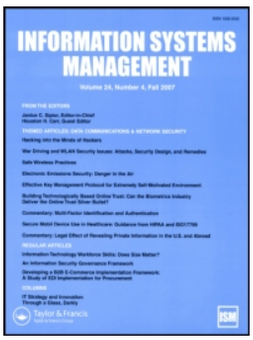

Information Systems Management

ISSN: 1058-0530 (Print) 1934-8703 (Online) Journal homepage: https://www.tandfonline.com/loi/uism20

Information Systems in Transition Economies: Does Ownership Matter?

Tamara Keszey

To cite this article: Tamara Keszey (2017) Information Systems in Transition Economies: Does Ownership Matter?, Information Systems Management, 34:1, 65-84, DOI: 10.1080/10580530.2017.1254456

To link to this article: https://doi.org/10.1080/10580530.2017.1254456

INFORMATION SYSTEMS MANAGEMENT
2017, VOL. 34, NO. 1, 65–84
http://dx.doi.org/10.1080/10580530.2017.1254456

Taylor & Francis
Taylor & Francis Group

Information Systems in Transition Economies: Does Ownership Matter?

Tamara Keszey

Department of Marketing, Institute of Marketing and Media, Corvinus University of Budapest, Budapest, Hungary

ABSTRACT
This research investigates the moderating roles of firm ownership in managerial perceptions of information systems (IS) in transition economies. Analysis of representative survey data from 304 companies in Hungary showed that perceptions of IS are driven by organizational variables in foreign firms, and by environmental variables in domestic firms. The findings embrace a more fine-grained notion of variables affecting IS usefulness in the transition economy context by showing that those are contingent on firm ownership.

KEYWORDS
Firm ownership; information systems; technological turbulence; organizational variables; ease of use; emerging economy; transition economy; Hungary

Introduction

Transition economies are those moving from a communist style central planning system to a free market system (Roztocki & Weistroffer, 2008), and, as such, are distinct from developed economies. These economies account for about one third of the total world population (Soubbotina & Sheram, 2007) and play an increasingly important role in the global economy, with information systems (IS) constituting the principal enabler for their global connectedness (Roztocki & Weistroffer, 2009). However, extant literature on IS mostly builds on empirical evidence from developed economies in Western Europe and North America, while research focusing on IS in transition economies is relatively limited, and more research on this domain is needed (Piotrowicz, 2015; Roztocki & Weistroffer, 2015).

These studies on IS in transition economies have yielded important theoretical foundations regarding the diffusion, strategic role, implementation, adoption, and management of IS, and have claimed that substantial differences exist between transition and developed economies (Dobija, Klimczak, Roztocki, & Weistroffer, 2012; Roztocki & Weistroffer, 2009). Despite progress in research focusing on IS transition economies, one important moderator (i.e., firm ownership) is currently missing from the literature. It remains unclear whether foreign companies operating in this business context continue to be characterized by the patterns that describe firms in transition economies or whether these observations hold true only for domestic firms. The objective of the article is to fill this gap and to enrich the extant literature on IS in transition economies by emphasizing the contingent roles of firm ownership.

This amalgamation is needed because ownership is a parsimonious and important variable for any transition economy to explore the firm-level characteristics (Ma, Yao, & Xi, 2006). Foreign firms and foreign inward investment play a catalyst role in the process of transition (Bartlett & Seleny, 1998; Choi, Lee, & Williams, 2011). To large extent, this catalyst role was associated with the delivery of modern management knowledge to these economies (Meyer & Peng, 2015). Prior to the transition, private ownership was virtually nonexistent, business operations were centrally planned, and modern management knowledge was unimportant in gaining advantages in the marketplace (Kornai, 1986). However, during the process of transition, these firms had suddenly faced increased competition to an extent that they had not experienced before, and the role of modern management practices and know-how suddenly became important (Meyer & Peng, 2015). As domestic companies lack this knowledge, foreign firms provided the missing managerial know-how in these economies (Meyer & Peng, 2015).

The present study addresses the following research questions: (1) How is managers' perception of IS usefulness affected by environmental, organizational, and IS-specific variables in a transition economy context? (2) Is the effect of environmental, organizational, and IS-specific variables on managers' perception of IS usefulness contingent on firm ownership categories, videlicet foreign versus domestic? By addressing these

CONTACT Tamara Keszey tamara.keszey@uni-corvinus.hu Department of Marketing, Institute of Marketing and Media, Corvinus University of Budapest, Fővám tér 8, Budapest 1093, Hungary.

questions, we—in addition to highlighting the contingent role of firm ownership—seek to contribute to the literature on IS in transition economies in three significant ways.

First, this article builds on and extends research on IS in transition economies by focusing on individuals—more specifically, on marketing managers within the firm. A recent review of the literature based on an analysis of 173 IS studies showed that most research on transition economies has been conducted at the macro level rather than at the micro level, and individuals were the focus of only eight of the studies (4.6%) (Roztocki & Weistroffer, 2015). According to Roztocki and Weistroffer (2015), this is a clear gap in the literature.

This study focuses on marketing managers, as over the past decade, management practice has been heavily influenced by IS: Nowhere is this truer than in marketing (Reinartz, Krafft, & Hoyer, 2004). Advances in customer-related IS, such as customer relation management systems and business model innovation, are examples of IS encroachment on marketing domains (Reinartz et al., 2004). Recently, the IT analyst firm Gartner has predicted that by 2017, marketing managers will outspend IT managers on both technology and IS (Arthur, 2012). Therefore, understanding how marketing managers perceive IS in general and what factors influence whether they deem IS useful is more relevant than ever before.

IS are organization-wide constructs; however, such systems are implemented at the individual level. Individuals, including managers and employees, are the actual users of these systems within the firm. Consequently, understanding how IS provide value for individuals within an organization is of key importance for understanding how IS provide value for an organization overall (Díez & McIntosh, 2009). As long as the analysis of IS in transition economies remains at the macro level, it is difficult to pinpoint how environmental, organizational, and system-related variables affect IS within a firm and why some IS are perceived as more useful than others. This research moves the extant literature forward by shedding light on some variables that influence individual-level responses to IS in transition economies.

Second, this study seeks to emphasize the effect of environmental conditions of IS perception. Organizational scholars have long argued that "the best way to organize depends on the nature of the environment to which the organization must relate" (Scott, 1981, p. 114). In a similar vein, IS outcomes can be better understood by accounting for the characteristics of the business environment (Salmela, Lederer, & Reponen, 2000). The current study builds on this research by investigating the effect of the technological turbulence of the environment on perceived IS usefulness.

Environmental turbulence is an especially relevant environmental characteristic in transition economies. During its early stages of transition, the environment in Hungary was often so turbulent that private firms were typically not motivated to build up a solid goodwill with their customers, as the owners often felt that they might not even be in business during the following year (Kornai, 1990). Overwhelming evidence suggests the scale and scope of environmental turbulence never seem to abate in these economies (Meyer & Peng, 2015). This turbulence creates specific conditions for IS to culminate to overly complex system adoption processes; unstable, ever changing requirements toward the IS; and unique considerations of IT projects (Huang & Palvia, 2001; Themistocleous, Soja, & da Cunha, 2011). While there is a rich literature on the ever-changing external environment that creates specific conditions of IS adoption in these economies, less is known about the congruence between the level of environmental turbulence and managers' perception of IS. This study thus extends previous work by advocating and enriching the impact of environmental turbulence on managers' perception of IS.

Third, this study contributes to a better understanding of how organizational characteristics provide a background for managerial perceptions of IS, as studies focusing on the role of organizational variables in evaluating the IS outcomes remain scant in the literature (Dwivedi et al., 2015). Recently, Petter, DeLone, and McLean (2013) conducted an in-depth analysis that examined more than 600 articles to provide a comprehensive understanding of the variables affecting IS success and to identify research gaps. One major gap noted by Petter and colleagues (2013) was that studies of the success of IS do not capture organizational complexities. As Petter and colleagues (2013, p. 42) stated, "we have done a poor job of understanding what task, user, social, project, and organizational characteristics influence organizational impact." More research is needed on organizational characteristics' effects on IS success (Petter et al., 2013). This article enriches extant literature by examining the effect of important organizational variables, videlicet social orientation, formalization, and organizational commitment on managerial perception of IS.

The rest of the article is organized as follows. In the following sections, a theoretical framework is presented, and research hypotheses are developed. Subsequently, we discuss a robust empirical research methodology, introduce measures, and evaluate the risks of possible measurement errors. We then test the model by using a representative sample of high-income

Hungarian firms. Hungary is especially well suited for a study aiming to highlight the role of ownership contingencies, as it has received more foreign direct investment than any other former communist state during the early stages of transition (Bartlett & Seleny, 1998) and still has one of the highest rates of foreign direct investment rate per capita in Central and Eastern Europe (United Nations Conference on Trade and Development (UNCTAD), 2016). Finally, results are presented and discussed along with managerial implications, research limitations, and suggestions for future research.

Conceptual background

This article focuses on the perceived usefulness of IS by marketing managers in a transition economy context. Thus, the conceptual background of the article is organized as follows: First, we define and highlight the importance of the perceived usefulness of IS; then, we provide a solid background on the specific features of marketing managers' use and perception of IS; finally, we highlight the most relevant outcomes of the literature focused on IS in transition economies.

Perceived usefulness of IS

IS are defined as a coordinated collection of data, systems, tools, and techniques with supporting software and hardware by which an organization gathers and interprets relevant information from businesses and the environment and transforms it into a basis for managerial action (Little, 1979). In this study, we focus on complex application software packages containing mechanisms that both support the management of the entire enterprise and integrate all areas of its functioning (Davenport, 1998). Examples of such IS include customer complaint management systems, integrated enterprise IS, and customer relationship management systems.

Scholars distinguish stages with respect to IS adoption in companies. Wierenga and Ophuis (1997), for example, identified adoption intention, adoption, implementation, and post-implementation phases, whereas Cooper and Zmud (1990) identified six stages: initiation, adoption, adaptation, acceptance, routinization, and infusion. However, to date, most empirical studies on transition economies focus on IS adoption (Bernroider, Sudzina, & Pucihar, 2011; Soja, 2011, 2015; Soja & Paliwoda-Pękosz, 2013), while the post-adoption stages of IS remain uncovered. It is nevertheless important to also devote attention to the latter phases. IS are regarded as "cornerstones of modern organizations" (Themistocleous et al., 2011, p. 223). However, adopting and implementing an IS are insufficient—firms need to accept and routinely use them for maximum advantage (Rollins, Bellenger, & Johnston, 2012).

