A Classification For Business Intelligence Agility Indicators

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A CLASSIFICATION FOR BUSINESS INTELLIGENCE AGILITY INDICATORS

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Abstract

Under the label of “Business Intelligence (BI) agility” a variety of measures has been proposed, from the adoption of Cloud Computing technologies, over the implementation of “Self-Service-BI” approaches, up to the implementation of agile software development methods. Their commonality is that they all aim at efficiently lowering response times to change requests. The discussion is hampered, however, by the fact that the term “agile” remains vague in the context of BI and that it can easily become misleading: A BI solution that is seemingly “agile” from the perspective of a given line of business can easily diminish the agility of the enterprise-wide BI solution. Besides, it is usually neither necessary nor advisable to subsume all sorts of changes in the often complex and vast BI application landscapes under one metric. This contribution tackles this problem. A review of related work and the analysis of multiple interpretative case studies lead to a differentiated and multi-level agility classification scheme for content, functional, and scale related BI agility concepts that are further differentiated with respect to architectural layer and reach.

Keywords: Agility, Business Intelligence, Data Warehouse, Agile-BI.
1 Introduction and problem statement

“Business Intelligence” (BI) usually denotes integrated approaches to managerial and decision support based on the gathering, storage, refinement, and analysis of data (Baars and Kemper 2008; Foley and Guilletette 2010; Shollo and Kautz 2010). BI has captured the attention of both CIOs (Gartner 2012) and Information Systems Research as it is a strategically relevant field where several strings of complex technical and business driven issues converge: The need to integrate data from heterogeneous areas, the requirement to distill large volumes of data into meaningful information, the balancing act between powerful analytic support and usability, or the orchestration of contradicting departmental and enterprise requirements, to name a few (Moss and Atre 2003; Turban, Sharad et al. 2010).

Recently, the term “agile BI” can be increasingly found in industry-oriented publications (e.g. (Sandler 2010)). A closer look reveals that here “agility” is used to discuss such diverse subjects as development process models (Schwaber 2002; Cockburn 2003) the application of Cloud Computing (Baars and Kemper 2010; Thomson and van der Walt 2010) or technological options for the user to modify systems or contents (“Self-Service-BI”) (Imhoff and White 2011). It sometimes highlights aspects of flexibility for the users to join new data sources, sometimes the speed of report development, sometimes data warehouse (DW) development methods, etc. (e.g. (Imhoff and White 2011) or (Kobielus, Karel et al. 2009)). All those seemingly unrelated conceptualizations of the term “agility” lead to the same root issue: The demand for fast changes of decision support systems. It has been argued that the unsatisfactory fulfilment of agility requirements is one of the causes for the appearance of “shadow BI systems”, i.e. systems that are developed and run within a user department and that are not integrated in the overall BI landscape. If unmanaged, such de-central systems can have detrimental effects on the overall BI landscape including inconsistent management information and reduced possibilities to develop cross-functional BI applications. (Zimmer, Baars et al. 2012).

In sum, agility seems to be a relevant success criterion for a BI solution. As a measurable success metric, however, it is too vague and not adequately related to the particularities of BI. BI is characterized by complex, and mostly multi-layered architectures as well as by conflicting requirements for local Line of Business (LoB) solutions and the overarching BI system which is often managed by specialized units (“BI competence center” – BICC) (Baars, Zimmer et al. 2009). A precise and measurable definition of “BI agility” would be of value not only for practitioners but also for researchers who still struggle to come up with relevant success metrics for BI systems (Dinter, Schieder et al. 2011). This contribution addresses this gap. The overarching research question is: “How can agility be broken down and defined with success metrics that take into account the particularities of BI?”

The course of the paper is as follows: At first, the term “agile” is dealt with in a review of related literature. The nature of agility in the BI context is further explored based on the analysis of multiple interviews and case studies. From the results a classification scheme for BI agility metrics is derived. The article closes with a discussion of the limitations and the contributions.

