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PATH DEPENDENCE OF POWER RELATIONS, PATH-BREAKING CHANGE, AND TECHNOLOGICAL ADAPTATION

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ABSTRACT

We study path-dependence of technological systems and power relations inside companies. While existing literature suggests power relations and technology to be path-dependent and influenced by each other, interactions across these evolutionary processes remain poorly understood. We studied the history of four retail firms over forty years, applying event structure analysis to explicate key dynamics. Companies exhibited two episodes of converging path dependency, where power relations further increased technological inertia. In each case, power initially concentrated outside the central headquarters. Path-breaking change led all firms to centralize power and implement networked IT systems supporting central control. We discuss the ability of converging technological and organizational path dependencies to create competitive disadvantage. Widely available technological advances create advantage even when competitors have similar existing systems, when power structures are strongly path-dependent, impeding technological change. Thus, company owners ought to create path-breaking disruptions in power relations when technological adoption provides value.

Keywords: organizational power; information technology; retail industry; computers; path dependence; historical analysis; event structure analysis; ESA.

* Authorship in reverse order of seniority.

INTRODUCTION

The development of increasingly sophisticated information technology (IT) systems has brought revolutionary change to the global retail industry. Mass retailers emerged in the United States in the 1880s after a new national railway system enabled the cost-effective transport of goods in high quantities across the nation (Chandler, 1977; Savitt, 1999). The principal retail strategy remained relatively intact for nearly 100 years, until the adaptation of IT into the supply chain processes of the retailers in the mid-1980s (Cortada, 2004). IT has played a major role in retail industry success stories, most prominently Wal-Mart. IT systems have improved productivity and performance (Broadbent et al., 1999; Brown et al., 2005; Ellram et al., 1989; Reardon et al., 1996) and created significant changes in business processes and strategy (Cortada, 2004; Lamberg and Tikkanen, 2006; Malone, 2003). Despite their central role, IT systems should not provide sustainable advantage or disadvantage to any firms, since investments can be easily imitated by competitors. Specialized IT service providers offer equal access to technology for all retail organizations with sufficient financial resources and even the leading adopters of IT have meager internal development capabilities. In practice, however, retail organizations have significant differences in IT adoption – a puzzling observation from a strategic perspective.

To explain the inability of some retailers to timely implement efficiency-improving technologies, we turn to the literature on path dependence – one of the most central theories of organizational and industry-level evolution (for reviews see Sydow, Schreyogg, & Koch, 2009; Vergne & Durand, 2010). Path-dependence studies elaborate the ability of initial choices made by organizations that develop or use technology to influence future choices through self-reinforcement, lock-in, and increasing returns (Cecere 2009; Page, 2006; Puffert, 2002). We complement this literature with an added focus on the power relations within organizations.
While initial work on path-dependence tended to ignore power and politics, the research on path creation (Garud, Kumaraswamy, & Karnoe, 2010) has highlighted the importance of social and political dynamics in the emergence of technological changes (Gruber, 2010; Vanloqueren & Baret, 2009) as well as technological change as a catalyst of social and political change in fields and organizations (McGuire, Fai, & Ozaki, 2010; Reinstaller & Holzl, 2009). Powerful organizational actors may use their influence in decision-making to direct technological changes to serve their own interests. Conversely, technological change alters the power relationships between different interest groups in organizations (Barley, 1986).

We contribute to the path dependence literature by examining how technological systems and power structures co-evolve over an extended time period. The dilemma we address is this: if both intra-organizational power structures and path-dependent technological developments shape technologies organizations use, how do these two forces interact? Building on a range of studies that show how power structures influence the adoption and use of information technology (Jasperson et al., 2002), we compare the intra-organizational power structures within four organizations. We address three research questions: (1) Are there generic patterns of interactions between the evolutionary paths of technology and power relationships? (2) What is the role of path-breaking change and path creation in parallel processes of path-dependency in power relations and technology? (3) Do systemic interactions between the evolution of power structures and technologies explain organizational competitiveness within an industry context?

To study these potentially complex social dynamics, we adopt a historical research design which earlier literature has identified as a potentially useful yet under-used research strategy to approach complex causalities and evolutionary processes over time (cf. Blundel, 2006; Savitt, 2002; Capoccia and Kelemen, 2007). Specifically, we study four organizations in Finnish retail industry between the years 1959 and 2005 and their disparate ability to
implement broadly available technologies developed outside Finland and offered by impartial global IT providers. We analyze our data using Event Structure Analysis (ESA) and the ETHNO program.

Our study also has implications concerning the role organizational power relations have on the adaptability and therefore competitiveness of firms. When existing power relations are strongly path-dependent and inhibit the adoption of new technological systems, the company is likely to continue operating with suboptimal technological systems and therefore to suffer from competitive disadvantage. In the retail domain, the degree of centralization versus decentralization in operations is often path-dependent and difficult to change. Furthermore, as we found optimal choice between centralization and decentralization is contingent on the characteristics of the most efficient technological systems available at the time, differences in centralization explained significant differences in the ability of companies to adopt generic technological advances.

**PATH DEPENDENCE OF TECHNOLOGY AND POWER**

Our conceptual framework, presented in Figure 1, consists of three elements: (1) intra-organizational power relations, (2) technological systems, and (3) path dependence in technology and power structures. The power relations and technological systems represent two interrelated elements within the organizational structure, whereas path dependence represents the process dynamics that guide subsequent changes. In the following, we provide a review and definitional discussion regarding the framework. While path dependence literature has historically addressed a number of analytical levels, including industries and even societies, our purpose is to examine organization-level path dependent processes. We begin with an overview of path dependence as a dynamic process influenced by prior conditions, develop an overview of path dependence in power relations, and finally explicate the linkages across technological systems and power relations.
Path Dependence

Following the classic work of David (1986), Puffert (2002) defined path dependence as the dependence of subsequent outcomes on the path of previous outcomes. Path dependence means that the sequence of choices made on the basis of transitory conditions persist long after those conditions change (Page, 2006). We qualify processes to be path dependent when prior choices increase the likelihood that managers make similar choices in the future (similar in some systematic dimension, not necessarily exactly similar). Notably, we do not require initial choices to be accidental or “contingent” for a process to count as path dependent (cf. Vergne & Durand, 2010).