The central concept of this article is the usefulness of IS as perceived by managers. We conceptualize perceived IS usefulness as the extent to which individuals in an organization believe that using such a system will enhance productivity (Venkatesh & Davis, 2000). There is overpowering evidence that organizations struggle to demonstrate how their investments in IS create value for the firm (Brynjolfsson, Hu, & Rahman, 2013). We focus on the perceived usefulness of IS because it is one of the most frequently applied success indicators and a variable that drives the actual use of IS (Wierenga & Ophuis, 1997).

IS and marketing managers

Marketing managers have a number of specific characteristics from an information processing perspective that distinguish them from the majority of managers within the firm. Because marketing decision makers are especially likely to be confronted with the complexity of information processing (Davenport, Harris, & Kohli, 2001), they are good subjects of any study aiming to uncover drivers of IS usefulness.

It has long been suggested that information relevant for marketing is the most complex type of information within a firm (Davenport et al., 2001). Marketing information is derived from various sources housed both within and outside a company, such as databases, the internet, customer complaint management systems, and market research (Rollins et al., 2012). Marketing decision makers are overwhelmed with not only complexity of data, but also an increasing amount of information, as a massive amount of data are generated, stored, and collected in IS every day (Rollins et al., 2012).

Marketing managers are in a specific position within the firm from an information processing perspective. They are not only charged of understanding customer needs, desires, and market feedback, but also responsible for sharing this information with other departmental units, such as research and development, sales, and production (Glazer, 2001). Marketing managers therefore pursue strategic roles within their organizations and are charged with obtaining critical information from the marketplace, customers, and competitors. Thus, marketing executives are responsible for not only providing feedback and perceptions from the external environment through their stakeholder networks, but also interpreting and translating that information back into their organizations (Jaworski & Kohli, 1993).

Organizational members who are expected to link the organization with the environment to forge intra- and

extra-organizational boundaries are often referred to as boundary spanners (Cross & Parker, 2004). Boundary spanners are vital individuals within a firm who facilitate the dissemination of knowledge and information by linking two or more groups of people who are separated by location, hierarchy, or function (Cross & Parker, 2004). Marketing managers, general managers responsible for marketing domains, and sales representatives are typical examples of boundary spanners (Singh & Rhoads, 1991).

In complex information processes, IS have been regarded as an important tool for supporting the integration of expertise, knowledge, and information in diverse fields (Levina & Vaaste, 2004). According to the knowledge-based view of the firm, integrating various sources of information and expertise leads to the ability to overcome significant obstacles, and performing that integration better than the competition may become a source of sustainable competitive advantage that is difficult to replicate (Alavi & Leidner, 2001). As IS integrate various sources of information, marketing managers may find them useful for building practices in gaining and sharing marketing information within a firm. Thus, boundary spanners' perception of IS usefulness enhances their ability to perform their key competencies (Alavi & Leidner, 2001).

Transition economy context of IS

Transition economies are subset of the flourishing group of "emerging economies" and include the former Eastern (or Soviet) Bloc and countries that resulted from the breakup of the Soviet Union (Roztocki & Weistroffer, 2015). Furthermore, the People's Republic of China and the Socialist Republic of Vietnam are also considered transition economies, although these countries still retain communist-type political systems (Roztocki & Weistroffer, 2015). These economies are at different phases of the transition process. Distinguished by a shared history and common interest in market reforms, the so-called Visegrád Four countries of Poland, Slovakia, Hungary, and the Czech Republic, for example, are well advanced in the transition process (Roztocki & Weistroffer, 2015). However, significant gaps remain between the European transition economies and the developed countries of "old" Europe. While developed countries are characterized by high living standards, well-developed infrastructure, and continuous and self-sustaining economic growth, transition economies still remain laggards among the countries in Europe according to GDP per capita (World Bank, 2015).

While research on IS in transition economies is in great need, over the last decade, studies on IS in these economies has started to proliferate. Recently, two profound literature reviews of the IS literature in emerging economies have been published (Piotrowicz, 2015; Roztocki & Weistroffer, 2015). Roztocki and Weistroffer (2015) included 173 articles from all transition economies, while Piotrowicz (2015) covered 124 studies. Providing an exhaustive literature review of IS in transition economies is beyond the scope of this study; however, we summarize the most relevant findings of recent empirical research.

As shown in Table 1, one stream of empirical research in this domain focuses on macroeconomic developments related to IT investments to examine the differential features of information and communication technology (ICT) in transition economies (Harindranath, 2008; Roztocki & Weistroffer, 2009; Samoilenko, 2008; Weerakkody, El-Haddadeh, Sabol, Ghoneim, & Dzupka, 2012) and the impact of ICT on macro-level productivity and investors' reactions and behaviors toward IT investments (Dobija et al., 2012; Samoilenko & Osei-Bryson, 2015). These empirical studies are either multi-country investigations where authors compare transition and developed economies (Weerakkody et al., 2012), focus on a group of transition economies (Roztocki & Weistroffer, 2009; Samoilenko, 2008; Samoilenko & Osei-Bryson, 2015), or examine a single country (Harindranath, 2008).

Findings from these macro-level studies confirm that transition economies lag behind developed economies with respect to IS. For example, the transition has led to increasing globalization in Hungary and to corresponding integration with the global and European economy, but the process and impact of such transition of ICT production has been more problematic (Harindranath, 2008). Another recent study by Weerakkody and colleagues (2012) showed that Slovakia is lagging in the adoption of e-government in comparison with the United Kingdom owing to social and legal factors. Another literature review by Roztocki and Weistroffer (2009) on ICT noted these economies seek different

Table 1. Recent empirical studies on IS in transition economies.

	Main research areas
Macro-economic level	
Samoilenko and Osei-Bryson (2015)	ICT systems
Weerakkody et al. (2012)	E-government
Dobija et al. (2012)	IT investments
Roztocki and Weistroffer (2009)	ICT systems
Samoilenko (2008)	ICT systems
Harindranath (2008)	ICT systems
Micro-economic level	
Soja (2015)	ES
Kokles et al. (2015)	IT systems
Soja and Paliwoda-Pękosz (2013)	ES
Soja (2011)	ES
Themistocleous et al. (2011)	ES
Bernroider et al. (2011)	ERP system absorption

ES = Enterprise Systems; ERP = Enterprise Resource Planning.

advantages through the adoption of ICT solutions. For example, while ICT are mainly used for replacing human labor in developed economies, the primary motivation in transition economies is to compensate for a lack of infrastructure.

The other main takeaway from these macro-level studies is that transition economies cannot be regarded from an IS perspective as a homogenous subset of countries. Based on a statistical analysis of secondary data from the World Development Indicators database and Yearbook of Statistics, Samoilenko (2008) identified two subgroups: the leaders (e.g., former 'Eastern' Bloc countries, Bulgaria, Hungary, Poland, and Slovenia) and the majority (e.g., former countries of the Soviet Union: Armenia, Azerbaijan, Estonia, and Latvia). The majority has a higher level of ICT investments aimed at producing revenues and has a higher level of sociotechnical know-how to transform ICT investments into revenues (Samoilenko, 2008). A recent study by Samoilenko and Osei-Bryson (2015) on the Visegrád Group (Czech Republic, Hungary, Poland, and Slovakia) and Baltic countries (Estonia, Latvia, and Lithuania) highlighted that the drivers of ICT investments evolve over time. ICT investments' contribution to productivity differed between before these countries joined the European Union and after they joined. In the transition period, growth was driven by technological changes, whereas in later stages, it was driven by efficient utilization (Samoilenko & Osei-Bryson, 2015).

In comparison with the number of macro-level studies, only a limited number of studies on IS in emerging economies have investigated the phenomena from a micro-level perspective (Roztocki & Weistroffer, 2015). According to Roztocki and Weistroffer (2015), in the domain of IS in emerging economies, some countries are overrepresented, while other countries are underrepresented. Poland, for example, served as the context for a number of micro-level IS studies (Soja, 2011, 2015; Soja & Paliwoda-Pękosz, 2013; Themistocleous et al., 2011). Slovakia has also been investigated in several IS studies (Bernroider et al., 2011; Kokles, Romanová, & Hamranová, 2015). Some other transition economy countries, however, have received less academic attention. For example, Hungary, which serves as the context of this study, is investigated in only 1.2% of the 173 works reviewed in the recent literature review by Roztocki and Weistroffer (2015).

The extant literature highlights that IS adoption seems to be more challenging for companies in transition economies than for companies in developed economies (Themistocleous et al., 2011). Scholars note that firms in transition economies use IS that are as developed or sometimes even more recent than firms in developed countries (Kokles et al., 2015), but their different environment and organizational settings engender many IS-related differences. The business environments in these economies are characterized by much higher complexity, turbulence, and unpredictability, which leads to ever-changing, unstable IS requirements in firms (Themistocleous et al., 2011). These complex changes account for the non-textbook process of IS adoption lifecycles with the presence of additional stages (Themistocleous et al., 2011), a lower level of IT strategic alignment (Kokles et al., 2015), and a different emphasis of IS adoption through a focus on stabilizing recent implementations instead of emphasizing the use of IS and renewing business routines (Bernroider et al., 2011).

Research framework and hypotheses

The dependent variable of the research framework is perceived usefulness of IS perceived by managers—as depicted in the research framework in Figure 1. In our research framework, we identified five independent variables: technological turbulence, social orientation, formalization, organizational commitment, and ease of IS use. These independent variables are linked to three subgroups of independent variables—environmental-, organizational-, and IS-related ones. These variables are hypothesized to have direct effects on the dependent variable (H1 to H5). In the following sub-section, we provide a definition of these variables and—based on the extant literature—build up our hypotheses. Subsequently, we introduce the moderating variable of firm ownership, and formulate the related hypotheses of moderating effects (H6a–d). Finally, at the end of this section, we put forward the control variables and provide an explanation on the importance of including these variables to the research framework.

