The establishment of the business architecture discipline in the Czech enterprises

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Abstract: Research aims to evaluate the level of business architecture establishment in the Czech enterprises. The research goals are: 1) find out the motivation of Czech enterprises to establish the business architecture discipline, 2) find out the current establishment level of the business architecture discipline in Czech enterprises.

In the beginning of the paper the current theoretical approach to this domain is searched. The original research itself is then executed through the survey which was addressed to two different target groups: 1) individuals working as business architects (or enterprise architects) in commercial executive enterprises, 2) individuals working as business architecture experts in commercial advisory enterprises or academic institutions. Part of the survey evaluation is the comparison of the answers received from both groups.

Key words: business architecture, business architect, enterprise architecture, enterprise architect, Czech Republic, enterprise, company, establishment, motivation, workload, agenda, methodological framework, tools, research

The motivation behind this article and behind the research execution is the endeavor to learn the way how the business architecture discipline is practiced in certain enterprises in the Czech market.

1. Research goals

The research tries to chart the state and the progress of the establishment of the business architecture discipline in the Czech enterprises. It has following goals:

1. to recognize the motivation of the Czech enterprises to establish the business architecture discipline
2. to recognize the actual state of the business architecture discipline establishment in the Czech enterprises

The questionnaire is addressed to the two different target groups and the part of the research evaluation is the comparison of both groups’ answers as well. These groups are:

- individuals working as business architects (or enterprise architects) in commercial executive enterprises
- individuals working as business architecture (or enterprise architect) experts in commercial advisory enterprises or academic institutions

2. Theoretical basis

2.1 Business architecture definition

(ISO/IEC/IEEE 42010: Conceptual Model, 2015) defines the architecture generally as “fundamental concepts or properties of a system in its environment embodied in its elements, relationships, and in the principles of its design and evolution”.

There are plenty of business architecture (BA) definitions and there is not a single one commonly respected. Broad list of definitions is covered in (Li, 2010) and (Malik, 2012), some of them are mentioned below:

- BA is the means to convert strategic decisions into implementation, to interpret business strategy, and to identify the work activities, roles and competences, business rules and processes necessary to build and operate the business
B
A is used to describe the business strategies, operating models, capabilities and processes in terms that are actionable for business technology.

BA describes the current and target business environments, focusing on the business processes and operations of the enterprise.

BA is the blueprint of why and how the business is done.

BA provides the link between business strategy and the other major architectures.

BA is a blueprint of the enterprise that provides a common understanding of the organization and is used to align strategic objectives and tactical demands.

BA is a description of the structure and interaction between the business strategy, organization, functions, business processes, and information needs.

BA is a holistic set of descriptive representations of the different components of the business and their relationships. The purpose of a business architecture is to ensure proper alignments and integration among the components.

BA is explicitly representing an organization’s desired state and as-is state, through a set of independent, non-redundant artifacts, defining how these artifacts relate with each other, and developing a set of prioritized, aligned capabilities needed to meet the organization’s goals, communicating this understanding to stakeholders, and advancing the organization from its as-is state to its desired state.

BA is an organized and repeatable approach to describe and analyze an organization’s business and operating models to support a wide variety of organizational change purposes; from cost reduction and restructuring, to process change and transformation.

The most common characteristics of the definitions are as follows:

- The business architecture interconnects the strategic and the tactical level of the enterprise and contributes to the fulfillment of the partial operational activities to the defined enterprise strategy.
- The business architecture is a mean of change management, while the change becomes more and more important factor of the current enterprise environment - cf. (Řepa, 2012) as “change as a principle”
- The business architecture is the support for the qualified decision making.
- The scope of the business architecture are the aspects relevant from the business point of view (people, processes, competences, organization, etc.), not the technological and technical aspects of the enterprise.

(Malik, 2012) classifies the definitions according to two dimensions:

- the scope represented by the definitions:
  - subject/content – such definitions describe the business architecture as a substantive and define its content
  - purpose – such definitions describe the purpose of the execution or creation of the business architecture
  - activities – such definitions describe the set of activities relevant for the execution or management of the business architecture
- the perspective, according to which the definitions consider the business architecture to be
  - the thing
  - the process

For the purpose of this article the following business architecture definition will be used:

- The business architecture is the mean of the transformation of the strategic decisions to the execution, the mean of the business strategy interpretation and the mean of determination of activities, roles and competences, business rules and processes required for the building and maintaining the enterprise.