The idea of multiple divergent paths in organizational evolution traces back (at least) to the writing of Veblen (1915), who explained the relative decline of English manufacturing advantage in the early 20th century as a result of first-comer disadvantage. The early adoption locked England into suboptimal technologies, allowing Germany to benefit from bypassing early and less efficient technologies. This bifacial nature of technological choice has largely remained in the focus of evolutionary research in organization theory. On the one hand, the adaptation and continuous use of a system generates capabilities (Kenney and von Burg, 1999; Teece et al., 1997) and routines (Nelson and Winter, 1982) which incrementally improve the use of the specific system. On the other hand, the large investments in the system make it increasingly difficult to conduct radical change, eventually resulting in relative inefficiency and decline (see e.g. Tripsas and Gavetti, 2000). Thus, even when technological choices are initially subject to rational choices and political processes (North, 1990; Pettigrew, 1973), they may have irreversible implications for organizational evolution.
Technological path dependence inside organizations can be triggered by a number of processes. For example, invested capital in equipment (cf. Hannan and Freeman, 1984) and compatibility across technologies that cause existing technologies to influence pay-off from future technological choices (e.g. Murmann and Frenken, 2006) can lead companies to choose technologies similar to their initial choice. Some technologies can become critically interrelated to organizational processes to the extent that costs of changing processes prohibit removing or modify the technologies (Reinstaller & Holzl, 2009; Vanloqueren & Baret, 2009). Firms often continue to use a certain technology because the sunk-costs for the technology prevent any short-term change and because capabilities to utilize the technology have grown over time (Heffernan, 2003; Lamberg and Tikkanen, 2006). Alternatively, myopia and ignorance can lead to bounded rationality that ignores alternative technologies. For example, Polaroid’s top management failed to recognize a need to change the company’s strategic focus mainly due a cognitive narrowness and misinterpretation of pay-offs resulting from focus on digital imaging (Tripsas and Gavetti, 2000). Whenever technology has increasing returns to adoption (Arthur, 1989) initially more popular technologies can become significantly more valuable over time – both on societal and organizational level.

**Power Relations and Path Dependence**

Organizational scholars have approached power from a variety of perspectives, ranging from the rationalistic resource dependence perspective to critical discursive formulations (Hardy and Phillips, 2002; Hardy and Clegg, 1996; Salancik and Pfeffer, 1974). In this study, we will focus on zero-sum power relations across different organizational parties that influence organizational decision-making, commonly known in sociological literature as ‘domination’ (Giddens, 1984; Lukes, 1974). To theorize the path dependence of power relations, we first explicate the primary forms and sources of power and then track how existing power relations may influence these sources through positive or negative feedback loops (cf. Pierson, 2000).
Political theory has recognized that positions of political authority can exhibit path-dependent increasing returns (Pierson, 2000). Once a party obtains a privileged position in formal decision-making, it can force decisions that further improve its authority. Similarly, the topic is indirectly addressed in sociological work on processes through which structural sources of power are sustained and reproduced through cultural distinctions and related signification processes which embody certain social positions with status and authority on the societal level (Bourdieu, 1977; Giddens, 1984). In contrast to such macro-level processes, our interest in this paper lies in the reproduction and accumulation of power within organizations.

Organizational power relations exhibit path dependence to the extent that the parties involved can use the available sources of power to accumulate or increase their power over another party. History matters in the evolution of power structures when the control of key resources, information, expertise, or a formal position in decision-making allows an interest group to influence decision-making in ways that provide them with more control over resources, increased reliance on their expertise, beneficial information, or an attractive position in decision-making processes. Such path-dependent effects can exist both within and across individual sources of power. For example, an interest group may be able to use its powerful position in intra-organizational networks (Ibarra, 1993) to secure control over critical resources (Salancik and Pfeffer, 1974), thereby accumulating even more power. Given the multiple alternative sources of power that may exist, it seems impossible to formulate a detailed account of distinct power sources (Clegg et al., 2006). There is no theoretical reason to expect salient sources of power to be similar across individual firms, industries, and/or societies, highlighting path dependence of power as an area for empirical research.

**Interdependent Evolution of Technology and Power Relations**

The history-dependent evolutionary paths of organizational power relations and technological systems may be considered as two distinct dynamics within organizational evolution. Another
option is to focus on how these two dynamics interact. Earlier studies have documented how technological systems can provide certain actors with power over others (Barley, 1986) and how, in reverse, actors with the power to influence technology-related decisions will make these decisions to their own advantage (McGuire et al., 2010; Vanloqueren & Baret, 2009). The range of possible interaction between changing technological systems and power relations is nearly limitless. When technological change influences the frequency or content of interactions across two interest groups (or common third parties) the power relations among these groups in question may also change. Yet, the path dependence in power relations, either within or across organizations, has been largely overlooked in the field of organization studies even though political processes have important ramifications on the evolution of organizations and technology (Garud and Rappa, 1994).

Such bidirectional relationships between technology and power have been examined most extensively in literature related to information technology (IT) (Jasperson et al., 2002). Commonly, new IT systems influence power relations by changing the distribution of information (Lee, 1991). IT systems typically facilitate the collection and distribution of information within and across interest groups, such as within the different actors of the supply chain in the retail industry. Such information flows may empower parties who could not previously act because they lacked access to information, but it may equally facilitate more effective hierarchical control (Jasperson et al., 2002; Zuboff, 1988). By increasing information flow, new technologies may eliminate the ability of certain stakeholders to influence decision-making by withholding information.

Given that technological investments, such as large-scale computer installations, threaten the status and positions of individuals and departments (Pettigrew, 1973), actors are likely to leverage their power relations to facilitate or hinder technological adaptation. Akin to technological path-dependence, differences in political authority and power can persist over
time as a result of their initial conditions, the accumulation of institutional sources of
decision-making power, and an increasingly inert web of social commitments (Pierson, 2000).
Studies show sensitivity to the power-related outcomes of IT initiatives leads to the promotion
of (and resistance to) new IT investments. Recognizing such risks, powerful actors are likely
to leverage their power relationships to facilitate or resist IT investments (Franz and Robey,
1984). In the IT domain, the concerns of potential changes in power positions influence the
total IT lifecycle, including technology-related decision-making, the design of the
technological systems, the implementation of the technologies, and the subsequent utilization
of the technology within the organization (Robey, 1997; Weill and Olson, 1989; Zuboff,
1988).

**Path-Breaking Change and Path Creation**

The interaction between technology and power is central in research focused on path breaking
changes and path creation. Rather than conceiving path dependence to be triggered by random
initial conditions, this literature directs our attention to the identification of the sources and
decision-making processes that initially cause path dependence and to the potential shocks
that “break” developmental paths (Garud & Karnoe, 2003). The literature suggests a concept
of “path creation” as a micro-level explanation for the initial emergence of developmental
paths emphasizing individual intentional actions, but does not deny the explanatory power of
path dependence as a non-intentional process that unfolds over time. The ‘creation’ of a new
path can also mean the ‘breaking’ of an existing path.

