

Factors impacting the adoption of Software as a Service in Slovenian SMEs

Marjeta Marolt
Maribor University

INTRODUCTION

Traditional business software applications from main ICT providers are too complex and expensive generally for almost all small and medium-sized enterprises (SMEs). Even the largest companies with the best IT departments have difficulties to follow the development of information and communication technology (ICT). SMEs as a major source of entrepreneurial skills and creativity (European Commission, 2008) cannot afford lagging behind large companies so there is a need to bridge the gap in ICT use between them. In a world where competence is dependent on the exploitation of technology SMEs can with the use of the on-demand software applications reduce time to market and easy adoption.

SMEs in Europe present 99 percent of all enterprises and two thirds of jobs in the private sector. SMEs cannot be classified as large scale enterprises because they have a number of specific characteristics that differ from larger companies. In addition to the size SMEs differ from larger companies in the area of deployment and use of ICT (Bouanno et al., 2005, Ramdane and Kawalek, 2009), because many SMEs do not know the advantages offered by the use of ICT, (Pucihar et., 2009, Kartiwi and MacGregor, 2007, MacGregor and Vrazalic, 2005, Cragg and King, 1993) limited financial ability as well as lack of appropriate technologies.

In spite of their major contribution to economy, studies focusing on adoption and diffusion of IS innovation among SMEs are underrepresented and they rarely appear in major IS journals (Li, 2009). In the report initiated by the European Commission to capture the development of cloud computing the specific recommendations for European research and development were identified. One of the main points is a need to explore the legal frameworks and business models that will help identify ways to reduce barriers for SMEs to enter the market (Jeffery et al., 2010).

Partial results of a survey by the European Network and Information Security Agency (ENISA) which was launched in April 2009 and will run until June 2010 shows that SMEs major concerns for SMEs migration to the cloud computing includes safety and reliability of data (ENISA, 2009). The survey also shows that SMEs prefer the cloud computing category called Software as a Service (SaaS).

There is a broad spectrum of different types of software solutions offered by a third party provider, available on demand, usually accessible via Internet, e. g. office (Zoho Office, Google Apps), CRM (Salesforce.com), ERP (Workday), HRM services (HumanWave). The shorter time period required to install and implement new software applications SaaS could be major advantage for SMEs that lack necessary ICT capabilities and organizational resources.

Most recent studies were focused on technical issues while research covering economic and organizational aspects of SaaS is underrepresented (Jeffery et al., 2010). Benlian et al. pointed out that although many research papers have theoretically explored the meaning of on-demand software applications there is virtually almost no coverage of the drivers of SaaS adoption on a substantial empirical basis except SaaS-adoption from a transaction cost theoretical lens (Benlian et al., 2009). This paper focuses on theoretical framework that

will incorporate all relevant theories in predicting factor of Saas adoption and will serve for further development of the research model and hypotheses.

LITERATURE REVIEW

If we look Saas as an outsourcing decision, we can draw on theories that have been mentioned several times in the past in similar outsourcing studies (Li and Li, 2009; Gonzales et al., 2006; Dibbern et al., 2004). Beside Transaction cost theory and Agency theory which are most widely utilized in the IS outsourcing studies (Gonzales et al., 2006) Knowledge-based theory, Stakeholder theory and Resource based theory have emerged as important.

