Association for Information Systems
AIS Electronic Library (AISeL)

All Sprouts Content

Sprouts

1-28-2013

End User Empowerment through Platforms for Situational Applications

Immanuel Pahlke
J.W. Goethe University, pahlke@wiwi.uni-frankfurt.de

Roman Beck
J.W. Goethe University, beck@itu.dk

Follow this and additional works at: http://aisel.aisnet.org/sprouts_all

End User Empowerment through Platforms for Situational Applications

Immanuel Pahlke
J.W. Goethe University, Germany

Roman Beck
J.W. Goethe University, Germany

Abstract

In recent years, new technologies help to enable the vision of agile business platforms leveraging the abilities and innovativeness of knowledge workers. In this article, we refer to the current trend of utilizing platforms for situational applications to increase the level of business agility in terms of improved environmental sensing and responding capabilities. Drawing from the extant literature and informed by the insights of a case study, conducted at a financial services provider, we elaborate on Enterprise Mashups as a new technology that empower end users to create and adapt situational applications. Thereby, we contribute to current requests for further research in the field of digital option generation and realization of business agility capabilities through IT innovations. Moreover, we expand the nomological network by the construct of user empowerment as an important mediator between IT capabilities and business agility.

Keywords: Business Agility, Empowerment, Situational Applications

Permanent URL: http://sprouts.aisnet.org/12-31

End User Empowerment through Platforms for Situational Applications

Working Paper

Immanuel Pahlke
Frankfurt University
Grüneburgplatz 1
60323 Frankfurt, Germany
pahlke@wiwi.uni-frankfurt.de

Roman Beck
Frankfurt University
Grüneburgplatz 1
60323 Frankfurt, Germany
rbeck@wiwi.uni-frankfurt.de

INTRODUCTION

The increasingly dynamic nature of business environments requires firms to further develop their alignment capabilities (Drucker, 2007). This ongoing need to realize and adapt to environmental changes is reflected by the concept of business agility (BA) which describes one of the key success factors for organizations striving to stay competitive even in turbulent markets (Dove, 2001). As an organization's responsiveness ultimately depends on the behavior of its employees (Haeckel 1999) firms have to establish mechanisms and technologies for empowering organizational members to be able to take action (Balasubramaniam et al. 2008). Therefore, firms refer to service-oriented architectures (SOA) and the dissemination of Web 2.0 technologies (such as SOAP, REST, or AJAX) to establish platforms that facilitate end users to create and customize situational applications in a co-creating innovation process thereby leveraging collective knowledge and experience (Von Hippel, 2005). We use the word 'situational' in terms of 'created on demand' or 'contextually customized' to address immediate needs (Balasubramaniam et al., 2008). With the term 'end user' we refer to knowledge workers (Davenport, 2005) who often possess only marginal technical skills. Accordingly, our research focuses on platforms that allow end users to tailor their work environments to their specific needs enabling them to operate more efficiently and increase an individuals' innovativeness that in turn may lead to improved operational adaptability (Ketter et al., 2009). More specifically, in this study we elaborate on Enterprise Mashups (EM) as an exemplary technology for realizing platforms for situational applications. To ground this article on a consistent EM terminology, we define EM platforms as *systems that facilitate end users to create and adapt individual services and situational applications through (re-)combining basic digital components (e.g., applications or services) from multiple sources* (Hoyer and Fischer, 2008, Pahlke et al., 2010). Therefore, EMs can be leveraged to facilitate a more participatory and bilateral end user innovation process.

However, the business value of such platforms has not yet been analyzed adequately since existing research mainly focuses on the underlying technical concepts and principles (e.g., Yu

2

et al., 2008). What is missing is a broader understanding of the nomological network through which these platforms influence firms' agility as an important dynamic capability of a firm. Thus, we elaborate on the following central research question: *How platforms for situational applications (i.e. EM platforms) can be utilized to leverage the potentials of end user innovation to improve the level of BA?* Grounded in the extant literature in the field of user empowerment and BA as well as informed by the insights of a case study conducted in a large financial institution, we propose a conceptual model depicting the nomological linkages between EM capabilities and BA. From a theoretical point of view, we thereby refer to the request of Sambamurthy et al. (2003) and Overby et al. (2006) for further research in the field of digital option generation and realization of BA capabilities.

