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**An Empirical Study of Management Controls
in Product Development**

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A thesis submitted in partial fulfilment of the requirements
for the degree of Doctor of Philosophy in Accounting,
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Abstract

Product development is critical for many firms, because in many industries the development of products has become a primary source of competitive advantage. To manage this process many firms use management controls, but the effect of those controls on product development is not clear. Recent research in the product development field suggests that the role of management control is to reduce uncertainty rather than the traditionally-assumed focus of promoting goal congruence, and that organisation members use management controls in an interactive style rather than in the traditionally-assumed diagnostic style.

The objective of this thesis is to provide empirical insight into management control practices in product development with particular reference to the interface between organisation members across different functions and hierarchal levels within the organisation. It examines both the role of management controls; either to promote goal congruence or to reduce uncertainty, and the style in which management controls are used; either interactively, diagnostically, to set boundaries, or influence beliefs during the activities that take place during the product development process for different types of product development project. To better understand how this takes place this thesis reports on the boundary objects (i.e. numbers, documents and models) that organisation members use during the product development activities to accomplish management control in practice.

Empirical field material was collected during a nine-month intensive longitudinal field study, informed by practice theory (ethnomethodology), which was carried out

at a large Australasian multinational company within the consumer foods industry. A participant observation approach was used to collect material from a wide range of sources within the company, including interactions and meetings involving executive managers, functional managers, and product development project teams who were members of the technology, marketing, sales, operations and finance departments.

The empirical results indicate that the role of management control changes during the product development process alternating between reducing uncertainty and promoting goal congruence. The style in which management controls are used also differs depending on the stage of the product development process and the nature of the product development projects. Finally, management control was accomplished through the use of different boundary objects for each type of product development project.

Dedication

To my family and all the members of AusFood and
OpCo who made this study possible

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I am grateful for the support that *OpCo* (my field study site) has given me over the nine months I spent learning about the practice of product development. Without their assistance this study would not have been possible.

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List of Abbreviations

AusFood - The Australasian multinational food company which provided access and sponsored the study

CEO - Chief Executive Officer

CFO - Chief Financial Officer

CoP_{EM} - Executive Manager Community of Practice

CoP_{FM} - Functional Manager Community of Practice

CoP_{FMPD} - Functional Manager Product Development Community of Practice

CoP_{FS} - Functional Specialist Community of Practice

CoP_F - Finance Community of Practice

CoP_M - Marketing Community of Practice

CoP_O - Operations Community of Practice

CoP_{PT} - Project Team Community of Practice

CoP_S - Sales Community of Practice

CoP_T - Technology Community of Practice

DC - Diagnostic Control

GM - General Manager

HR - Human Resource

IB - Influence Beliefs

IC - Interactive Control

IP - Intellectual Property

Lab – Laboratory

OpCo - The operating company within AusFood where the field work reported in this thesis was carried out

PGC - Promote Goal Congruence

PMO - Project Management Office

RU - Reduce Uncertainty

R&D - Research and Development

SB - Set Boundaries

List of Key Terminology

Boundary objects (Carlile, 2002; Star, 1989; Star & Griesemer, 1989)

- Star (1989) states that boundary objects are one way for communities of practice to solve the heterogeneity problem which is produced by local issues and divergent viewpoints. Boundary objects are artefacts that take on different meanings in different parts of the organisation (functions or levels in the hierarchy) and yet are stable enough to allow organisation action.
- In this thesis I follow communities of practice to see how they use three boundary objects to accomplish management control during product development. These consist of numbers, documents and models.
 - o Numbers - include both financial numbers gathered and reported by the firm's accounting system as well as non-financial operational numbers gathered and reported by the marketing, sales, technology and operations departments.
 - o Documents - include process documents, marketing and sales reports, project reviews and presentations, as well as strategy and brand plans.
 - o Models - include product and packaging samples as well as manufacturing and market trials.

Communities of practice (Wenger, 1998, 2004)

- Groups of people who share an interest and who interact regularly in order to learn how to do it better. Key aspects include;
 - o An exposure to common issues or problems (Lesser & Storck, 2001)

- Sharing a common domain and sense of identity (Wenger, McDermott, & Snyder, 2002)
 - Having a common sense of purpose (Brown & Duguid, 2001)
 - The ability to collaborate directly and learn together (Lave & Wenger, 1991)
- In this thesis communities of practice consist of formal hierarchal communities including; executive managers, functional managers and functional specialists and formal functional communities including; marketing, technology, sales, operations and finance.

Ethnomethodology (Garfinkel, 1967, 2002; Lynch, 1993; Rawls, 2002)

- Ethnomethodology literally means the study of people's methods. It is a sociological discipline which focuses on the ways in which people go about their everyday activities and produce social order in a given context.
- Ethnomethodology is a distinct discipline and is grounded in Durkheim's (1966) fundamental principle of sociology which states that the aim of sociology is to find "the objective reality of social facts." While functional sociology attempts to achieve this through theoretical abstractions and formal quantitative analysis, ethnomethodology is based on the view that social order can only be displayed and recognised by people as they go about their every-day activities.

Management control (Bisbe & Otley, 2004)

- Management control refers to the processes used by organisation members to mobilise resources and action towards some individual or shared interest(s).

- In this thesis management controls are viewed in relation to the activities in which communities of practice take part in during the product development process and the objects they create and re-create to mobilise resources and interact in relation to their individual and shared interests.

The product development process (Crawford & Di Benedetto, 2006)

- The activities undertaken within an organisation from the generation of new product ideas to the launch of these products onto the market.

The role of management control (Davila, 1997, 2000)

- To promote congruence with the firm's strategic and financial goals.
- To reduce uncertainty about technology, the market and project scope.

The style of management control use (Bisbe & Otley, 2004)

- Interactive control systems (Simons, 1995a) are defined in terms of the extent to which managers regularly and personally involve themselves in the decisions and problem solving activities of subordinates. Interactive controls are characterised by;
 - o Face-to-face meetings where managers and employees debate information, and challenge assumptions and action plans about the way forward.
 - o Interactions that generate organisation learning and shape emerging strategy.

- Diagnostic control systems (Simons, 1995a) are defined in terms of critical performance variables and feedback systems used to monitor outcomes and correct deviations from preset performance standards. Diagnostic control are characterised by;
 - The measurement and monitoring of critical performance variables associated with the organisation's strategy.
 - The way in which they provide motivation, and establish guidelines for corrective action.
 - Project monitoring systems that allow *ex post* evaluation such as
 - Time to market
 - Project cost
 - Product cost
 - Product profitability or gross margin

- Boundary systems (Simons, 1995a) are defined in terms of risks to be avoided and formally stated limits and rules that must be respected. They are characterised by;
 - Management actions which limit the territory in which organisation members can operate.
 - Systems which allow individual creativity within defined limits.
 - Rules and proscriptions in codes of conduct, strategic planning systems, and asset acquisition systems.
 - Emphasis on risks to be avoided.

- Belief systems (Simons, 1995a) - are defined in terms of an explicit set of shared beliefs that define basic values and are used to;
 - o Provide guidance to opportunity-seeking behaviour, for example
 - Statement of core values
 - Vision statement
 - o Manage purpose, direction and commitment within the organisation.