

**Guideline for annotation of
argument structure and quality in
business pitches**

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1. Introduction

Argumentation is a ubiquitous basis of our daily communication and thinking. In general, it is intended to increase or decrease acceptance of a controversial point of view (Eemeren et al. 1996). Logical, structured arguments are a necessary prerequisite for persuasive conversations, general decisions, and drawing accepted conclusions (Kuhn 1992). Based on Aristotle's studies, the ability to formulate persuasive arguments is recognized as the basis for convincing an audience of new ideas; it plays an important role in strategic decision making and the analysis of different points of view.

Argumentation mining is an interdisciplinary research area from computational linguistics that involves the creation of argumentation models and automated methods for identifying arguments in written texts. These models not only provide novel opportunities for educational applications such as intelligent writing support, but also open up new possibilities for improving student argumentation through adaptive learning tools. However, an important prerequisite for the development of Natural Language Processing (NLP) methods that can identify argument components and argumentative relations in written texts is the availability of annotated corpora. However, current annotated argumentation corpora are usually limited to certain domains, e.g., legal documents (Mochales 2008), newspapers and court cases (Reed 2008), product reviews (Garcia-Villalba 2012), or online debates (Cabrio 2012). In *Educational Texts*, there are currently two annotated corpora of *persuasive student essays* by (Stab 2014) and (Stab 2017). However, these corpora are annotated in English and are not derived from a specific teaching-learning scenario.

Because of this requirement and the complex structure of argumentative discourse, "automatic recognition of arguments has been little studied until 2008" (Reed et al. 2008). The goal of this work is to formulate a suitable guideline to help annotate the structure and quality of argumentation and its components in persuasive business pitches.

1.1 Arguments in a Nutshell

An argument consists of several statements. In its simplest form, it contains an *statement/claim* supported by at least one premise (Peldszus and Stede, 2013; Britt and Larson, 2003; Toulmin, 1958). The claim represents a controversial statement with which the author attempts to persuade the reader. This usually represents a suggestion or assumption and should not be accepted by the reader without additional support. The characteristic feature distinguishes arguments from statements in which the conclusion is a true non-controversial statement (e.g., an event that occurred in the past). The second component of an argument, the *premise* supports the plausibility of the claim. This is usually added by the proponent (writer) to convince the reader of the claim.

Considering the simplest form of an argument, a premise can be seen as a justification for the claim, while more complex argument structures can also contain premises that aim to refute a claim. These more complex structures are basically graphs that connect premises and claims through different relationships.



Figure 1: Relationship of claim and premise.

Even such a simple form of an argument can be expressed in many different ways in written text. Figure 2 shows some example patterns found in written argumentation:

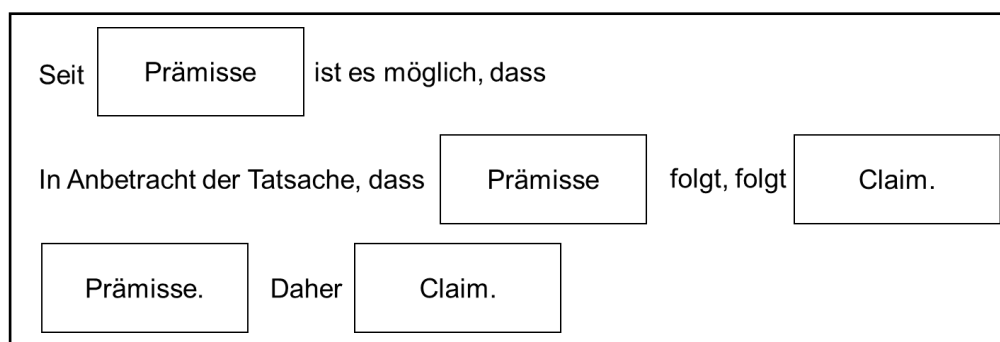


Figure 2: Example pattern for arguments.

In the further course of this guideline, a sound basis for the annotation of arguments in business pitches will be created using definitions, rules and concrete examples. The next chapter takes a closer look at business pitches as a form of argumentation and discusses their special features and structure. This is followed by the annotation process.

1.2 Persuasive Business Pitches

This annotation guideline is built based on a dataset of persuasive business pitches. These pitches usually have a certain structure, which is briefly explained in this section. Typically, a pitch begins with an introduction that includes a brief description of the business idea. This basic business idea is referred to below as the Major Claim.