The remainder of the paper is organized as follows: First, the employed research design is introduced and the key facts of the case study are presented. Next, we elaborate on the impact of EMs on the level of BA and present first support for the derived propositions. Finally, the article concludes with a discussion of limitations and an overview of future research opportunities.

RESEARCH DESIGN AND CASE DESCRIPTION

To ground the article from a theoretical and methodological point of view, we chose a conceptual framing as proposed by Yadav (2010). In so doing, we define and describe the included constructs and combine these constructs and key theoretical arguments to the proposed conceptual model. The disclosure of the implicit claims is addressed by the explication of statements, the declaration of the research question, and the derivation of precise and empirically testable propositions. To ground the stated propositions and to increase the robustness of our findings, we refer to two distinct sources of evidence. First, we base our conceptual model on well-established literature streams, such as strategic management with respect to BA and empowerment as well as IS management. Second, we conduct an exploratory case study according to Yin (2003) to derive specific features of EM systems and facilitated capabilities. The findings of the study provide first support for the developed propositions.

Accordingly, to safeguard both theoretical and practical relevance, we tailored the depicted conceptual model along existing literature gaps and the expressed needs of our interview partners. For this purpose, we were deeply involved in an EM implementation project conducted in a financial institution with more than 100,000 employees worldwide. At the beginning of 2009, a business department of this financial institution, responsible for processing securities transactions, requested a flexible IT platform that accelerates the implementation of situational applications and the automation of repetitive tasks and work processes. As a result, a project was initiated and consultants were engaged to work with the employees of those departments to define the day-to-day operations that were performed by the data processing and operations team. The goal of this first step was to identify the work processes that would potentially benefit from an EM platform. Subsequently, the required infrastructure was installed and the EM system was implemented.

Since the objective of the case study was to further inform the deductively derived conceptual model, we focused on key stakeholders of the EM projects. Therefore, semi-structured interviews were conducted over a half-year period with two responsible IT project managers, the chief systems architect, two end-users as well as one responsible manager from a business department. Furthermore, we attended weekly status meetings and had access to the project share point server and therefore were able to collect and analyze secondary data (e.g., meeting minutes, project documentations and several evaluation studies) for triangulation purposes.

CONCEPTUAL DEVELOPMENT

To broaden our understanding about the role of platforms for situational applications that empower the knowledge worker (i.e., EM platforms), we examine the nomological network through which these platforms influence a firm's agility. In general, we follow the conceptual framing of Sambamurthy et al., (2003) thereby suggesting that higher levels of IT resources and competencies influence BA through capability development processes enabled by the empowerment of end users and the creation of digital options. By the capability-building process we refer to firms' ability to integrate, build, and reconfigure internal and external resources in creating higher-order capabilities that are embedded in the organizational context (Teece and Pisano, 1997). Thus, IT does not serve as direct enabler of BA, but as a catalyst and occasion that expands the possibilities for individual empowerment and new digital options finally leading to an improved BA. Taking these general relationships into account, we conceptually illustrates the nomological relations between EM competencies and capabilities on the level of BA, mediated by emerging digital options (business process perspective) and the benefits of empowerment (employees' perspective). In the following, the single constructs and corresponding propositions (**P1-P5**) of our conceptual model are derived and first support from the case study is provided.
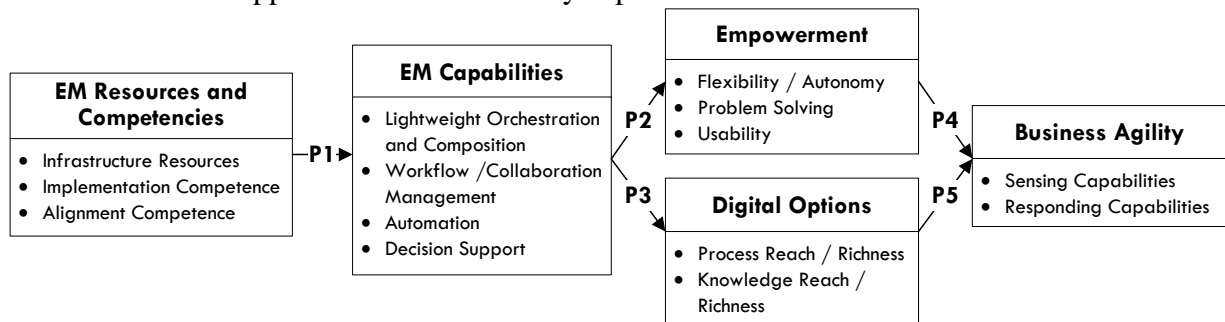

