Let's explain what we argue for

The argumentative function of explanations in Earnings Conference Calls

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Abstract

Interactions between financial analysts and company managers are particularly meaningful in the context of quarterly Earnings Conference Calls (ECCs), notably in the Q&A sessions. The current contribution delves into the alternation between argumentation and explanation within such sessions, particularly those in which the stakes are particularly high - i.e., in the context of a company crisis. The motivation for such a study is the acknowledgement that explanations found in such a situation globally contribute to the overarching argumentative goal of defending company reputation.

Keywords

argumentation, explanation, financial communication, argumentative reconstruction, argument mining

1. Introduction

Explanations represent a feature of a more general argumentative discussion [1]. The current context of inquiry is the financial domain and, particularly, Q&A sessions of Earnings Conference Calls (ECCs) – dialectical exchanges between financial analysts and corporate representatives. Particularly, corporate representatives are called to account on results and choices related to the previous quarter and are asked for insights and predictions about the following one. In such exchanges:

1. Explanations are implemented in the context of an overall activity type the goal of which is to give enough information to let analysts and investors valuate the company in the most favourable way for the latter [2]. Thus, the guidance the company tries to convey is to hold or buy its stocks, and explanations graft on the global reliability and accountability discourse – taking shape of proof of good-willingness, sincerity and integrity of the company.
2. Distinctly, *causal* explanations describe the relationship between a cause and an effect. Here it is particularly relevant to notice the *framing* of the cause: if the effect is positive, the attributed cause will be internal (deliberate, mostly permanent); if the effect is negative, the imputed cause will be external (uncontrollable and hopefully temporary). In both cases, the overall argumentative strategy aims at showing that the management worked properly and – even in the case of failure – it did its best in safeguarding investors' interests.

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Explanations - and not just causal ones [3] – therefore possess **an *indirect* argumentative relevance**, closely associated with the structural and mechanical properties of the development of a critical discussion in context [4]. Explanations are expected to be integrated into the argumentative stage where the *explanans-explanandum* complex is implemented as an argumentative premise. Besides, the unearthing of the general argumentative use of explanations for argumentative purposes is of concern for the argument mining community notwithstanding with the application to a specific textual genre; with such broad goal in mind, §6 will showcase a preliminary pipeline for the automation of extraction and classification of arguments and explanations.

2. Theoretical framework

2.1. Explanations

Regarding the concept of argumentation, we will adopt the pragma-dialectical definition [1]:

> Argumentation is a verbal, social, and rational activity aimed at convincing a reasonable critic of the acceptability of a standpoint by putting forward a constellation of propositions justifying or refuting the proposition expressed in the standpoint.

Conversely, not to conflict with the ongoing theoretical complex discussion about what explanations are or how they should be described (see [5] for a brief overview on the matter), the present contribution will board onto a stipulative approach towards what an explanation is:

> An explanation is an antecedent-subsequent pair of statements logically connected through a process of reasoning. It is partly similar to argumentation, where a conclusion is supported by shared premises. However, the 'standpoint' (i.e., the *explanandum*) is already known and accepted in the context, whereas the 'argument' side (i.e., the *explanans*) – either already known or promptly introduced to the conversation – needs to be approved as inevitably holding a meaningful relationship with the *explanandum*.

The core of the analysis revolves around the instruments of Inference Anchoring Theory (IAT) [6, 7], which gives annotators the possibility to both specify the logical relations between locutions (inference, conflict and rephrase) and the illocutionary forces characterising either a single locution or the relationship between two or more locutions. Thus, exploiting the design offered by such a theory, the analytical framework draws the divide between argumentation and explanation as follows: both instances are depicted by two (or more) locutions connected by an inference; however, argumentative pairs are anchored with an 'arguing' force (see Figure 1), whereas explanatory ones are anchored with an 'explaining' force (see Figure 2). Undeniably, the boundaries between argumentation and explanation are not always clear-cut; not only because it is not necessarily clear which element of the pair should be taken for granted or truthful - maybe one is just interactionally presented as such - but also because their relationship (i.e., its illocutionary force) is drafted contextually.

