Abstract

M&A is a strategy of growth for organizations with specific goals and benefits. The benefits are realized during the process of combining IT divisions from two or more organizations. We investigate how success of IT integration in M&A post-merger scenarios can be measured using key performance indicators (KPI). We identified 25 unique benefits of IT integration in a structured literature review (SLR) and categorized them by sources of synergies: strategic & managerial aspects, technology consolidation-related savings & synergies, and synergy through common organizational culture & staff retention. As the literature offers no definition for IT integration success, we defined it as the realization of chosen benefits and the avoidance of deficiencies while staying on budget and time.

Keywords

IT post-merger integration, synergies and benefits measurement, KPI, mergers and acquisition

Introduction

Mergers and acquisitions (M&A) are a well-known economic phenomenon which influences two or more merging partners in all organizational units. According to Thomson Financial IMAA (2017), there were about 4400 M&As worldwide in 2017 with a transaction value of bn 3125 USD. This shows how important M&As are in the global economy. Although M&As can have different specific goals, they all want to create value for the newly merged organization (Hitt et al. 2001). M&As require significant investments which should pay off by delivering the expected benefits (Tafti 2011).

M&As consist of an integration phase in which the merging partners are combined. Integration includes the realization of value creation which determines whether an M&A is successful. IT integration is one specific, very important part of the process: IT supports most of the processes or activities in organizations (Hitt et al. 2001; Gates & Very 2003; Mehta & Hirschheim 2004). The value of an M&A is created through synergies which are realized during the integration (Hitt et al. 2001).

Information system (IS) researchers have begun to look into the issue of M&A due to the rising importance of IT integration. Since a lot of M&A projects fail to reach expectations, researchers have begun to study how the IT and IS integration process can be managed and designed successfully. However, no scientific framework for measuring the success of the post-merger IT integration can be found. Additionally, it is unclear how success in the case of IT integration is defined.

There is much research on the success of (IT) integration in the field of M&A and how to reach it, but little on the measurement of this success. Few studies concentrate on some specific measure or key performance indicator (KPI). The purpose of this research is to close the gap, identify measures for success and link them to common performance measurement frameworks and KPIs used in literature.

We conducted a structured literature review (Kitchenham 2007) to answer the following question: How can the success of IT-integration in M&A post-merger scenarios be measured using key performance
indicators? Furthermore, we set out to answer the sub-questions: Which synergies can be identified? Which benefits can be identified? Which KPIs can be identified? We identified benefits and KPIs that can determine the success of an IT integration. We mapped the benefits and KPIs to the synergies they result from and evaluated them against the strategic performance measurement model Balanced Scorecard (BSC) (Kaplan & Norton 1996).

Background

The term M&A is used to describe two slightly different corporate restructuring activities. Observing M&A from an IT perspective “it is sufficient to consider M&A as any type of enterprises’ fusion under one economic authority, independent from the legal status of the participants” (Freitag et al. 2010).

M&As occur for several reasons (DePamphilis 2015, p. 5-8): Diversification of products and markets, tax considerations, increased market power, and synergy. Operating synergy includes economies of scale and scope, financial synergy is achieved through the reduction of the acquirer’s cost of capital. Hubris (managerial pride), buying undervalued assets, managerialism, and “mis-valuation” are reasons for under- or overestimating the outcomes of mergers. Absorption, preservation, and symbiosis are M&A objectives (Wijnhoven et al. 2006, derived from Haspeslagh and Jemison 1991). M&As can be seen as “the series of activities culminating in the transfer of ownership from the seller to the buyer” (DePamphilis 2015, p. 118) or the incorporation of systems, infrastructure, and policies (Wijnhoven et al. 2006). IT integration in acquisitions is important because it is a prerequisite for operational integration (e.g. Mehta & Hirschheim 2007; Wijnhoven et al. 2006; Yetton et al. 2013; Toppenberg & Henningsson 2014). The merged organization cannot function effectively without it (Evgeniou 2002; Mehta & Hirschheim 2007; Henningsson & Carlsson 2011). IT and IS integration can be defined by influenced domains: integration of IT (1) infrastructures, (2) applications and data, (3) human resource management practices, (4) vendor management practices, (5) strategy-making practices (Tanriverdi & Uysal 2011). There are adaptive, contingent, and multi-stage integration processes (Gates & Very 2003) and the IT integration methods renewal, takeover, standardization, and synchronization (Wijnhoven et al. 2006 based on Harrel & Higgins 2002, and Johnston & Yetton 1996). These concepts of IT and IS integration show several similarities. The terms IT and IS are often used interchangeably but focus on different issues. IT refers to technology while IS is a broader term and includes e.g., processes and people (Bozic et al. 2008, p. 43-44). According to Henningsson (2008, p.33), the relation between IT and IS in IT & IS integration is unclear, but, in practice, IT is a part of IS. Wijnhoven et al. (2006) include information systems in their IT integration definition, Tanriverdi & Uysal’s dimensions (2011) include some attributed to IS. In conclusion, there is no widely accepted rule which term to use. In this paper, we use the IT integration as defined by Wijnhoven et al. (2006).