Figure 1. Conceptual model – BA through platforms for situational application

EM Resources, Competencies, and Capabilities

In general existing research in the field of IS conceptualize the construct of IT resources and competencies as the level of IT investments, the quality of the IT infrastructure (e.g., global connectivity and reliability), and IT human capital (e.g., appropriate technical and business skills) (Weill and Broadbent, 1998, Zhu et al., 2006). According to this framing, in our case EM resources and competencies are gained from the level of innovation-specific financial investments, the maturity of the existing EM infrastructure (e.g., access to a scalable SOA infrastructure), and the ability to drive EM-based innovations of strategic importance in an effective and efficient manner. Ideally, these EM competencies lead to EM-specific capabilities, such as the lightweight orchestration and composition of resources, automation of repetitive work processes, enhanced workflow and collaboration management, as well as improved decision support (Hoyer and Fischer, 2008, Pahlke et al., 2010). Accordingly, we propose: *EM competencies and required resources positively affect EM capabilities* (**P1**). Based on subject-specific literature and the insights of our case study these specific EM capabilities are discussed in more detail, in the following.

Lightweight Orchestration and Composition: One of the central capabilities of EMs is the lightweight resource composition concept which is reflected by the reuse of existing building blocks (components or services) in different contexts (Hoyer and Stanoevska-Slabeva, 2009). The term "lightweight" refers to the characteristic feature of platform independency that enable an orchestration of services based on open standards without requiring the allocation of native resources in the operating system (Hoyer and Fischer, 2008). Through enabling interoperability between different information sources and business

4

applications, working processes are simplified as well as cutting, pasting, and switching among different applications are reduced.

Workflow and Collaboration Management: The objective of the EM development approach is to integrate end users from business units who often possess only marginal technical skills (Ketter et al., 2009). By embracing this development paradigm, EM technology encompasses flexible process management capabilities and an application platform that can be leveraged to coordinate different services by allowing end users to align orchestration events along the workflows (Davenport, 2005). For instance, these workflow management capabilities were used to improve the corporate actions process in the financial institution that contained many copy and paste instructions from different information sources to multiple systems. In particular the process relied heavily on collaborative spreadsheet and checklist tasks. From existing IS research it is well known that these collaborative spreadsheet tasks are particularly susceptible to many types of errors leading to compliance issues (Panko, 2007). Activity tracking (i.e., built-in scheduling, prioritization, alert, and escalation mechanisms) and context-sharing features help to reduce errors by implementing automated eyeballing, execution testing, auditing, and logic inspection procedures and thereby increase confidence in compliance (Panko, 2007). In essence, an EM system eventually allows users to specify workflows execution and enables the integration of process actors represented by both technical and human-related services.

Automation: Based on the two aforementioned capabilities, EM systems enable the automation of business processes that originally were not affordable or were considered as a niche solution. Concerning this matter, in the case study the EM platform was used, inter alia, to facilitate back office workers to audit and process corporate actions. The original process was dominated by paper work of people sitting close to each other passing tasks around. After the introduction of the EM platform a responsible manager stated: "*It was possible to automate the desk-to-desk paper-based process without losing the advantages of flexibility and reachability*". Moreover, the chief enterprise architect evaluated the potentials of the EM platform as follows: "*While we see that this platform can be reused for more mid-office and back-office services automation, we also see opportunities in consumer financing, cash and trade operations, and also in account opening process automation.*"