Theory	Previous research findings
Agency theory	<p>Consistent with these perspectives, the client firm represents the principal and the vendor represents the agent in outsourced IT projects. The agency problems are indeed more pronounced in outsourced software development projects relative to internal projects (Choudhury and Sabherwal, 2003). Each organization—principal and agent—pursues its own goals while being concerned about its own lack of complete project control and wary of opportunistic behavior by its partner (Earl, 1996; Lacity, and Hirschheim, 1993). Koh et al. have found that close project monitoring is an important antecedent to successful outsourcing outcomes (Koh et al., 2004) especially when there is a lack of trust between involved parties.</p>
Knowledge-based theory	<p>This theoretical perspective suggests that outsourcing arrangements serve as a vehicle for utilizing vendors' complementary skills and expertise (Grant and Baden-Fuller, 2004). The first knowledge-based motivation for outsourcing is the desire to gain access to and exploit technical knowledge that the client firm does not possess (Levina and Ross, 2003). Greater technical knowledge increases the ability of clients to more precisely spell out contract terms and to effectively monitor and supervise vendors (Kirsch et al., 2002), increasing their relative bargaining power. Later on, during the development process the effective software development requires project level integration of client domain knowledge and vendor technical knowledge (Tiwana and McLean, 2005).</p>
Transaction cost theory	<p>The main idea of this theoretical perspective is that organizational decision to purchase or manufacture goods and services is based on transaction costs.</p> <p>Transactions with high asset specificity are likely to be kept within firm boundaries, while the rest should be outsourced. (Williamson, 1991). Dibbern argue that insourcing is more cost efficient in creating strategic benefits through IS, if the provision of application services requires a high amount of firm specific human assets (Dibbern et al., 2005). According to Benlian and Hess application specificity is the most important driver of adopting Saas-based applications (Benlian and Hess, 2009).</p> <p>The level of uncertainty is the major deterrent to outsource IT operation activities (Aubert et al., 2004; Benlian, 2009). Dibbern conceptualized environmental uncertainty in the IT outsourcing context as comprising business driven and technology driven uncertainty (Dibbern, 2004). Technology driven uncertainty captures the extent to which the required technical functions or features of the outsourced application may be changed over time (Benlian, 2009; Benlian and Hess, 2009).</p>

Stakeholder theory	Organizational stakeholders are any group or individual who can affect, or is affected, by the achievement of organizational objectives (Freeman, 1984). Despite the different expectations and goals of key stakeholder groups there is a need of upholding the interest of these stakeholders to achieve successful IT outsourcing. Gottschalk and Solli-Sæther found stakeholder theory as second most important theory in the field of IT outsourcing (Gottschalk and Solli-Sæther, 2005). While there have been few research examining the employees impact on the outsourcing (e.g. Purcell, 1996), stakeholders beyond the company have been largely ignored especially when considering the pressure from large business partners.
Resource-based theory	<p>The main idea of the theory is that organizational decision to purchase or manufacture goods and services is based on transaction costs. Resource-based thinking considers that a company's resources include all assets, organizational characteristics, processes, aptitudes, information and knowledge controlled by that company and its employees (Barney, 1991).</p> <p>The most prominent use of the theory is in the preparation phase of the outsourcing process for defining the decision making framework and in the vendor selection phase for selecting an appropriate vendor (Perunović and Lindgaard Pedersen, 2007). For the sustainable competitive advantages firms are forced to rely on a multitude of outside suppliers for software and knowhow and in doing so gain access to valuable resources and external capabilities (Langlois 1990). Kang pointed out that case companies not only reduced cost but also enhanced their core business outcomes by utilizing high level of outsourcing at non critical items (Kang et al., 2009).</p> <p>The resource-based view in outsourcing builds from a proposition that an organization that lacks valuable, rare, inimitable and organized resources and capabilities, shall seek for an external provider in order to overcome that weakness (Barney, 1992; Petraf, 1993) and increase organizational flexibility. The level of organizational flexibility reflects the ability of the firm to anticipate, adapt or react to the changes in its environment (Volverda, 1998).</p>

Table 1: Relevant theories

RELEVANT STUDIES

While focusing only on the SaaS adoption between SMEs where several theories were taken into account we manage to find two previous studies. This attempt was found in the work of Xin and Levina where they drew on economic, strategic management and IS theories to develop theoretical framework (Xin and Levina, 2008). The results of this study are not available. Furthermore, Benlian et al. proposed multi-theoretical research model which incorporates transaction cost theory, resource-based view and theory of planned behavior. Although the usefulness and relevance of the three theoretical frameworks for assessing SaaS adoption was demonstrated they pointed out that there is a need for further extend of the proposed theoretical framework to other theories (Benlian et al., 2009).