2 Related work

Currently, the topic of “BI Agility” is still dominated by a non-academic discussion. Many publications focus on agile development methods, e.g. for a DW, for ETL jobs (Extract, Transform, Load), or for report development and deployment. Following the agile manifesto (Fowler and Highsmith 2001), these publications discuss how to apply principles like short-iterations, customer-centric design, continuous testing, etc. in the context of BI. Methods adapted include SCRUM (Hughes 2008), extreme programming (Landry 2011) and the like. Beyond this very narrow perspective on BI agility, the enabling (or disabling) role of architectures is increasingly gaining attention. For example, the use of Cloud Computing is seen as a way to quickly scale or change BI systems (Thomson and van der Walt 2010; Mircea, Ghilic et al. 2011), or “sandboxes” are implemented that allow expert users to modify their own system based on a given data excerpt from
Another building block for agility is coming from the realm of organization and deals with rights and responsibilities, rules and regulations. In academia, these components are jointly discussed under the umbrella of “BI governance” which deals with constructing frameworks for steering and controlling BI systems (Watson, Fuller et al. 2004; Gutierrez 2008). In fact, it has been illustrated that development methods, organization, and architecture interact and substitute each other in parts. The common denominator of all these approaches is that they aim at a fast response to new user requirements – either because these are unclear or because they are subject to unforeseeable changes in the business environment. This is also the bridge to theories on the value of Information Systems, most prominently the Dynamic Capabilities View which addresses the ability to “integrate, build, and reconfigure internal and external competences to address rapidly changing environments” (Teece, Pisano et al. 1997; Eisenhardt and Martin 2000). Dynamic capabilities are often knowledge-based and have been linked to respective IS in general (Overby, Bharadwaj et al. 2006) and BI in particular (Seddon, Constantinidis et al. 2013). BI agility is therefore here understood as a potential lever for a higher organisational agility.

<table>
<thead>
<tr>
<th>Group</th>
<th>attribute</th>
<th>Examples</th>
</tr>
</thead>
</table>

Table 1. Definitions on agility

In order to provide further insights into the matter, a given literature base on “agility” was systematically extended by a database-driven literature search (EBSCO, Google Scholar) with keyword queries as well as backward- and forward-searches. A total of 27 scholarly reviewed articles have been selected that define and discuss the concept of “agility” (8 from Manufacturing, 6 from the realm of Strategic IS Management, 4 from organisation or business in general, 4 from Software development, 5 from Supply Chain Management). This distribution represents the historical development of the agility discourse (Holsapple and Li 2008). As a side note, the list already includes
several meta-reviews (Bernardes and Hanna 2009; Yaghoubi, Kazemi et al. 2011; Vinodh, Madhyasta et al. 2012). Interestingly, in academia, BI and BI systems are mostly discussed as enabler for agility rather than being agile-sub-systems themselves (e.g. (Weill, Subramani et al. 2002; Lu and Ramamurthy 2011). Table 1 groups attributes of agility that are emphasized in the various definitions.

The grouping of the attributes leads to three different subsets (cf. Table 1):

1) Attributes that associate “agility” with a desirable outcome of a system (the fast and timely reaction to an unforeseen change from outside). In this sense a system “is” agile.

2) Attributes that focus on the behaviour of the system or the ability for this (sensing, responding, seizing opportunities). In this sense a system “behaves” agile. Unlike in the first group, the system is seen as a (pro-)active entity. This has already been highlighted very early by Goldman and Preiss (Goldman and Preiss 1994).

3) Publications that treat agility as a structural trait of a system, i.e. it is particularly flexible and efficient. In some cases, concrete features of the system are referred to. In this case, a system is “constructed” to be agile.

The grouping shows the multi-facet nature of agility which combines aspects of outcome with behavioural and structural characteristics that enable such outcomes.

Furthermore, some authors take highly specific features as indicators for agility (e.g. certain production principles as in (Vinodh and Aravindraj 2012)). For the purpose of this research it was decided to clearly separate between means and ends – as sometimes specific architectural or organizational features might support fast changes in one setting but impede them in another (an example being redundancy or the lack thereof). For these reasons it is also not advisable to simply adapt specific indicator systems proposed for other domains such as manufacturing, supply chain management, or systems development. Another aspect seen in the table is that agility is often put in contrast to the costs or the time needed to apply a change. Attributes given here include “lean”, “efficient”, or “with ease”. In this case, it makes sense to follow this example – it is the higher efficiency of many of the new proposed agility enhancing methods that separate them from alternatives (e.g. cloud-based provisioning vs. traditional outsourcing).