Decision Support: Due to the information-intensive business of financial services providers, banks store and disseminate vast amounts of transactional and analytical data (Holsapple and Sena, 2005). In this context, identifying, extracting, transforming, and presenting data are considered to be of fundamental importance for supporting managerial decision-making. In this regard, prevailing solutions often provide only a static user interface, encompassing parameter-based spreadsheet reports and semi-free dashboards. In this regard, an end user stated: "*Spreadsheets have been used for decision support but we still suffers from two fundamental problems emerging in our practice. First, it is still complicated to combine and integrate spreadsheets with other information sources. Moreover, it is hard to embed spreadsheet work in a professional (distributed) workflow resulting in high error rates.*" Based on data integration and standardized information exchange mechanism such as REST, RSS, and Atom, EM platforms enable end users to compose different data sources and information services (such as (databases, spreadsheets, websites, Web services, feeds and unstructured sources). Thus, EM platforms offer a promising solution to realize real time decision support (Simmen et al., 2008) by empowering end users to access information whenever it is needed.

EM Capabilities Facilitate the Empowerment of End Users

Empowerment continues to attract management researchers and practitioners especially with regard to new technical opportunities in the field of end user participation (Psoinos et al., 2000, Von Hippel, 2005). Generally, empowerment means to enable

5

employees in doing things that they would otherwise be unable to do (Wagner, 1994). As a prerequisite, restrictions that prevent employees from working efficiently have to be removed (Thomas and Velthouse, 1990). According to this definition, we consider empowerment as an effective mechanism of change management in order to respond to organizational and environmental changes (Hong and Kim, 2002). This can be traced back to the fact that empowered employees are more willing to innovate and display greater initiative (Spreitzer, 1995).

With regard to our specific research context, we argue that EM capabilities empower end users particularly through higher levels of autonomy and usability as well as in enhancing problem solving capabilities. *Autonomy* is defined as the degree of choice individuals have in how they use a tool in accomplishing their work activities and the flexibility to react to changes (Gill, 1996). With *usability* we refer to the ease of use of a system and therefore the actual level of effort required to completing specific tasks (Venkatesh, 2000). *Problem solving capabilities* refer to the ability of an individual to effectively utilize at least one or a combination of knowledge, skills, information, technology, and social-networks to resolve a problem or develop a strategy to support the resolution process. Accordingly, we place emphasis on these three different dimensions to clarify how EM competencies and capabilities can lead to user empowerment in a more differentiated way.

As already mentioned, EM platforms are intended to address user needs that arise spontaneously in the form of lightweight orchestration and composition of different resources which provide an improvement in flexibility and autonomy (Liu et al., 2007). In addition, usability is enhanced by composing components in a flexible way and by eliminating application switches and process breaks. A manager from the business department responsible for corporate actions processing commented: "*The EM platform streamlines our workflows and business processes by simplifying navigation, eliminating searching for information, and reducing steps in business tasks without writing or altering application code.*" The analysis of an advisory process in the retail banking shows that a financial adviser on average access over 12 different business applications with more than 100 clicks to organize and digitally process an appointment for consultation. In this context, a manager from the retail department stated: "*... due to the integrated user interface and architecture, unnecessary clicks and application switching can be avoided which results in a better usability and improved process efficiency.*"

Moreover, EM systems can also be used to implement an end user innovation concept by leveraging enhanced workflow and collaboration management capabilities. Business users are actively involved in the creation of situational applications and thus are part of end user innovation processes (Von Hippel, 2005). Thereby, the creative energy of a large number of people can be leveraged to aggregate knowledge and different capabilities in groups (Surowiecki, 2004) leading to improved problem-solving capabilities (Hoyer and Stanoevska-Slabeva, 2009). In addition, the situational composition and integration of external and internal information services based on the self-service concept could enhance decision making processes and individuals' problem-solving capabilities (Negash, 2004). In this context, an end user from the investment division argued: "*The right information at the right time is everything in the investment branch. Information aggregation from multiple applications and information services can give the users a coherent view of the market environment at the click of a button.*" Another end user stated: "*The new solution allows me to access and compose business information from many different sources, directly addressing the daily business challenge of timely decision support*".

Given the aforementioned, EM platforms enable workers to react quickly to changing needs with just-in-time services that better fit to their business problems. Therefore, EMs allow the on-demand composition of complex services based on underlying commodity services and thus evolve the ability of an enterprise to react to situational requirements and

6

changing needs in a flexible manner. Overall, we found a moderate to high level of user empowerment through the EM business solution in the depicted case. Thus, we propose: *EM capabilities positively affect the empowerment of the end user* (**P2**).