Path dependence and path breaking/creation eventually represent theories from two
different scientific paradigms. Path dependence is a structural explanation of how and why
historical processes determine the range of alternatives. Path creation, on the other hand,
emphasizes how individuals and organizations are embedded in processes fundamentally
influencing the direction and speed of technological and organizational development paths
(Garud & Karnoe, 2003). Path creation is a process that happens due to the intentional and
creative activities of individuals using path dependent processes as platforms of innovation (Thrane, Blaabjerg, & Moller, 2010). From this vantage point, our study of interrelated path dependent processes concerning technology and power relations enables us to better conceptualize the relationship between structural determinism (path dependence) and organizational innovation (path creation) (cf. Schreyogg & Sydow, 2010)

Summary
Our literature review elaborates intra-organizational path dependence within technologies and power structures and suggests an abundance of potent interactions among the two. If these interactions are truly ubiquitous, the attention to mutual evolution of power and technology calls into question whether prior research has too single-mindedly focused on technological sources of path dependence. Thus, it is worth examining whether the omission of power relations has distorted our understanding of technological path dependencies in organizations. The added focus on power can also contribute to the better understanding of path breaking changes within organizations. Power relations [technology] could either enable or inhibit the ability of agents to induce ‘breaks’ into technological development [changes in power relations].

In our analysis we set out to answer the following three questions: (1) Are there generic patterns of interactions between the evolutionary paths of technology and power relationships? (2) What is the role of path-breaking change and path creation in parallel processes of path-dependency in power relations and technology? (3) Do systemic interactions between the evolution of power structures and technologies explain organizational competitiveness within an industry context?

METHOD AND DATA

Research Context
The study focuses on the four dominant retail organizations in Finland from the day computers were first introduced in the retail industry (November, 1959) to 2005. For the entire period, the four retailers we examined, Kesko, OTK, S Group, and TUKO\textsuperscript{1}, had a combined market share of over 90\% of the Finnish grocery business (Hjerppe, 1989; Skurnik, 2002). Studying the four retail organizations enabled us to cover the co-evolution of IT and power relations in one specific industry during the entire lifetime of its IT implementation. The retail groups provide an ideal research setting as they exhibit substantial differences in both power structures and technological choices. Yet, the retailers were comparable in terms of their core activities and environment, helping us draw inferences. We were thus able to conduct comparative analyses on the similarities and discrepancies in the evolutionary paths of IT and power relationships.

This story of retail oligopoly is particularly interesting for the differences in the ideology and power structures of these four organizations, persisting from their very founding up to the 1990s. The S Group and OTK originated from an association of local cooperatives, which was split in two in 1917. OTK followed a socialist ideology, while the S Group followed a peasant/agrarian ideology. TUKO and Kesko, in contrast, were founded later, during a period of war with the Soviet Union (1939-1944). The purpose of TUKO and Kesko was to further the interests of independent wholesalers and retailers during the wartime rationing system. While Kesko was owned by individual retailers and their representative association, TUKO was owned by local wholesale companies.

During the first decades of our study, the Finnish society went through a radical transformation including extensive urbanization, increasing income levels, and rapid growth

\textsuperscript{1} TUKO=Tukkukauppojen Oy, Kesko=Kauppiaitten Keskuskunta r.l. osuuskunta, S Group = Cooperative enterprises and Suomen Osuuskauppojen Keskuskunta (SOK) with its subsidiaries. The organization we call 'OTK' (standing for ‘Osuustukkukauppa’) was officially called OTK in 1918—1982, then EKA from 1983-1994 and finally Tradeka from 1994-2005.
of private automotives. Respectively, the retailers started to shift from small-scale rural general stores to deploying sub-urban self service stores. This also meant that the Finnish retail market was open to conquest, resulting to major changes in the competitive positions of the retailers. Another critical period impacting the competitive situation of the retailers was the major depression Finland went through in 1990-1993, during which the gross national product decreased by 13% and unemployment rocketed from 3,5% to 18,9% (Honkapohja, Koskela, Gerlach, & Reichlin, 1999). This depression accelerated the restructuring processes in the Finnish retailers and paved the way for another redistribution of market shares. The development of relative market shares over the study period is plotted in Figure 2. The key historical developments per each retail organization are summarized in Table 1.

Data Collection

We started our research by collecting historical studies on information technology in the Finnish retail sector (Manninen, 2003; Tienari, 1993). We continued by gathering company histories (Herranen, 2004; Hoffman, 1983, 1990; Kallenautio, 1992), published academic studies (Lamberg and Tikkanen, 2006; Lehti, 1990; Mitronen, 2001; Skurnik, 2002), annual reports, newspaper articles, industry studies, and press releases. Specifically, we used annual reports of the four organizations to identify discreet decisions and strategy statements. These provided us with an in-depth understanding of the relative power positions of various constituencies within the organizations and the generic patterns of organizational change. The
choice of historical setting enabled us to convince all four companies to grant us access to their extensive internal archives.

Along the process, we interviewed altogether nine IT professionals who had made significant careers in the IT departments of the case organizations. Our informants had held different positions in the IT departments; many had started as programmers in the 1960s and were now IT managers and CIO’s, some already retired. The interviews were semi-structured and lasted between 1.5 and 2.5 hours. The interviews were taped and transcribed. We also had several follow-up discussions and e-mail correspondence to complete and verify our data. We complemented our interviews of retail staff by independent industry experts; one interviewee had acted as an IBM account director for the retail industry in Finland in the 1960s and 1970s. Our data gathering was complemented with multiple informal discussions with other non-IT related executives from the case organizations.

Overall, our data collection process resulted in extensive material which allowed us to make inferences from multiple vantage points (cf. Capoccia and Kelemen, 2007; Scheffer, 2007). The internal archival material enabled us to triangulate and complement the knowledge gathered from other sources. Particularly, as annual reports can suffer from conscious efforts to portray overly positive impressions and retrospective interviews suffer from a variety of potential biases, the ability to verify our initial interpretations from historical documents was extremely valuable.

Since no reliable accounts of the IT systems within the Finnish retail business existed, we began our historical study by composing 10-15 page long historical accounts for all four case organizations. We specifically focused on how and when the retailers applied new information systems in their business, with a lesser focus on the properties of the underlying technology (Cortada, 2004; Yates, 2005). The histories covered the entire computer-era in all four organizations, starting from the introduction of their first computers in the late 1950s continuing to the deployment of automatic replenishment applications and voice-directed
warehouse systems in the mid 2000s. We asked our key informants to read these histories and revised them based on their feedback.