FURTHER STEPS

Based upon above mentioned theories which are considered to be useful we will develop a comprehensive research framework for this study. In accordance with the research framework the hypotheses and questionnaire will be developed. The questionnaire will be first reviewed by the knowledgeable experts (Carmines and Zeller, 1979) and then a small pilot study will be conducted (Oppenheim, 1992). While the web survey will be used to collect data pre-testing of survey instrument is needed. After the revision of the questionnaire the invitation message will be sent out to several types of organizations using several databases. A reminder email message will be sent out two weeks after the invitation messages. To test weather non-

response bias exist the second reminder will be sent out two months later. Such responses will be compared with earlier responses. This study will allow data collection from IS executive and end-users.

Expected contribution to academic research is empirical tested research model on the adoption of SaaS which may be useful for future studies of SaaS-adoption. This study will also have implications for practice. The findings will be useful for SaaS service providers, system developers as well as government and private institutions that are promoting the use of information technology among SMEs.

The research will be restricted to Slovenia which may limit generalization of findings of the study. Our concerns about generalization is eased a little by the fact that Slovenia SMEs seem not be significantly different from the overall European SMEs. Another limitation is internet access while the data for the study will be collected through an online survey. Email and internet penetration rates are extremely high in Slovenia still the informants of the survey are also end-users who do not necessary have organizational email.

REFERENCES

- Aubert, B. A., Rivard, S. and Patry, M. (2004). A transaction cost model of IT outsourcing, *Information and Management*, 41 (7), 921-932.
- Barney, J. B. (1991). Firm resources and sustained competitive advantage. *Journal of Management* 17(1), 99–120.
- Benlian A., Hess T., Bauxmann P. (2009). Drivers of SaaS-Adoption – An Empirical Study of Different Application Types. *Business & Information Systems Engineering*, 1(5), 357 -369.
- Benlian, A. (2009). A transaction cost theoretical analysis of Software-as-a-Service (SaaS)-based sourcing in SMBs and enterprises. *Proceedings of the 17th European conference on information systems*, Verona
- Bharadwaj, A.S. (2000). A Resource-Based Perspective on Information Technology Capability and Firm Performance: an Empirical Investigation. *MIS Quarterly*, 24(1), 169-196.
- Buonanno, G.; Faverio, P.; Pigni, F.; Ravarini, A. (2005). Factors affecting ERP system adoption: A comparative analysis between SMEs and large companies. *Journal of Enterprise Information Management*; 2005; 18, 4; pp. 384-426.
- Carmines, E. G., & Zeller, R. A. (1979). *Reliability and validity assessment*. Newbury Park, CA: Sage Publications.
- Choudhury, V., and Sabherwal, R. (2003). Portfolios of control in outsourced software development projects. *Information Systems Research*, 14(3), 291–314.
- Cloud Computing - SME Survey. Available from <http://www.enisa.europa.eu/act/rm/files/deliverables/cloud-computing-sme-survey/>.
- Cloud Computing Risk Assessment. Available from <http://www.enisa.europa.eu/act/rm/files/deliverables/cloud-computing-risk-assessment>.
- Cragg, P. B.; King, M. (1993). Small-firm computing: Motivators and inhibitors. *MIS Quarterly*, 17(1), 47.
- Dibbern, J. (2004). The sourcing of application software services: Empirical evidence of cultural, industry and functional differences. *Physica-Verlag, Heidelberg, New York*.
- Dibbern, J., Chin, W. W. and Heinzl, A. (2005) The impact of human asset specificity on the sourcing of application services, *European Conference of Information Systems*, Regensburg.
- Dibbern, J., Goles, T., Hirschheim, R., Jayatilaka, B. (2004). Information systems outsourcing: a survey and analysis of the literature. *ACM SIGMIS Database* 35(4), 6–102.
- Earl, M. (1996). The risks of outsourcing. *Sloan Management Review*. 37(3), 26–32.
- European Commission (2008). *The European e-Business Report 2008: The impact of ICT and e-business on firms, sectors and the economy*. European Communities, Belgium.
- European Commission, DG Enterprise and Industry (2008). *A comprehensive policy to support SMEs*. Available at: http://ec.europa.eu/enterprise/entrepreneurship/sme_policy.htm
- Expert group report. (2010). *The future of cloud computing: opportunities for european cloud computing beyond 2010*. European Commission, Information Society and Media, Belgium.