EM Capabilities as Enabler for Digital Options

Digital options represent a set of IT-enabled capabilities that are reflected in digitized business processes and knowledge systems (Sambamurthy et al., 2003). These capabilities can be conceptualized along the dimensions of reach and richness (Evans and Wurster, 2000). A high degree of process reach is represented by the design and establishment of digitized processes leading to an improved cooperation among employees, with customers, and business partners. Digitized process richness covers the quality, transparency, and availability of information about transactions running within a process or between two processes and the ability to re-engineer the underlying procedures upon this (Evans and Wurster, 2000). The level of access to codified firm knowledge and its degree of comprehensiveness is encompassed by digitized knowledge reach (Grover and Davenport, 2001). Digitized knowledge richness facilitates the exchange and development of knowledge within a company (Sambamurthy et al., 2003). Following this differentiation, EMs could contribute to the generation of digital options through enhanced orchestration and composition, workflow and collaboration management, automation, as well as decision support capabilities.

In general, the lightweight orchestration and composition of information services, application components, business-critical information, and functionality can be provided and reconfigured situationally, thus positively influencing process and knowledge reachability. More specifically, digitized and modular business processes can be realized based on enhanced automation capabilities. Accordingly, business processes can be integrated and accessed from anywhere through electronic interfaces, which enhances their reach. Moreover, improved workflow and collaboration management capabilities – based on activity tracking and context-sharing features – enhance the quality of information that is available about transactions and actors involved in the processes thereby positively affecting process reach. In this context, a project manager from the IT division stated: "*Processes can be tracked, time stamped, and recorded, eliminating the need for less reliable and time-consuming manual controls.*" In line with this, a responsible manager from the retail banking department added: "*Our employees utilize a number of applications to perform repetitive tasks, such as screening of the creditworthiness. The EM platform simplifies many of these tasks, allowing the financial advisors to focus on their customers instead of the different software they are using. Due to the simplification and rationalization offered by the EM system, the employees have a much improved breadth for their clients and the business problems. And of course, automation of manual processes will reduce resource requirements, minimize human error, and increase efficiency.*" This was also confirmed by two evaluation projects that elaborate on the performance improvements in terms of processing time, fault tolerance, service level agreement, and reengineering/implementation time. The first test evaluates the automation of different transaction processes, where manual interferences were necessary in the initial process implementation. An analyst described the evaluation results as follows: "*Using the EM business solution to automate these manual processes reduced processing time by 98% while reducing process breaks and human error. Moreover, the average design of the automated processes was completed and desktop-ready in 2 days.*" Another use case in the investment banking (back-office) division that utilizes the EM platform to automate, operate, and control different kinds of manual pricing and business information procurement processes shows that: "*Automating manual pricing and market information updates improved the ability to meet Service Level Agreements while reducing processing time by 79%.*"

In addition, enhanced decision support capabilities lead to a faster access to and integration of new combinations of codified and dispersed knowledge, hence increasing the

(cc) BY-NC-ND Sprouts - http://sprouts.aisnet.org/12-31

knowledge reach and richness. However, it has to be stated that the degree of knowledge reach and richness of the investigated business solution can only be descript as moderate since the EM platform has not been used comprehensively within the institution. Accordingly, community of practices, encompassing end users sharing common practice, and the related interchange of business knowledge in terms of situational applications have not been established up to the time of the investigation. Moreover, only a few information and business application services, which can be integrated in situational EM applications, were available so far. Nevertheless, it was still possible to decompose business applications' functionality into a set of dedicated services and to integrate external services to provide homogenous components through the EM platform. As a result, we found at least a moderate level of digital options generation in the depicted case and therefore propose: *EM capabilities positively affect the generation of digital options* (**P3**).