The interesting conception of the business architecture in the enterprise is brought by (Ulrich and McWhorter, 2010), according to which the main mission of the business architecture is the visualization of the enterprise because through the visualization it is possible to achieve better awareness of the key stakeholders about the impact of the proposed changes and thus even more transparency to the whole enterprise direction. This conception does not differ from the mission of the business architecture discipline according to the standard definitions but emphasizes much more the
vividness and the visualness of the business architecture outputs which help execution of the qualified decision making.

The business architecture is traditionally perceived as a part of the holistic architecture of the enterprise – the enterprise architecture (Burta and Zeman, 2017). E.g. TOGAF methodology (Haren, 2011) distinguish within the enterprise architecture domain the following partial architectures:

- business architecture
- information system architecture
  - data architecture
  - application architecture
- technological architecture

2.2 Methodological frameworks

The important concept in the domain of the enterprise architecture, and transposingly in the domain of business architecture, is the framework. According to the (ISO/IEC/IEEE 42010: Conceptual Model, 2015) “An architecture framework establishes a common practice for creating, interpreting, analyzing and using architecture descriptions within a particular domain of application or stakeholder community.”

The enterprise architecture framework therefore defines how to create and use the enterprise architecture. Analogously it is possible on the most general level to define the business architecture framework as the way of the creating and utilization of the business architecture in the enterprise. The overview of the basic enterprise architecture frameworks including their history bring (Minoli, 2008; Gála, Bucharčíková and Jandoš, 2012). For the further work with the business architecture frameworks it is important that most of the enterprise architecture frameworks respect the business architecture as a part of the enterprise architecture and hence can be considered in the narrowed scale to be the business architecture frameworks as well.

Next to this approach it is possible to meet even independent business architecture frameworks and concepts, as the most known it is possible to mention BIZBOK or BACOE.

2.3 Previous research

From the world-wide perspective the research (Ulrich, 2008) executed within The BA Institute in 2007 is very relevant. It comes to the following conclusions:

- the classification of people executing the business architecture job:
  - “80% of respondents were business people, 20% of respondents were affiliated with the information technology (IT) organization”
  - “28% were either executives or managers, 72% were architects, analysts or other categories”
- the business architects’ workload:
  - “over 2/3 are involved in business architecture analysis, documentation and/or management”
  - “over 2/3 are involved in business analysis and/or business modeling”
  - “almost 2/3 are involved in business requirements analysis”
  - “half of respondents are involved in strategic planning”
  - “half of respondents are involved in program and/or project management”
  - “more than 1/3 are involved in governance work or organizational change”
  - “more than 1/3 are involved in IT analysis and/or IT architecture activities”
- the business architecture organization:
  - “more than 1/3 had one or more business architecture units”
  - “just under 2/3 had no formal business architecture unit”
- business architecture mission:
  - “increase business agility, efficiency, effectiveness - 82%”
  - “streamline business processes across business units - 77%”
  - “improve ability to specify business requirements to IT - 60%”
  - “align business terminology, semantics across business units - 42%”
  - “streamline supply and distribution chains or other external relationships - 27%”
• key business architecture interests:
  o “achieve business transformation through business architecture” – 2/3 of respondents
  o “leverage business architecture to drive tactics, strategies and decision making” – 2/3 of respondents
  o “obtain improved insights into alignment of organization, processes, information and business goals” – 2/3 of respondents
  o “align business requirements and business architecture with IT architecture” – 2/3 of respondents
  o “visualize and streamline business value streams” – more than 1/2 of respondents
  o “define / deploy / support modeling standards, notations, meta-models and tools” – more than 1/2 of respondents
  o “drive cross-functional business intelligence efforts” – more than 1/2 of respondents
  o “visualize and align business governance structures” – more than 1/3 of respondents
  o “improve understanding of business semantics across enterprise” – more than 1/3 of respondents

• survey summary
  o “business architecture holds high expectations in terms of benefits sought”
  o “interests tend to be strategic (not tactical)”
  o “organizations are establishing teams and roles to address business architecture”
  o “more work is being performed by the business as opposed to IT”
  o “organizations are seeking education, tools and outside help to enable these efforts”

In both commercial and academic environment in the Czech Republic the delay in the development against the world and the absence of relevant materials can be observed. The complex research on similar topic does not exist, as the closest to it the research executed within (Selčan, 2014) and (Sládek, 2010) can be considered, which are however focusing mainly on the enterprise architecture domain.