Performance measurement (PM) is “the process of quantifying the efficiency and effectiveness of past actions” (Neely et al. 2002). According to literature (Neely 2007), some of the most cited performance measurement models are the BSC (Kaplan & Norton 1996, 2001), self-assessment excellence models (e.g., European Foundation for Quality Management’s business excellence model), and the SMART pyramid (Lynch & Cross 1991) and performance prism model (Adam & Neely 2000). The most popular model is the BSC (Kaplan & Norton 1996, 2001). It distinguishes financial, customer, internal business, innovation, and learning performance perspectives which should be weighed equally (Kaplan and Norton 1996, 2001). Performance indicators are dependent (conflicting/complementary relationships). Independence is an exception (Gillies 1979 in Kueng 2000).

The meaning of success in M&A IT integration has to be specified. A successful M&A has reached the intended goals of the merger, or achieved the synergies it promised at the time of the merger announcement and its share price and revenue growth rate increased post-merger (Mehta & Hirschheim 2004). According to Hitt et al. (2001), an M&A is successful, if the value of the implemented synergies is higher than the costs needed to build them. Gates & Very (2003) add that an integration is successful, if value is created. In conclusion, an IT integration is successful, if the IT-enabled synergies are achieved and the integration project was finished in time and on budget.

The realization of synergistic relationships is a key motive for companies to engage in M&A. Here, the term synergy refers to the ability of a merged firm to be more profitable than the firms that were combined (Lubatkin 1983 in Henningsson & Carlsson 2006). There are revenue enhancing and cost reducing operating synergies (Gaughan 2007). The former is based on enhancing the revenue streams of both merging partners; the latter, which is more commonly sought after by merger planners, refers to reducing costs (Gaughan, 2007). Mehta & Hirschheim (2004) describe synergy as “generating revenue due to combined offerings”, Weber & Plishkin (1996) as “two operating units, divisions, or business units together [...] [running] more efficiently (i.e., with lower costs) and/or more effectively
Post-merger IT integration success and performance measurement

(i.e., with better resource allocation)”. The integration of functions and processes can result in lowering the average cost curve of the acquirer and gaining competitive advantage by reducing prices (Weber & Pliskin 1996). Synergies in M&A can be cost cutting or revenue enhancing, short-term or long-term, and realized by the combination of organizations through rationalization or consolidation. 50% of all synergies conducted in a merger are related to IT (Sarrazin & West 2011). Sward (2006) suggests that performance is the result of benefits brought to separate business units and the organization as the whole by IT solutions or related services. An advantage of tangible benefits is that they can be quantitatively measured. As intangible benefits cannot be quantitatively evaluated, those benefits do not translate into a quantitative or business value (Murphy & Simon 2001).

Methodology

We followed the structured literature review (SLR) method (Kitchenham 2007) and conducted the following three steps accordingly: (1) formulating research questions and search strategy, (2) filtering and extracting data based on inclusion and exclusion criteria, (3) synthesizing the findings.