2.2. Conceptual remarks

The analysis will employ the high-level concepts of text segmentation Maximal Interrogative Unit (MIU) and Maximal Answering Unit (MAU) [8]. A MIU is a collection of sentences that could maximally identify with a question turn, which is characterized by the following attributes:

- It is a macro-unit which groups discursive moves within the same question turn and comprising no less than one question, each discursive move being the length of (at least) one sentence;
- All the discursive moves in a MIU prepare, rephrase or modulate the same objective;
- All discursive moves within a MIU can be satisfied by a single corresponding Maximal Answering Unit.

A MAU is determinable in relation to the MIU from which it is triggered: it is a collection of sentences, within an answer turn, that globally react to a MIU. A MAU can maximally correspond to the entire turn, or minimally correspond to a single sentence.

3. Data and method

The dataset for the current study is constituted by the 65 question-and-answer pairs drawn from the four ECCs delivered in 2021 by Swiss bank *Credit Suisse*. It comprises 111 MIUs and 118 MAUs, for a total of 1,710 sentences and 32,102 words.

The reasons behind the choice of Credit Suisse as a case study include the evaluation of the company's performance: in a precarious environment, financial analysts are expected to perform adversarial questions. The most remarkable negative features that were taken into consideration are:

- CS steadily reported losses along the whole financial year
- although a certain variability in CS stock prices can somewhat be traced, their value inevitably drops in occasion of each ECC
- CS incurred in at least two major scandals during the period considered (financial and reputational crises)

The Q&A pairs of interest were selected as follows. Argumentation is, by design, a pervasive strategy of dialectical exchanges in this context, and therefore associated with any type of request; however, studies in the genre showed that the type of request impacts the density of argumentation in the related answers [9, 10]. Since the distribution of explanatory stances across request types is not known *a priori*, the current working hypothesis is that explanations will certainly appear in reply to requests overtly demanding them. Therefore, the subset is constituted by MIU-MAU pairs where the MIU contains at least one request for explanation (or for a clarification regarding an explanation).

The pairs were first annotated by trained annotators – supported by the official annotation manual of the project [11] – with respect to Dialogue moves, Request types and MIU-MAU linking. This step was performed on the INCEpTION annotation platform [12]; inter-annotator agreement Kappa [13] was consistently substantial or better (>0.60) for all annotation layers.

Subsequently, requests for explanation and for clarification queried from the previous step were annotated by team researchers according to a genre-specific adaptation of IAT on the OVA3 platform [1] [14] and stored on AIFdb [2] [15].

4. Hypotheses

The hypotheses for the current inquiry are that, in co-occurrence with requests more or less explicitly targeting an explanation as a reaction:

H1: The reply will exhibit at least one explanation, aside from a variable number of argumentative instances, especially if the MIU does comprise more than one question (whether more than one request for elaboration or not)

H2: The ratio between (occurrences of) argumentation and explanation will be consistent across answers

5. Analysis and results

The combination of requests for explanation and for 'clarification on an explanation' (henceforth: both under the label 'for explanation') appear to be the third most numerous type of requests in the dataset, following opinion and elaboration. This is consistent with previous studies [16, 9, 10]; in Table 1 the number and distribution of requests. Of the 35 requests for explanation listed in the dataset, 16 co-occurred with other requests within the same MIU; of those, 7 comprised at least one other request for an explanation. This led to the analysis of 24 distinct MIUs.

H1: verified

The correlation between the density of requests for explanation within a MIU and the amount of explanations in the answer is significant ($r(22)=.13$, $p=.552$), although weak; however, as expected by H1, we can see a general stronger eagerness towards providing explanations if the request(s) for an explanation are accompanied by other request types within the same MIU ($r(22)=.17$, $p=.426$).

H2: verified

The correlation between argumentation and explanation is overall slightly significant ($r(22)=.25$, $p=.232$); however, the results were still quite below expectations (data aggregated by quarter in Table 2. To investigate the causes, an additional conjecture was added: constraining questions, i.e., proposing a possible answer (namely, polar [17] or alternative [18] formulation) would receive fewer explanations as a reaction: since preferable answers are provided, explanations behind them are taken for granted. The correlation between explaining instances in the reply and constraining question formulation was indeed negative and significant ($r_{pb}= -.36$, $p=.08708$), see Table 3 for the specifics. Conversely, the correlation between non-constraining MIUs and both arguing and explaining instances in answers was finally significant and in line with the hypothesis ($r(12)=.32$, $p=.257$).

