E-procurement adoption by European firms: A quantitative analysis

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Abstract

We explore country differences in adoption of electronic procurement. Data are used from the EU-initiated e-Business W@tch survey 2003. Analyses are conducted on 3475 organizations from seven different European countries that were stratified according to nine different sectors and three size categories. It appears that there indeed are country differences with respect to e-procurement adoption, and that firms from countries with a low uncertainty avoidance such as Germany and the UK are the early adopters of e-procurement, while countries that are less reluctant to change such as Spain and France have lower adoption rates.
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1. Introduction

Research in purchasing and supply management should become much more quantitative than it is now. I have two main reasons for this. The first one is that in any science, there should be a balance between the soft and the hard, the prescriptive and the descriptive, and the richness of details versus the generality of statistics. In purchasing research there is a abundance of qualitative studies and we need a bit of counterweight to the qualitative stream of research. The second reason is that our discipline is still young: we actually need to have more quantitative facts to talk about. Otherwise, theorizing in purchasing research is playing the air guitar over and over: all moves but no sound. Science rightly starts from imagination and amazement: "I just saw this happen, how can that be?" In social sciences such as ours, it should be a fundamental target to investigate first whether the amazing feat that we saw is indeed an interesting empirical regularity or just a remarkable but rare coincidence.

For me, the best way help the discussion on the issue is to provide quantitative studies. It will have strong and weak points that are characteristic for its kind. My driver is that the strong points outweigh the weak points. But you can decide for yourself.

The adoption of IT or information systems is often interpreted as a single or isolated act of purchasing an application. Obviously, this is a simplification of the common notion that the initial purchase of IT is often the start of an extensive trajectory of implementation, deployment, and alignment that significantly effects the adopting organization (cf. Gopalakrishnan and Damanpour, 1994; Mabert et al., 2002). The starting point of this paper is that the adoption of e-procurement is no exception. While the opportunities and threats of e-procurement seem to wave along with the commercial exposure of IT-consulting companies and related media interests, user organizations face complex deliberations whether to go along with this step to digitalize their purchase and procurement function (Davila et al., 2003). The organizational decision to adopt e-procurement is commonly taken by boards and managers who take information about both the alternatives and the consequences into account. To set one important scope of this study, we focus on this kind of decision making and its variation *between* organizations. Consequently the adoption decision *within* organizations is neglected, including issues such as the acceptance of e-procurement by users (Rogers, 1983; Bouwman et al., 2005). In addition, we limit this study by focusing on the conditions of e-procurement adoption instead of its potential objectives. In particular, we aim to understand the role of national characteristics as

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one particular condition that might influence the likelihood of adoption. Interest in cross-national differences for IT adoption and procurement have started to emerge, but so far little or no empirical studies have been done on e-procurement as the combination of both. Although reports and normative studies about "world class purchasing" and "purchasing excellence" emphasize the importance of international comparisons through benchmarking (Boodie et al., 2002), more profound empirical indicators for procurement levels across countries is needed. With the rapid and world-wide increase of Internet and web-based application in organizations, the emergence of e-procurement (or: on-line purchasing) has become an interesting and distinctive performance indicator. In addition, existing research on country differences in the adoption of IT and ICT in general can assist in explaining differences in the adoption rate and pace.

In the following section we indicate and understand the potential effect of country characteristics on the e-procurement adoption of organizations. First, I elaborate on some theoretical expectations on cross-national differences in the next section. Then, a large-scale dataset that results from a international survey among European organizations is introduced. This survey, initiated by the European Community under the label "e-Business W@tch," is used to describe and explain the e-procurement adoption of companies from seven different European countries around 2003. Before doing so, the influence of industry (and company) size is explored as a prominent background determinant of e-procurement. The final, "controlled" cross-national analysis of e-procurement adoption is then presented and expectations are evaluated. The last section closes with summary and suggestions.

2. Theory and expectations

Around 2000, when the adoption of IT and especially web-based applications was booming, Krumbholtz et al. (2000) studied the impact of culture on the implementation of Enterprise Resource Planning (ERP) in organizations. They used a case study to investigate the implementation of a German ERP package in a large pharmaceuticals company in Scandinavia and the UK. It was suggested that many of the ERP implementation problems are related to issues of (corporate) culture, especially when there is a mismatch of core values. They could not find a direct link between national culture and these implementation problems however.

The study by Krumbholtz et al. is one of the many practical examples that express the acknowledged, but (so far) hardly addressed question about the cross-national and cross-cultural aspects of ICT in business. In the context of this paper, we basically point to the question why organizations would in, say, Belgium, differ in their use of e-procurement software from, say, Finland. Most of the academic research that is conducted in the field of international comparison of organizations, international

management, or cross-cultural studies, are focusing on the country differences as such (Kirkman and Law, 2005). Indeed, these are of direct relevance if firms wish to expand their business to new markets, or if they consider opening a distribution center in a certain country, or are thinking about outsourcing their IT activities to a certain area. Consequently, much attention has been paid to the specific nature of doing business abroad, including extensive advises and consultancy on how to deal with customers, suppliers, business partners, governmental agencies, and so on. This mainstream of research is of limited use when we aim to understand the underlying principles of country differences. Indeed, it might be the case that Germans are known about their punctuality, and British about their politeness (to quote some common sense notions), but what does it tell about the decision making behavior of these inhabitants of Europe?

The most cited author in the research of international differences is obviously Hofstede (1980, 1991) who claims that national culture can explain half of the differences between managerial values, attitudes, and beliefs. Based on his classic study at IBM among 116,000 managers between 1967 and 1974, Hofstede scored over 70 countries on five basic dimensions: power distance, uncertainty avoidance, individualism versus collectivism, masculinity versus femininity, and long-term versus short-term orientation. Although extensively cited and used, Hofstede's work was criticized also by (among others) Mintzberg et al. (1989) who emphasized the severe limitations of the original study (for instance, measurements were taken during the 1970s and among IBM managers only). More recent publications and statistics provided by Hofstede (2002) however, show that for 74 countries and regions the IBM study has been replicated and extended since 2001, using different international populations (including "commercial airline pilots", "students," "civil service managers," "up-market consumers," and "elites" in a varying number of countries), which suggests that the original results do not seem to depend much on Hofstede's original choice of IBM managers.

Van Everdingen and Waarts are among the few scholars who used Hofstede's typology to empirically study cross-national differences in the adoption of IT (Van Everdingen and Waarts, 2003). Using data from over 200 respondents from ten European countries and six main industry sectors, they studied the adoption of ERP systems around 1998, including the intention of firms to adopt before 2003. Van Everdingen and Waarts indeed found a significant relationship between Hofstede's cultural values and ERP adoption. Companies from countries with (1) lower scores on power distance, (2) lower scores on uncertainty avoidance, and (3) higher scores on long-term orientation, had larger probabilities of adopting ERP. These relationships were hypothesized earlier by the authors through reasoning that: (1) power distance is characterized by centralization but ERP will not help to achieve this, (2) uncertainty avoidance is characterized by being risk adverse but ERP adoption is