The actual arguments that either support (support) or attack (attack/challenge) the major claim are presented after the introduction or after the major claim. At the end of the Business Pitch, there can be a summary of the supporting arguments (claims/premises), a reiteration of the business idea (major claim), or a concluding statement. Figure 3 illustrates the common structure of argumentative pitches including the introduction, claims, and concluding statement. The annotation structure follows a tree structure. The root node of the tree is the Major Claim, which mostly occurs in the Introduction. The Major Claim is supported by Claims, and the individual Claims are in turn supported by Premises.

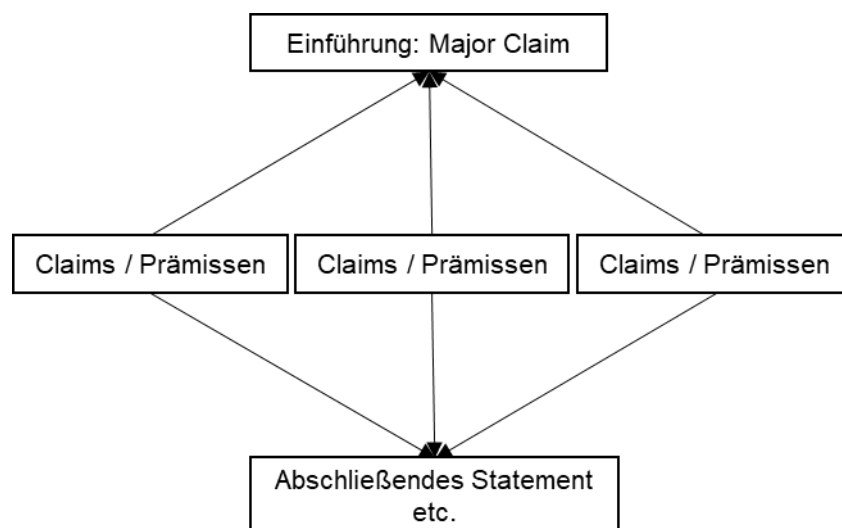


Figure 3: Structure of argumentative pitches.

To illustrate this in more detail, Figure 4 shows an example argument structure. The relationships from the claims of the arguments to the Major Claim are not explicitly annotated, so they are shown with dashed lines in Figure 4. Premises can either support (support) or attack (attack/challenge) claims. In Example 4, both Claim 1 and Claim 2 are supported by premises. The premise supporting claim 1 is additionally supported by another premise. After describing the argumentation structure, the next section gives a brief overview of the annotation process and then describes each annotation step individually in the following sections.

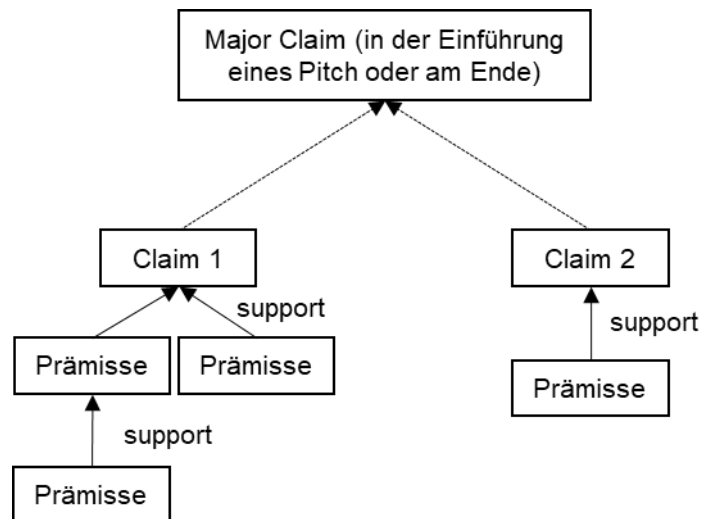


Figure 4: Example of the structure of an argumentative pitch.

1.3 Annotation process

The previous sections described in detail the argumentation structures that will be annotated in this study. For the annotation of these structures, the six-step process will be clearly presented in the following.

1. *Reading the entire Business Pitch and then annotating the Major Claims:*

In the first step, the Business Pitch is read in its entirety so that an initial understanding of the business model is given. Then the major claim, i.e. the business idea, should be annotated. This is usually found at the beginning or end of the text. Concrete examples of this are explained later in this guideline.

2. *Annotation of the claims:*

In the second step, we reread the text, marking each claim as the central component of an argument that either supports or attacks the Major Claim. A claim can thus be seen as a reason or assertion for the Major Claim.