Business Agility through End User Empowerment and Digital Options

So far, existing research has presented several competing definitions of agility, mostly grounded in the manufacturing domain (see Ganguly et al., 2009 for an overview). Based on first investigations on this concept, early definitions of agility were developed by Youssef (1994), Goldman et al. (1995), and Yusuf et al. (1999) who viewed agility as a firm's ability to operate profitably in a rapidly changing and continuously fragmenting market environment by producing high-quality, high-performance, customer-configured goods and services (Sharifi and Zhang, 1999). Beyond the manufacturing domain, the agility concept has received considerable attention in strategic management as well as IS research. Generalizing the concept, scholars from these domains broadly refer to business agility as an organization's ability to sense and respond to environmental change by reconfiguring their resources, knowledge, and business processes in an efficient, effective, and timely manner (Dove, 2001; Overby et al., 2006; Sambamurthy et al., 2003).

S*ensing* capabilities refers to the ability of firms to immediately sense environmental changes including, e.g., changes in customer needs and preferences, as well as technological developments. *Responding* capabilities refers to the ability of firms to act appropriately in an effective and fast manner (Overby et al., 2006). These capabilities are enabled through digital options that result from establishing an EM platform. More specifically, higher levels of digital process reach and richness promote agility through high levels of interoperability (Tsourveloudis and Valavanis, 2002), as well as rapid sequencing and coordination of business applications and services along the business processes and entire value chain (Sambamurthy et al., 2003). Moreover, greater reach and richness of knowledge options also enhances a firm's agility by enabling it to rapidly seek and integrate new knowledge, business functionalities, and competencies within its value network (Sambamurthy et al., 2003).

User empowerment can also be considered as an important driver of BA. Concerning this matter, the expert interviews and the analysis of the secondary data clearly demonstrate that the bank aim at improving sensing and responding capabilities through the implementation of the EM platform for empowering its employees. More specifically, sensing of emerging market developments are improved by, e.g., offering the end users different external and internal information services that can be integrated and utilized within their work environments to capture a full picture of current market developments. Moreover, sensing changes in the customer's demand was improved by building a new integrated and flexible frontend system based on the EM technology for financial advisors in the retail banking division. For this purpose, specific business information and application services relevant to the financial advisers can be integrated and orchestrated situationally to decrease unnecessary application and context switches. On the other hand, the creative energy of a large number of people and the sharing of knowledge through distributed work processes that are established via the EM system (Hoyer and Stanoevska-Slabeva, 2009; Surowiecki, 2004) contributes to improved responding capabilities. Thereby, the EM platforms drive agility

through the empowerment of developers and end users since the situational development of EM applications reduces the time-to-market of emerging business opportunities and models. With regard to the case study, it can be stated that the investigated EM platform exhibits a high responding capability through the lightweight orchestration and composition of services based on a SOA-compliant implementation and flexible integration mechanism. Accordingly, new complements and services can be integrated situationally into EM applications that in turn enable workers to react quickly to changing needs with just-in-time solutions that better fit their business problems.

In summary, we hold that the current implementation of the bank's EM business solution and the further planned and conceivable use cases for such systems substantiate the high potential of EM platforms for establishing sensing of and responding capabilities. Hence, we propose: *Higher levels of BA can be realized by increasing the empowerment of employees* (**P4**) *and establishing digital options* (**P5**) *through the implementation of an EM platform.*

CONCLUSION AND FURTHER RESEARCH

Today, researchers and executives would do well to consider platforms for situational applications as a digital option generator and driver for end user empowerment. In this paper, we derived a research model conceptualizing the impact of specific IS resources and competencies on the level of end user empowerment and digital options to broaden our understanding of the nomological network through which a firm's dynamic capabilities are influenced. For this purpose, we specifically emphasize on EMs as a promising technology to realize a platform for situational applications and elaborate on the generation of digital options as well as the innovativeness resulting from user empowerment on an operational level. From a theoretical point of view, we contribute to a better understanding of the relation between IT capabilities and BA mediated by user empowerment and digital options. Thereby, we refer to the request of, e.g., Sambamurthy et al. (2003) and Overby et al. (2006) who encouraged further research in the field of digital option generation and realization of BA capabilities resulting from IT investments. Moreover, we extent the nomological net proposed by Sambamurthy et al. (2003) by the construct of user empowerment as an important mediator between IT capabilities and BA. Accordingly, a key contribution of this study is the rich insight afforded by the relationship between IS, empowerment, and end user innovation which has been mostly neglected in the IS literature so far.