Research question & search strategy: The research question How can the success of IT-integration in M&A post-merger scenarios be measured using key performance indicators? guided the overall search process and was accompanied by three sub-questions: Which synergies can be identified?, Which benefits can be identified?, Which KPIs can be identified? A Google Scholar Search with predetermined search terms (M&A, IT integration, performance, measur*) and timeframe (2007 – August 2017) was chosen as a primary source (cf. Kitchenham 2007). To improve the quality of the results, Association for Computing Machinery (ACM), Institute of Electrical and Electronics Engineers (IEEE), and Springer search were used to identify additional material. Filtering and extracting data: Google Scholar yielded 301 resources, 48 of which were selected for closer examination, the rest were discarded because they did not focus on either M&A, performance measurement or IT/IS integration. Of the 48 sources, 16 relevant articles were included in the final pool, the rest discarded for the above mentioned reasons or because they did not include benefits. The ACM search resulted in 8 articles, only one of which met our criteria but which was already in the final pool. The IEEE search resulted in 10 articles. Five of the articles were relevant, but three of them had already been identified by previous search results. Two new articles were added to the final pool. The Springer Search resulted in 48 articles. Seven of them were considered relevant and pre-chosen for further investigation, only two met our criteria. One had already been identified, the other article was added to the final pool. The SLR included all types of peer-reviewed research publication that were written in English and matched our selection criteria. We selected publications that focus on IT/IS integration during M&A that discuss benefits, costs and performance measurements. Overall, 19 articles were identified and included in the final pool (c.f. Table 1).

<table>
<thead>
<tr>
<th>Google Scholar</th>
<th>ACM</th>
<th>IEEE</th>
<th>Springer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Records identified through search:</td>
<td>301</td>
<td>8</td>
<td>10</td>
</tr>
<tr>
<td>Records after abstract scan:</td>
<td>↓</td>
<td>↓</td>
<td>↓</td>
</tr>
<tr>
<td>Records after full-text assessment:</td>
<td>16</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Records after duplicate removal:</td>
<td>↓</td>
<td>↓</td>
<td>↓</td>
</tr>
<tr>
<td>19 records included in synthesis</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Figure 1. Overview of search and filtering of SLR results.

Synthesizing the findings: The analysis of the final sample was performed by means of narrative and descriptive analysis techniques. The selected papers were screened in four phases to identify obtainable benefits and/or concrete performance indicators in order to generate a comprehensive list. Phase 1 identified benefits and KPIs resulting in an unstructured list of benefits but not necessarily KPIs. Benefits and the available indicators were synthesized by combining similar ones. Phase 2 categorized the output of phase 1 into IT integration dimensions identified in literature (Strategic & managerial aspects, Technology consolidation-related savings and synergies: IT infrastructures (1), IT applications and data (2), and Business processes (3), Synergy through common organization culture and staff retention). These categories focus on the synergistic viewpoint which is in line with common performance measurement models. In Phase 3, we added KPIs to complete the list. Benefits with a KPI were considered complete. Phase 4 evaluated the identified benefits on whether they help accomplish the goals of the merged organization.
Introduction. A KPI is identified for each benefit using performance measurement frameworks. They are categorized by sources of synergies: strategic and managerial aspects, technology, and staff retention. Each section contains the identified benefits with a short introduction. A KPI is identified for each benefit using performance measurement frameworks.