3. *Annotation of the premises:*

In the third step, the premises for the claims are annotated. These are the reasons given by the author for supporting or attacking the claim. A premise can be a statistic, intuition, invented instance, analogy, or statement.

4. *Annotation of argumentative relations of the argumentation components*

The fourth step involves the annotation of the argumentative relations of claims and premises. Here we annotate the support and attack (support or challenge) relations that exist between argument components to identify the structure of the arguments.

5. *Annotate the quality of the argumentation components*

In the fifth step, the quality of the argumentation components is evaluated by ranking major claims, claims and premises on the basis of various dimensions. Table 1 shows an overview of the individual dimensions. The most important dimensions are specificity and evidence. Specificity refers to the limited scope of a claim. Evidence describes how well the supporting components describe the component to be supported.

After all argumentation components have been evaluated according to the present scheme, the persuasiveness can be assessed (cf. Table 1). The persuasiveness is derived from the scores of the individual dimensions. If a major claim, a claim or a premise has low scores in specificity and evidence (strength of evidence), the persuasiveness is to be rated as low. If individual dimensions have higher scores and individual dimensions have lower scores, the persuasiveness is to be rated as neutral or medium. If all dimensions have a high score, the argumentation component has a high persuasiveness (score).

		Specificity	Evidence	Strength premise	Persuasio n
M 1	Example	2	3		3
C 1	Example	4	4	4	4
P 1	Example	3	1		4

Table 1: Exemplary assessment of quality

6. Annotation of the overall quality of the business pitch

After the quality of the individual argumentation components has been evaluated, the overall quality of a pitch will finally be assessed. The strength, clarity and generation of interest are evaluated in turn (cf. Tables 9, 10, 11). The procedure is similar to that for the argumentation components, except that in this case the argumentation is evaluated as a whole.

The following figure clearly summarizes the entire annotation process and its individual steps and shows an example annotation with the associated color scheme.

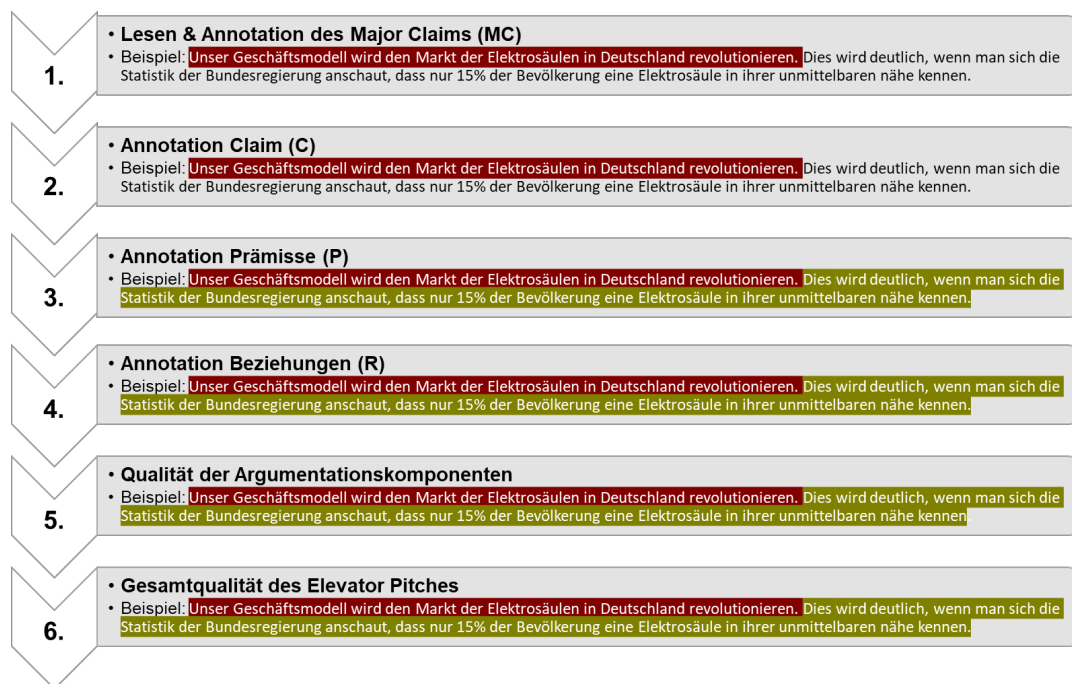


Figure 5: Example annotation process.

