

# Alliance patterns during industry life cycle emergence: the case of Ericsson and Nokia

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## Abstract

Industry Life Cycles (ILCs) have been proposed as a means of analyzing the processes of company entry and exit in competitive industries. This paper utilizes ILC approaches to better understand the changing rationales for alliance formation for two large multinational electronics firms, Nokia and Ericsson. Through the use of alliance announcements by the firms, we find that the rationale for alliance formation changes over the industry life cycle in response to changing organizational needs and industry imperatives. We also find that the rapid emergence of standards-based alliances has been a strategic response by firms and industries to the growing complexity of information and communication technology systems and the costs involved in ignoring the scale economies that standards-based alliances deliver.

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## 1. Introduction

Research relating to the study of Industry Life Cycles (ILCs) has generally been focused upon company survival throughout periods of industry evolution. Processes of ‘shakeout’ are generally examined as a common finding, and the reasons behind this rationalisation of organisational participants is a common theme in the literature.

This paper takes a different slant on the role and nature of industry life cycle dynamics. We adopt the industry life cycle of the mobile telecommunications terminal manufacturing industry as a contextual background, and examine the manner in which two large and successful multinational firms create and develop interorganisational alliances in their efforts to facilitate their strategic and operational success.

Inherent in the paper is a focus on the changing rationale for alliance formation and development. We explicitly address the changing nature of alliance arrangements and the operational and resource-based organisational

imperatives that alliances address. Links are thus developed between the changing rationale for alliance formation and the changing industrial context of the ILC. The paper thus seeks to create a nexus between evolutionary models of industry development and theories relating to organisational alliance formation (from a Resource-Based View (RBV) and operational perspective).

## 2. Industry life cycle research

Industry Life Cycle (ILC) models aim to integrate technological, firm and industry evolution in terms of trajectories and outcomes that can be exogenously observed (Suarez and Utterback, 1995; Klepper, 2002). ILC and product life cycles (PLCs) are terms that are often used interchangeably, though ILC research tends to focus on aggregate industry development issues, while PLC research is often more micro-level, and of greater importance in analysing the market trends. Inherent in the ILC approach is that some degree of accumulation occurs with regard to embodied knowledge (in the form of capabilities and competencies), and thus a link between industry evolution and organisational competency has developed (Lieberman and Montgomery, 1998).

This focus on knowledge accumulation creates a clear theoretical nexus with evolutionary theories of firms

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and economies (see Nelson and Winter, 1982). As such, ILCs can be seen as one model of explanation of the way in which firm populations change, driven by market factors (for example, the accumulation of manufacturing economies and diseconomies and the industrial impacts of technological evolution).

We suggest in this paper that alliances will primarily be contractual in nature in the early stages of the ILC and will move towards standards and knowledge-based arrangements during the later stage of the ILC.

While there have been numerous models proposed as to the form of ILCs and the number of stages they contain (e.g. Schumpeter, 1939; Hofer 1975; Abernathy and Utterback, 1978; Anderson and Zeithaml, 1984; Hill and Jones, 1998) there is a shared assumption of heightened risk and uncertainty during early stages leading to more stable firm and market dynamics during late stages. Industry life cycles are often studied in a quantitative empirical sense through an analysis of population ecology models which, in turn, analyse firm establishment and mortality (Klepper and Graddy, 1990; Mazzucato, 2002; Mazzucato and Geroski, 2002) as a means of gauging the stage of the industry life cycle under investigation.

The phases of an ILC generally conform to some variation of the ‘birth, growth, maturity and decline’ continuum, with decisions taken earlier by firms cementing their latter roles and success within the emergent industry. This occurs through the processes of accumulation of organisational competencies on the one hand and sunk costs on the other.

For Klepper (1996) the stages of a life cycle of an industry provide a potential explanation for the persistence of inter-temporal and inter-sectoral returns to scale. These differences emerge from the fact that early industry stages are characterised by greater uncertainty and risk in investment decisions, with the concomitant rewards of this state of uncertainty emerging in later stages of the industry cycle as product markets and organisational competencies mature.

Klepper (2002), in testing this model, found that observed differences between firms within industries and indeed industrial sectors can at least be partially attributed to the dynamically increasing returns made available to firms and industries through technological change. Market structure and operational technologies, he notes, co-evolve or are simultaneously determined. The implications for management and policy makers under this scenario are manifest, with the management of technological emergence (and its impacts on the firm) of key importance in the establishment of a durable role within an industry population. ILC models thus have significant implications for organisational technology strategies.

As ILC models also adopt a point of departure of dynamic, rather than static, industrial environments, they present a key challenge to neoclassical models of economics and strategic management. For example, they assume a key

role for the accumulation of organisational competencies, and they argue that firm scale and dominance are cyclical and often transitory and they posit that the vagaries of technological uncertainty have a major role to play in the shaping of organisational success. As such, managerial prerogative extends beyond the neo-classical challenge of efficiency seeking to include actions within and between firms to manage these dynamic processes of exogenous technological change and endogenous organisational resource development.

### *2.1. Industry life cycles and interorganisational alliances*

Most ILC theories acknowledge the primacy of technological change as the key driver of industry evolution. Technology facilitates and constrains operational efficiencies and product level innovations (Jovanovic and McDonald, 1994), and often provides the impetus for the emergence of a dominant design (Utterback and Suarez, 1993), with its latter impacts on industry makeup.

Pyka (2002) contends that factors exogenous to firms, though endogenous to technology-based society, are creating a strong impetus for the formation of informal networks—a precursor to formalised knowledge alliances. In essence, he identifies the three drivers of technological uncertainty, technological opportunity and spill-over appropriability as the rational drivers for network aggregation. Such factors seem especially relevant in an economy driven by high technology. In such a context, scale and scope were of secondary importance to issues such as speed of innovation, information sharing and technological capacity across product and application lines, across standards and within and between industries (D’Aveni, 1994; Brown and Eisenhardt, 1997). By linking the formation of alliance precursors so closely to the processes of technological emergence, Pyka (2002) makes a strong case for the need to study alliance emergence over time in industries with changing and emergent technological factor markets.

These authors acknowledge that alliance arrangements play many roles in organisational technological strategies. In terms of the exploration versus exploitation trade-off (c.f. March, 1991), alliances can clearly allow for both the acquisition of new competencies and the better use of existing competencies. One major way that firms can integrate the dual challenges relating to exogenous technological change and endogenous organisational competency development is through alliances. Alliances and interfirm networks are increasingly seen as means to extend the ‘knowledge boundaries of firms’ (Howells et al., 2003). Within different ILC stages, alliances can be driven by differing knowledge-strategy objectives. Hagedoorn (1993) contends that at the earliest stages of an industry’s life cycle, firms seek to create alliances to facilitate technological innovations, while at latter stages, alliances may aim to create diversified product offerings. Such propositions are consistent with those of Freeman (1990) who notes the use

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