However, despite the rich findings, our investigation has some limitations that suggest avenues for future research. Our study suffers from the natural limitations of a single case investigation including the lack of generalizability and subjective bias (Yin, 2003). These limitations, however, are unlikely to have affected the validity and reliability of the outcomes significantly because our primary objective was not to generalize, but to provide analytical evidence for our propositions. However, since our study relies on a specific technology and industry setting, further case or field studies are required to empirically validate and generalize the depicted propositions. Moreover, we encourage future researchers and practitioners to investigate, expand, and validate our developed conceptual model to achieve a better understanding of an increasingly important, but complex set of relationships between IS platforms that empower end users ultimately leading to improved BA. In contrast to centrally administered business applications, these platforms are often manipulated by end users with the IT department only taking a supporting role. This can lead to typical problems of decentralization, such as lack of service quality, uncontrolled use, and other compliance issues. Further research should therefore elaborate on the reasons for human errors, the conceptualization of appropriate incentive approaches to encourage cultures of participation, and frameworks that provide insights into the end user development phenomena in work

9

practices. This research could benefit from insights of extant work in the field of end user computing (e.g., spreadsheet development and usage). Moreover, we argue that the spread of platforms empowering the end user depends on a balance of motivational aspects, effective tools, and management issues. Accordingly, organizational challenges and technical properties, which are a prerequisite for further acceptance of open and evolvable systems in the business environment, should be discussed. In this context, we hope that we have set the stage for an ambitious research agenda for reframing the role of evolvable IS (i.e., platforms for situation applications) in firms in the contemporary digital economy.

REFERENCES

Balasubramaniam, S., Lewis, G.A., Simanta, S., and Smith, D.B. (2008). Situated Software: Concepts, Motivation, Technology, and the Future. *IEEE Software*, 25 (6), 50-55.

Davenport, T.H. (2005). *Thinking for a Living: How to Get Better Performance and Results from Knowledge Workers*. Harvard Business School Press, Boston.

Dove, R. (2001). *Response Ability: The Language, Structure, and Culture of the Agile Enterprise*. John Wiley & Sons Inc., New York.

Drucker, P.F. (2007). *Managing in the Next Society*. Elsevier, New York.

Evans, P.B. and T.S. Wurster (2000). *Blown to Bits: How the New Economics of Information Transforms Strategy*. Harvard Business School Press, Cambridge.

Ganguly, A., Nilchiani R., and Farr, J.V. (2009). Evaluating Agility in Corporate Enterprises. *International Journal of Production Economics*, 118 (2), 410-423.

Gill, T.G. (1996). Expert Systems Usage. *MIS Quarterly*, 20 (3), 301-329.

Goldman, S. L., Nagel, R. N., and Preiss, K. (1995). *Agile Competitors and Virtual Organizations: Strategies for Enriching the Customer*, New York, NY: Van Nostrand Reinhold.

Grover, V. and Davenport, T. (2001). General Perspectives on Knowledge Management: Fostering a Research Agenda. *Journal of Management Information Systems*, 18 (1), 5-23.

Haeckel, S. H. (1999). *Adaptive Enterprise: Creating and Leading Sense-and-Respond Organizations*, Boston: Harvard Business School Press.

Holsapple, C.W. and Sena, M.P. (2005). ERP Plans and Decision-Support Benefits. *Decision Support Systems*, 38 (4), 575-590.

Hong, K.-K. and Kim, Y.-G. (2002). The Critical Success Factors for ERP Implementation: an Organizational Fit Perspective. *Information Management*, 40 (1), 25-40.

Hoyer, V. and M. Fischer (2008). Market Overview of Enterprise Mashup Tools. In Proceedings of the *6th International Conference on Service-Oriented Computing*. Australia, Sydney.

Hoyer, V. and K. Stanoevska-Slabeva (2009). Generic Business Model Types for Enterprise Mashup Intermediaries. In Proceedings of the *15th Americas Conference on Information Systems*, USA, CA, San Francisco.

Ketter, W., M. Banjanin, R. Guikers, and A. Kayser (2009). Introducing an Agile Method for Enterprise Mash-Up Component Development. In Proceedings of the *12th IEEE Conference on Commerce and Enterprise Computing*, USA, WA, Washington.