2. Argument components

An argument consists of several statements. In its simplest form, it contains a statement (claim) supported by a single premise (premise) (Peldszus and Stede 2013; Britt and Larson, 2003; Toulmin 1958). The statement represents a controversial proposition that the author is trying to convince the reader of. It is usually a proposition or assumption and should not be accepted by the reader without additional support (Christian Stab and Iryna Gurevych 2015, 2). In this context, premises can not only support an opinion, but also attack it, which is used as a stylistic device or can also illustrate uncertainty in the argument. The simplest form could be as follows:

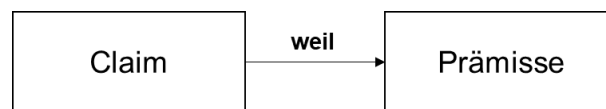


Figure 6: Simplest form of an argument.

The argument components of an annotation in business pitches consist of three argument components. First is the Major Claim (MC), which is the main statement of the pitch that reflects the fundamental idea of the business model (Carlile et al. 2018, 622-623). The following statement shows an example of a Major Claim:

"The new platform WeMatch connects users via existing dating apps (partners/co-operations) with potential locations for a first meeting."

The major claim thus briefly presents the basic idea in one sentence. Figure 7 shows three more examples of what a Major Claim can look like. The argument can follow one of three strategies, ethos (appeals to the author's credibility, pathos (appeals to the reader's emotions), and logos (author uses facts and evidence). The idea can be supported by one of the three strategies. The three strategies can be applied to both Major Claims and Claims.

1st example Major Claim (MC): Basic idea (main message).

Idea 1: The presented platform - Lokker - will serve to link the demand for storage space with owners of vacant commercial space.

Idea 2: Wouldn't it be great if you could order photos directly from your cell phone and surprise your beloved wife or good friends with great pictures for Christmas? FOS makes it possible.

Idea 3: The "Grillsational App", based on an interactive platform where you can interact with the local grilling community - not only individuals but also businesses.

Figure 7: Examples of a major claim .

The second argument component is a claim, in the form of a controversial statement that readers should not accept without additional support (Carlile et al. 2018, 623). To be able to convince the reader of the statements regarding the idea, premises are used. Premises are moving reasons to convince the reader of the idea. Premises can take two different forms, support or challenge. The support supports a claim or major claim.

"Around a thousand square meters of commercial space has been vacant since the new building was built in 2016, which could bring in rental income of 200,000CHF annually."

This example would support the claim or major claim (idea 1). In addition to support premises, challenges can also be used in a pitch to draw attention to challenges relating to the idea. This is not considered a disadvantage, but a positive criterion. To make premises easier to spot there are some signal words that can be looked at. These include words such as "therefore", "therefore", "by", "thereby", "since", "because", "in order to", "so", "so that", "whereby". The words are mostly adverbs and can indicate premises, but are not a guarantee of premises and must be carefully examined in certain situations.

2. example claim (C): controversial statements that should not be accepted by readers without additional support.

3. example premise (P): reasons to convince the listener (reader) of the idea consists of two components challenge and support.

3.1 Support: one reasoning component supporting another one

3.2 Challenge: an argumentation component that shows challenges

Figure 8: Argumentation components .

Premises can be of different types, for example, statistics, explanation, description, invented instance, or analogies (Carlile et al. 2018, 625). For example, a statistic is,

"In this regard, MyCareerCoach benefits from strong recurring demand, as more than 400,000 students in Germany are considered for higher education each year. "

Examples of premise types:

Instance: This means that environmentally harmful microplastics no longer enter the waterways. And plastic waste from packaging can be reduced to a minimum.

Analogy: Product tests such as those by K-Tipp are only a snapshot, while blog posts in turn only reflect the opinions of individual people.

Explanation: This prevents the network from placing a lot of advertising. At the same time, the payment barrier serves as a filter and quality control for members.

Description: Services can all be booked and paid for simultaneously and centrally.

User-centric example: when planning a special movie night, the customer can purchase additional services and products to go with the selected movie.

Figure 9: Examples of premise types.

3. Relationships of argumentation components

Argument components form the tree structure of an argument through relationships (Christian Stab and Iryna Gurevych 2015). An argument always contains a statement, which can be supported or attacked by one or more premises. In turn, individual premises can also be supported or attacked (challenged) by a chain of other premises. Each argument can thus consist of 3-4 levels. The first level is the Major Claim, which contains the main statement. In the second level there is a claim (assertion), which supports the first level. Premises form the second level, premises can include for example statistics, definitions or real examples. At the fourth level, there may be additional premises that provide additional support for level 3 (Carlile et al. 2018, 623).