- Gonzalez, R., Gasco J., Llopis, J. (2006). Information systems outsourcing: A literature analysis. *Information & Management* 43(7), 821–834.
- Gottschalk P., Solli-Sæther H. (2005). Critical success factors from IT outsourcing theories: an empirical study, *Industrial Management & Data Systems*, 105(6), 685-702.
- Grant, R., and Baden-Fuller, C. (2004). A knowledge accessing theory of strategic alliances. *Journal of Management Studies*, 41(1), 61–84.
- Kartiwi, M., MacGregor, R.C. (2007). Electronic Commerce Adoption Barriers in Small to Medium-Sized Enterprises (SMEs) in Developed and Developing Countries: A Cross-Country Comparison. *Journal of Electronic Commerce in Organizations*. 5(3), 35-51.
- Kirsch, L.; Sambamurthy, V.; Ko, D.; and Purvis, R. (2002). Controlling information systems development projects: The view from the client. *Management Science*, 48(4), 484–498.
- Koh, C.; Ang, S.; and Straub, D. (2004). IT outsourcing success: A psychological contract perspective. *Information Systems Research*, 15(4), 356–373.
- Lacity, M., and Hirschheim, R. (1993). The information systems outsourcing bandwagon. *Sloan Management Review*. 35(1), 73–86.
- Freeman, R. Edward (1984). *Strategic Management: A stakeholder approach*. Boston: Pitman
- Levina, N., and Ross, J. (2003). From the vendor's perspective: Exploring the value proposition in information technology outsourcing. *MIS Quarterly*, 27(3), 331–364.
- Li, M., Li, D. (2009). A Survey and Analysis of the Literature on Information Systems Outsourcing. *Pacific Asia Conference on Information Systems Proceedings*.
- Li, X. (2009). An empirical examination of factors affecting adoption of an online direct sales channel by small and medium-sized enterprises. Doctoral dissertation.
- MacGregor, R., Vrazalic, L. (2005). The Role of Small Business Clusters in Prioritising Barriers to E-commerce Adoption: A Study of Swedish Regional SMEs. *CRIC Cluster conference. Beyond Cluster-Current Practices & Future Strategies*. Ballarat.
- Markus, M.L. and Robey, D. (1988). Information technology and organizational change: Causal structure in theory and research. *Management Science*, 34 (5), 583-598.
- Mingu Kang, Xiaobo Wu, Paul Hong (2009). Strategic outsourcing practices of multi-national corporations (MNCs) in China. *Strategic Outsourcing: An International Journal*, 2 (3), 240 – 256.
- Oppenheim, A. N. (1992). *Questionnaire design, interviewing and attitude measurement*. Pinter Publishers, New York.
- Peteraf, M.A. (1993). The Cornerstones of Competitive Advantage: A Resource-Based View. *Strategic Management Journal*, 14 (3), 179-191.
- Pucihar, A., Bogataj, K. Lenart, G. (2009). Increasing SMEs' efficiency through the single European electronic market as a new business model. V: PAAPE, Björn (ed.), VUK, Drago (ed.). *Synthesized organization*. Frankfurt am Main [etc.]: P. Lang, 2009, str. 347-368.
- Purcell, J. (1996). Contingent workers and human resource strategy: Rediscovering the core- periphery dimension, *Journal of Professional HRM*, No5, 16-23.
- Quinn, J. B., & Hilmer, F. G. (1994). Strategic outsourcing. *Sloan Management Review*, 35, 43–55.
- Ramdani, B., Kawalek, P. (2009). Predicting SMEs' adoption of enterprise systems. *Journal of Enterprise Information Management*. 22 (1/2), 10-24.
- Sambamurthy, V., Bharadwaj, A., and Grover, V. (2003). Shaping Agility through Digital Options: Reconceptualizing the Role of Information Technology in Contemporary Firms. *MIS Quarterly*, 27(2), 237-263.
- Tiwana, A., and McLean, E.R. (2005). Expertise integration and creativity in information systems development. *Journal of Management Information Systems*, 22 (1), 13–43.
- Williamson O. E. (1991) *Comperative economic organization: The analysis of discrete structural alternatives*. *Administrative Science Quarterly*, 36(2), 269-296.