In summary, the conclusions of the literature review are the following:

- Agility is a term that is associated with more than mere outcomes of a “black box system”, i.e. the speed for conducting a change. It also refers to the inner workings and structures of the system.
- In order to measure the agility of certain BI features; it is advisable to separate between agility and features that are deemed to be agility-enabling.
- Agility is relative to the effort to achieve change.

A first working definition would therefore be: “BI agility is the ability to efficiently and quickly react to changes in foreseen or unforeseen requirements based on structural and behavioural characteristics of the BI system as well as anticipating change pro actively”. This definition still falls short of being able to adequately capture agility in a BI-specific way.

3 Methodology

The following research is based on an exploratory and qualitative research design that consisted of two phases: In the first phase, a series of 14 expert interviews was conducted with responsible BI managers (each between 70 minutes and 3 hours) that addressed selected research questions (Myers and Newman 2007). The companies were chosen because of their renowned and established BI infrastructures. All were larger commercial German organisations with an established BI organisation, (12 with dedicated BICCs), a BI experience of at least seven years and mostly larger DWs (several terabytes) (cf. table 2). All interviews were transcribed (36 pages per transcript on average) and then evaluated by a step-wise open-coding process that consisted of a fracturing and reordering of the source material, as well of a constant comparison that led to conclusions regarding the relevant
constants and their relationships (Miles and Huberman 1994; Locke 2001). In the **second phase**, six selected interviews were chosen for a closer look and extended to in-depth interpretative case-studies (Walsham 1995; Yin 2008) for which additional data sources (e.g. architecture documentation, governance documents, list of reports and applications) were gathered and add-on interviews, workshops, hands-on system demonstrations, and a joint exploration of new technologies provided additional insights.

<table>
<thead>
<tr>
<th>Case</th>
<th>Industry</th>
<th>Architecture</th>
<th>Case</th>
<th>Industry</th>
<th>Architecture</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Chemical industry group</td>
<td>HS, cDW</td>
<td>H</td>
<td>Telecommunication</td>
<td>HS, cDW</td>
</tr>
<tr>
<td>B</td>
<td>Banking</td>
<td>HS, cDW</td>
<td>I</td>
<td>Insurance</td>
<td>HS, cDW</td>
</tr>
<tr>
<td>C</td>
<td>IT subsidiary in a chemical group</td>
<td>HS, 2 DWs + iDM (additional)</td>
<td>J</td>
<td>Holding Company</td>
<td>HS, cDW</td>
</tr>
<tr>
<td>D</td>
<td>Passenger and cargo logistics</td>
<td>HS, cDW</td>
<td>K</td>
<td>Chemicals</td>
<td>HS, cDW</td>
</tr>
<tr>
<td>E</td>
<td>Manufacturer of industry Chemicals</td>
<td>HS, cDW</td>
<td>L</td>
<td>Food industries</td>
<td>HS, 2 DWs</td>
</tr>
<tr>
<td>F</td>
<td>Automotive</td>
<td>HS, cDW</td>
<td>M</td>
<td>Banking</td>
<td>HS, cDW</td>
</tr>
<tr>
<td>G</td>
<td>Insurance IT and BI service provider</td>
<td>HS, cDW</td>
<td>N</td>
<td>Holding Company</td>
<td>2 DWs</td>
</tr>
</tbody>
</table>

**Table 2. Overview on the interviews and the extended case studies (bold)**

Both the design of the interviews and the data analysis were organized according to a conceptual framework that is a product of our understanding of BI agility. It is seen in relation to aspects of the overall BI context, the dynamics of BI requirements, BI architecture, and measures to deal with changes (cf. **figure 1**):

**Figure 1. Conceptual Framework**

The subjects of *BI and BI strategy* are providing contextual information on the (strategic) relevance of BI, the application areas, the BI organisation and governance. In the centre of the study were the *dynamics of BI requirements* including the frequency and predictability of requirement changes – constituent properties of a need for agility. For getting more concrete insights, the types of requirements (what concrete BI features are subject to the requirements) are covered. In order to capture the relation to organisational agility, the sources of requirements (internally / externally driven) are also considered. The *BI architecture* and its interplay with the requirements are given much room in order to explore the structural aspect of agility. “BI architecture” is hereby understood as the logical architecture of the overall BI system, e.g. its layers (data acquisition, data storage, data analysis, reporting and frontend), the individual components (data marts, DWs, analysis systems) and their arrangement (e.g. independent data marts, hub-and-spoke with a central DW and dependent data marts, multiple DWs) (Baars and Kemper 2008; Ariyachandra and Watson 2010). The *measures* for achieving agility are analysed with respect to the affected parts of the architecture and encompass organisational, architectural, or technological actions. This also leads to the associated efforts.