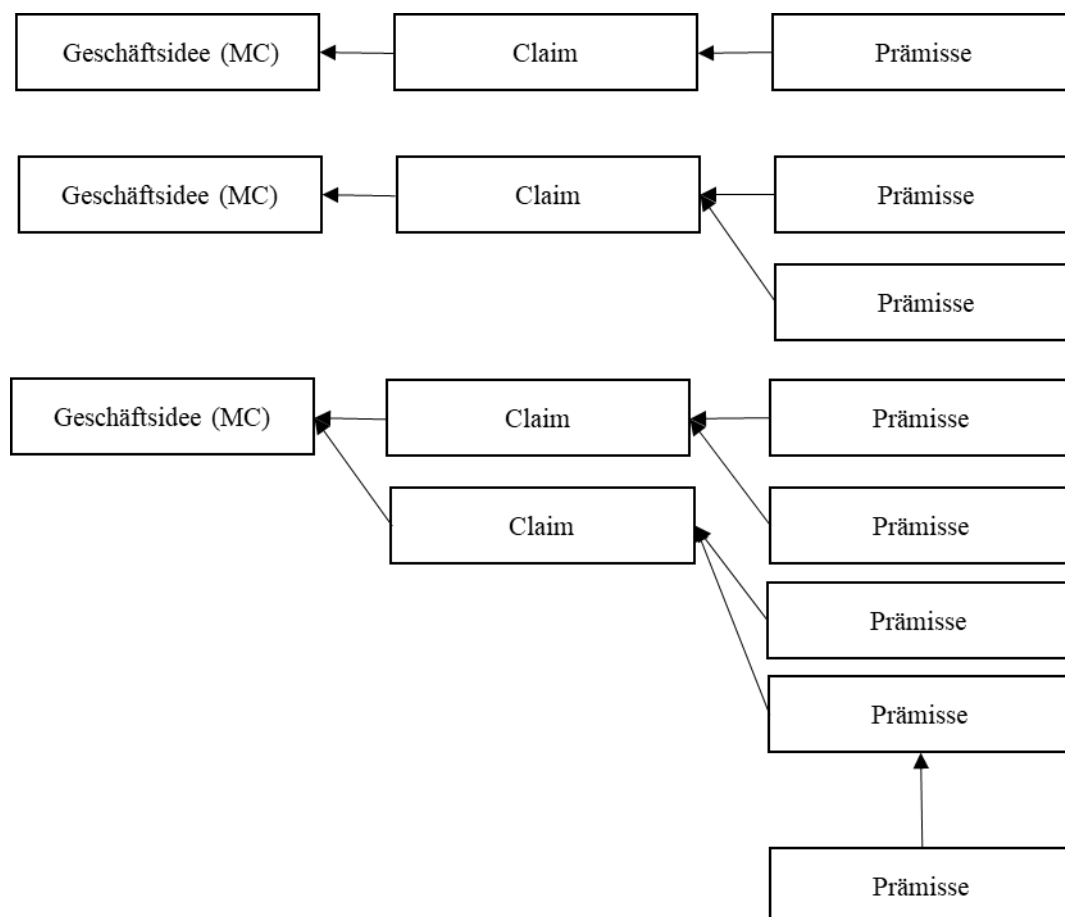


Figure 10: Example argumentation tree.

Having explained the tree structure in principle, we link the argument components with argumentative relations to build the tree structure of each argument. An argumentative relationship is a directed link between two argument components with a specific source and

target component. Such a relationship indicates either that the source component is a support (support relationship) or an attack/challenge (attack relationship/challenge) for the target component (Stab and Gurevych 2015, p. 20).

However, in this Guideline we assume that there will not be a classic Attack, since the students will not refute their own ideas in a short business pitch. Therefore, in this Guideline, we view the attack as a challenge, i.e., an indication of future challenges that might be related to the project or idea. Basically, each initial component of an argumentative relation represents a premise. By annotating argumentative relationships, we identify for each premise the goal to which it belongs and recognize whether the premise supports (Support) or attacks (Attack/Challenge) the goal. Note that the target can always be a claim or another premise. For the claims and the premises, the argument structure is built as follows (Stab and Gurevych 2015, p. 20).