### Synergy source

<table>
<thead>
<tr>
<th>Synergy source</th>
<th>Benefits</th>
<th>Sample KPI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strategic and Managerial</td>
<td>Aligned IT &amp; business strategy</td>
<td>Degree of staff participation in merger planning (Baro et al. 2008)</td>
</tr>
<tr>
<td></td>
<td>Increased business efficiency</td>
<td>Manufacturing cycle effectiveness (Kaplan &amp; Norton 1996)</td>
</tr>
<tr>
<td></td>
<td>Decreased operational business disruptions</td>
<td>Mean time between failures (Benitez-Amado &amp; Ray 2012)</td>
</tr>
<tr>
<td></td>
<td>Business agility</td>
<td>Business agility score (Törner &amp; Henningsson 2017)</td>
</tr>
<tr>
<td></td>
<td>Greater integration capabilities</td>
<td>Integration capability score (Benitez-Amado &amp; Ray 2012)</td>
</tr>
<tr>
<td></td>
<td>Cost reduction</td>
<td>Communication costs (Williams et al. 2015)</td>
</tr>
<tr>
<td></td>
<td>Enhanced decision making and group problem solving capability</td>
<td>Degree of end-user involvement (Baker &amp; Niederman 2014)</td>
</tr>
<tr>
<td>Technology, consolidation-related savings and synergies</td>
<td>IT infrastructure flexibility</td>
<td>Degree of connectivity (Benitez-Amado &amp; Ray 2012)</td>
</tr>
<tr>
<td></td>
<td>Increase system efficiencies</td>
<td>Number of workarounds implemented (Benitez-Amado &amp; Ziegenbein 2011)</td>
</tr>
<tr>
<td></td>
<td>Data quality improvement</td>
<td>Percentage of good data records (Maydauschk 2007)</td>
</tr>
<tr>
<td></td>
<td>Increased system security</td>
<td>Number of security incidents (Benitez-Amado &amp; Ziegenbein 2011)</td>
</tr>
<tr>
<td></td>
<td>Increased usage</td>
<td>Perceived ease of use (Venkatesh &amp; Davis 2000)</td>
</tr>
<tr>
<td>Business processes</td>
<td>Process improvement</td>
<td>Average process execution time (Dumas et al. 2013)</td>
</tr>
<tr>
<td></td>
<td>Efficiency improvement of business processes</td>
<td>Unit costs (Amado &amp; Ray 2013)</td>
</tr>
<tr>
<td></td>
<td>Standardization of business processes</td>
<td>Process standard adherence (Mathies et al. 2012)</td>
</tr>
<tr>
<td>Synergies through common organisational culture and staff retention</td>
<td>Minimized staff resistance</td>
<td>Employee satisfaction (Kaplan &amp; Norton 1996)</td>
</tr>
<tr>
<td></td>
<td>Staff and customer satisfaction</td>
<td>Percentage of key staff turnover (Kaplan &amp; Norton 1996)</td>
</tr>
<tr>
<td></td>
<td>Appropriation of knowledge</td>
<td>Employee retention rate (Kathuria et al. 2011)</td>
</tr>
<tr>
<td></td>
<td>Cost reduction</td>
<td>IT personnel costs (Kaplan &amp; Norton)</td>
</tr>
<tr>
<td></td>
<td>Appropriation of culture</td>
<td>Cultural perception (Gates &amp; Vred 2003)</td>
</tr>
</tbody>
</table>

### Results

The benefits and KPIs identified during the SLR are summarized in Table 2. They are listed and categorized by sources of synergies: strategic and managerial aspects, technology consolidation-related savings and synergies focusing on IT infrastructures, IT applications, data and business processes, and synergy through common organizational culture and staff retention. Each section contains the identified benefits with a short introduction. A KPI is identified for each benefit using performance measurement frameworks.

### Strategic & managerial aspects

**Aligned IT and business strategy** (Ali et al. 2015; Alaranta & Henningsson 2007; Baro et al. 2008; Myers 2008; Williams et al. 2015; Henningsson 2007): M&A are strategic top-bottom actions (Alaranta & Henningsson 2008), the new business strategy influences the new IT strategy (compare COBIT 5 for goals cascade (ISACA 2012)). Alignment of business and IS strategies does not generate M&A integration success (Baker & Niederman 2014). A measure for business and IT alignment is information economics (Parker et al. 1988), based on ROI and non-tangibles (DeHaes & Grembergen 2015, p. 47-48). A KPI is degree of IS (staff) participation in merger planning (Baro et al. 2008).

**Increased business efficiency** (Henningsson & Kettinger 2016; Williams et al. 2015): Negative outcomes of a merger are operational, agility, and governance business inefficiencies (Henningsson & Kettinger 2016).

**Decreased operational business disruptions** (Henningsson & Kettinger 2016): Disruptions reduce operational performance of integrations (Henningsson & Kettinger 2016). Availability management (e.g., ITIL Process Availability Management) measures the impact of incidents using extended incident lifecycle. KPIs to measure impact of disruptions are Mean Time: Between Failures, to Restore Service, Between Service Incidents, to Repair (Beims & Ziegenbein 2014, p 94).