Direct effects

The first subset of independent variables in our research framework refer to environmental variables. Environmental variables are elements of the business environment that exist outside of a firm's control; however, can significantly impact its decision making, operation, performance, and strategies. Examples of environmental variables are legal, economical, socio-cultural, and technological ones (Kroon, 1995). Among the environmental variables, we focus on technological turbulence. For more than three decades, a cornerstone of the management literature has been that successful firms thrive because of their constant ability

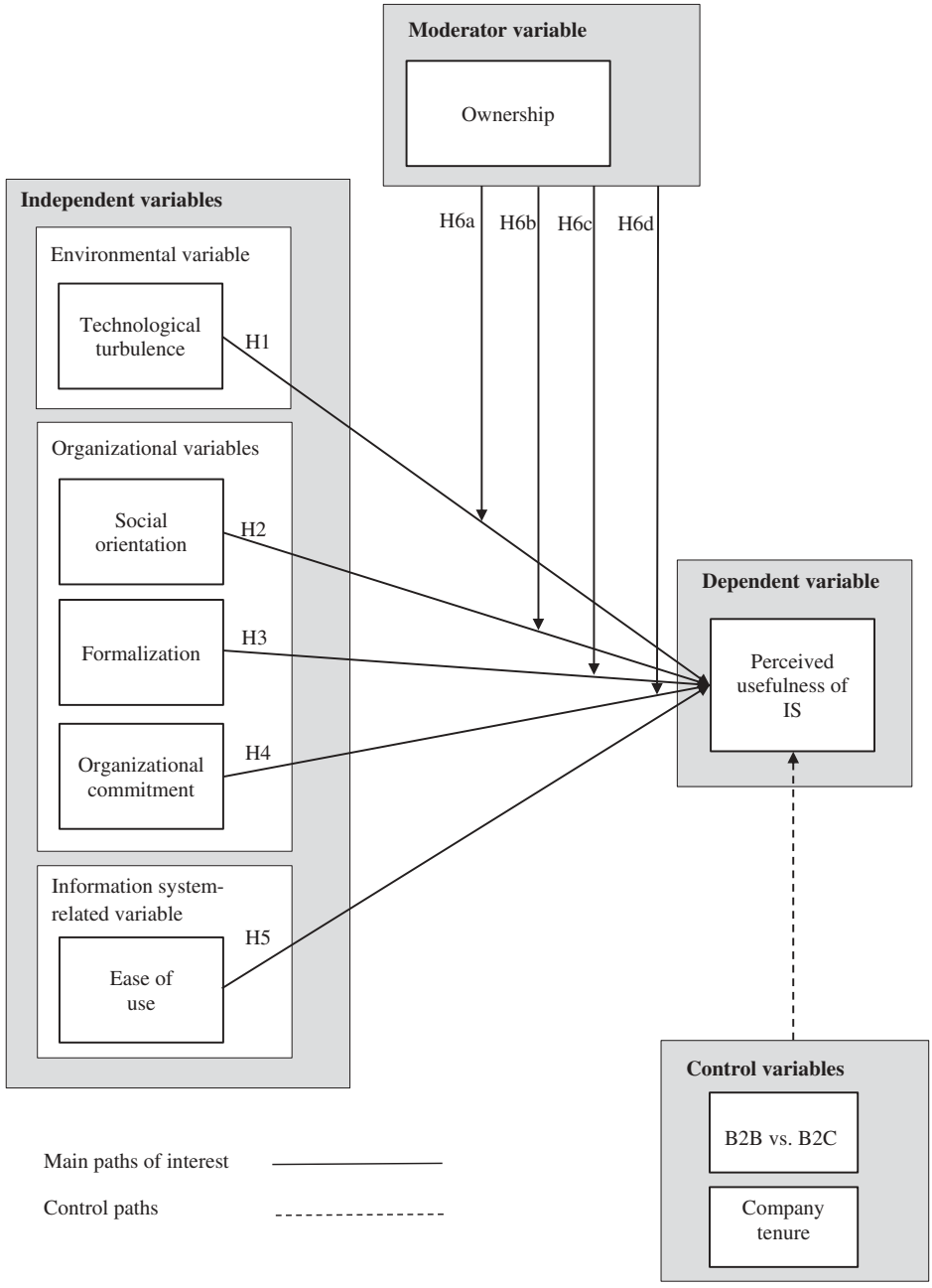

Figure 1. Research framework.

to adapt to changes in the environment (Jaworski & Kohli, 1993). Because turbulence in the marketplace does not seem to abate, organizations assume that IS play a fundamental role in developing adoption capabilities because the notions of speed and flexibility would be inconceivable without them (Autry, Grawe, Daugherty, & Richey, 2010). The environment's technological turbulence is an important element of the business environment that has been conceptualized as technology's rate of change and unpredictability in an industrial or market environment (Song, Droge, Hanvanich, & Calantone, 2005). Technological turbulence could also be evaluated in terms of resource advantage theory, which states that organizations will seek a comparative advantage in resources in the market to achieve relative advantage and superior financial performance (Autry et al., 2010). Previous studies have revealed the importance of IS in gaining organizational performance advantages over market competitors (Autry et al., 2010). In technologically turbulent markets, organizations that fail to follow current and anticipated trends in technology may fail to achieve a comparative advantage. This "fear of missing out" may foster mimicry. Based on technological turbulence

that reflects the overall state of technology in the business environment, along with the firm's essential desire to keep up with the competition on the marketplace through means of IS, we propose the following hypothesis:

H1: Technological turbulence in the business environment increases the perceived usefulness of IS.

The second subset of variables considered in our research framework is organizational variables. Organizational variables are collections of all characteristics that are typical for the firm and that provide the background against which the organization operates. These variables also significantly influence the performance and operations of the company and its elements; for example, include ownership, employees, organizational structures, and organizational culture. In this study, we focus on three organizational variables: social orientation, formalization, and organizational commitment.

A firm's social orientation refers to the extent to which it provides its employees with opportunities to interact in social, non-work-related settings (Maltz, Souder, & Kumar, 2001). Examples of such events include cross-departmental sports contests or recreational activities and organization-wide, firm-initiated, and firm-organized parties. These opportunities allow managers to meet colleagues from other fields and departmental units in an informal, non-business setting. Although these events are primarily social, they also provide opportunities to address work-related issues in an informal manner and to discuss topics encountered at work. The relaxed atmosphere of these social events improves team spirit, increases interpersonal trust, and reduces conflicts and distance between the members of a firm. Social orientation increases marketing managers' perceptions of information usefulness from other departments and provides opportunities to learn how to use and contextualize market information to improve managerial efforts in a relatively informal setting (Maltz et al., 2001). Accordingly, social orientation is supposed to have positive effects on the perceived usefulness and use of market information disseminated among managers belonging to different functional units. Because managers can increasingly gain information through well-developed social bonds with trustworthy colleagues who are trained in how to contextualize and effectively use this information, they will need to rely less on IS and will perceive IS as less useful. Therefore, we posit the following hypothesis:

H2: A firm's social orientation decreases the perceived usefulness of IS.

Formalization has been conceptualized as the presence of written routines and procedures within an organization that guide managers' work patterns (Deshpandé & Zaltman, 1982). Few works have focused on the role of formal management processes in influencing the benefits resulting from IS (Petter et al., 2013). Chatterjee, Grewal, and Sambamurthy (2002) noted that formal routines allow managers to develop the integrative knowledge necessary for undertaking and structuring actions aimed at assimilating web technologies. Kearns and Sabherwal (2007) revealed an indirect effect of formal management processes on IS strategic alignment and the business effect of IS. In the field of managers' information processing, several early but well-known studies have analyzed the effect of job formalization on the usefulness of information to managers, with contradictory results. Deshpandé (1982) showed that the more exact a marketing manager's job description, the less he or she will perceive market research as useful in decision making. Zaltman, Duncan, and Holbek (1973) validated a negative relationship between organizational formalization and the usefulness of market information. An examination of the managerial use of business plans by John and Martin (1984) arrived at findings opposite to those of Deshpandé (1982) and Zaltman and colleagues (1973). According to these studies' results, the more formalized the job, the larger the extent to which the business plan will be perceived as a useful management activity (John & Martin, 1984). Maltz and Kohli (1996) analyzed the formalization of interdepartmental information sharing and find that the more formalized the managerial processes, the larger the extent to which information from other departments is perceived as useful by the marketing department.

Our assumption suggests the more formalized a manager's job description, the more he or she will perceive IS to be useful in decision making. Job formalization brings a kind of order, routine, and rigor to management activities; thus, in the case of formal work processes and well-defined duties—which may precisely determine the scope of information to be considered in a complex decisional situation—the likelihood of "neglecting" IS systems in managerial decision making is small. This leads us to propose the following hypothesis:

H3: Formalization of the firm increases the perceived usefulness of IS.

A key variable explaining individuals' organizational behavior is an employee's organizational commitment, which is defined as the degree to which an employee

identifies with the organization, and is committed to pursuing its goals and desires to maintain employment (Maltz & Kohli, 1996). The role of organizational commitment in the perception of IS usefulness has not yet been widely studied, although Venkatesh, Morris, Davis, and Davis (2003) identified the exploration of commitment and IT implementation as one "of the most important future research directions" (Venkatesh et al., 2003, p. 470). Nevertheless, this variable is "one of the most often studied variables in organizational behavior research" (Riketta, 2002, p. 257). A meta-analysis of 111 samples from 93 studies shows that employees who are committed to an organization perform better at their jobs (Riketta, 2002). Employees who feel attached to and identify with their organization work harder and are more willing to make an effort to comply with company goals (Riketta, 2002). The perception of IS usefulness is both a cognitive process and a gap analysis of what the IS can offer and what users actually require to effectively perform their jobs (Venkatesh & Bala, 2008). The smaller the gap, the higher the perceived usefulness of the IS. The management literature suggests that organizational commitment results in positive attitudes in the workplace (Maltz & Kohli, 1996). Thus, the more committed the employee, the better he or she evaluates organizational initiatives because of his or her generally positive attitudes toward the organization. We argue that these positive attitudes driven by organizational commitment lead to less critical evaluations of the potential shortcomings of IS usefulness and that users will therefore perceive the IS to be more useful. Therefore, we posit the following hypothesis:

H4: A manager's organizational commitment increases his or her perceived usefulness of IS.

The third subset of independent variables in the research framework is related to the IS. We consider ease of use, which has been conceptualized as "the degree to which a person believes that using a particular system would be free of effort" (Davis, Bagozzi, & Warshaw, 1989, p. 320). The technology acceptance models—TAM (Davis, 1989; Davis et al., 1989), TAM2 (Venkatesh & Davis, 2000), and TAM3 (Venkatesh & Bala, 2008)—indicate the perceived ease of IS use has a positive effect on perceived IS usefulness. Venkatesh and Bala (2008) noted that individuals form their judgment of the perceived usefulness of IS by cognitively comparing what such a system is capable of doing with their actual job requirements. Therefore, IS are perceived as useful when system capabilities and job requirements overlap. When users are able to use IS in a more effective manner, they will evaluate IS as more useful. As stated by Davis and colleagues (1989, p. 987), "Improvements of ease of use may be instrumental, contributing to increased performance." Venkatesh (2000, p. 343) noted that "perceived usefulness will be influenced by perceived ease of use because, other things being equal, the easier a technology is to use, the more useful it can be." Efforts saved because of increased ease of use may be redeployed—enabling a person to accomplish more work for the same effort (Venkatesh & Bala, 2008). Therefore, we propose the following hypothesis:

H5: Ease of IS use increases the perceived usefulness of IS.