Liu, X., Y. Hui, W. Sun, and H. Liang, (2007). Towards Service Composition based on Mashup. In Proceedings of the *4th IEEE International Conference on Service Computing*, USA, IN, Chicago.

Negash, S. (2004). Business Intelligence. *Communications of the AIS*, 13 (15), 77-195.

Overby, E., Bharadwaj, A., and Sambamurthy, V. (2006). Enterprise Agility and the Enabling Role of Information Technology. *European Journal of Information Systems*, 15 (2), 120-131.

Pahlke, I., Beck, R., and Wolf, M. (2010). Enterprise Mashup Systems as Platforms for Situational Applications - Benefits and Challenges in the Business Domain. *Business & Information Systems Engineering*, 2 (5), 305-315.

Panko, R.R. (2007). Two Experiments in Reducing Overconfidence in Spreadsheet Development, *Journal of Organizational and End User Computing*, 19 (1), 1-23.

Psoinos, A., Smithson, S., and Kern, T. (2000). An Exploratory Study of Information Systems in Support of Employee Empowerment: Constraints and Opportunities. *Journal of Information Technology*, 15 (3), 211-230.

Sambamurthy, V., Bharadwaj, A., and Grover, V. (2003). Shaping Agility through Digital Options. *MIS Quarterly*, 27 (2), 237-263.

Simmen, D., M. Altinel, V. Markl, S. Padmanabhan, and A. Singh (2008). Damia: Data Mashups for Intranet Applications. In Proceedings of the *14th International Conference on Management of Data*, Canada, Vancouver.

Spreitzer, G.M. (1995). Psychological Empowerment in the Workplace: Dimensions, Measurement, and Validation. *Academy for Management Journal*, 38 (5), 1442-1465.

Surowiecki, J. (2004). The Wisdom of Crowds. Anchor Books, New York.

Sharifi, H., and Zhang, Z. (1999). A Methodology for Achieving Agility in Manufacturing Organizations: An Introduction. *International Journal of Production Economics*, 62 (1-2), pp. 7-22.

Thomas, K.W. and Velthouse, B.A. (1990). Cognitive Elements of Empowerment: An Interpretive Model of Intrinsic Task Motivation. *Academy of Management Review*, 15 (4), 666-681.

Teece, D.J., and Pisano, G. (1997). Dynamic Capabilities and Strategic Management. *Strategic Management Journal*, 18 (7), 509-533.

Tsourveloudis, N.C. and Valavanis, K.P. (2002). On the Measurement of Enterprise Agility. *Journal of Intelligent and Robotic Systems*, 33 (3), 329-342.

Venkatesh, V. (2000). Determinants of Perceived Ease of Use: Integrating Control, Intrinsic Motivation, and Emotion into the TAM. *Information Systems Research*, 11 (4), 342-365.

Von Hippel, E. (2005). Democratizing Innovation. The MIT Press, Cambridge.

Wagner, J.A. (1994). Participation's Effects on Performance and Satisfaction: A Reconsideration of Research Evidence. *Academy of Management Review*, 19 (2), 312-330.

Weill, P., and Broadbent, M. (1998). *Leveraging the New Infrastructure: How Market Leaders Capitalize on Information Technology*. Harvard Business School Press, Cambridge.

Yadav, M.S. (2010). The Decline of Conceptual Articles and Implications for Knowledge Development. *Journal of Marketing*, 74 (1), 1-19.

Yin, R.K. (2003). Case Study Research: Design and Methods. Sage Publications Inc., Thousand Oaks.

Youssef, M. A. (1994). Editorial. *International Journal of Operations and Production Management*, 14(11), pp. 4-6.

Yu, J., Benatallah, B., Casati, F., and Daniel, F. (2008). Understanding Mashup Development. *IEEE Internet Computing*, 12 (5), 44-52.

Yusuf, Y., Sarhadi, M., and Gunasekaran, A. (1999). Agile Manufacturing. *International Journal of Production Economics*, 62 (1-2), pp. 33-43.

Zhu, K., Kraemer K.L., and Xu, S. (2006). The Process of Innovation Assimilation by Firms in Different Countries: A Technology Diffusion Perspective on E-Business. *Management Science*, 52 (10), 1557-1576.