**Event Structure Analysis**

After collecting historical facts related to the industry and its environmental dynamics, we conducted Event Structure Analysis (ESA) between the four organizations to explicate the path dependent processes taking place in the organizations (Heise, 1989). ESA offers systematic, computer-assisted procedure to model causal relationships across observed events (Corsaro & Heise, 1990; Brown, 2000). Concretely, we used on-line program “ETHNO” to analyze the sequential event data we had extracted. ² We screened our data to reach a set of key organizational actions and choices on technology and power structures, triangulating our sources to establish when and why these might depend on preceding technological and political factors. In accordance with Mahoney (2000) and Pierson (2000), we were interested in identifying manifestations of historical causality and influence between power relations and technological conditions over time, including path-dependent and path-breaking processes.

ETHNO software produced the diagrams of event sequences presented in the Appendix 1. Based on the outcome of the ETHNO analysis, we constructed higher level descriptions of the causal histories in the organizations also distinguishing the technological and political sequences of the events. These analytical views of the causal sequences (see Figures 3-6) enable us to explicate how technological and power-related factors influenced each other over time to shape the evolution of organizations (cf. Pajunen, 2005). As a final step, we compared the analyses of the four retail corporations in order to identify and understand the common characteristics and key distinctions between the intra-organizational development paths.

2 http://www.indiana.edu/~socpsy/ESA/home.html
FINDINGS

We first elaborate and compare the path-dependent evolution of IT applications and power relations in the four retail organizations and then examine how power relations influenced the adoption of IT systems and discuss the impact of IT systems on shifting the locus of power towards the headquarters in the four organizations. Finally, we elaborate the role of existential threats in all organizations in creating a period of path-breaking change and new path creation.

Not surprisingly, all organizations exhibited technological path dependence: investments in new technology built on the prior technological investments. The continuity was strongly evident in the IT histories, although these characteristics cannot always be captured in the ESA figures. Although OTK consistently adopted novel technologies, most information systems (such as the YJ83 in Kesko, order management systems in S Group, material management systems in OTK, and POS systems in TUKO) were used for decades. Companies were reluctant to replace existing functional systems, leading to gradual upgrading of hardware and specific functionalities without radical changes to main features and data structures. Significant changes in the business logic and functionality were only achieved by implementing completely new systems and even then the prior systems often strongly guided the implementation of the new systems; In OTK, some data records in 2005 originated directly from the punch-card systems of the 1950s. Divergence of POS systems provides an example of technological path-dependence also visible in ESA analysis: initial decisions to adopt heterogeneous systems on store-level (rather than as standardized solution decided on the corporate level) led S Group and Kesko to delay investment into networked POS.
Likewise, we found considerable path dependence in the power relations among headquarters, retailers, and regional wholesalers/co-operatives. The power relationships in the organization were "locked-in" by the initial conditions, most importantly the ownership structures at the founding. In all four organizations, decision-making authority over strategy, business models, and investments followed closely the ownership structures. Organizational actors with powerful positions defended their interests by preventing or postponing decisions that would weaken their positions, while also seeking to consciously further strengthen their position. For example, retailers forced Kesko to decentralize advertising and assortment management in the 1980s, a move that in hindsight appeared to reduce overall efficiency but at the time prevented the corporate HQ from gaining power over the retailer-entrepreneurs.

As expected, the path-dependence of power and technology were interdependent. We found a striking and consistent effect of power structures on technology adoption of IT systems with political implications. At the time when central organization had inferior power in relationship to other parties (i.e. independent retailers, cooperatives and warehouse companies), there was scarce adoption of IT applications that constrained the independence of local organizations and provided information on the local operations to the central organization – even though the systems were available. The influence of power relations on technology is most apparent in the case of Kesko, which was initially the frontrunner of IT use during the 1960s and 1970s when computer systems had little impact on the strong position of retail outlets. However, when the computers and inventory management systems entered retail stores in the 1980s, Kesko was slow to react. In particular, the retailer-owners resisted the adoption of IT systems that provided the corporate HQ with detailed information on their retail activities, e.g. the POS systems. In contrast, OTK was the only retail organization that was able to make centralized decisions about store-specific processes and operations. Lacking political resistance, OTK adopted IT influencing the autonomy of store-level operations systems years ahead of their competitors.
The changes in technology also influenced power relations. The introduction of POS systems in the late 1970s started the digitalization of the retail stores. By the early 1990s, most Finnish retail stores had POS systems that collected detailed and accurate data on their sales. The POS systems diminished the dependence of headquarters on the expertise of the retailers as well as regional level by increasing information flows to headquarters. This allowed headquarters to exert bureaucratic control over retailers and wholesalers. With comprehensive and up-to-date data of sales, the central organizations was able to take over the category planning and supply chain operations, reducing the dependency of HQ on non-central actors and increasing the dependence of others on HQ.

For example, in Kesko the HQ started for the first time to consciously limit management information delivered to the individual stores in the early 2000s. This reflects the shifting power relations between store personnel and the central organizations. As the central chain management personnel had the information and the IT systems to manage the store level operations, the role of the store managers decreased considerably in significance. IT systems also increased standardization and central control of work processes. Common product master data, for example, helped to unify assortments and logistical processes in all the retailers. Perhaps the most dramatic changes in power positions resulted from automation that rendered previously-valued human activities obsolete. Automated store replenishment, for example, redefined the role of the storekeeper in the ordering process.

Ultimately all four organizations manifested a similar pattern of path breaking change, caused by the lack of competitiveness and the realization that external developments in IT technology and business processes favored greater centralization. The path-breaking changes in the organizations reconfigured the path-dependent power relationships, representing an event of path-creation that placed all firms on a path towards increasing centralization facilitated by converging centralization of power and implementation of networked technological systems that facilitated centralization.
It is noteworthy that each organization started from its unique configuration of decentralized organizational power relationships (see Table 1). Yet, each organization ended in almost identical hierarchical structures in which corporate headquarters controlled all major processes within retail chain management. In the two co-operatives (OTK and S Group), a financial and operational crisis in the late 1970s and early 1980s initially catalyzed a transfer of power towards the central organization resulting in almost total collapse of the regional co-operatives. As the re-structuring occurred already in the early 1980s it simultaneously allowed the adoption of increasingly efficient IT systems, chain management strategy, and related logistical processes. Consequent improvement in market performance (especially in the case of S Group) finally cemented centrally managed hierarchical corporation as the modus operandi, with all major strategic decisions to be decided at the corporate HQ.

TUKO embarked on similar path towards centralization, but significantly later. Since the regional organizations were independent wholesale firms, they were able to literally refuse to (a) voluntarily re-organize (as in the case of regional co-operatives); and (b) allow TUKO to take a more central role in chain management. The power position of TUKO strengthened during the financial crisis in the end of the 1980s and early 1990s, but strong path-dependence in power relations was only overcome through an intervention from major financiers, creating the consequent path of increasing centralization.