The addressed research questions – that are embedded in this conceptual framework and that are seen instrumental to the overall question of chapter 1 – are:

1. What types of changes have to be dealt with in BI environments – where do they come from, at what frequency do they arise, and how urgent and predictable are they? The answers to these questions is supposed to help deriving connections to other agility measures, especially enterprise
agility and getting precise reference points for clarifying unspecific terms like “certain time frame” from the definition.

2. For which architectural layers and components and in which way is agility relevant? These questions support pinpointing the structural dimension of agility.

3. What are examples of measures to deal with agility requirements? This question is supposed to challenge and corroborate the insights gathered from question 2 and to provide examples.

4 Results

Regarding the architecture all but one company followed a layered Hub-and-Spoke BI approach of some kind with central DW(s) and dependent Data Marts, sometimes with one Enterprise DW, sometimes with two DWs (c.f. Table 2; company C also has a business unit with independent data marts). In the latter cases the DWs were separated because they were supporting business areas with very distinct business models (commodity vs. brand products, consumer vs. industry goods, direct sales vs. indirect sales). The only organisation without a layered architecture was the holding N with two smaller DWs that were already resting upon prepared data from the various company daughters.

4.1 BI requirements, the relevance and the nature of BI agility

In 11 of the 14 cases agility requirements were explicitly linked to changes in the business environment – particularly from market dynamics and regulation. The changes affect functionality and – much more so – contents (reports, KPIs, data models, data granularity, data sources).

However, change was not always unpredictable and sudden. In fact, in companies B, G, M, and I, relevant regulatory changes were predictably coming with each new legislative period which e.g. brings health care reforms or new financial regulations. In companies E, M, H and F significant changes were related to mergers and acquisitions and in A to restructures on the side of the (industry) customers. All those were likewise foreseeable. In all seven cases, though, the concrete consequences for the BI (e.g. new data integration projects, new data structures, new reports etc.) materialize on very short notice in form of new, unforeseeable BI requirements. So, while the concept of agility can be linked to environmental changes, it cannot always be fully explained by it. Concepts for capturing organisational agility are therefore no starting point for defining BI agility indicators. These have to be designed independently with the time of the specification of a BI requirement as a reference point. This conclusion is further corroborated by the fact that users become more creative, experienced, and demanding regarding BI (e.g. in A, M and J) and impose agility pressures from the inside.

The reference point for measuring BI agility should therefore be the time a requirement becomes concrete from a BI point of view.

4.2 Subjects of BI agility – the rationale for splitting up agility

The discussions regarding the need for agility and concrete measures always revolved around content related issues. The main reason is that changes on the content (data) side can quickly thwart the overall BI approach: “In the BI environment it is always a challenge to take the time or to have the time to introduce a (data) structure that helps mid-term. […] You have to be aware though, that you can quickly deliver solutions, but five quick solutions are the death to BI operation.“ (company N).

The rate of change in the companies on the content side varied between daily and monthly, ranging from changed reports to the introduction of new data models. In contrast, the functionality was undergoing much slower changes (“yearly” to “never”) and was mostly limited to dedicated components (e.g. the introduction of features for social media analytics in company C). Additionally, changes in functionality were mostly limited to separate components or layers which make them easier to manage. Exceptions occurred rather seldom – at most at a frequency of 5 to 10 years (e.g. when switching the underlying product infrastructure, as in company B several years ago).
That doesn’t mean functionality is irrelevant: E.g. measures like Cloud Computing were considered as highly relevant – often as a means to quickly introduce or evaluate new analytic or frontend functionality (e.g. for mobile BI in companies K and C, or for analytics or mining in company H) but also for administrative functions like archiving (company C). But the given measures (also agile development processes e.g. for ETL routines in companies M and I) were mostly unrelated to the ones on the content side.

Another aspect of agility that was brought up was scale, especially regarding various workloads in data analysis and data provision. However, with one exception this was seen as (expensive) nuisance that can be dealt with e.g. with additional hardware or software, a constant redesign – or by just accepting delays. There are exceptions to this rule: In case C, a planning application was on its limits during its peak usage times, prohibiting new features for interactive planning and budgeting.