Steps:

1. choose a claim

2. link each premise to the claim it supports (Support) or attacks (Attack / Challenge).

Following this process ensures that the argument structure is a tree and that each premise is associated with exactly one argument component (either Claim or Premise). Note also that in some cases the support (or attack/challenge) of a single premise may be weak and not obvious. However, when it is combined with another premise, the persuasive power can become stronger. This happens, for example, when the author uses a specific event or example to justify or refute a point of view. Therefore, it may sometimes be necessary to consider premises in combination to identify the proper target of each premise. In the next sections, the annotation of support and attack relationships is explained in detail using several examples (Stab and Gurevych 2015, p. 20).

3.1 Annotation of support relationships (Support)

A support relationship (support) between two argument components indicates that the source component provides a reason or justification for the target relationship. In the following examples, the claim is underlined, the premise is underlined in waves, and the argument components are enumerated by quotation marks. Consider the following simple example:

Simple example: "[Until now, it has been difficult for Swiss companies to rent out their storage space]¹ because [this involves a great deal of effort (legal, administrative, time)]²".

In this example, there are only two argument components, the first of which occurs as a claim and the second as a premise. The indicator "because" signals that the second component is a justification for the first component. Therefore, the second argumentation component is linked to the first one via a support relation (Support).

4. Rules for annotation of argumentation components

Argument components do not necessarily cover a complete sentence, because often a sentence can also consist of several argument components, which are annotated separately. For example, a sentence may consist of a statement and one or more premises. Likewise, a sentence can begin with so-called phrases such as "In my opinion...". These are not relevant to the content of the argument component, as long as the rest still makes a complete sentence. The following rules should clarify this.

4.1 Completeness rule

An argument component should always include a point of view, which can also be a complete sentence.

In English, one can check whether an annotated component represents a complete position by placing the clause "It is true that, <claim>" in front of the statement and the sentence still remains grammatically correct. If this is satisfied, then the annotation is correct according to the completeness rule (Christian Stab and Iryna Gurevych 2015, 7).

For the example of business pitches, this rule cannot be applied one-to-one, since the German sentence structure is different and the formulations are also different. Thus, as soon as the sentence part "It is true that <opinion>" is placed in front of the statement, the sentence structure of the statement must be changed so that it still remains grammatically correct.

Rule: If "It is true that" can be placed before the argument component and the sentence structure of the argument component can be rearranged with the same words in such a way that the sentence remains grammatically correct, then the annotation is fulfilled according to the completeness rule.

Example:

Buying and changing tires is an unpleasant activity. It consumes time and money and does little in terms of convenience.

It is true that buying and changing tires is an unpleasant activity. It is true that it consumes time and money and can do little in terms of convenience.

4.2 Relevance rule

Rule: All relevant words must be included in the argument component. This means that all subordinate clauses relevant to the content must be included in the annotated component. Temporal information such as "in the past", "recently" or "nowadays", which can be at the beginning of a sentence, must also be included in the annotated component, otherwise the content cannot be understood (Christian Stab and Iryna Gurevych 2015, 8).

Example:

Nowadays, there are more singles with a disproportionately high income and women or mothers who have a part-time job. Accordingly, the old role model of man and woman is considered outdated.

4.3 Shell language rule

In English, shell language has no relevance to the context of an argument component, since the component is nevertheless grammatically correct and thus irrelevant to it. Examples of shell words include : "For example,", "According to the previous fact,", "As can be seen", "Another important point which contributes to my argument is that", "In this context", "because", "though", "in my view", "i think", "also", "furthermore",....

In the exceptional case that shell words are relevant to the context of an argument component, they should be included in the component. Examples are: "I do not agree that", "I disagree with the view that", "i don't think", "i do not believe", ... (Christian Stab and Iryna Gurevych 2015, 8).

In business pitches, this rule also cannot be adopted completely in every case. After shell words, the argument component is not always grammatically correct unless another word like "it" is added. Translating the English shell words into German results in the following examples of shell words: "For example", "According to the previous fact", "As you can see", "Another important point which supports my argument is that", "In the context", "because", "since", "however", "nevertheless", "In my opinion", "I think", "also", "Furthermore", etc.

Example:

Furthermore, [cooking diaries can be shared between friends via the WMF app].

The argument component makes no grammatical sense as a stand-alone sentence like this without adding the word "it". The argument component is grammatically correct as follows:

Furthermore, [Cooking diaries can be shared between friends via the WMF app].