**Business agility** (Myers 2008, Törmer & Henningsson 2017): The ability of firms to sense/respond to change. It can affect business agility directly through IT capability (influences sensing and responding), indirectly through IT contributions to performance in business processes (Overby et al. 2006). The suggested KPI (“agility score”) to measure agility is based on sensing and responding.


**Cost reduction** (Henningsson & Kettinger 2016; Henningsson & Kettinger 2015; Chang et al. 2014; Myers 2008): Integrating strategic/managerial level IT savings can be measured using the transaction cost theory (Henningsson & Kettinger 2015; Dao 2010). Transaction costs economies can measure the impact of IT on merger performance (Dao 2010). Costs can be reduced by implementing or consolidating IT. Communication costs are a KPI for managerial cost savings (Chang et al. 2014).

**Enhanced decision making and group problem solving capability** (Baro et al. 2008): These capabilities are a key to successful merger integrations (Baro et al. 2008). Management decision making is based on complete, accurate, and timely information provided by effectively integrating IS and data needed (Baker & Niederman 2014). The proposed KPI is the degree of end-user involvement.

**Effective communication** (Baro et al. 2008; Baker & Niederman 2014; Williams et al. 2015; Alaranta & Henningsson 2007): The communication between IT and business units is critical for successful IT integration (Tanriverdi & Uysal 2011). KPIs are communication costs, communication staff, professional communication staff, internal client and stakeholder satisfaction index, management practice indicator (UK Audit Agencies 2010).


**Innovativeness** (Henningsson & Kettinger 2016): Innovation is one of the strategies to gain competitive advantage (especially radical innovation) (Rackoff et al. 1985). Innovation performance measurement happens on the Industry, Organization, User and Technology level. Innovation can be measured using, e.g., a patent-based approach. A KPI is the number of patents per year (Katila 2007).

**Technology consolidation-related savings and synergies**


**Cost reduction** (Henningsson & Kettinger 2016): It refers to the savings which are made by consolidating the infrastructure during integration. This includes, e.g., the cutting of existing servers made redundant by the integration. A KPI is maintenance costs (Henningsson & Kettinger 2016).

**Increase system efficiencies** (Henningsson & Kettinger 2016; Henningsson & Kettinger 2015): Consolidated applications and data that are run efficiently (Chang et al. 2014) are a benefit. The KPI concentrates on workarounds implemented to keep the system running. A KPI is the number of unsolved problems resulting from the IT integration (Beims & Ziegenbein 2011).
Application- and data-related cost reduction (Chang et al. 2014; Henningsson & Kettinger 2015; Kovela & Skok 2015; Freitag et al. 2010): It refers to the savings through the termination of redundant applications and data. KPIs are software costs, maintenance costs, operation costs (all costs to keep system running) and costs of provisioning.

Data quality improvement (Ali et al. 2015; Chang et al. 2014; Kovela & Skok 2015): Data quality (data accuracy, availability, completeness, confidentiality, consistency, integrity, and validity (Chang et al. 2014; Kovela & Skok 2015; Ali et al. 2015)) is enhanced as a result of the integration. Data quality can be defined as the “fitness for the purpose of use” and measured by using an aggregate score (e.g., record-level score). A KPI is the percentage of good data records (Maydanchik 2007, p. 245).

Increased system security (Ali et al. 2015): It refers to security measures during and after the integration process (long-term benefit). The goals of security are system confidentiality and integrity (Ali et al. 2015), and availability (ITIL). A KPI is the number of security-relevant incidents or the number of security-caused incidents which resulted into a service failure (Beims & Ziegenbein 2011).

Increased usage (Baro et al. 2008; Kovela & Skok 2015; Ali et al. 2015; Lin et al. 2010): The use of a system and its net benefits are linked (Delone & Mclean 1992, 2003). Usage is measured by user acceptance, perceived ease of use, usability, etc. (Baro et al. 2008; Kovela & Skok 2015; Ali et al. 2015; Lin et al. 2010). The variables are part of the Technology Acceptance Model (TAM) (Davis 1985) and TAM2 (Venkatesh & Davis 2000): Perceived ease of use influences perceived usefulness. KPIs are the actual system use (number of system use) and the perceived ease of use (measured as a score).

