

# Linking operations objectives to actions: A plug and play approach

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## Abstract

This paper proposes a ‘plug and play’ (PnP) framework and software tool that allows managers to rapidly build simplified models of operations objectives. These models enable them to understand, study the cause–effect linkages of potential actions, and communicate such understanding to their colleagues. The salient features of the PnP framework are its ability to serve as scaffolding for managers building their own models, consulting other/prior models, and linking their own models to others’, and to provide a rapid modelling approach to strategic deployment. This paper introduces the PnP principle, describes the proposed framework, and discusses the issues and challenges related to its development.

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## 1. Introduction

In order to gain the full advantage from a manufacturing strategy, the strategy needs to be deployed and executed. Thus, once the manufacturing objectives have been established, the next stage of the strategy process is to develop the ways in which these objectives will be reached. It is useful to think of the objectives being the ‘whats’ and the supportive action plans being the ‘hows’. For successful strategy operationalisation, a process that leads strategy to action needs to be created (Miller and Hayslip, 1989). However, a review of manufacturing strategy literature reveals that little

is available to guide managers in the process of objective deployment, that is, translating a set of manufacturing objectives into action plans (see Table 1). Existing manufacturing strategy frameworks and processes (Hill, 1989; Platts, 1990; Garvin, 1993; Suh et al., 1998; Barad and Gien, 2001; Mills et al., 2002) seem to focus on broad directions and the establishment of manufacturing objectives, but are weak in translating the established objectives and broad strategies into detailed action plans.

Some researchers (Fine and Hax, 1985; Voss, 1990; Segerstrom, 2003; Allio, 2005), however, directed their research more to overall strategy implementation issues such as project management. Their studies mainly described the implementation process and provided guides on how to manage the process successfully.

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Table 1  
Existing manufacturing strategy frameworks and processes

Study	Approach	Limitations
Hill (1989)	Using the concept of order winners and order qualifiers to provide insight into how products qualify and win orders in the market	Suitable to assist managers in the setting of manufacturing priorities Provides little help on how a range of feasible action plans can be generated and selected
Platts (1990)	Provides a detailed procedure guiding managers to specify manufacturing objectives and formulate manufacturing strategy	Focuses on objective setting and strategy formulation Little guidance on action plans generation
Garvin (1993)	Using the concept of strategy manufacturing initiatives (SMI) to link manufacturing objectives to improvement plans over a specified time period. The process consists of four stages; disaggregation, decomposition, translation and evaluation	Focuses on action selection but not action generation This approach has not addressed the key issues of how a range of feasible action plans can be generated
Suh et al. (1998)	Using an axiomatic design methodology where components of a system are broken down into functional requirements (FR) and design parameters (DP)	Focuses on manufacturing systems design Involves complex deployment steps, and little help on action plans generation and selection
Barad and Gien (2001)	Using a structured model based on quality function deployment (QFD) to assist managers in connecting operating improvement needs to selection of improvement actions	Focuses on action selection but not action generation Like the axiomatic approach, this model seems to incorporate a vast number of mathematical calculation procedures
Mills et al. (2002)	Using Platts (1990) procedure as a basis, the formulation process also includes a strategy charting session to chart strategic events over a period of time	Advocates the use of brainstorming methods to generate action plans Little guidance on action plans generation and selection

From a more quantitative perspective, a number of researchers have used survey results to shed some light on action plan selection in practice. Their studies explored the links between a company's manufacturing objectives and choice of action plans (Ward et al., 1988; De Meyer and Ferdows, 1990; Kim and Arnold, 1996; Boyer, 1998). In general, these studies focus on what type of action plan a company selects to meet or align with the set manufacturing objectives. Some studies (Imai, 1986; Schonberger, 1986; Shingo, 1981), however, are more focused on discussing the benefits that may result from specific improvement programmes (Cagliano and Spina, 2000). By and large, these studies suggest the expected links between manufacturing objectives and choice of action plans.

For a successful deployment of manufacturing objectives, a manager must be able to identify a range of feasible alternative plans before the final decision is made. How then can a factory manager identify a range of potential alternative actions that can be taken to achieve the given objectives? Many researchers (Anderson et al., 1989; Garvin, 1993; Swink and Way, 1995; Kim and Arnold, 1996) have indicated that the process of translating manufacturing objectives to action plans is often overlooked and poorly implemented.

The ability to generate many alternate action plans is an important part of managerial problem solving and decision making (MacCrimmon and Wagner, 1994). However, many managers have approached decision making in a way that neither puts enough options on the table nor permits sufficient evaluation to ensure that they can make the best choice (Garvin and Roberto, 2001). Decisions made without considering alternatives may have devastating consequences. Drucker (1967) points this out succinctly '*Whenever one has to judge, one must have alternatives among which one can choose. A judgement in which one can only say 'yes' or 'no' is no judgement at all. Only if there are alternatives can one hope to get insight into what is truly at stake...*' However, the search for alternatives is often restricted or biased by managerial values, human perceptions, and the psychological acceptance or avoidance of risk (Harrison, 1999).

Traditionally, manufacturing managers have depended on the use of past experience and intuition, idea generation techniques (such as brainstorming), seeking third party advisers, and deployment techniques to assist them in making action plan generation and selection decisions. These

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