Moderating effect of firm ownership

The adoption of IS and evaluation of IS as useful constitute a collective and cumulative activity in firms. Implementing such a system that is deemed useful by managers requires a considerable degree of immobility with respect to various organizational resources as well as organization-wide integration and commitment. Studies of IS in emerging economies highlight that specific conditions prevail, which result from both environmental characteristics and organizational variables (Hoskisson, Eden, Lau, & Wright, 2000). We propose that ownership may moderate the link between these variables and managerial perception of IS usefulness. In other words, the effect of organizational and environmental characteristics on managerial perceptions of IS might vary depending on ownership. Further, the effects of these variables on perceived IS usefulness may be strengthened while others may be weakened when the owner is domestic or foreign.

During the socialist regime, private ownership hardly existed and most firms were large, state-owned enterprises (Roztocki & Weistroffer, 2008). These state-owned firms were sponsored and controlled by the government—rendering them inert with respect to market dynamics (Li & Tang, 2010). State-owned firms in these economies were isolated from the world capitalist economy, and they had extensive linkages with the Soviet industry and long-standing ties with the barter-trading system of the Council for Mutual Economic Assistance (Bartlett & Seleny, 1998; Seleny, 2007). The transition shifted these economies toward private ownership, whether they were foreign or domestic by nature. New private firms appeared, and the state sector shrank with the privatization of state-owned companies (Kornai, 2000). The transition from

socialism to capitalism has thus created hundreds of thousands of new small and medium-sized firms in Hungary (Kornai, 2000).

Private domestic enterprises have a long history of continuously adapting to turbulent business environments. These small domestic firms—unlike state-owned ones—were driven by market trends. These private firms proliferated because they were able to meet the demand left unsatisfied by the state-owned sector (Kornai, 2000). A further dimension of this adjustment to the business environment was related to the multitude of bureaucratic interventions and restrictions. In Hungary, for example, at the early phases of transition, access to materials, credit, and foreign exchange was limited, and to maintain business operations, they often had to be acquired in illegal or semi-legal ways (Kornai, 1990). Domestic private firms also faced difficulties related to the underdevelopment of legal institutions regarding the consistent protection of private property (Kornai, 1990).

Turbulent environments are characterized by a frequently changing and unpredictable market and/or technological changes within an economy (Calantone, Garcia, & Dröge, 2003). During the process of transition, unpredictability due to environmental turbulence continually erodes competitive advantages to an extent that firms often feel that they might not be in business the following year (Kornai, 1990). Business of transition economies is still characterized by diversity and instability (Meyer & Peng, 2015), and studies of IS in transition economies also confirm that the unpredictability of the business environment engenders specific conditions for both IT investments and IS adoption (Bernroider et al., 2011).

According to Meyer and Peng (2015), repeated adaptation to changing environments has become a new normal in emerging economies. For instance, foreign firms, mainly western multinational companies, faced very different circumstances in the transition economies of Eastern Europe than in other capital-importing regions during the earlier phases of foreign direct investment (Seleny, 2007). Thus, foreign firms had to learn, and particularly understand, local environmental business conditions (Meyer & Peng, 2015).

Previous studies have shown that under turbulent environmental conditions, especially technological turbulence, the perceived usefulness of IS is especially important in predicting users' acceptance (Autry et al., 2010). IS that are easier to use can be implemented quickly and effectively, which makes these IS attractive to firms seeking means of gaining competitive advantage in the marketplace. Extant management literature on transition economies suggest that foreign firms' understanding of and adjustment to environmental turbulence in emerging economies is sometimes suboptimal, which impedes their reactions to the environmental effects of foreign firms (Yang, Mudambi, & Meyer, 2008). Based on these findings, combined with previous findings of domestic firms' extremely quick reactions to turbulent changes in the business environment, we propose the following hypothesis:

H6a: The positive effect of technological turbulence on the perceived usefulness of IS is stronger among domestic than among foreign firms.

Under the central planning system, specific management priorities prevailed. Decision makers encountered soft budget constraints, which means that strict relationships between expenditures and earnings were relaxed and that deficits were recouped by the paternalistic state (Kornai, 1986). For example, full employment was more important than organizational profitability. Management did not receive incentives for efficiency or innovation; instead, it needed to provide basic goods at a price that was widely affordable to customers.

The residues of 40 years of central economic planning engendered significant hurdles to the diffusion of modern management knowledge in the former communist countries (Bartlett & Seleny, 1998). While knowledge of modern management practices are pivotal elements of firm strategy, firms in transition economies were isolated from this knowledge (Bartlett & Seleny, 1998). Foreign firms played key roles in the transition process in these economies (Meyer & Peng, 2015). Shareholding by foreign firms in transition economies was conducted not only through equity participation, but also through business relationships and business activities (Choi et al., 2011). Through these business relations, foreign firms provided domestic firms with the missing cutting-edge management know-how and resources well beyond their financial equity participation (Choi et al., 2011). In many emerging economies, foreign firms were the only source of modern organizational management practices (Choi et al., 2011).

This study focuses on three such organizational variables: social orientation, formalization, and organizational commitment. While prior research suggests that ownership is a parsimonious and important variable for exploring the organizational characteristics of transition economies (Ma et al., 2006), very limited knowledge on how these variables are contingent on ownership is available. However, extant research shows that foreign firms in transition economies tend to be more successful and innovative owing to their more embedded, advanced managerial knowledge of the firm (Choi et al., 2011). These results suggest that

foreign firms tend to be more successful in effectively relying on organizational management practices than their domestic counterparts.

H6b–d: The positive effect of (b) social orientation, (c) formalization, and (d) organizational commitment on perceived usefulness of IS is weaker among domestic than among foreign firms.

Control variables

The conceptual framework includes two control variables: company tenure and the business context.

Marketing managers' company tenure—measured by the number of years spent at the firm—is included as a control variable for the perceived usefulness of IS. Previous studies confirmed that work-related expertise accrued during the years managers have spent at a firm affects marketing managers' perception of the usefulness of information and the way in which managers make decisions and use different types of market information (e.g., Nielsen data, colleagues' opinions, and consumer research) (Lee, Acito, & Day, 1987). Therefore, company tenure is added as a control variable for the perceived usefulness of IS.

Chiasson and Davidson (2005) reviewed IS-related publications in top-tier IS journals for the period between 1997 and 2004 and found that only 11% of the publications considered the influence of the industry in individual-, group-, and organization-level studies. They claimed overlooking industry-specific characteristics may diminish the generalizability of the findings—especially when the focal IS artifact is specific to an industry (Chiasson & Davidson, 2005). This is a multi-industry study, and while it focuses to a non-industry-specific IS artifact, we control for business context to avoid alternative explanations. Previous research concluded that the business context—mainly regarding whether a firm operates in business-to-business versus business-to-customer (hereinafter B2B versus B2C) context—slightly influences managers' perception of the usefulness of available information (Rollins et al., 2012). Therefore, the business context is added as a control variable with respect to the managerial perception of IS usefulness.

Research method

Research context and data collection

The data for this study were collected through a mail survey that was sent to all private—either Hungarian or foreign—companies operating in Hungary belonging to the top 10% in terms of sales revenue, as reported in the quarterly business information database by the Hungarian Central Statistical Office (www.ksh.hu) in spring 2013. For all 1036 companies satisfying this criterion, we obtained contact information on key informants: managers or decision makers in charge of business-related decisions and marketing managers. The firms were contacted in two stages. First, we sent our questionnaire to all 1036 firms in our sampling frame. Second, 14 days after the mailing, we contacted each company that had not responded yet to inquire whether they received our questionnaire, call upon their collaboration, and gain information on possible reasons for their nonresponse. We updated and expanded the database in cases of misdelivery or when the company consisted of multiple business units with multiple marketing executives. Third, using the amended database, we sent additional questionnaires by mail. Respondents were offered a brief summary of the main findings of our research as an incentive. The data collection resulted in 304 usable questionnaires.

Our respondents are either marketing managers, or in the absence of such a position, general managers in charge of marketing-related decision domains (e.g., definition of communication activities, analysis of market potential, planning and execution of a customer satisfaction analysis, definition of a market strategy, design and introduction of new products, definition of price positioning, discounts, and price promotions). We asked our respondents to answer the questionnaire by thinking of an IS that has already been implemented for at least 1 year and that they have more often been using as a source of marketing information for their decision making over the last 3 months. We gave examples of such systems (e.g., customer complaint management systems, integrated enterprise IS, and customer relationship management systems). Thus, we have not limited the artifact of our study to a specific type of IS. The mean of company-specific experience of the respondents is 9.6 years, and most respondents are one level below top management, supposedly with decision-making authority. Table 2 summarizes the profiles of the sample firms.

The sample is representative of the Hungarian private large scale companies in terms of the number of employees and industry of operation. Analysis of variance did not indicate significant differences between the means of the key constructs or the descriptive statistics (products/services provided, number of employees, ownership structure) between early and late respondents (Armstrong & Overton, 1977). Our respondents were identified as early respondents if they sent back the questionnaire promptly, and as late

Table 2. Profiles of respondent firms.

Company characteristic	Percentage	Company characteristic	Percentage
Number of employees		*Business categories*	
≥ 5000	1.5	Durable consumer goods	13.8
1000–4999	11.9	Fast moving consumer goods	25.0
500–999	12.8	Materials and components	11.2
300–499	17.1	Industrial capital equipment	4.9
100–299	29.1	Industrial services	5.6
20–99	23.7	Consumer services	11.5
0–20	3.9	Other	28.0
Industry of operation		*Major field of operation*	
Agriculture	5.6	B2B	45.2
Building industry	8.2	B2C	54.8
Transportation	4.3		
Wholesale commerce	20.5	*Ownership*	
Financial services	5.9	Private domestic	49.1
Mining	0.3	Private foreign	50.9
Processing industry	30.9		
Telecommunication and broadcasting	4.9		
Retail and commerce	14.1		
Other services	4.0		
Other	1.3		

respondents if they sent back the questionnaire after the follow-up phone calls. The most frequent reason for refusal to cooperate—as turned out during the follow-up phone calls—was a lack of time. Therefore, we concluded that nonresponse errors would not cause systematic error in the sample, and we pooled data for subsequent analyses.

Measures

The scale items used in this study were taken from or based on former studies (Appendix A). The resulting questionnaire was tested by using a three-stage process. First, two academics evaluated the questionnaire. One of them, with notable experience in marketing and sales management research, evaluated the statements according to their fit with Hungarian business practice and was asked to propose additional statements, if deemed necessary. The other academic, with several decades of experience in academic research, performed a semantics review of the questionnaire by earmarking statements that may cause confusion, that are pervaded with Anglicism, or that are based on Hungarian research experience or would be expected to overtax respondents' patience. Second, 42 Master of Business Administration (MBA) students completed the questionnaire. We asked them to take the questionnaire home, complete it, and mark all statements they found confusing, incoherent, or difficult to respond to. They were asked to briefly describe their problems with each item and to measure how much time it took them to complete the questionnaire.

