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Institutional effects in the adoption of e-business-technology Evidence from the German automotive supplier industry

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ABSTRACT

This article analyzes the adoption of B2B-e-business technology in German automotive supplier companies during the internet hype period, i.e. in the very early stage of technology diffusion. While from the outset e-business was assumed to be used by companies in order to increase efficiency and reduce costs, some previous IOS research and theoretical considerations suggest that both efficiency and environmental expectations can be important reasons for companies to implement e-business. On this backdrop, the paper analyzes the reasons for e-business technology adoption, focusing on the explanatory value of institutional factors like mimesis, coercion, and normative pressures. Theoretically based hypotheses are developed and tested using regression models with a quantitative data set of more than 1900 companies.

The article tries to make an innovative contribution to the field of IOS research, first, by drawing on theories of organizational structuring – new institutionalism, social psychology, and transaction cost economics; second, variation of adoption rationales in different types of companies and different business functions inside a company is taken into account. It appears that the adoption of e-business is explained by external pressures from other customers, bandwagon effects and herding behavior during the e-business hype, and expectations and interests of professionals inside a company. In the ‘core’ areas of a firm, efficiency rationales play an important role, too. The data reveals that the reasons of e-business usage differ significantly by department and company type.

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1. Introduction

Since the 1990s, internet-based technologies have become wide-spread tools for firms to support a variety of business processes (for example see Liu & Vijayaraman, 2007). Around the year 2000, with the rise of the new economy, many industries faced an 'e-business hype'. Firms expected that modern internet tools would become a precondition for enhancing efficiency and maintaining competitiveness. While the media, management scholars and consultant agencies have pointed to the overall positive effects of B2B-e-business¹ and focused on advising promising ways to benefit from e-business technology (see Papazoglou & Ribbers, 2006; Fox, 2006, for instance), little attention has been paid to the risks and obstacles firms face when redesigning their structures and processes with e-business technology. If e-business technology per se is a prerequisite for coping with the challenges of the global economy, why are many companies reluctant to use electronic business? Why do some stick to more simple technologies only, like email, while others invest in highly advanced e-business systems?

The purpose of this paper is to determine the rationales for the adoption of e-business technology by automotive supplier plants in an early period of innovation diffusion, i.e. between 2001 and 2002, under circumstances of a 'hype' situation. To this end, I seek to apply recent theories of organizational structuring to the field of technology diffusion. While there has been valuable research on IOS as well as on e-business diffusion (see Robey et al., 2008), in this study two broader concepts of organization research are utilized in order to explain the adoption of e-business among suppliers: the new institutionalism of the sociology of organizations (DiMaggio & Powell, 1983; Meyer & Rowan, 1977); and transaction cost economics (Williamson, 1985; Coleman, 1994).

I refer to those two broader theoretical paradigms for three reasons. *Firstly*, in a 'hype' situation, rational explanations for IOS adoption might faint as social expectations, fads and herding behavior gain importance (Hirschheim et al., 2012). New institutionalism and social psychology provide some theoretical rationales to analyze those processes, some of which have been successfully applied to the field of IOS in previous research (see Fichman, 2004; Teo et al., 2003: 41); however, as the sector under investigation is assumed to be highly competitive, efficiency reasons cannot be excluded from the theoretical concept. *Second*, linking IOS adoption research more closely to broader paradigms in sociology and economics may support the connection to current debates in social sciences. The theories chosen here appear to provide highly sophisticated rationales, enabling to ground the explanation in elaborated theoretical frameworks of (contradicting) assumptions about organizational behavior.² *Thirdly*, as the new institutionalism emphasizes power relations and legitimacy instead of efficiency, it is capable of avoiding the 'pro-innovation-bias' because, confronted with institutional pressures, companies "may adopt innovations that are not right for them and, thus, experience outcomes that fail to meet expectations" (Robey et al., 2008: 509). Transaction cost economics, on the other hand, provides a good counterpart which has already been widely employed in organization science and IOS studies.

In the remainder, both theories will be presented briefly and discussed with respect to the possible explanations for e-business adoption. I will point out that the theoretical models reveal different rationales for the diffusion of e-business.³ E-business technology diffusion might be triggered by firms strategically planning to increase efficiency (market pressures); it can also stem from 'political processes' in the automotive industry, which is characterized by the asymmetric allocation of power in customer-supplier-relationships. Finally, as companies are embedded in their institutional environments, normative expectations or cultural demands might account for e-business technology usage among suppliers. Based on our theoretical reflections, hypotheses will be developed and tested using multivariate models based on data from 1902 companies within the German automotive supply industry.

¹ In the following, for matters of convenience, the simple term "e-business" is used. E-business technology is regarded as IOS that is confined to business-to-business functions, and thus, excludes "e-commerce" which is assumed to point to a business-to-consumer relation (see Section 2).

² It has been claimed that salience of research in the field of IOS might be sustained not by consolidation of a theoretical schema but through an increase in theoretical models and references (Robey et al., 2008: 508). Vice versa, by applying grand theories to the specific field, IOS research might contribute to the development of those broader economic and sociological theories, like, for instance, transaction cost economics and institutionalism, thereby enhancing overall recognition and legitimacy of the discipline.

³ In this aspect, the study follows previous research on organizational structuring (cf., for example, Fligstein, 1985; Beck & Walgenbach, 2006) which refuses a mono-causal approach.

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