Kesko was the last to undergo a change in the fundamental power relations, exhibiting strong path dependence within power relations. As the market performance of Kesko continued to be very good until the 1990s, there was no immediate reason for path breaking change in power relations. However, the path-dependent development of Kesko’s chain management IT system lagged behind the highly efficient centralized IT solutions developed
abroad and exploited by its competitors. Once Kesko’s market performance started to deteriorate and the benefits of greater centralization were evident – not only from the increasingly successful S Group but from retailers globally – the power struggle between independent retailers and the central organization became more acute. These tensions were only resolved when central organization was able to wrestle power from the retailers in part through a juridical process in the end of the 1990s. The path breaking change and consequent path creation resulted from observed inferiority in chain management and logistics combined with an organizational crisis. Final outcome was still the same as in the other groups: centralized power structure and intensive use of the very latest information technology.

**DISCUSSION AND CONCLUSIONS**

Three research questions guided our historical analysis on path dependence in technology and intra-organizational power: (1) Are there generic patterns of interactions between the evolutionary paths of technology and power relationships? (2) What is the role of path-breaking change and path creation in parallel processes of path-dependency in power relations and technology? (3) Do systemic interactions between the evolution of power structures and technologies explain organizational competitiveness within an industry context? We address these questions separate and summarize the contributions of our study to the theory in these respective areas.

**Interactions across Path Dependencies of Power Relations and Technology**

Path dependence is a process that takes place in a distinct pre-defined dimension, typically the choice of technology to invest in (e.g. Reinstaller & Holzl, 2009). Our study contributes to the literature by examining a novel dimension of path dependency: the degree of centralization in the organization. We found this political dimension of organizational path dependency to also explain the evolution of technology.
Our study shows that the marriage of power interests and technological systems created its own, even stronger, process of path dependence where self-reinforcing effects combine with mutual reinforcement of the evolutionary path. In all four organizations, the path-dependencies converged into a mutually reinforcing power structures and technological systems on two occasions: due to the initial power conditions and due to reconfiguration triggered by a path-breaking crisis. Initially, power relations acted to inhibit technological change, locking the company even more strongly into its present technological systems. After the path-breaking change, power and technology reinforced the effects of one other, leading to a convergence towards centralized power and centralized technological systems.

**Path-Breaking Change and Path Creation**

In contrast to existing literature that tends to attribute path-breaking change to mindfulness (Garud & Karnoe, 2001; Thrane, Blaabjerg, & Moller, 2010), our case exhibited a quite distinct dynamic. The organizations became mindful of the potential efficiency gains available from switching the path from decentralization to centralization during the 80s, at latest in early 1990s. However, the path-breaking change to a new configuration of technology and organizational power happened only through an existential crisis in each of the four case organizations.

In line with the punctuated equilibrium literature (e.g. Tushman & Anderson, 1986), organizational crises disrupted self-reinforcing paths of decentralization in power and technology. In each organization, the crisis shifted power away from the periphery towards the central organization and legitimized path-breaking changes to existing technological systems. Crisis facilitated the implementation of new technological architecture, new types of inventory systems, and control technology. The initial adoptions of these IT architectures positioned the companies on a technological path to adopt further applications (cf. Tegarden, Hatfield, & Echols, 1999). Technologies increased the dependence of retailers and regional
units on the central organization, effectively creating a path for self-reinforcing dynamic of increasingly centralized power. Reinforcing the newly created developmental path, these shifts in power relationships allowed further adoption of centralized IT systems that would have earlier been prevented by organizational politics.

In summary, our contribution to path creation lies in illustrating the role of organizational power relations in creating new techno-political paths. While the creation of technological paths involves the creation of self-reinforcing mechanisms in the domain of technological choices (Sydow et al., 2009; Reinstaller & Holzl, 2009), the creation of techno-political paths represented intertwined formation of a coherent path for both power relations and technology investments. Our findings suggest that the act of technological path creation can be simultaneously a “Machiavellian” act of political path creation – by stepping on a technological path towards centrally coordinated IT architecture, retail groups also ensured the creation of a path towards a certain power configuration.

**Path-Dependencies and Competitiveness**

Our study suggests that the systemic linkages between power and technology strongly affected the ways the organizations competed in the market place. Available developments in technology would have enabled all organizations to update their business models and improve their efficiency – yet, most of the groups failed to make the performance-increasing investments despite strong evidence of benefits from abroad. Should we consider technological path dependence on its own, we should expect organizations with very similar technological systems to make relatively similar investments (Gruber, 2010; Vanloqueren & Baret, 2009). In our data, organizations avoided technological advances because they conflicted with the path-dependent power relations. The initial decentralization of power relations increased the ‘inertia’ in technological development, leading initially similar organizations to adopt external developments at different pace.
Kesko represents an extreme case to support this argument. It was easily the most successful group in our sample, but one that became hostage to path dependent power relationships inhibiting central management from implementing centralized networked IT systems. In contrast, OTK was an anomaly – a poorly managed company that was able to adopt superior technological systems and move towards the central coordination at an early stage. However, OTK was mired by problematic stakeholders and sub-standard resources development during the period when socialist ideology dominated decision making.

In theoretical terms, the concept of technological discontinuities helps explain how strong convergent path dependencies in technology and power relationships are likely to create problems (Tushman & Anderson, 1986). Even when companies might otherwise overcome intra-organizational technological path dependencies and adapt to a new technological paradigm, the convergence of technological path dependence with power relationships can inhibit change in the technological paradigm. Persistence with the old technological paradigm will eventually lead to a suboptimal technical performance (Perez-Nordtvedt, Payne, Short, & Kedia, 2008). Over time, suboptimal performance in some technical domain will lead to higher cost structures, lack of competitiveness, and decrease in market share and/or profitability.

**Practical Implications**
The study is not without practical implications. Power structures influence the timing of IT investments, and thereby the relative competitiveness of the organizations. Our study may act as a reminder that retail organizations are not always monolithic entities in a shared ideological pursuit of efficiency. Political coalitions are likely to be conscious of their positions and will use the power available to them to reproduce and even increase their standing within the organization. For retail industry managers willing to improve efficiency and shareholder returns, technological path dependencies may well appear trivial in
comparison to the pregnant path dependencies of power. Since we found power relations to prevent path creation based on mere mindfulness, the findings call attention towards the need for owners to intervene and create a path-breaking change when crucial technological adaptation is prevented by path-dependency of the prevailing power relations.

