Building IT Resources in Post-Industrial Organizations: Cases on the Development and Application of IT Competencies

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Abstract

Researchers in the IS field have noted that the process by which IT competencies are developed and applied is not well understood. This paucity in extant research begs to be addressed. Hence, the primary objective of this study is to deepen the IS field’s understanding of the creation, development, and application of IT competencies and their role in shaping the distinctive competence of post-industrial organizations. In order to attain this study’s research objective, an integrative theoretical model and a related research framework are employed to investigate the competence profiles of four organizations: News International Newspapers Ltd., Examiner Publications Ltd., Analog Devices Inc., and Interactive Multimedia Systems Ltd. The theoretical model draws on the resource-based view of the firm in institutional economics and on institutional theory in sociology. Four research questions, drawn from the theoretical model and framework, act to guide the conduct of the study. In answering these questions, the findings of four constructivist case studies describe the experiences of the aforementioned organizations in creating, developing, and applying IT competencies to build idiosyncratic IT resources. A meta-analysis of the empirical findings then reveals the major contributions of this study.
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Executive Summary

Post-industrial organizations have two salient characteristics: first, they are knowledge-intensive; second, they employ information technology to acquire, create, and disseminate information, and to co-ordinate and control business activities (Bell, 1989). At a more fundamental level, post-industrial organizations exhibit such structural attributes as flat organizational hierarchies, disaggregated business functions, flexible, dynamic networks or partnerships, and decentralized work locations (Winter and Taylor, 1996).

Researchers in the information systems (IS) field have noted that the process by which IT competencies are created, developed and applied is not well understood. This paucity in extant research begs to be addressed. Hence, the primary objective of this study is to deepen the IS field’s understanding of the creation, development, and application of information technology (IT) competencies and their role in shaping the distinctive competence of post-industrial organizations. IT competencies are here defined as the wherewithal of committed social actors to apply their experiential and technical knowledge of information technologies to design, develop and implement information systems in organizations. Core IT competencies are differentiated from supplementary and enabling competencies, which are non-firm specific and do not constitute a source of rent.

In order to attain this study’s research objective, an integrative theoretical model and a related research framework are employed to investigate the competence profiles of four organizations: News International Newspapers Ltd., Examiner Publications Ltd., Analog Devices Inc., and Interactive Multimedia Systems Ltd. The theoretical model draws on the resource-based view of the firm in institutional economics and on institutional theory in sociology. Four research questions, drawn from the theoretical framework, are posited to guide the conduct of the study. In answering these questions, the findings of four constructivist case studies describe the experiences of the aforementioned organizations in developing and applying IT competencies to build idiosyncratic IT resources. A meta-analysis of the empirical findings then reveals the major contributions of this study.

Information systems is a relatively new field of inquiry that emerged from the need to understand the process by which information technologies are designed, developed, and implemented. The IS field looks to a variety of disciplines for its theoretical foundations. This poses a problem for IS researchers in that the diversity of reference disciplines gives rise to a situation where there is little agreement within the field on a general theory of organizations. Nevertheless, economic theories that treat the firm as a ‘black box’ and examine antecedents and outcomes of organizational behaviour, rather than processes that help explain it, exert a major influence on IS researchers. Consequently, the complex nature of organizational life is seldom appreciated. This is an important point, because while the IS field’s origins lie in practice and in the codification of method, its advancement depends increasingly upon building theory that helps explain and predict the creation, development and application of IT competencies and how they are employed to successfully design, develop, implement, and use information technologies in post-industrial organizations. There is an imperative then for researchers to display a sensitivity to theories that capture the web of conditions and factors that socially construct organizations and institutions. This is particularly relevant to the present endeavour as IS researchers note that the process by which IT competencies are created, developed and applied to build firm specific IT resources is not well understood.

Previous studies on the phenomenon have operated from the resource-based view (RBV) of the firm, which emanates from institutional economics; however, conceptual problems with resource-based theory have neither been noted nor addressed by IS researchers. Neither have the obvious deficiencies with extant research approaches to understanding the phenomenon. These have been quantitative and variance-based studies in the main, or studies that have focused on the views of senior managers only. This study acknowledges these
issues and provides a solid conceptual foundation for future studies on the resource-based view by answering recent calls for a theoretical model and framework to guide research in the area. It also adopts a process-based, interpretive approach aimed at explaining and understanding the phenomenon. In assembling the theoretical foundation for the proposed integrative model and its associated framework, and following Scott (1995), two theoretical perspectives from institutional sociology, one normative, the other cognitive, are employed to augment the predominantly regulative focus of the resource-based view.