One can reformulate the sentence as follows after the completeness rule in such a way that the grammar remains correct. I.e. here shell word "des Weiteren" should be integrated with the argumentation component.

Rule: If an argumentation component can be rearranged according to the completeness rule and the context of the component is not changed by this, shell words or phrases should not be included in the annotation. If the context of the argument component is changed by omitting shell words, they should be included in the annotation. Additionally, shell words in English, as well as in German, serve as indicators for identifying argument components.

4.4 Separation rule

Rule: A sentence may be fully annotated only if the corresponding sentence does not contain conclusion and shell words between different opinions. That is, a sentence may not be split into two argument components if there are several complete opinions. Only if one opinion is the reason for another opinion, the sentence may be split into two or more argumentation components.

It is important that sentences containing multiple opinions are not separated if they are connected by words such as "and", "or", and bullets, and do not contain an intervening conclusion. This can occur when one sentence contains multiple reasons for an opinion from another sentence. In this case, the various reasons (premises) from one sentence must be annotated as a single argument component. This also applies to conditional sentences, which contain a condition under which something occurs (Christian Stab and Iryna Gurevych 2015). An indicator of such sentences are words like "if", or "in that". The subordinate clause formulates the condition that must be met in order for the consequence stated in the main clause to be realized.

If this brand has a sale, the desired garment will be automatically displayed and, if desired, delivered to your home.

P1: *the desired garment will be displayed automatically* AND **P2:** *delivered to your home if desired.*

In this example, the argument component contains two premises: These are connected by the word "and". Here, these two premises should be combined into one argumentation component.

4.5 Punctuation rule

Rule: Punctuation marks that appear at the end of an argument component must not be included in the annotation (Christian Stab and Iryna Gurevych 2015, 8).

Example:

[Everyone knows the problem: You have arranged to have dinner with friends, but you have no idea what to cook. In addition, one friend has an allergy to nuts and the other colleague is a vegetarian].

4.6 Grammar rule

Sentences that are structured like bullet points, in which grammatically important words are omitted but still represent a clear statement or premise, should be treated as if these words were present. Likewise, sentences that are grammatically incorrect should be annotated as argument components. Statements or premises that are split into several sentences and only together make a meaningful argument component are annotated as one argument component.

5. Quality of argumentation components

5.1 Step 1: Evaluation of the individual arguments and the levels

In the following, the quality of the argumentation components will be evaluated. The aim is to determine the persuasiveness of the individual argumentation components in an business pitch. The individual components (levels) are to be evaluated using the following tables, followed in the second part by an evaluation of the overall impression of the pitch. The persuasiveness of the arguments is composed of three attributes. The component types (Major Claims, Claims, and Premises) refer to the attributes of Specificity, Evidence (strength of evidence), and Strength. Specificity refers to the limited nature of a Major Claim. More specific Major Claims are more credible because they indicate the author's confidence and depth of knowledge about a topic. Evidence describes how well the supporting components describe the component being supported (Carlile et al. 2018, p. 623). The attributes are each given their own score, which is explained in more detail in the following tables. Table 2 provides an overview of the annotation scheme (cf. Table 2).

Attributes	Description	Scores	Applicability to
Specificity	How detailed and specific is the explanation of the business model?	1-5	MC
Evidence Assessment	How well does the claim support the business idea?	1-5	MC, C
Relevance	Is the premise relevant to the overarching business idea?	1-5	P
Strength	How well does a single premise contribute to the persuasiveness of the business idea?	1-5	P

Table 2: Overview annotation scheme [Own representation based on Carlile et al. 2018] .

Tables 3 describes the specificity. Specificity indicates how detailed and specific an argument component is, i.e., how characteristic or indicative the Major Claim is. Major Claims that are specific are more credible because they indicate the author's confidence and deep knowledge of a topic. The statement of a claim can be neutral, only the supporting evidence (premises) evaluate and then lead to the credibility of the claim (Carlile et al. 2018, p. 623).

Specificity score (MC)	Description
------------------------	-------------

5	The claim summarizes the argument well and has an addendum that indicates the extent to which the claim applies. Claims that summarize the argument must invoke most or all of the supporting components.
4	The claim summarizes the argument very well by mentioning most or all of the supporting components. However, there is no addendum indicating the conditions under which the claim is true. Alternatively, the claim moderately summarizes the argument by referring to a minority of the supporting components and includes an addendum.
3	The claim contains a supporting component or addendum that indicates whether the claim is true. However, the argument is inadequately summarized.
2	The claim does not summarize the idea and does not include an addendum indicating whether the claim is true.
1	The claim does not summarize the idea and is not explained by supporting components. Most of the time, the claim is simply a paraphrase of the major claim or even lies outside the actual subject matter of the major claim.