The constructs from our framework were measured with 5-point Likert-type multi-item scales. Each scale consisted of at least three items. In addition, we included firm type (B2B or B2C) and marketing managers' expertise and ownership (Hungarian or foreign) as control variables. Firm type and ownership were coded as dummy variables: majority of incomes derive from B2B markets = 1, majority of incomes derive from B2C markets = 2; Hungarian = 1, foreign = 2, respectively. Marketing managers' expertise was measured by the number of years a manager has spent within the company.

To control for common method bias (CMB), predictor and criterion variables were allocated in separate sections of the questionnaire, and verbal labels were used for all scale points. To statistically control for CMB, the partial correlation technique was adopted (Lindell & Whitney, 2001) by using a marker ("Our salespeople are knowledgeable of the market," measured on a 5-point Likert scale) that was theoretically expected as unrelated to the focal constructs of our model. Bivariate correlations among the marker and the other variables, as well as a series of partial correlations, did not indicate significant CMB problems.

Analyses and results

Assessment of measures

The validity and properties of the multi-item scales were assessed through confirmatory factor analysis (CFA) with AMOS 20.0 and SPSS 20.0 for the six constructs of perceived usefulness of IS, technological turbulence of the industry, social orientation, formalization, organizational commitment, and ease of use. The CFA results indicate a good fit based on the accepted cutoff values (Byrne, 2010). Table 3 presents the findings from the measurement validation tests that have been assessed with AMOS 20.0 and SPSS 20.0.

All standardized factor loadings are statistically significant and within an acceptable range (Anderson & Gerbing, 1988). Composite reliability measures are also above the threshold (Nunnally, 1967), indicating the acceptable reliability of the constructs. The average variance extracted values are above the conventional benchmark (Bagozzi & Yi, 1988). The outcomes from these tests support the convergent validity of the constructs used. Furthermore, the square of the inter-correlation between two constructs is less than the Average Variance Extracted (AVE) estimates of the two constructs for all pairs of constructs, providing support of discriminant validity (Fornell & Larker, 1981). Table 4 presents the descriptive statistics for the model's key constructs.

Table 3. Measurement model summary.

Construct	Standardized loading	Composite reliability	Cronbach's alpha	Average variance extracted
Perceived usefulness of IS		0.93	0.92	0.73
PU1	0.75			
PU2	0.85			
PU3	0.84			
PU4	0.89			
PU5	0.93			
Technological turbulence of the industry		0.80	0.79	0.57
TUR1	0.77			
TUR2	0.73			
TUR3	0.77			
Social orientation		0.81	0.80	0.58
SO1	0.85			
SO2	0.71			
SO3	0.72			
Formalization		0.76	0.74	0.51
FOR1	0.74			
FOR2	0.65			
FOR3	0.76			
Organizational commitment		0.90	0.88	0.64
OC1	0.87			
OC2	0.90			
OC3	0.73			
OC4	0.71			
OC5	0.79			
Ease of use		0.76	0.75	0.51
EU1	0.71			
EU2	0.74			
EU3	0.70			

Model fit: ($\chi 2 = 310.20$, df = 190; $\chi 2/df = 1.633$; $p = 0.000$; AGFI = 0.889, GFI = 0.917, NFI = 0.919, IFI = 0.967, CFI = 0.960, RMSEA = 0.046). All of the loadings are significant at the $p < 0.001$ level.

Hypotheses testing

The model was tested by using structural equation modeling (SEM) to simultaneously measure the hypothesized relationships between the constructs (Figure 1). The results of the hypotheses tests are summarized in Table 5.

H1 predicts that technological turbulence of the industry leads to higher levels of perceived usefulness of IS, and this hypothesis is supported. H2 proposes that social orientation has a negative influence on perceived usefulness of IS; however, the empirical results do not support this hypothesis. H3 states that higher levels of formalization enhance the positive perception of IS usefulness; this hypothesis is supported by the data. H4 suggests that organizational commitment has a positive influence on the perceived usefulness of IS, providing support for this hypothesis. H5 predicts that ease of use will lead to higher levels of perceived usefulness of IS, which is supported by the data.

If these results are taken together, technological turbulence of the industry, social orientation, formalization, organizational commitment, and ease of IS use explain 50% of the variance in the perception of IS usefulness.

We controlled for two variables: the company tenure of the respondent and the presence of the firm in a B2B or B2C market. We found that the company tenure and the derivation of income from B2B or B2C markets do not have a significant impact on the level of perceived usefulness of IS. Thus, the results show the overall level of perceived usefulness of IS is not directly influenced by these control variables.

The overall results suggest the hypothesized conceptual framework fits the empirical data acceptably well.

Multigroup moderation test

To reveal possible pattern similarities or differences across the two subgroups of domestic and foreign firms, we performed a multi-group moderation test. Critical ratios (z-scores) were used to identify significant differences between Hungarian and foreign companies for each of the hypotheses suggested in this article (Byrne, 2010).

The results presented in Table 6 show that environmental turbulence has a differential effect on the perceived usefulness of IS. Whereas this variable has a significant effect with respect to the perceived usefulness of IS in Hungarian firms, it has no such effect in foreign firms; however, the level of difference between domestic firms and foreign firms is not significant. Therefore, H6a is not fully supported. Social orientation has a significant negative impact on the perceived usefulness of IS in foreign firms,

Table 4. Means, standard deviations, and correlations.

	Overall sample ($N = 304$)		Domestic firms ($N = 149$)		Foreign firms ($N = 155$)		Correlations in the overall sample ($N = 304$)					
Constructs	Mean	*SD*	Mean	*SD*	Mean	*SD*	1	2	3	4	5	6
Perceived usefulness of IS	3.64	0.93	3.64	0.93	3.64	0.93	1					
Technological turbulence of industry	3.18	0.92	3.07	0.91	3.28	0.92	0.16**	1				
Social orientation	2.82	0.87	2.79	0.85	2.85	0.89	0.15**	0.19**	1			
Formalization	2.96	0.79	3.00	0.76	2.92	0.83	0.29**	0.10	0.25**	1		
Organizational commitment	3.89	0.77	3.97	0.75	3.81	0.79	0.25**	0.03	0.24**	0.19**	1	
Ease of use	3.28	0.87	3.25	0.87	3.30	0.87	0.56**	0.07	0.20**	0.29**	0.12*	1

SD = Standard Deviation.
*$p < 0.05$; **$p < 0.01$.

Table 5. Parameter estimates (standardized structural coefficients) and variance explained (R^2).

Hypo-theses	Direct effects	Path coefficient
H1	Technological turbulence → Perceived usefulness of IS	0.125*
H2	Social orientation → Perceived usefulness of IS	−0.111
H3	Formalization → Perceived usefulness of IS	0.142*
H4	Organizational commitment → Perceived usefulness of IS	0.139*
H5	Ease of use → Perceived usefulness of IS	0.650***
	Covariates	
	B2B/B2C market→ Perceived usefulness of IS	0.088
	Company tenure → Perceived usefulness of IS	−0.079
	Variance explained (R^2)	
	Perceived usefulness of IS	0.505

Model fit: χ2(633) = 928.816, χ2/df = 1.467; RMSEA = 0.028; SRMR = 0.064; NNFI = 0.957; CFI = 0.946. *$p < 0.05$; **$p < 0.01$; ***$p < 0.001$.

Table 6. Results of multi-group analysis.

	Domestic companies (n = 149)		Foreign companies (n = 155)		Significance of domestic–foreign differences
Relationship	Std. β	sig.	Std. β	sig.	z-score
Technological turbulence → Perceived usefulness of IS	0.213	0.017*	0.105	0.195	−0.918
Social orientation → Perceived usefulness of IS	0.049	0.605	−0.272	0.011*	−2.191**
Formalization → Perceived usefulness of IS	0.114	0.264	0.216	0.024*	0,847
Organizational commitment → Perceived usefulness of IS	−0.040	0.628	0.276	0.000***	2,746***

Notes. z-score significance: 0.01 level if it is greater than 2.58, 0.05 level if greater than 1.96, and 0.10 level if greater than 1.65 (Byrne, 2010).
*$p < 0.05$; **$p < 0.01$; ***$p < 0.001$.

but it has no effect in Hungarian firms, and the difference between the two groups is significant; thus, H6b is fully supported. Formalization has no effect on the perceived usefulness of IS in domestic firms, but has a significant effect in foreign firms; however, the difference is not significant, thus H6c is not fully supported. Organizational commitment has a significant positive effect on the perceived usefulness of IS in foreign companies, but no effect among Hungarian companies, and the difference is significant, thus fully supporting H6d.

Discussion and contributions

The primary goal of this study is to enrich the IS literature by demonstrating the moderating role of firm ownership in the link between different variables and the usefulness of IS perceived by managers in boundary-spanner positions in the context of a transition economy. More specifically, we aim to answer the following research questions: (1) How is managers' perception of IS usefulness affected by environmental, organizational, and IS-specific variables in a transition economy context? (2) Is the effect of environmental, organizational, and IS-specific variables on managers' perception of IS usefulness contingent on firm ownership categories, videlicet foreign versus domestic?

Our findings suggest that 50.5% of variance in the managerial perception of IS is explained by the investigated environmental, organizational, and IS-specific variables. The most important variable that determines the perception of IS usefulness is the perceived ease of use. Previous studies on developed economies have shown that the ease of IS use enables managers to accomplish more work for the same effort (Venkatesh & Bala, 2008); however, to the best of our knowledge, the link between the ease of IS use and perceived IS usefulness has not been tested in the transition economy context. Our results indicate that ease of IS use is a key driver of IS usefulness in the transition economy context. The results of this study show that the effect of environmental, organizational, and system-specific variables on the perceived usefulness of IS is contingent on ownership in the context of top-performing firms in a transition economy (i.e., Hungary).