Business processes

Process improvement (Page 2010; Henningsson & Kettinger 2016; Myers 2008): It focuses on effectiveness, efficiency, and adaptability (Page 2010, p. 7). Quantitative business process-related PM dimensions are time, cost, quality, and flexibility (Dumas et al. 2013). Effectiveness focuses on internal and external quality aspects (Dumas et al. 2013). A KPI of external quality is satisfaction with products., a KPI of internal the control process participants feel they have (Dumas et al. 2013, p. 215). Adaptability can be measured by the number of special requests (Van Looy & Shafagatova 2016).

Efficiency improvement of business processes (Chang et al. 2014; Myers 2008): It refers to the enhanced efficiency after IT integration and can be measured by time- and cost-related KPIs (Dumas et al. 2013). Time-specific KPIs are process throughput, process cycle time, or operation time. Cost-specific KPIs are process or unit cost (Chang et al. 2014; Dumas et al. 2013; Myers 2008).

Standardization of business processes (Chang et al. 2014; Törmer & Henningsson 2017): Consolidated processes must be standardized. The implementation of Enterprise Architectures (EA) is similar to M&A integrations (Törmer & Henningsson 2017). The former consolidate internal business silos, the latter the IT of two businesses. Stages of architectural maturity are Business Silos, Standardized Technology, Optimized Core, Business Modularity (Rossa et al. 2006). The EA approach standardizes business processes/technologies (Törmer & Henningsson 2017). A measure for process standardization is the IT process standard adherence (Matthes et al. 2012).

Synergy through common organizational culture and staff retention

Minimized staff resistance (Baro et al. 2008; Henningsson & Kettinger 2016; Chang et al. 2014; Williams et al. 2015): IT covers the acceptance of the newly integrated IT (Baro et al. 2008) and of change in general (Williams et al. 2015). A KPI is staff sick rate: if percentage of sick employees during integration higher, there is resistance (Henningsson & Kettinger 2016). A KPI is the employee satisfaction measured as an aggregate score (Kaplan & Norton 1996, p. 129).

Staff and skill retention (Baker & Niedermann 2014, Baro et al 2008, Kathuria et al. 2011, Lin et al. 2010, Myers 2008, Henningsson & Kettinger 2016): This focuses on the goal of keeping key employees (e.g. due to their expertise, leadership, skill, knowledge) within the organization during the integration. Percentage of key staff turnover is given as an KPI (Kaplan & Norton 1996).

Appropriation of knowledge (Kathuria et al. 2011): It focuses on technology acquisitions to acquire IT competencies. Building knowledge is a long-term process which can be sped up by acquiring the knowledge externally (Kathuria et al. 2011). This benefit focuses on acquiring new knowledge from the target company. Kathuria et al. (2011) propose employee retention rate as a KPI.
Cost reduction (Myers 2008): Headcount reduction as a major benefit (e.g., Vielba & Vielba 2006) is generalized as cost reduction and measured by the headcount (Myers 2008). It measures the cost reduction indirectly. A KPI like the overall IT personnel costs is necessary (Kaplan & Norton 1996).

Appropriation of culture (Kathuria et al. 2011; Williams et al. 2015; Lin 2009): It refers to the combination of two cultures or the integration of one culture into another which can be managed and measured (Gates & Very 2003). A KPI is the cultural perception of employees of the combined firm.