Table 3: Specificity (Major Claim) [Own representation based on Carlile et al. 2018].

Table 4 describes the evidence. The evidence describes how well the supporting components describe the component being supported (Carlile et al. 2018, p. 623).

Evidence Score (MC, C)	Description
5	A very strong, very convincing argument. There are many supporting components that have high relevance scores.
4	A strong, convincing argument. There are enough supporting components with respectable relevance.
3	The reasoning pattern is present. However, the supporting components do not show high relevance.
2	A poor, only possibly convincing argument. There are few supporting components. The relevance scores of the existing supporting components are low.
1	An unconvincing pattern of argumentation. There are hardly any or no supporting components. The relevance scores of the existing supporting components, are low.

Table 4: Evidence [Own presentation based on Carlile et al. 2018].

Premises can additionally be rated according to their relevance for explaining the higher-level explanation (score 1-5). This relates to the argumentative relationship illustrated in section 3 using argumentation trees (Carlile et al. 2018, 624-625).

Relevance score (P)	Description
5	Both components have high specificity and eloquence or contain the same words or similar coreference.

4	relationship is clear. One component has high specificity and eloquence, the other has low specificity and eloquence.
3	relationship becomes clear only with imagination. It takes some thought to imagine how the components are related. Both statements refer to the same subject, but have no related ideas within the domain of said subject.
2	The relationship is not clearly evident. Some important assumptions are needed to relate the two components. A component can also receive this rating if both components have a low clarity rating.
1	Relationship of the components is not apparent and disjointed. Few people can see how the claim and premise are related.

Table 5: Relevance of premises [Own representation based on Carlile et al. 2018].

The last step is to evaluate the strength of the premises (Table 6). The aim is to evaluate how well an individual statement contributes to persuasiveness. Only premises and their influence on the claims are evaluated. The premise type takes on one of the following: User-centered example, explanation, description, invented instance, analogy, or statistic (see Carlile et al. 2018, 625-626). A user-centered example describes a typical single instance that is used as an explanation to help the user understand usability. The explanation attempts to make the claim understandable through logical and causal relationships. When annotating, the question should be why something is done or should be done this way, so it is about context. Questions might be "Why do I need something?" or "Why does something need to be done this way?". In contrast, description serves to convey a concrete or abstract object, state, context or circumstance to a person by linguistic means in such a way that the addressee gains a precise idea of it. Thus, in contrast to explanation, it is a matter of mere description. When annotating, the question should be asked "How does something look like" or "How should something be done". The premise is called an invented instance when it describes a hypothetical situation. An analogy attempts to explain a claim by explaining known, similar, or partially identical circumstances. In simple terms, an analogy looks at an explanation from a different angle. With the use of statistics, numbers and data are used to justify a claim. Examples for a better understanding of the premise types are shown in Figure 9 on page 14.

Strength score (P)	Description
5	A strong premise. By itself, it contributes very well to the persuasiveness of the argument.
4	A reasonable premise. It is a pretty strong point, but it could be improved to make it more persuasive.

3	An inadequate premise. It is not a strong premise and can only convince a few readers.
2	A weak premise. It can only help to convince a small number of readers.
1	The premise does not add to the persuasiveness at all.

Table 6: Strength of premises [Own representation based on Carlile et al. 2018].

5.2 Step 2: Evaluation of the entire pitch

After the individual arguments and their components have been evaluated, the entire pitch is now to be subjected to an evaluation. The strength, clarity, and interest generation are to be evaluated. The strength of the pitch score indicates how well the idea is argued. The following score is relatively subjective compared to the scores of the first step. Therefore, they are only meant to complete the evaluation of the pitch.

Score (strength of the pitch)	Description
5	Little improvement or no improvement needed.
4	Idea is generally well understood, but can be expanded.
3	Poorly understandable idea due to errors or ambiguities.
2	It is unclear which idea the author wants to support argumentatively (no relevant idea, the idea is incomprehensible)
1	The pitch does not introduce an idea.

Table 7: Pitch strength [Own representation Ke et al. 2019].

6. Sources

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