3. Preparation phase of the research

Working hypothesis
The research aims to verify following hypothesis:

\[ H1. \text{The motivation of the enterprises for the establishment of the business architecture discipline is defined identically by respondents from both target groups, i.e. (1) by individuals working as business architects (or enterprise architects) in the commercial executive enterprises and (2) by individuals working as business architecture experts in the commercial advisory enterprises or academic institutions.} \]

\[ H2. \text{Business architecture departments’ workload differs in a significant way among enterprises.} \]

\[ H3. \text{Most of the enterprises do not systematically use any existing methodological framework during the execution of business architecture discipline.} \]

4. Execution phase of the research

The research was executed using the qualitative method research, specifically using the survey method (Molnár et al., 2012).

As a platform for the realization of the survey Google Forms were chosen. The questionnaire can be found on the address http://goo.gl/forms/BnU01d8Wdb.

The distribution of the survey and the collection of the answers ran during April 2015.

For acquisition of the survey participants the personal connections, recommendations from the colleagues from The University of Economics, Prague and profession social network LinkedIn were used.

Overall 43 participants from 28 institutions of the commercial executive, commercial consultancy and academic sphere were addressed.

All the communication was executed only in the Czech language.
5. Research results
In the absolute figures 17 respondents participated the research which creates quite small statistical sample. Considering the size of the Czech market and the quantity of companies which utilize or intend to utilize the business architecture discipline, we come to the fact that the research results are relevant and credible because from the set of particular selected enterprises across the whole market almost half participated.

From all the respondents 76% classified their organization as commercial executive, the rest 24% of respondents divided proportionally between commercial consultancy enterprises and the academic institutions.

6. Conclusions
The following sections summarize the results of the research and try to identify more general conclusions across the answers to the single questions.

6.1 Expectations toward the business architecture and its fulfillment
Respondents divided the particular expected benefits related to the establishment of the business architecture among key, important, marginal and not considered benefits. Tab. 1 below shows the consolidated information in the particular evaluated areas. The value 100% within the consolidation of the answers would mean that all respondents declared the expected benefits in the specific area as the key ones.

Tab. 1 - Quantification of expected benefits related to the establishment of the business architecture in the specific areas (consolidated)

<table>
<thead>
<tr>
<th>Area</th>
<th>Commercial executive enterprises</th>
<th>Commercial consultancy enterprises or academic institution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Support the qualified decision making in the enterprise and better knowledge about the impact of decision being decided</td>
<td>67%</td>
<td>75%</td>
</tr>
<tr>
<td>Ensure the alignment between the real enterprise direction and defined strategy</td>
<td>64%</td>
<td>67%</td>
</tr>
<tr>
<td>Identify the impact of the changes to the current enterprise operation</td>
<td>54%</td>
<td>83%</td>
</tr>
<tr>
<td>Create the integrated and consistent description of the changes</td>
<td>54%</td>
<td>83%</td>
</tr>
<tr>
<td>Coordinate particular changes</td>
<td>56%</td>
<td>78%</td>
</tr>
<tr>
<td>Within the change ensure the communication between the business and ICT side</td>
<td>56%</td>
<td>67%</td>
</tr>
<tr>
<td>Optimize costs on the ICT side</td>
<td>61%</td>
<td>50%</td>
</tr>
<tr>
<td>Formalize enterprise strategy</td>
<td>53%</td>
<td>58%</td>
</tr>
<tr>
<td>Accelerate the change implementation</td>
<td>50%</td>
<td>67%</td>
</tr>
<tr>
<td>Make the enterprise transparent</td>
<td>45%</td>
<td>67%</td>
</tr>
<tr>
<td>Reduce costs of the change implementation</td>
<td>47%</td>
<td>58%</td>
</tr>
<tr>
<td>Create the enterprise strategy</td>
<td>50%</td>
<td>44%</td>
</tr>
<tr>
<td>Optimize costs on the business side</td>
<td>50%</td>
<td>33%</td>
</tr>
<tr>
<td>Execute the fundamental transformation of the enterprise</td>
<td>42%</td>
<td>44%</td>
</tr>
<tr>
<td>Write down and share the enterprise operation know-how</td>
<td>42%</td>
<td>33%</td>
</tr>
<tr>
<td>Improve the shareholders’ satisfactions</td>
<td>33%</td>
<td>33%</td>
</tr>
<tr>
<td>Area</td>
<td>Commercial executive enterprises</td>
<td>Commercial consultancy enterprises or academic institution</td>
</tr>
<tr>
<td>--------------------------------------------------</td>
<td>----------------------------------</td>
<td>----------------------------------------------------------</td>
</tr>
<tr>
<td>Achieve new revenues</td>
<td>33%</td>
<td>33%</td>
</tr>
<tr>
<td>Improve the customers’ satisfactions</td>
<td>36%</td>
<td>25%</td>
</tr>
<tr>
<td>Simplify the enterprise operation</td>
<td>36%</td>
<td>17%</td>
</tr>
<tr>
<td>Streamline the cooperation with suppliers and other partners</td>
<td>24%</td>
<td>42%</td>
</tr>
<tr>
<td>Improve the enterprise culture</td>
<td>25%</td>
<td>25%</td>
</tr>
<tr>
<td>Improve the employees’ satisfactions</td>
<td>17%</td>
<td>17%</td>
</tr>
<tr>
<td>Other</td>
<td>6%</td>
<td>0%</td>
</tr>
</tbody>
</table>