A conclusion of this discussion is that content, functionality, and scalability should be treated independently and require the following separate indicators: Content Agility (reaction time to apply changes to data repositories / necessary efforts), Functional Agility (reaction time to apply changes to the functionality / necessary efforts), Scale Agility (reaction time to scale a BI solution regarding data volumes, data throughput, or data processing capacity / necessary efforts).

For a concrete application, the efforts would need a translation into monetary values under consideration of one-time costs required for preparing to deliver agility (e.g. by developing a KPI catalogue that allow for a reuse of indicators), and recurring costs (e.g. cloud fees or personnel costs for conducting changes).

4.3 BI requirements and architecture layers

Agility requirements also varied according to the various layers of the BI system:

First, many of both the agility-related issues and measures brought up were specific to certain layers or components, e.g. measures for speeding up or temporarily bypassing ETL design (as in I and M that introduced a “bypass BI” for quickly injecting new data into the DW), for changing data reports both regarding contents and functionality e.g. with “Self-Service-BI” solutions (e.g. in company B), and for adjusting data administration components (e.g. metadata management in company M).

Second, the respective layers require very distinct skill sets, and in some cases are also based on products from different vendors following different concepts (especially in best-of-breed-situations like in B which has specialized teams for the separate layers – in this case with a size of ca. 40 people each).

Third, change frequencies vary between the layers – from frequent changes in reports and frontends (up to daily) over changes in data models (at most monthly), up to changes in data sources and ETL (every couple of months). Therefore, most changes occur in the tools closer to the user. This claim was later also confirmed with a subsequent quantitative exploration. It is noteworthy that unresolved issues that were brought up by the interviewees were again primarily seen on the content side: „What we miss in the [frontend and analysis] tools is the option for a user to join in data. I.e. the user gets the data model and now he can add attributes, build up and report upon new groupings and add new filters or hierarchies” (Company K – a similar quote was made in L).

In conclusion, it makes sense to differ between agility measures for different layers: Data Acquisition Agility, Data Storage Agility, Analysis/Reporting/Frontend Agility, and Data Administration Agility.

4.4 Changes across layers

The most problematic changes were seen if more than one layer was affected. In fact, one of the reasons that the companies enforced rigorously and meticulously layered BI architectures was to confine changes to selected layers and thereby buffering the overall BI system from the dynamics from the user side (A, D, E, F, J, K and M). One of the related measures was to proactively integrate
data in the DW (A, B, F, and L) and thus avoiding ad-hoc-changes in the data acquisition layer (ETL): “We always meet in a key user circle where we think about what data [in the DW] is missing and if we still have an enterprise-wide data base and [then] try to start data acquisition or integration projects even when the concrete requirement is not there yet – which is of particular value under consideration of the aspect of agility because we can react much quicker” (company L).

It is noteworthy that this type of measure seemingly violates the ideals of the agile manifesto which strongly disapproves of approaches that design, model, and implement features ahead. This again supports the second conclusion from the literature review. There are two caveats with this approach, though: First, agility is defined here relative to costs – and preparing data for the DW without even knowing if this data will ever be used certainly leaves its traces on the “cost” denominator. Second, such a solution can hardly be complete and long-term with unforeseen and often large external data sources gaining in relevance (as explicitly stated by the interviewee from company C which referred to external statistics, newspaper reports, opinion statements, and data of business partners).

Some approaches for dealing with cross-layer changes are more sophisticated, e.g. sandboxes that allow users to design their own solutions based on DW excerpts. These are governed and – if deemed stable – merged into the BI environment across all layers. This procedure particularly includes data acquisition (such measures have been implemented in companies I, J, M). As stated in Company I: “The best solution to consolidate data in the ETL-Layer is to include the knowledge of the user departments”. In the cases I and M, this was combined with detailed governance and architecture components which still did not impede cost efficiency.

The most challenging situations arise when the BI is interwoven with operational systems which would be affected by the changes. Respective applications were seen as hardly amendable to agility measures. Such situations were found in Companies M and B. So far, these solutions can still only be developed in fixed release cycles.