Theoretical contributions

By answering these research questions, we aim to make a number of theoretical contributions to the extant literature. First, building on previous literature on IS in emerging economies (e.g., Roztocki & Weistroffer, 2015) and economics literature focusing on transition economies (e.g., Kornai, 2000), we distinguish between two types of firm ownership (i.e., domestic and foreign firm ownership), and find the effect of organizational and environmental characteristics on managerial perceptions of IS vary depending on the type of firm ownership. In particular, our findings suggest the effect of organizational variables on the perceived usefulness of IS is strengthened when the owner is foreign. This result is particularly insightful given that domestic firms in transition economies lacked modern organizational management knowledge and foreign companies served as a primary source of such know-how (Meyer & Peng, 2015). Our findings suggest that foreign firms tend to be more successful in effectively relying on organizational management practices (i.e., social orientation, formalization, and organizational commitment) in improving managerial information processing than

their domestic counterparts. In contrast, the effect of the environmental variable is weakened when the owner is foreign. This finding is especially interesting considering that foreign firms entering to these emerging economies have to learn and understand the local business conditions, where domestic firms served as a source of knowledge regarding the local business environment (Meyer & Peng, 2015). Our findings imply that foreign firms are less sensitive and exposed to turbulent changes in the business environment. This study thus embraces a more fine-grained notion of IS in transition economies: Differences are prevalent not only between transition and developed economies, but also between individual companies that have domestic owners and those that have foreign owners. These results imply that future research on IS in transition economies should focus on examining the contingent role of firm ownership.

Second, our findings demonstrate that research focusing on IS should devote more careful attention to the departmental affiliations of respondents. Our study focuses on managers in boundary-spanning positions working in a complex information environment in which they must integrate information from various sources, with IS being only one of many sources (Rollins et al., 2012). Our findings suggest the organizational impact of IS depends not only on variables closely related to the alignment of IS, but also on the development of alternative means of acquiring information. For instance, ceteris paribus, the usefulness of an IS might diminish simply because of an individual's well-developed social network, especially in the case in which managers occupy boundary-spanner positions and are charged with business tasks in which information from the business environment emerges from both within and outside the company (Davenport et al., 2001). This is an important theoretical contribution to empirical studies on organizational IS success, which typically denote no attention to specifying users' departmental affiliations (Venkatesh & Bala, 2008).

Third, this study extends previous work by advocating and enriching the impact of environmental turbulence (i.e., where technological changes provide great opportunity, technology changes rapidly, and product ideas have been made possible through technological breakthroughs) on managers' perception of IS. While a rich literature shows that ever-changing external environments create specific conditions of IS adoption in these economies, less is known about the congruence between the level of environmental turbulence and managers' evaluation of IS once such systems have been adopted, and the managerial implications in this regard remain ambiguous. Our findings indicate that uncertainties in the technological environment are salient to Hungarian firms only when they assess IS usefulness. As unpredictability rises in domestic firms, the rate and impact of changes increase in the marketplace, and marketing managers' perceptions of IS become more positive. Autry and colleagues (2010) have shown that managers increasingly want to obtain the first IS that appears useful as turbulence in the technology market increases. Thus, turbulence-driven judgment of IS usefulness may result of fear or uncertainty of the marketing managers who will be prone to accept an IS as an initial source of information. Marketing information is derived from various sources within and outside of the company (Rollins et al., 2012). Our findings indicate that in turbulent times, managers of domestic firms are inclined to reduce risks and stick to known vendors and brands for which IS provide data without fully considering their firms' long-term needs and failing to comprehensively assess the rich, ever-changing information environment.

Fourth, this study contributes to a better understanding of how organizational characteristics provide a background for the managerial perception of IS. While organizational variables might be especially relevant in the context of transition economies (Huang & Palvia, 2001), studies on the role of organizational variables in evaluating the IS outcomes remain scant in the literature (Dwivedi et al., 2015).

Our findings provide new empirical evidence on the role of social orientation (i.e., recreation and sport events, after work get-togethers, and joint celebrations involving individuals from different functional areas) that indicates it reduces perceptions of IS usefulness in foreign firms, but has no impact in domestic ones. The results indicate that social orientation and opportunities to interact improve social bonds among members of the firm and information that flows through social linkages provides somewhat of a replacement for information stored in IS, which reduces the perceived usefulness of IS in foreign firms. On the other hand, domestic firms do not behave in such a textbook manner. Increased information flow and greater opportunities (enhanced by a firm's social orientation) to rely on alternative, more personal sources of information do not affect the perception of IS usefulness. Giving more weight to information disseminated through interpersonal linkages at the expense of IS requires a high level of interpersonal trust. Studies have shown that 25 years after regime change, transition economy countries continue to lag with respect to interpersonal trust. People's lack of interpersonal trust and suspicion of hidden harmful motivations are the heritage of their socialist

past. Our findings lend support to the idea that the consequences of totalitarian rule and the lack of legitimacy create a culture of mistrust that may spill over to shape managers' attitudes toward one another. Our findings also indicate that the effect of organizational commitment (i.e., emotional attachment to the organization, the feeling that the organization's problems are my own, and the feeling that the firm has a great deal of personal meaning) on the perception of IS usefulness is also moderated by firm ownership. During the centrally-planned socialist regime, organizational commitment—employees' dedication to pursuing their goals and desires to maintain employment—was a difficult concept to define. Firms provided full, long-term employment, which was a top priority that was more important than organizational profitability; underlying operations were centrally planned (Kornai, 2000). Our results show that in foreign private firms, marketing managers' perception of IS usefulness is influenced by employees' organizational commitment. These findings confirm the work of Riketta (2002), who—based on an extensive literature review—claimed that more committed employees show more positive attitudes. However, this organizational commitment seems to be unrelated to positive attitudes toward IS among marketing managers working for domestic companies. Managers working for domestic firms in transition economies are more short-term oriented, tend to "play it safe," and are less proactive and aggressive (Song et al., 2005).

Our study contributes to advancing knowledge of IS in transition economies and to exploring whether and how different types of ownership can change the effect of variables on perceived usefulness; these issues have not been considered in the previous literature. This study's findings provide critical, novel insights into how environmental and organizational variables affect marketing managers' post-implementation judgment of IS usefulness.

Practical contributions

This study might be of interest to both IS vendors and domestic and foreign firms in transition economies that are seeking means to improve the usefulness of IS. Indeed, our results imply that vendors of IS solutions in transition economies should use ownership as a primary variable of customer segmentation within large firms. The findings of this article show that unique selling propositions (USP) in convincing customers of the usefulness of IS in domestic and foreign (international and multinational) firms are different, and that they thus require different selling tactics in firms with different owners. In addition to depicting IS attributes, vendors selling to domestic companies should emphasize that in turbulent times, firms can reduce risks by using a well-designed IS that provides accurate data on known vendors and customers. This USP, however, should not be prominent in selling situations to international and multinational companies. Vendors should pay clear attention to underlining the user-friendliness of IS, and, optionally, provide value-added services for ease of use, such as personnel assistance in troubleshooting.

Improving post-adoption use and usefulness of IS is an important challenge that both domestic and foreign firms face in transition economies. Our study provides practical implications for firms to better manage IS that have already been adopted and implemented. Owners of domestic firms in turbulent times should consider how to manage the challenge of environmental unpredictability. Our findings indicate that managers of domestic firms perceive the usefulness of IS more positively when turbulence in the marketplace increases. Managers—owing to uncertainty or fear—often overvalue the usefulness of IS (Autry et al., 2010). When there is high environmental turbulence, domestic firms need to design effective incentives to motivate managers in boundary-spanner positions to take risks. Effective incentives could contribute to their effective accomplishment of their strategic roles in considering marketing information deriving from IS without failing to comprehensively assess other sources of information. Our results show the organizational variables considered in this study (i.e., social orientation, formalization, and organizational commitment) do not significantly affect how managers perceive the usefulness of IS. Our findings suggest that managers working for domestic companies may lack incentives to develop positive attitudes toward IS usefulness. For example, organizational commitment is less likely to lead to positive perceptions of IS usefulness among domestic firms. Managers working for domestic firms in transition economies are more short-term oriented, tend to "play it safe," and are less proactive and aggressive (Song et al., 2005). Therefore, top managers should find means to strengthen this proactive behavior—for example, by empowering employees and strengthening the feeling that their actions matter—in order to more effectively benefit from organizational characteristics, such as commitment.

Foreign firms often face more turbulent environments in transition economies than in their home countries or other countries (Meyer & Peng, 2015). While domestic firms face continuous, unpredictable, and turbulent changes in the business environment, this diversity and

instability might be novel to foreign firms (Meyer & Peng, 2015). To overcome these difficulties, they need to adapt to changing environments. Our study shows that while technological turbulence has a positive impact on managers' perception of IS usefulness, it has no effect among foreign firms. Domestic firms' enhanced responsiveness to technological turbulence may well result from managers' fear or tendency to avoid uncertainties by estimating the available IS more favorable (Autry et al., 2010); however, it is important that foreign firms are alert to unpredictable changes of the business environment; for example, by monitoring and evaluating changes in environmental factors. Our results imply that improving organizational commitment is an effective way of improving managers' perception of IS usefulness among foreign firms; therefore, it is important to improve positive attitudes toward firms. As an insightful result, we found that social orientation decreases perceptions of IS usefulness. Foreign firms should acknowledge this finding. While previous research shows that social orientation creates a relaxed atmosphere and increases interpersonal trust (Maltz et al., 2001), foreign firms should pay attention to that information disseminated through well-developed social bonds should not take over the role of IS. Our findings show that job formalization (e.g., a written job description and strict operational procedures) may be a remedy in this regard, as formal routines are effective in enhancing managerial perceptions of IS in foreign firms operating in a transition economy context.

Limitations and directions for future research

This study has a few limitations that provide several directions for future research. First, the data collection is limited to high-income firms in Hungary. Although previous studies have shown that transition economies are not a homogenous set of countries (Samoilenko, 2008; Samoilenko & Osei-Bryson, 2015), the findings of this study may be generalizable to other leader (Visegrad countries) and pioneering (former Yugoslavia and the Baltic countries) transition countries. Hungary and these countries have similar per capita incomes and comparable living standards and socio-cultural values and patterns. Because other transition countries (e.g., China and non-Baltic countries of the former Soviet Union) might be characterized by different cultural, social, business, and economic patterns, the findings in this specific context may not be generalizable to those economies. This limitation suggests that drivers of IS usefulness might be investigated in transition economies in the countries of the former Soviet Union and in the BRIC (Brazil, Russia, India, China) countries.

This study has defined ownership based on the dichotomy of foreign and domestic private firms. However, further research may seek to gain a better understanding of the moderating roles of firm ownership structure by using more complex measures of ownership structures. These additional ownership structures, such as level of managerial ownership, ownership concentration, and state versus non-state ownership, may contribute to a full picture of corporate ownership and its effect on IS in transition and emerging markets.

Second, aside from this study's examination of IS characteristics, its focus on the role of environmental and organizational variables omits any attention to personal variables such as expectations, satisfaction, or attitudes; meanwhile, the explanatory power of these variables is well documented in the literature (Bhattacherjee, 2001). Investigation of the moderating role of ownership on these variables' effects in this context would be intriguing because, as noted by previous studies, people's attitudes are major impediments to IS adoption in these economies (Soja, 2015).

