how these may best be related to provide a set of orthogonal and common metrics.

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1. Introduction

In addressing the question 'What is Strategy?' Porter began by pointing out that it is not the same as operational effectiveness, since effectiveness on its own does not create sustainable differentiation [34]. Yet many forms of strategic differentiation rely upon the implementation of appropriate operational effectiveness activities for their realization. Realized strategy is, in Mintzberg's terms "a pattern in a stream of decisions" [28] and creating a pattern which is coherent with strategy is therefore of utmost importance to the continued success of a business. Coherence necessitates that clear cause and effect relationships are established between strategy and operational outcomes [11].

Without such coherent patterns, neither activity can make complete its proper contribution to the organization.

While the literature on strategy is extensive, so too is the record of strategy failure. We have previously written that this is frequently due to the lack of a formal framework for linking strategy to process improvement implementation [23]. In this paper, we examine how a simple framework may be used to map strategy to portfolios and how this might help to identify misalignments or gaps in shop-floor execution of strategy.

1.1. Project selection frameworks

If one considers projects to be the fundamental expression of business strategy [30] then it follows that an organization must be careful in how it selects them [17,22]. Hoshin Kanri [16] and its precursor Quality Function Deployment (QFD) [4] have been successfully employed by sophisticated enterprises since the 1960s to align strategy to projects and objectives, however smaller and less mature organizations are not always successful in making that link. For example, in the study by Cagliano et al. [10] firms chose projects that aligned with strategy only 43% of the time. This should not come as a great surprise since, while researchers recognize that project selection is critical for the success of continuous improvement programs [2,37], such discussion is generally absent from the popular press [5,6,8,27,31,35,36,40] leaving practitioners to develop their own approaches to strategy alignment.

The result is that industry practitioners often use more or less subjective approaches when selecting and prioritizing improvement projects. Recently we reported on a survey in which we found that only half of the respondent organizations had defined value streams for all strategic value creation activities and less than half explicitly linked their Value Stream Maps (VSMs) to strategy using metrics [24]. While in a study of companies in the United Kingdom, Banuelas [3] found that practitioners predominantly used brainstorming to identify projects and, despite recognizing the importance of linking projects to business strategy, used prioritization tools that were, at best, only loosely connected to strategy.

As it is unlikely that a portfolio so conceived might deliver an optimal outcome, or that one might have a

priori knowledge whether this is the case, we proposed that practitioners use the process shown in Figure 1 to generate portfolios [23].

In this approach, the *optimal* future is first modeled (step 1) and differences between the current state of the business and the optimal state then drive portfolio creation (step 2) followed by the use of formal methodologies that select an optimal subset of the strategic portfolio (steps 3 and 4).

The ensuing project portfolio must fulfill multiple objectives, which will vary depending upon the organization’s chosen strategy. Organizations should therefore attempt to ensure the portfolio is both capable (each project has the potential to successfully address the target issue) and complete (the entire portfolio addresses all dimensions from the multiple objectives of strategy). A discussion on capability goes to the heart of improvement methodologies such as Six Sigma or Lean and is thus out of the scope of this paper. Rather, we are interested in how organizations may determine whether or not a portfolio may be considered to be ‘complete’.

The remainder of this paper investigates this question and a simple framework is presented for use in Small to Medium Enterprises (SME). The paper is organized as follows: in Section Two we discuss the structural framework of strategy and manufacturing practice bundles; in Section Three we describe a process whereby strategy is mapped to metrics and then to projects, describing the results from the application in an SME; finally in Section Four we make concluding remarks.

2. Strategy and Practice Bundles

According to Kotha [25] there are four levels at which strategy is developed: Industry (industry policymaking by Government); Corporate (defining the nature of the business and resource acquisition and allocation); Business (strategic business unit boundaries, scope, direction and the basis of competitive advantage); and Functional (how a function such as manufacturing supports the Business level and other Functional level strategies). Since one determinant of competitive advantage is how well the organization’s internal capabilities fit the external environment [9], the concept of portfolio ‘completeness’ can be defined as the match between the Business level strategy and Functional level actions. This will hold true whether an organization’s strategy is market-led or resource-led, since either will necessitate various improvement actions or decisions from within manufacturing that will impact business performance [7,12,13]. Thus, whilst our interest lies at

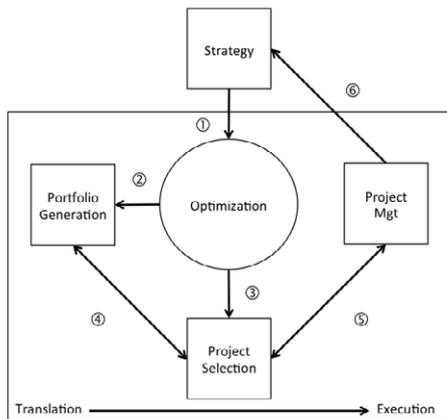


Fig 1: Framework for linking strategy to process improvement.

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