Discussion

We identified 25 distinct IT integration benefits: Ten strategic/managerial, ten technology-related, five human resource and culture-related. The technology-related benefits include five for applications and data, three for business processes, two for IT infrastructure. The identified benefits can be classified into sources of value creation and value leakage (Gates & Very 2003). Some benefits focus on avoidance of value leakage, but the majority focuses on value creation. Instead of distinguishing between pure benefits and sources of value leakage (Gates & Very 2003), all value leaking factors were considered to be benefits mitigating negative outcomes. The discussion of the findings is structured according to the BSC (Kaplan & Norton 1996). The financial perspective mainly includes benefit cost reduction identified to be a synergy or a benefit (e.g., Gaughan 2007). There are four areas of cost reduction: applications, IT infrastructure, strategy, human resources. To the best of our knowledge, this distinction was not yet proposed in IT integration literature. Cost reductions are one of the basic benefits that mark a successful integration. Cost reductions should be introduced carefully as excessive reductions can effect IT quality of service negatively and can destroy acquired capabilities (Henningsson & Kettinger 2016). The customer perspective in this case refers to internal customers such as employees or users (as opposed to Gates & Very 2003). The internal perspective focuses on business processes and how IT supports them. It mainly includes different areas of efficiency concerning IT integration, the key benefit of the internal business process dimension in M&A integration (Gates & Very 2003). Employee satisfaction influences employee productivity which is a measure of efficiency (Kaplan & Norton 1996). IT integration success depends on employee behavior, especially on the resistance against the integration. Therefore, employee efficiency could be defined to be a benefit and measured by the KPI employee productivity. The perspective organizational capacity includes capabilities, knowledge, and culture. Appropriating knowledge and culture is a major challenge in a merger where skills and staff should be retained and the headcount reduced. Some capabilities can be acquired and should be retained (e.g., business and IT infrastructure flexibility), others can be built during the integration (e.g., Integration capabilities). Greater integration capabilities are a major benefit for serial acquirers with an acquisitions-based growth strategy (Henningsson 2015). Innovation stagnation is a risk for new organizations. The BSC counters it by introducing the objective to increase innovation (Kaplan & Norton 1996). We did not consider how benefits interrelate. For example, the benefit of minimized staff resistance might have a positive or negative impact on culture appropriation. Future research will look into these relationships. Although the BSC describes how the perspectives relate to each other, it should not be transferred to IT integration. The four perspectives are only used to structure the identified benefits.

Limitations: The literature selection was performed by one person, diverging from Kitchenham (2007) who proposes that the selection and reading process should be conducted by more than one researcher. The overall case size of each identified study is small. The SLR proposes to include studies with greater case sizes as a quality criterion (Kitchenham 2007). Due to limited amount of available papers, the case size was neither a quality nor an exclusion criterion. The selection of papers was not bound to one industry or branch which opens the possibility that a benefit could be industry-specific. Kovela & Skok (2012) for example only focus on the banking industry. Although there is the potential for industry-specific benefits, the focus is on industries which are IT-‘heavy’ or where IT is deeply integrated into the business. In a future study this could be the focus of the identification of benefits and KPIs.

Mergers and acquisitions were not distinguished selecting the articles, although they might be different phenomena. A future study could identify different benefits for mergers or acquisitions.

Conclusion

M&A is a strategy of growth for organizations which includes several goals and benefits. The focus of this systematic literature study is on IT integration, the combination of IT divisions from different organizations. This includes infrastructure, applications, data, processes, people, and culture. The goal
was to identify how to measure the success of IT integration. IT integration success was identified as the gain of chosen benefits and avoidance of deficiencies, while staying within budget and time. Benefits refer to objectives which create value or prevent value leakage. Budget and time refers to the project management perspective which measures the success of the implementation. Benefits are measured by KPIs which are distinct and operationalized indicators.

We identified 22 unique benefits of IT integration and several example KPIs which indicate the realization of each benefit. These benefits are the result of a structured literature review of 19 peer-reviewed articles published in the last ten years. The findings were categorized by three sources of synergies which are a combination of the most widely accepted IT integration models. The BSC can include all identified benefits which makes it suitable for the use of IT integration performance measurement. In practice, the list of benefits can be used to identify benefits during the planning activities in a real-world IT integration. Additionally, our proposed definition of IT integration success can help organizations to determine whether the conducted IT integration is a success. The literature review shows that there are insufficient studies focusing on the broad topic of IT integration success measurement. A future discourse should determine which other definitions of success can be identified.

REFERENCES


Davis, F. (1985), A technology acceptance model for empirically testing new end-user information systems - theory and results, PhD thesis, Massachusetts Inst. of Technology.


Henningsson, S., & Kettinger, W. J. (2015). “Late to the game: assessing IT integration risk after the acquisition target has been identified.” In Proceedings of the 48th Hawaii International Conference on System Sciences (HICCS), pp. 4651-4660.