Next the respondents evaluated the rate of the fulfillment of the business architecture benefits for particular benefit types according to their importance (options: expectations have been met entirely, expectations have been met almost entirely, expectations have been met partially, expectations have not been met at all). Fig. 1 below shows the consolidated information about the fulfillment of the expected benefits for particular types according to their importance. The value 100% within the consolidation of the answers would mean that all respondents declared the fulfillment of the expected benefits (of particular type according to their importance) as completely fulfilled.

![Fulfillment of the expected benefits related to the establishment of the business architecture (consolidated)](image)

**Fig. 1 - Fulfillment of the expected benefits related to the establishment of the business architecture (consolidated)**

Both groups of the respondents agreed on the fact that the expectations consequent to the key, important and marginal benefits are according to the opinion of the majority fulfilled just partially.
6.2 Business architects’ agenda
The respondents stated the estimated annual time allocation of the business architects on the non-project and project activities.

6.2.1 Non-project activities
The most of the time according to the answers business architects spend on following non-project activities:

- according to the respondents from the commercial executive enterprises:
  1. creating and maintaining of the change activities portfolio (18%)
  2. coordination of particular change activities, creating of roadmaps, identification of dependencies (15%)
  3. creating and maintaining of the architecture concepts (14%)
  4. ad hoc consultations and advisory (12%)
  5. formulation of the enterprise strategy (10%)

- according to the respondents from the commercial consultancy enterprises and academic institutions:
  1. creating and maintaining of the architecture models used for describing the current shape of the enterprise (53%)
  2. creating and administrating of the change activities portfolio (13%)
  3. coordination of particular change activities, creating of roadmaps, identification of dependencies (13%)
  4. creating and maintaining of the architecture concepts (13%)
  5. ad hoc consultations and advisory (7%)

The diversity of particular respondents’ answers is shown in the Fig. 2 below.

![Fig. 2 - Non-project agenda of the business architecture – diversity of particular respondents’ answers](image-url)
6.2.2 Project activities

The most of the time according to the answers business architects spend on following project activities:

- according to the respondents from the commercial executive enterprises:
  1. definition and drafting options of the solution on the business side of the enterprise (15%)
  2. opposition to the new business ideas for the change activity (13%)
  3. identification of the impacts of the change activities to the current enterprise operation (13%)
  4. definition and drafting options of the solution on the ICT side of the enterprise (11%)
  5. definition of the change activities scope (10%)

- according to the respondents from the commercial consultancy enterprises and academic institutions:
  1. opposition to the new business ideas for the change activity (21%)
  2. identification of the impacts of the change activities to the current enterprise operation (14%)
  3. definition and drafting options of the solution on the ICT side of the enterprise (14%)
  4. definition of the change activities scope (14%)
  5. creating of the detailed description for business analytical and executional departments (14%)

The diversity of particular respondents’ answers is shown in the Fig. 3 below.