Among the environmental variables that drive perception of IS usefulness, the role of political and legal turbulence—variables that change rapidly in transition economies—should also be considered. Future researchers may investigate these or other variables affecting the perception of IS usefulness, investigate other aspects of IS impact on the organizational level, and model more complex relationships between constructs or add performance metrics to the model.

In recently reviewing 173 works published between 1993 and 2012, Roztocki and Weistroffer (2015) reported that only eight studies (4.6%) included management theories as a conceptual foundation, whereas 95.4% of the studies did not rely on corresponding theories. These works build upon 10 different theories, including absorptive capacity theory, bureaucracy theory, contingency theory, diffusion of innovation theory, growth theory, the resource-based view, social presence theory, stakeholder theory, and transaction cost theory. However, none of these theories has been used more than once to explain IS-related phenomena within the transition economy context (Roztocki & Weistroffer, 2015)—indicating that none of the corresponding theories has become an integrative, widely-accepted paradigm. While the literature on IS in transition economies has seen a theoretical pluralism, there is great need for an integrative theory aiming to explain how and why such contextual variations matter in this business context. Our study focuses on a wide spectrum of variables, including environmental, organizational, and system-specific ones that proved to be relevant for IS

research and research focusing on IT in transition economies (Huang & Palvia, 2001). Future research could be based on a corresponding theory that would provide a more comprehensive and solid background for the selection of variables included to the theoretical framework.

Acknowledgments

The author appreciates insightful comments and suggestions from the four anonymous reviewers and the ISM Senior Editor, Narcyz Roztocki.

Funding

The author is grateful for the financial support of the Hungarian Scientific Research Fund (OTKA) in conducting the mail survey.

Notes on contributor

Tamara Keszey is an associate professor and researcher of marketing at Corvinus University of Budapest, Hungary. She holds a PhD in management sciences from the Corvinus University of Budapest. Her teaching and research interests cover information systems and information management, managerial use of business information, sales-marketing collaboration, customer-co-creation, and new product development. Prior to her academic career, she had been working as a senior SAP consultant at KPMG Hungary.

ORCID

Tamara Keszey http://orcid.org/0000-0003-2535-9581

References

Alavi, M., & Leidner, D. E. (2001). Review: Knowledge management and knowledge management systems: Conceptual foundations and research issues. *MIS Quarterly*, *25*(1), 107–136. doi:10.2307/3250961

Anderson, J. C., & Gerbing, D. W. (1988). Structural equation modeling in practice: A review and recommended two-step approach. *Psychological Bulletin*, *103*(3), 411–423. doi:10.1037/0033-2909.103.3.411

Armstrong, J. S., & Overton, T. S. (1977). Estimating nonresponse bias in mail surveys. *Journal of Marketing Research*, *14*(3), 396–402. doi:10.2307/3150783

Arthur, L. (2012). Five years from now, CMOs will spend more on IT than CIOs do. *Forbes*. Retrieved from http://www.forbes.com/sites/lisaarthur/2012/02/08/five-years-from-now-cmos-will-spend-more-on-it-than-cios-do/

Autry, C. W., Grawe, S. J., Daugherty, P. J., & Richey, R. G. (2010). The effects of technological turbulence and breadth on supply chain technology acceptance and adoption. *Journal of Operations Management*, *28*(6), 522–536. doi:10.1016/j.jom.2010.03.001

Bagozzi, R. P., & Yi, Y. (1988). On the evaluation of structural equation models. *Journal of the Academy of Marketing Science*, *16*(1), 74–94. doi:10.1007/BF02723327

Bartlett, D., & Seleny, A. (1998). The political enforcement of liberalism: Bargaining, institutions, and auto multinationals in Hungary. *International Studies Quarterly*, *42*(2), 319–338. doi:10.1111/1468-2478.00084

Bernroider, E. W. N., Sudzina, F., & Pucihar, A. (2011). Contrasting ERP absorption between transition and developed economies from Central and Eastern Europe (CEE). *Information Systems Management*, *28*(3), 240–257. doi:10.1080/10580530.2011.585581

Bhattacherjee, A. (2001). Understanding information systems continuance: An expectation-confirmation model. *MIS Quarterly*, *25*(3), 351–370. doi:10.2307/3250921

Brynjolfsson, E., Hu, Y. J., & Rahman, M. S. (2013). Competing in the age of omnichannel retailing. *MIT Sloan Management Review*, *54*(4), 23–29.

Byrne, B. M. (2010). *Structural equation modeling with AMOS: Basic concepts, applications and programming* (2nd ed.). New York, NY: Routledge.

Calantone, R., Garcia, R., & Dröge, C. (2003). The effects of environmental turbulence on new product development strategy planning. *Journal of Product Innovation Management*, *20*(2), 90–103. doi:10.1111/1540-5885.2002003

Chatterjee, D., Grewal, R., & Sambamurthy, V. (2002). Shaping up for e-commerce: Institutional enablers of the organizational assimilation of web technologies. *MIS Quarterly*, *26*, 65–89. doi:10.2307/4132321

Chiasson, M. W., & Davidson, E. (2005). Taking industry seriously in information systems research. *MIS Quarterly*, *29*(4), 591–606.

Choi, S. B., Lee, S. H., & Williams, C. (2011). Ownership and firm innovation in a transition economy: Evidence from China. *Research Policy*, *40*(3), 441–452. doi:10.1016/j.respol.2011.01.004

Cooper, R. B., & Zmud, R. W. (1990). Information technology implementation research: A technological diffusion approach. *Management Science*, *36*(2), 123–139. doi:10.1287/mnsc.36.2.123

Cross, R. L., & Parker, A. (2004). *The hidden power of social networks: Understanding how work really gets done in organizations*. Boston, MA: Harvard Business School Press.

Davenport, T. H. (1998). Putting the enterprise into the enterprise system. *Harvard Business Review*, *76*(4), 121–131.

Davenport, T. H., Harris, J. G., & Kohli, A. K. (2001). How do they know their customers so well? *Sloan Management Review*, *42*(2), 63–74.

Davis, F. D. (1989). Perceived usefulness, perceived ease of use and user acceptance of information technology. *MIS Quarterly*, *13*(3), 319–340. doi:10.2307/249008

Davis, F. D., Bagozzi, R. P., & Warshaw, P. R. (1989). User acceptance of computer technology: A comparison of two theoretical models. *Management Science*, *35*(8), 982–1003. doi:10.1287/mnsc.35.8.982

Deshpandé, R. (1982). The organizational context of market research use. *Journal of Marketing*, *46*(4), 91–101. doi:10.2307/1251365

Deshpandé, R., & Zaltman, G. (1982). Factors affecting the use of market research information: A path analysis. *Journal of Marketing Research*, *19*(1), 14–31. doi:10.2307/3151527

Díez, E., & McIntosh, B. S. (2009). A review of the factors which influence the use and usefulness of information systems. *Environmental Modelling & Software*, *24*(5), 588–602. doi:10.1016/j.envsoft.2008.10.009

Dobija, D., Klimczak, K. M., Roztocki, N., & Weistroffer, H. R. (2012). Information technology investment announcements and market value in transition economies: Evidence from Warsaw stock exchange. *The Journal of Strategic Information Systems*, *21*(4), 308–319. doi:10.1016/j.jsis.2012.07.003

Dwivedi, Y. K., Wastell, D., Laumer, S., Henriksen, H. Z., Myers, M. D., Bunker, D. … Srivastava, S. C. (2015). Research on information systems failures and successes: Status update and future directions. *Information Systems Frontiers*, *17*(1), 143–157. doi:10.1007/s10796-014-9500-y

Fornell, C., & Larcker, D. F. (1981). Evaluating structural equation models with unobservable variables and measurement error. *Journal of Marketing Research*, *18*(1), 39–50. doi:10.2307/3151312

Glazer, R. (2001). Marketing and the changing information environment: Implications for strategy, structure and marketing mix. In R. Deshpandé (Ed.), *Using market knowledge* (pp. 127–162). London, UK: Sage Publications.

Harindranath, G. (2008). ICT in a transition economy: The case of Hungary. *Journal of Global Information Technology Management*, *11*(4), 33–55. doi:10.1080/1097198X.2008.10856478

Hoskisson, R. E., Eden, L., Lau, C. M., & Wright, M. (2000). Strategy in emerging economies. *Academy of Management Journal*, *43*(3), 249–267. doi:10.2307/1556394

Huang, Z., & Palvia, P. (2001). ERP implementation issues in advanced and developing countries. *Business Process Management Journal*, *7*(3), 276–284. doi:10.1108/14637150110392773

Jaworski, B. J., & Kohli, A. K. (1993). Market orientation: Antecedents and consequences. *Journal of Marketing*, *57*(3), 53–70. doi:10.2307/1251854

John, G., & Martin, J. (1984). Effects of organizational structure of marketing planning on credibility and utilization of plan output. *Journal of Marketing Research*, *21*(2), 170–183. doi:10.2307/3151699

Kearns, G. S., & Sabherwal, R. (2007). Strategic alignment between business and information technology: A knowledge-based view of behaviors, outcome, and consequences. *Journal of Management Information Systems*, *23*(3), 129–162. doi:10.2753/MIS0742-1222230306

Kokles, M., Romanová, A., & Hamranová, A. (2015). Information systems in the post-transition period in enterprises in Slovakia. *Journal of Global Information Technology Management*, *18*(2), 110–126. doi:10.1080/1097198X.2015.1052686

Kornai, J. (1986). The soft budget constraint. *Kyklos*, *39*(1), 3–30. doi:10.1111/j.1467-6435.1986.tb01252.x

Kornai, J. (1990). The affinity between ownership forms and coordination mechanisms: The common experience of reform in socialist countries. *Journal of Economic Perspectives*, *4*(3), 131–147. doi:10.1257/jep.4.3.131

Kornai, J. (2000). Making the transition to private ownership. *Finance and Development*, *37*(3), 12–13.

Kroon, J. (1995). *General management* (2nd ed.). New York, NY: Routledge.

Lee, H., Acito, F., & Day, R. L. (1987). Evaluation and use of marketing research by decision makers: A behavioral simulation. *Journal of Marketing Research*, *24*(2), 187–196. doi:10.2307/3151508

Levina, N., & Vaaste, E. (2004). *The emergence of boundary spanning competence in practice: Implications for information systems' implementation use* Information Systems Working Papers Series, Working Paper No. 2451/14121. New York, NY: New York University.