**Limitations and Future Research**

It is important to recognize further limitations in studying power structures within the context of a single country and industry. As noted in our literature review, sources of power can vary across cultures, industries, and even individual organizations. Power is often subjective, as the ability of an interest group to dominate another depends on the perceptions and attitudes of the dominated (Bourdieu, 1977). In other industries, the ideology of technological efficiency may dominate any influence of power on technological path dependence. Many modern corporations, especially in the U.S., are controlled by strict hierarchical command that extends over any decentralized decision-making power. Tight central control would preclude the resistance and politics we document. Thus, the applicability of our model seems bound to those organizations where hierarchical power can be contested.

The breadth of data and the span of historical developments covered in our study forced us to limit the material we exhibit. By opting to illustrate path dependent processes within a national industry through a significant time period, less attention has been devoted to individual decision making processes. While a comprehensive synthesis of data from interviews, archives, and publications allow us to compare broad patterns of change in organizations, additional insights could inevitably be gained by adopting a different analytical method, undertaking a more fine-grained investigation of individual key decisions.

Our theoretical contributions inevitably raise questions concerning the development of technologies that facilitated centralization. Was the emergence of technologies that require centralized control and management structures in the U.S. coincidental? Did power structures
at the sites of technology development influence the macro-level technological paths? In our study of technology users, the technological developments appeared ‘deus ex machina’, as foreign inventions that made centralization more efficient than decentralization.

In summary, we would like to encourage future research to further develop path dependence approach to organizational power. Most contemporary studies and theory of power focus on either broad discursive structures or micro-level rhetoric practices (Clegg, Courpasson & Phillips, 2006). Yet, by ignoring the most basic conception of power as rule of dominant over the dominated (Lukes, 1974), we may miss crucial evolutionary processes that shape not only individual organizations but whole industries.
REFERENCES


FIGURE 1

A summary of the interdependent evolutionary paths of organizational power relations and technological capabilities

Legend
- Influence of intra-organizational power relations on technological investments
- Influence of technological systems on power relationships
- Path-dependence of power structures
- Technological path-dependence
FIGURE 2

Relative market share of the retail groups
1960-2006, percentages

- S Group
- Kesko
- TUKO
- OTK
### Analytical view of the causal sequences in OTK

<table>
<thead>
<tr>
<th>Technology realm</th>
<th>Organizational realm</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1960</strong></td>
<td><strong>OTK is a group of numerous local co-operatives, central organization in charge of some upstream &amp; service operations, but with limited control of retail operations</strong></td>
</tr>
<tr>
<td>Early investments in computers, systems built for wholesale and logistics</td>
<td>The central organization focuses on wholesale operations</td>
</tr>
<tr>
<td>When OTK builds the first comprehensive “ERP” system to support OTK’s strategy and business model in the late 1970s, the retail operations remain out of the system’s scope</td>
<td>As decision-making across local co-operatives remains difficult, central organization focuses on manufacturing and wholesale operations, instead of retailing.</td>
</tr>
<tr>
<td><strong>1970</strong></td>
<td><strong>2. Path-breaking change: Crisis shifts power from regions to central organization</strong></td>
</tr>
<tr>
<td><strong>1980</strong></td>
<td><strong>3. Path-dependent convergence towards centralized power held by the central organization</strong></td>
</tr>
<tr>
<td><strong>1990</strong></td>
<td><strong>A national co-operative, centralized organization has strong central decision-making authority, was acquired by an investor group in the early 2000s</strong></td>
</tr>
<tr>
<td>With its new comprehensive mandate, EKA makes investments in common POS systems, moving power to central organization</td>
<td>EKA focuses on chain management including the retail concepts and store level processes and systems (such as POS)</td>
</tr>
</tbody>
</table>

---

2. Path-breaking change: Crisis shifts power from regions to central organization

As a result of economic problems and increasing competition, OTK is restructured and the E-cooperative EKA founded in 1983. EKA starts to focus on end-to-end processes for the grocery business.
FIGURE 4

Analytical view of the causal sequences in S Group

<table>
<thead>
<tr>
<th>Technology realm</th>
<th>Organizational realm</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1960</strong></td>
<td>S Group consists of more than 370 local cooperatives, the largest cooperatives dominate decision-making; central organization in charge of upstream and service operations, but has limited control of retail operations</td>
</tr>
<tr>
<td><strong>1970</strong></td>
<td>SOK makes early investments in computer applications that support wholesale operations, no central coordination or ownership on store level technology investments</td>
</tr>
<tr>
<td></td>
<td>The central organization, SOK, strengthens its role in procurement and logistical processes during 1960s-1970s, but has little power to impose the local cooperatives to make new, common investments or adopt common operating models</td>
</tr>
<tr>
<td></td>
<td>Co-operatives make their own decisions on POS systems, this results in a number of different, disintegrated POS systems across S Group</td>
</tr>
<tr>
<td><strong>1980</strong></td>
<td>By early 1980’s, SOK’s management still has limited authority over S Group’s retail operations</td>
</tr>
<tr>
<td><strong>1990</strong></td>
<td>S Group is restructured in the mid 1985. New strategy focuses on S Group’s customer owners and end-to-end processes across S Group. Respectively, S Group adopts a new business model based on modern chain management thinking.</td>
</tr>
<tr>
<td></td>
<td>S Group finally renews its entire IT architecture &amp; systems, including chain management systems and a common POS system, during late 1980’s and 1990s.</td>
</tr>
<tr>
<td></td>
<td>Enabled by common IT system, the role of the central chain management operations is repeatedly enforced during 1990s</td>
</tr>
<tr>
<td></td>
<td>A group of 23 local co-operatives, central organization is in charge of wholesale and most retail operations through strong chain-management processes</td>
</tr>
</tbody>
</table>
### FIGURE 5

**Analytical view of the causal sequences in Tuko**

<table>
<thead>
<tr>
<th>Technology realm</th>
<th>Organizational realm</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1960</strong></td>
<td>Tuko owned by independent wholesalers, central organization operates mainly as a collective procurement organization</td>
</tr>
<tr>
<td><strong>1970</strong></td>
<td>Tuko's central organization has little mandate to improve the effectiveness of warehouse &amp; logistical processes in the group as these operations are disintegrated in Tuko across regional wholesale organizations</td>
</tr>
<tr>
<td></td>
<td>With mandate for central coordination of retail operations, Tuko, the late adopter in computing, is the first Finnish retailer to invest in common product database and POS systems. However, concerning wholesale and logistical systems, Tuko remains way behind competition.</td>
</tr>
<tr>
<td><strong>1980</strong></td>
<td>In contrast to other Finnish retailers, Tuko's central organization starts supporting Tuko's retail/store-level operations starting already from the 1950s</td>
</tr>
<tr>
<td><strong>1990</strong></td>
<td>Under decreasing performance and market share, Tuko is restructured in the early 1990s. Tuko's three-layer structure (store keepers, regional wholesale organizations, central wholesale organization) is dismantled and Tuko adopts centrally managed business model.</td>
</tr>
</tbody>
</table>