Teece and Pisano's (1998) theoretical work on dynamic capabilities, which emanates from the resource-based view in economics, provides this study’s theoretical model with a set of microanalytic attributes. Teece and Pisano’s framework is augmented by findings from Norhaug’s (1994) study of human capital and competence development in organizations. Selznick’s (1949, 1957) theory of commitment informs this study’s perspective on organizational behaviour. Selznick’s theory is selected due to its normative emphasis and clear empirical relevance viz. it posits that the development of organizational character is shaped by the endogenously and exogenously influenced commitments of social actors and that this is a major determinant of organizational distinctive competence. The regulative focus of Teece and Pisano’s perspective, and the predominantly normative focus of Selznick’s view of the firm, are complemented by insights drawn from Berger and Luckmann’s (1967) cognitive treatise on the social construction of knowledge and Kanter’s (1968) theory of the role of commitment in shaping social institutions. Philosophical perspectives from phenomenology and hermeneutics are also introduced to provide this study with its ontological, epistemological and methodological foundations. Finally, the constructivist research approach adopted in this study helps capture a wealth of rich observations that contribute to a general appreciation of the phenomenon.

Three major contributions emerge from this study. First, this study answers calls from researchers in institutional economics, sociology, and the IS field for a theoretical perspective on firm specific competencies that addresses the weaknesses in extant conceptualizations of the phenomenon. Hence, this study addresses the need for holism, rigour, and empirical fidelity in IS research by positing an integrative theoretical model and associated framework that can be employed to help explain and understand the creation, development, and application of firm specific IT competencies and resources.

The second major contribution is this study’s articulation of a constructivist research approach and an associated hermeneutic method for research on information systems in organizational contexts. The articulation of a hermeneutic method is of particular import given the growing interest in interpretivist research in the IS field and the absence here-to-fore of a well-delineated method for the application of hermeneutic principles in the social sciences.

The third major contribution of this study is empirical and relates to its findings. These act to confirm and extend existing theory and empirical research, on one hand, and provide unique insights into the complex nature of the phenomenon of IT competencies, on the other. The findings illustrate the key role that the social web of organizational commitments plays in shaping and influencing the development of firm specific IT competencies and resources in organizations. This is in keeping with the model’s theoretical assumptions. Thus, a behavioural theory of the firm is posited that helps explain the development of business and IT competencies within and across organizations, and with reference to wider institutional contexts. In summary, the empirical findings and associated meta-analysis: (a) illustrate how ‘core rigidities’ can be overcome in institutional contexts; (b) provide in-depth descriptions of the contribution of individual and cross-functional learning in competence development within and between ‘communities-of-practice’; (c) illustrate the role that wider institutional forces play in shaping organizational competencies; (d) highlight that knowledge cannot be managed—only social actors and the commitments they possess can; (e) indicate that complex interrelationships exist between an organization’s historically determined character, its core ‘soft’ and ‘hard’ IT competencies, the intangible resources that
underpin them, and the tangible firm specific IT resources that result. Finally, the study presents a refined theoretical model of the historically-conditioned and socially-constructed nature of business and IT competencies.

This study therefore provides a timely answer to calls in the IS field for in-depth empirical research of a qualitative nature on the creation, development, and application of IT competencies. This deepens the field’s understanding of the phenomenon and acts to guide future research.
Note

The author hereby declares that, except where duly acknowledged, this thesis is entirely his own work. This point is particularly emphasized in relation to all figures and tables. Where these are reproduced or adapted, the original sources are acknowledged. Otherwise, they represent the author’s own work.
A Chorus from ‘The Rock’

The Eagle soars in the summit of Heaven,
The Hunter with his dogs pursues his circuit.
O perpetual revolution of configured stars,
O perpetual recurrence of determined seasons,
O world of spring and autumn, birth and dying!
The endless cycle of idea and action,
Endless invention, endless experiment,
Brings knowledge of motion, but not of stillness;
Knowledge of speech, but not of silence;
Knowledge of words, and ignorance of the Word.
All our knowledge brings us nearer to our ignorance,
All our ignorance brings us nearer to death,
But nearness to death no nearer to God.
Where is the Life we have lost in living?
Where is the wisdom we have lost in knowledge?
Where is the knowledge we have lost in information?
The cycles of Heaven in twenty centuries
Bring us farther from God and nearer to the Dust.