Li, J., & Tang, Y. (2010). CEO hubris and firm risk taking in China: The moderating role of managerial discretion. *Academy of Management Journal*, *53*(1), 45–68. doi:10.5465/AMJ.2010.48036912

Lindell, M. K., & Whitney, D. J. (2001). Accounting for common method variance in cross-sectional research designs. *Journal of Applied Psychology*, *86*(1), 114–121. doi:10.1037/0021-9010.86.1.114

Little, J. D. C. (1979). Decision support systems for marketing managers. *Journal of Marketing*, *43*(3), 9–26. doi:10.2307/1250143

Ma, X., Yao, X., & Xi, Y. (2006). Business group affiliation and firm performance in a transition economy: A focus on ownership voids. *Asia Pacific Journal of Management*, *23*(4), 467–483. doi:10.1007/s10490-006-9011-6

Maltz, E., & Kohli, A. K. (1996). Market intelligence dissemination across functional boundaries. *Journal of Marketing Research*, *33*(1), 47–61. doi:10.2307/3152012

Maltz, E., Souder, W. E., & Kumar, A. (2001). Influencing R&D/marketing integration and the use of market information by R&D managers: Intended and unintended effects of managerial actions. *Journal of Business Research*, *52*(1), 69–82. doi:10.1016/S0148-2963(99)00096-X

McGee, G. W., & Ford, R. C. (1987). Two (or more?) dimensions of organizational commitment: Reexamination of the affective and continuance commitment scales. *Journal of Applied Psychology*, *72*(4), 638–641. doi:10.1037/0021-9010.72.4.638

Meyer, K. E., & Peng, M. W. (2015). Theoretical foundations of emerging economy business research. *Journal of International Business Studies*, *47*(1), 3–22. doi:10.1057/jibs.2015.34

Nunnally, J. C. (1967). *Psychometric theory*. New York, NY: McGraw-Hill.

Petter, S., DeLone, W., & McLean, E. R. (2013). Information systems success: The quest for the independent variables. *Journal of Management Information Systems*, *29*(4), 7–62. doi:10.2753/MIS0742-1222290401

Piotrowicz, W. (2015). Information technology and systems in the Visegrád group of countries (Czech Republic, Hungary, Poland, and Slovakia): A literature review. *Journal of Global Information Technology Management*, *18*(2), 77–93. doi:10.1080/1097198X.2015.1052684

Reinartz, W., Krafft, M., & Hoyer, W. D. (2004). The customer relationship management process: Its measurement and impact on performance. *Journal of Marketing Research*, *41*(3), 293–305. doi:10.1509/jmkr.41.3.293.35991

Riketta, M. (2002). Attitudinal organizational commitment and job performance: A meta-analysis. *Journal of Organizational Behavior*, *23*(3), 257–266. doi:10.1002/job.141

Rollins, M., Bellenger, D. N., & Johnston, W. J. (2012). Customer information utilization in business-to-business markets: Muddling through process? *Journal of Business Research*, *65*(6), 758–764. doi:10.1016/j.jbusres.2010.12.013

Roztocki, N., & Weistroffer, H. R. (2008). Information technology in transition economies. *Journal of Global Information Technology Management*, *11*(4), 1–8. doi:10.1080/1097198X.2008.10856476

Roztocki, N., & Weistroffer, H. R. (2009). Research trends in information and communications technology in developing, emerging and transition economies. *Collegium of Economic Analysis*, *20*, 113–127.

Roztocki, N., & Weistroffer, H. R. (2015). Information and communication technology in transition economies: An assessment of research trends. *Information Technology for Development*, *21*(3), 330–364. doi:10.1080/02681102.2014.891498

Salmela, H., Lederer, A. L., & Reponen, T. (2000). Information systems planning in a turbulent environment. *European Journal of Information Systems*, *9*(1), 3–15. doi:10.1057/palgrave.ejis.3000339

Samoilenko, S. (2008). Contributing factors to information technology investment utilization in transition economies: An empirical investigation. *Information Technology for Development*, *14*(1), 52–75. doi:10.1002/itdj.20087

Samoilenko, S., & Osei-Bryson, K. (2015). Before and after joining the European Union: The impact of investments in telecoms on the Visegrád group of countries and Baltic states. *Journal of Global Information Technology Management*, *18*(2), 94–109. doi:10.1080/1097198X.2015.1052685

Scott, W. R. (1981). *Organizations: Rational, natural, and open systems*. Englewood Cliffs, NJ: Prentice Hall Inc.

Seleny, A. (2007). Communism's many legacies in East-Central Europe. *Journal of Democracy*, *18*(3), 156–170. doi:10.1353/jod.2007.0056

Singh, J., & Rhoads, G. K. (1991). Boundary role ambiguity in marketing-oriented positions: A multidimensional, multifaceted operationalization. *Journal of Marketing Research*, *28*, 328–338. doi:10.2307/3172868

Soja, P. (2011). Examining determinants of enterprise system adoptions in transition economies: Insights from Polish adopters. *Information Systems Management*, *28*(3), 192–210. doi:10.1080/10580530.2011.585584

Soja, P. (2015). A stakeholder analysis of barriers to enterprise system adoption: The case of a transition economy. *Information Technology & Management*, *16*(3), 253–271. doi:10.1007/s10799-015-0245-1

Soja, P., & Paliwoda-Pękosz, G. (2013). Comparing benefits from enterprise system adoption in transition and developed economies: An ontology-based approach. *Information Systems Management*, *30*(3), 198–217. doi:10.1080/10580530.2013.794606

Song, M., Droge, C., Hanvanich, S., & Calantone, R. (2005). Marketing and technology resource complementarity: An analysis of their interaction effect in two environmental contexts. *Strategic Management Journal*, *26*(3), 259–276. doi:10.1002/smj.450

Soubbotina, T. P., & Sheram, K. (2007). *Beyond economic growth: Meeting the challenges of global development*. Retrieved from http://www.worldbank.org/depweb/beyond/beyond.htm

Themistocleous, M., Soja, P., & da Cunha, P. R. (2011). The same, but different: Enterprise systems adoption lifecycles in transition economies. *Information Systems Management*, *28*(3), 223–239. doi:10.1080/10580530.2011.585585

United Nations Conference on Trade and Development (UNCTAD). (2016). *United nation conference on trade and development: Country fact sheets 2016, Hungary*. Retrieved from http://unctad.org/sections/dite_dir/docs/wir2016/wir16_fs_hu_en.pdf

Venkatesh, V. (2000). Determinants of perceived ease of use: Integrating control, intrinsic motivation, and emotion into the technology acceptance model. *Information Systems Research*, *11*(4), 342–365. doi:10.1287/isre.11.4.342.11872

Venkatesh, V., & Bala, H. (2008). Technology acceptance model 3 and a research agenda on interventions. *Decision Sciences*, *39*(2), 273–315. doi:10.1111/j.1540-5915.2008.00192.x

Venkatesh, V., & Davis, F. D. (2000). A theoretical extension of the technology acceptance model: Four longitudinal field studies. *Management Science*, *46*(2), 186–204. doi:10.1287/mnsc.46.2.186.11926

Venkatesh, V., Morris, M. G., Davis, G. B., & Davis, F. D. (2003). User acceptance of information technology: Toward a unified view. *MIS Quarterly*, *27*(3), 425–478.

Weerakkody, V., El-Haddadeh, R., Sabol, T., Ghoneim, A., & Dzupka, P. (2012). E-government implementation strategies in developed and transition economies: A comparative study. *International Journal of Information Management*, *32*(1), 66–74. doi:10.1016/j.ijinfomgt.2011.10.005

Wierenga, B., & Ophuis, O. P. A. M. (1997). Marketing decision support systems: Adoption, use, and satisfaction. *International Journal of Research in Marketing*, *14*(3), 275–290. doi:10.1016/S0167-8116(97)00009-8

World Bank. (2015). *World Bank GDP per capita – international dollars*. Retrieved from http://data.worldbank.org/indicator/NY.GDP.PCAP.PP.CD

Yang, Q., Mudambi, R., & Meyer, K. E. (2008). Conventional and reverse knowledge flows in multinational corporations. *Journal of Management*, *34*(5), 882–902. doi:10.1177/0149206308321546

Zaltman, G., Duncan, R., & Holbek, J. (1973). *Innovations and organizations*. New York, NY: John Wiley & Sons, Inc.

Appendix A: Scale items

Perceived usefulness of IS (Davis, 1989; 1 = strongly disagree, 5 = strongly agree)
PU1 Using IS improves my job performance.
PU2 Using IS in my job increases my productivity.
PU3 Using IS enhances my effectiveness on the job.
PU4 I find using IS useful in my job.
PU5 Using IS in my job enables me to accomplish tasks more quickly.

Technological turbulence of the industry (Jaworski & Kohli, 1993; 1 = strongly disagree, 5 = strongly agree)
TUR1 Technological changes provide big opportunities in our industry.
TUR2 The technology in our industry is changing rapidly.
TUR3 A large number of new product ideas have been made possible through technological breakthroughs in our industry.

Social orientation (Maltz et al., 2001; 1 = very untypical, 5 = very typical)
SO1 How typical are the following activities involving individuals from different functional areas organized by your SBU or corporation: Recreation and sport events?
SO2 How typical are the following activities involving individuals from different functional areas organized by your SBU or corporation: After work or evening get-togethers (pub, dinners, etc.)?
SO3 How typical are the following activities involving individuals from different functional areas organized by your SBU or corporation: Joint celebrations, parties (e.g., X-Mas party, birthday, and celebrations)?

Formalization (Deshpandé & Zaltman, 1982; 1 = strongly disagree, 5 = strongly agree)
FOR1 There is a complete written job description for my position.
FOR2 We follow strict operational procedures at all times.
FOR3 The organization keeps a written record of everyone's performance.

Organizational commitment (McGee & Ford, 1987; 1 = strongly disagree, 5 = strongly agree)
OC1 I feel emotionally attached to this organization.
OC2 This company has a great deal of personal meaning for me.
OC3 I would be glad to spend the rest of my career with this organization.
OC4 I enjoy discussing this organization with people outside of it.
OC5 I really feel this organization's problems are my own.

Ease of use (Davis, 1989; 1 = strongly disagree, 5 = strongly agree)
EU1 It is easy to learn how to use our system.
EU2 I find it easy to get the IS to do what I want it to do.
EU3 It is easy for me to become skillful at using our IS.
Ownership: 1 = majority of the firm is owned by domestic owner; 2 = majority of the firm is owned by foreign owner (Nominal scale, dummy variable)
Company tenure: For how many years have you been working for this company? (open ended question)
B2B vs. B2C: 1 = Majority of incomes derive from B2B markets; 2 = Majority of incomes derive from B2C markets (Nominal scale, dummy variable)