In conclusion, different levels of (content) agility can be differentiated and have to be taken into account regarding their company-specific relevance. Coming from the user as the origin of change requests the following indicator types are defined:

- **Level 1 BI content agility**: Agility with respect to changes in content within the sphere of the user analysis and reporting solutions, e.g. by changing the view on a given data set or by inserting a front-end calculation.
- **Level 2 BI content agility**: Agility with respect to changes that involve changes in the underlying (cross-application) data storage – usually the DW.
- **Level 3 BI content agility**: Agility with respect to changes that involve data storage as well as data sources/data integration (data acquisition layer).
- **Level 4 BI content agility**: Agility with respect to changes that also lead to changes in operational systems.

### 4.5 Examples and Conclusions

The results of the interviews and case studies can be summarised as follows:

- **The concept of BI agility should not be directly tied to agility concepts from the enterprise environment.**
- **The reference point for measuring BI agility should be the time a requirement becomes concrete from a BI point of view.**
- **It is advisable to split BI Agility into content, functional, organizational, and scale agility.**
- **It is advisable to split BI Agility according to architectural layers into data acquisition agility, data storage agility, data analysis agility, data administration agility, and frontend agility.**
- **It is advisable to differentiate between agility measures with respect to the architectural reach (layer specific, across layers, including data sources, involving changes in non-BI systems).**

Taken together, a classification schema for agility measures takes shape that is shown in Figure 2.
Figure 2. Classification of differentiated BI agility concepts

A few examples from the cases illustrate the application of this schema – and highlight the different impact and the relation to efficiency of various approaches (cf. Table 3):

**BI functional agility on frontend/reporting/analysis side:** J and K are seemingly performing well below F and M given the speed of change in functionality. At a second glance, these results come with varying efforts: Company F achieves fast functional changes by giving the LoBs the freedom to bring in new tools – at the price of high recurring costs for managing tools, licensing, and ex-post integration. In contrast, company M implemented a construction kit for application classes where the components can be joined flexibly – thus achieving functional change at a much lower price.

**BI content agility:** As mentioned before the companies I and L have implemented different kinds of sandbox approaches and “Bypass BI” that allows them to score high on level 3 content agility. Based on these architectures, the companies are e.g. able to change ETL-processes within a day and the ability to provide new data from the DW to a user within hours. Other companies – like K and J – need two to six months for similar changes – with higher costs that result from following more traditional software development models. These companies are also agile, however, with respect to content changes on Level 1: With available data, new reports or analyses can be done within a day.

**BI scale agility:** To support scale agility almost all companies have implemented different solutions: Company H implemented a periodical review and redesign process for the ETL processes supplemented by scalable infrastructures. Here, virtualization technologies (especially of larger corporations with their data centres, as in company C) and mid-term cloud solutions should further increase BI scale agility.

5 Limitations and Contribution

The results from the cases highlight that agility is a multi-faceted concept and that it is advisable to fan out a system for BI agility concepts that considers differences in the subject of agility (content,
function, scale), the affected layers, and the depth of the reach of the changes agility is related to.

Limitations of this study are seen in its merely qualitative foundation and the fact that the derived indicator system has not been implemented full-scale in a real business environment yet. Furthermore, it would be valuable to have a larger sample in order to analyse how the derived indicators correlate and what measures foster what types of agility.

The main practical contribution is the developed indicator system itself that is designed to support the steering of BI approaches under explicit consideration of agility objectives. Issues of agility can be expected to gain further traction with the expansion of the BI tool set, e.g. with In-Memory-BI solutions, that cut down modelling overhead (Plattner 2009) (affecting level-2- and, with the fusion of OLTP and OLAP, possibly level-4-content-agility), or ”BigData”-solutions (Chen, Chiang et al. 2012). The latter enable an agile insertion, merging, and analysis of large volumes of structured and unstructured data (with effects on functional agility as well as on level-2 and level 3-content agility), but come at the price of restrictions regarding consistency and semantic richness.

The theoretical contribution of this research goes beyond the realm of BI: It can motivate other IS areas to start a discussion about the distinction between agility-enabling measures and agility, a splitting of agility concepts based on affected areas, architectural layers, and the architectural reach. This particularly has implications regarding the value of Information Systems in dynamic business environments and is therefore prone to be reflected with the theoretic lens of the Dynamic Capabilities View (cf. section 2). In this context, it particularly supports the translation of high-level concepts into measurable Information Systems objectives and to gain further insights into the interplay between organisational agility and IT/IS agility constructs.

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