#### 2. Path-breaking change: Crisis shifts power from wholesalers to central organization

#### 3. Path-dependent convergence towards centralized power held by the central organization

As a profit-driven centrally managed corporation, Tuko builds common supply chain systems (e.g. common ERP system, central procurement system, vendor-managed inventory)

The management of the new Tuko focuses on developing the end-to-end processes in the group

As a result of a radical re-structuring of operations, the locus of power is moved to the central headquarters
Significant and early investments in computer applications that support wholesale operations, no central coordination or ownership on store level technology investments

Existing power structures are continually enforced: the independence of retailers increases and central organization focuses only on wholesale operations

With disintegrated product and sales data, Kesko has limited opportunities to improve the effectiveness of procurement, inventory management and logistics across end-to-end operations in Kesko

The independent retailers hold around 40% of Kesko’s shares-based votes. The central organization is in charge of wholesale and most retail operations through strong chain-management. Previous entrepreneurs are more regularly replaced with salaried managers.
**TABLE 1**

**Key Historical Events in Finnish Retail Organizations**

<table>
<thead>
<tr>
<th>Organization</th>
<th>Traditional power structure</th>
<th>Path breaking change</th>
<th>First adoption of IT</th>
<th>The impact of path breaking change on IT</th>
</tr>
</thead>
<tbody>
<tr>
<td>OTK</td>
<td>Power diluted to two partly competing central organizations and numerous local cooperatives</td>
<td>After financial and operational crisis, the majority of local cooperatives merged to form a national organization EKA in 1983.</td>
<td>The history of IT in Finnish retail began in November 1959 when OTK, or more precisely one of OTK’s constituent local cooperatives - Elanto, received its first computer.</td>
<td>EKA started to build common POS systems within different store concepts in mid-1980s, the merger also started the renewal of all major operational IT systems</td>
</tr>
<tr>
<td>S-Group</td>
<td>Power diluted to local cooperatives, and manufacturing industries controlled by the central organization.</td>
<td>Quite similarly with OTK, over 180 small S Group cooperatives merged to form 39 larger units in 1984. This enabled S Group to launch radical rationalization and renewal processes.</td>
<td>The second adopter of digital computers in the Finnish retail, ordered its first computer in 1960-1961</td>
<td>S Group created a completely new IT strategy in 1988, that lead the way to replacing of all major operational IT systems with new chain management IT systems (including POS)</td>
</tr>
<tr>
<td>Tuko</td>
<td>Power held by local wholesale companies which effectively prevented or slowed the central organization to implement strategic changes.</td>
<td>A number of TUKO’s wholesaler-owners drifted into economic difficulties during the 1980s, and were acquired by the increasingly indebted TUKO. In the early 1990s, TUKO became a victim of financial speculation. In 1996, TUKO was sold to Kesko and then parcelled into several smaller companies.</td>
<td>A late adopter in computing, did not acquire a computer until 1974. However, started using digital computing on an outsourcing basis already in the mid-1960s.</td>
<td>Deployment of common POS system started in 1985. The restructuring in early 1990s did not lead to major changes in the IT development, many of the critical IT systems were already built during 1980s</td>
</tr>
<tr>
<td>Kesko</td>
<td>Kesko’s central organization functioned as a service organization towards independent retailer-owners. This worked well until the interests of the entire group and individual retailers increasingly separated in the 1990s.</td>
<td>In the late 1990s, the integration of two separate stock series diminished the voting power of retailers. This allowed the central organization to take control of operations such as chain management, buying, and inventory management.</td>
<td>Had their first computer system up and running in the spring of 1964</td>
<td>Kesko was not able to build IT systems to support the chain management operations until in the late 1990s when it build a new ERP solution and deployed common POS systems</td>
</tr>
</tbody>
</table>
TABLE 2

Summary of Research Results

<table>
<thead>
<tr>
<th></th>
<th>OTK</th>
<th>S Group</th>
<th>TUKO</th>
<th>Kesko</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beginning</td>
<td>R/c</td>
<td>R/c</td>
<td>W</td>
<td>S/c</td>
</tr>
<tr>
<td>Pre-crisis</td>
<td>R/c</td>
<td>R/c</td>
<td>W</td>
<td>S</td>
</tr>
<tr>
<td>During crisis</td>
<td>C/r</td>
<td>C/r</td>
<td>C/w</td>
<td>C/s</td>
</tr>
<tr>
<td>Final power configuration</td>
<td>C</td>
<td>C</td>
<td>C</td>
<td>C</td>
</tr>
</tbody>
</table>

Locus of power within retail groups
C = Central organization; R = Regional organizations; S = Store owners; W = Independent wholesales organizations
APPENDIX 1: ETHNO ANALYSIS OF THE EVENT LOG IN OTK

Case OTK: Event log

1960
- The first computers are introduced in OTK and Elanto to automate wholesale operations such as inventory tracking, store invoicing, and payroll
- OTK’s ideological parent organization, Kulutusoskuntien Keskusliitto (KK) prevents planned centralized management functions
- Lack of competitiveness from decentralized operations ensues, leading the CEO to call for centralization
- The central organization starts conducting accounting, payroll, and inventory management (gradually encompassing the regional warehouses and later individual stores as well)
- E–planning steering committee is established to manage planning for the entire co-operative
- In 1969 OTK’s management communicates the need for more central coordination and planning of business activities
- Mergers between local co-operatives increase

1970
- E–store accounting system is completed, purpose to get sales data to the central OTK organization, increasing OTK responsibility for management of the financial performance of the entire cooperative

1980
- OTK invests in “ERP” system (“E total system”) for the wholesale operations
- A decision is made that by 1980 the number of local cooperatives should reduce from 68 to 20
- Corporate orientation is recognized as strategic priority. The planning of OTK’s complete restructuring starts, objective being a common national co-operative instead of 20 regional ones
- Central organization gains power over regions as market share continues to decline for fifth consecutive year and regional co-operatives run into trouble.
- OTK and 39 local co-operatives merge into a single national co-operative
- Need for change is emphasized by continued poor performance, accentuated by the oil crisis

1990
- The new centralized computer department gets a mandate to build common, integrated POS systems across the stores
- OTK establishes the first retail chains
- Central chain management organization builds a common product database (Etara)
- The chains become centrally managed
- Eka’s businesses are grouped into 12 independent business divisions
- Joint procurement and logistics company, Inex Partners Oy, is founded with the S Group
- Central organization gains power over regions as market share continues to decline for fifth consecutive year and regional co-operatives run into trouble.