![Fig. 3 - Project agenda of the business architecture – diversity of particular respondents’ answers](image)

6.3 Standard methodological frameworks

Respondents evaluated the utilization of the standard methodological frameworks. As a systematical utilization of the methodological framework in the enterprise is considered the situation when the respondent stated at least for one of the proposed frameworks, that particular framework is in the enterprise utilized without changes or with changes. In other situations (framework is utilized marginally / as an inspiration, framework is not utilized / not known) the utilization of the
methodological frameworks in the enterprise is considered as non-systematical. Proportion of systematical and non-systematical utilization of methodological frameworks shows Tab. 2 below.

### Tab. 2 - Systematical utilization of methodological frameworks in the commercial executive enterprises (relative frequencies)

<table>
<thead>
<tr>
<th>Systematical utilization of at least one methodological framework</th>
<th>No systematical utilization of any methodological framework</th>
</tr>
</thead>
<tbody>
<tr>
<td>90%</td>
<td>10%</td>
</tr>
<tr>
<td>utilized without changes</td>
<td>utilized with changes</td>
</tr>
<tr>
<td>50%</td>
<td>utilized marginally (as an inspiration)</td>
</tr>
<tr>
<td>40%</td>
<td>not utilized / not known</td>
</tr>
<tr>
<td>10%</td>
<td>0%</td>
</tr>
</tbody>
</table>

### 6.4 Comparison of the research result to the previous research

The executed research results meet the results of the older world research (Ulrich, 2008) as follows:

- **“business architecture holds high expectations in terms of benefits sought”**
  The executed research confirms this general result, specifically among others by identification of variety of areas within which the achieving of key or important benefits is expected.

- **“interests tend to be strategic (not tactical)”**
  Although the executed research does not directly evaluate the level of the support which business architecture provides, in the identified business architects’ agenda there is noticeable the presence of both strategical and tactical activities.

- **“organizations are establishing teams and roles to address business architecture”**
  The executed research confirms this result.

- **“more work is being performed by the business as opposed to IT”**
  The executed research confirms this result.

- **“organizations are seeking education, tools and outside help to enable these efforts”**
  The executed research is not relevant for this perspective, only the interest of the enterprises for external tools for business architecture execution support can be confirmed.

### 6.5 Hypothesis evaluations

**H1** The motivation of the enterprises for the establishment of the business architecture discipline is defined identically by respondents from both target groups, i.e. (1) by individuals working as business architects (or enterprise architects) in the commercial executive enterprises and (2) by individuals working as business architecture experts in the commercial advisory enterprises or academic institutions.

The hypothesis was confirmed. **The Pearson Correlation Coefficient value counted based on the results shown in the Tab. 1 makes 0.81981 and implies the strong positive correlation between both samples.**

**H2** Business architecture departments' workload differs in a significant way among enterprises.

The hypothesis was confirmed. **Even naked eye gaze on the graphical representations of the particular respondents’ answers regarding their time allocation on non-project activities (see Fig. 2) and project activities (see Fig. 3) as well can identify significant difference in the particular respondents’ answers. In case of non-project activities the significant difference between both aggregated groups of respondents can be observed as well.**

1 Pearson Correlation Coefficient
The value of R is 0.81998. This is a strong positive correlation, which means that high X variable scores go with high Y variable scores (and vice versa). The value of R2, the coefficient of determination, is 0.6721. The P-Value is < 0.00001. The result is significant at p < 0.05.

2 Spearman's Rho
The value of R is 0.82038 and the two-tailed value of P is 0.000. By normal standards, the association between the two variables would be considered statistically significant.
Most of the enterprises do not systematically use any existing methodological framework during the execution of business architecture discipline.

The hypothesis was disproved. Tab. 2 shows that according to the 90% of respondents from the commercial executive enterprises at least one standardized methodological framework is utilized in their enterprise. According to the respondents from both groups the most commonly used standardized methodological framework is TOGAF.

6.6 Evaluation of the research goals accomplishment

The research has specified two goals:

1. to recognize the motivation of the Czech enterprises to establish the business architecture discipline
2. to recognize the actual state of the business architecture discipline establishment in the Czech enterprises

Both goals were achieved within the research. The first goal was covered by the hypothesis H1, the second goal was in general covered by the whole research, specifically however by the hypothesis H2 and H3.

References


JEL Classification: L20, M10, O30