1997
- Retail operations are centralized under three chain-concepts
- Distribution centers are centralized under one common management; new Hakkila warehouse built
- Loyalty program is launched
- Restructuring of the store network, 150 stores are closed
- The common POS system is deployed, allowing chain management to gain real-time information from stores
- The retail arm, Tradeka Group, is incorporated
- Automatic replenishment system is deployed, greatly diminishing the role of store-level managers.

2000
- A new chain management system is deployed, connecting POS with sales ordering
- The chain management operations of the three retail chains are merged into one central chain management organization
- The chain management operations of the three retail chains are merged into one central chain management organization
APPENDIX 2: ETHNO analysis of the event log in the S Group

### Case S Group: event log

<table>
<thead>
<tr>
<th>Year</th>
<th>Event Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1960</td>
<td>First computer is acquired to automate centrally-run administrative processes, (e.g. production of sales statistics and invoices). A transportation unit is founded with responsibility of rationalizing transportation and warehouse operations in the S Group. Broader program for rationalization of co-operative structures. Several co-operative mergers.</td>
</tr>
<tr>
<td>1975</td>
<td>A transit invoicing system is deployed, creating a key role for the central organization to manage invoicing within the group. A new Kilo central warehouse is built. SOK’s mission is clarified: to improve the operational preconditions of the co-operatives. Investment in mini-computers for the local warehouses.</td>
</tr>
<tr>
<td>1980</td>
<td>Micrion ordering terminals enable S Group to close regional ordering centers. The S Group starts to use of EAN product codes. Local cooperatives implement direct deliveries to stores without intermediate storage in local warehouses. The central organization takes over the management of product flows across the S Group from regional operators. S Group loses market share and many regional co-operatives run into problems. S Group’s restructuring reduces the number of co-operatives from 178 to 32.</td>
</tr>
<tr>
<td>1988</td>
<td>Revolutionary strategic shift to greater emphasis on central chain management; mission redefined from serving regional co-operatives to providing benefits to the customer-owners of the S Group. IT strategy to create common POS, logistics, and chain management systems across S Group.</td>
</tr>
<tr>
<td>1990</td>
<td>SOK makes chain management agreements with the distressed co-operatives, reallocating power to central organization. Based on the updated agreement concerning the distribution of profit between the central organization (SOK) and the co-operatives, the old transit invoicing system is updated to reflect the new invoicing reward model in the early 1990s. SOK establishes a chain management unit. Joint procurement and logistics company, Inex Partners Oy, is founded.</td>
</tr>
<tr>
<td>1994</td>
<td>S Group’s bonus system becomes national (earlier co-operative specific). A decision made for centrally driven renewal of the retail concepts. New, central system is built to manage membership data across co-operatives.</td>
</tr>
<tr>
<td>2001</td>
<td>New chain management IT system is introduced. The sales based ordering system automates and centralizes the ordering process for several product categories. S Group’s bonus system becomes national (earlier co-operative specific). S Group’s strategy stresses the unity of the S Group.</td>
</tr>
</tbody>
</table>
APPENDIX 3: ETHNO analysis of the event log in Tuko

Case Tuko: Event log

1960
The role of central procurement is strengthened during the early 1960s
Computing services are outsourced in 1966 to Nokia. While all other major Finnish retailers invested in computers in the early 1960’s, Tuko waits until 1970s to acquire its own computer.

1970
Tuko identifies opportunities to rationalize collaboration between central organization and regional member associations
Tuko starts to more closely analyze the sales from Tuko to the local wholesale organizations
Tuko plans new warehouse for imported goods, to be shared across local wholesalers (Helsingin Keskustukku)
Tuko develops ‘Tukku-7’, an in-house “ERP” system
Tuko launches a common T-sign and started respective marketing activities

1975
Tuko’s and Helsingin Keskustukku’s new central warehouse with a new computer is launched in Hämeenkylä
Regional marketing committees are established with equal participation from wholesale and retail organizations
Hämeenkylä main warehouse is expanded in order to increase centrally managed supply of new product categories
The regional wholesalers prohibit Tuko from entering retail operations, slowing down the creation of centrally controlled retailing

1980
Objective to store products with slow turnover in the Hämeenkylä central warehouse
The central unit is established to facilitate and manage development of retail operations in the T-stores
A decision on a common EAN-based POS system across all stores.

1985
Power of regional wholesalers prevents real changes outside retail domain
The strategy of T Group and Tuko is fundamentally re-assessed; focus now on clients and markets, central organization to remain light
Tuko’s director announces that there is no clear leadership in the T Group; pressures mount for greater central power to drive change

1990
Tuko becomes a centrally managed for-profit corporation; The three-level regional structure dismantled
A new centralized procurement system (Tapeli) is deployed
POS system integrated with Tuko’s central IT systems; the central organization has real-time sales data for central chain management organization, and common product data and price information for stores
Tuko builds a new more efficient logistical system
APPENDIX 4: ETHNO analysis of the event log in Kesko

Case Kesko: Event log

1960
- Advances in infrastructure & urban growth in Finland
- Kesko deploys first computer system (inventory management & invoicing)
- Kesko centralizes procurement
- Kesko opens new central warehouse in Hakkila
- The central group Kesko is owned by individual store owners, typically family firms

1970
- Kesko’s mission confirmed to focus completely on wholesale and the success of K-retailers
- Kesko focuses on developing wholesale systems
- Limited attention to store operations and systems
- Kesko and the retailers make new agreements
- Store owners invest in, and own, point-of-sales systems
- Family-owned retailing ceases to be Kesko’s operating principle

1980
- Kesko decides not to integrate Kesko’s systems with store level systems, such as POS
- Only part of goods ordered from Kesko
- Kesko suffers from not having common product register and no access to store-level sales
- Kesko’s area of operations defined to cover activities that are most effectively done centrally
- Central coordination of stores is strengthened in Kesko
- Family-owned retailing ceases to be Kesko’s operating principle

1990
- The autonomy and initiative of the retailers enforced
- Kesko suffers from not having common product register and no access to store-level sales
- All other major retailers had implemented central chain management operations
- Kesko starts to lose market share while S Group grows fast
- Kesko’s share capital becomes publicly traded
- Central coordination of stores is strengthened in Kesko

1995
- Kesko establishes central chain management division with focus on chain management, common category management and marketing
- Kesko further reasserts the chain mgt. operations with more centrally driven procurement, logistics and retail operations
- Kesko builds common, integrated POS systems across the stores

1999
- Kesko invests in a new ERP system
- The power-position of the retailers decreased
- The central organization starts to manage and optimize store inventories

2001