[1] http://ova3.arg.tech/

[2] the OVA3 corpus is available at: http://corpora.aifdb.org/ArgExplCMNA23

6. Further developments

On the qualitative side, further steps will explore whether and how explanations have a distinct role in the overall argumentative strategy of the answerer; this would include extending the analysis to other request types. This study, however, configures a preliminary move in the perspective of developing a pipeline of automatic identification and extraction of explanations (as opposed and complementary to arguments). This appears to be a challenging although meaningful objective both for its general purpose application, as well as its specific activity type-related outcomes, along the lines of the work by Chen et al. [19] on opinion mining in the financial domain. Therefore, we presently display a tentative sequence of tasks - some of which are already under development within the general project this paper is an instance of – operationalising such an all-inclusive effort. The course of action needs to focus on three main areas of automation - each of which constitute a progressive step in the pipeline but also account for a meaningful accomplishment in itself for argument mining, which is the area of research defined as "the automatic identification and extraction of the structure of inference and reasoning expressed as arguments presented in natural language" [20]. These are:

1. Connection of MAUs to antecedent MIUs;
2. Identification of inferences (RA nodes, in AIF terms) within units [21] - both for MIUs and MAUs;
3. Classification of illocutionary connections anchored in RA nodes, i.e., differentiating between argumentative and explanatory instances.

The advancement of the first two tasks is currently ongoing, although at different stages. The full success of the second step would be reached with the correct detection of unit boundaries - which is currently under development, starting from MIUs. The third step, however, advances a series of technical issues bound to the contextual characteristics that, by definition, delineate the very existence of an explanation.

7. Conclusions

In the present contribution an exploratory analysis on a dialogical case study in the financial domain was performed, examining the relationship between argumentation and explanation; explanations were claimed to have a relevant argumentative role in the overall discussion which unfolds in the interaction. A stable parallelism between MIUs containing requests for explanation, especially featuring multiple requests, and the existence of explanatory stances in their answers was observed; further investigation will also include different types of request in the sample. A valid correlation between the volume of argumentation and explanation across answers to requests for explanation was drawn. Finally, a pipeline of analysis in the argument mining domain was launched, aiming at the automatic recognition of argumentation and explanation. Such a task is believed to be fundamental towards the uncovering of both the nature of the argumentative strategy of answerers and the overall strategic alternation of argumentative patterns [22, 23] in the dialectical exchange.

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A. Figures

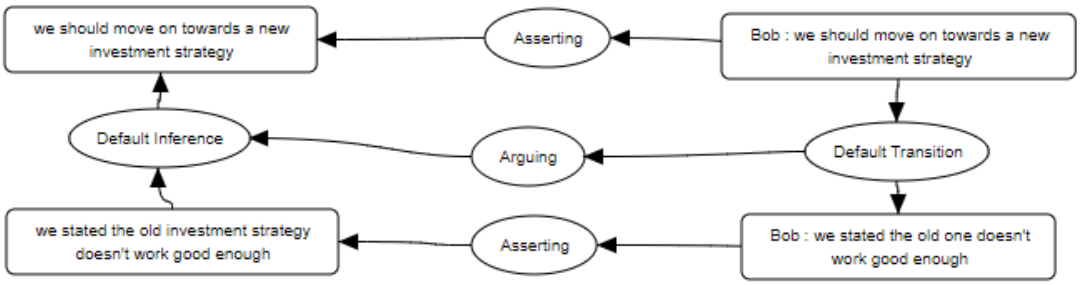

Figure 1: An example of an argumentative relationship between locutions. The premise is the statement of a fact, from which departs an inferential edge. The conclusion is the target of the inference, and it constitutes a deontic statement uttered by speaker Bob. The addressee can doubt the veracity/sensibility/applicability of the conclusion, but the premise is taken for granted (and part of the common ground). This type of relationship between the two utterances is signaled by the anchored speech act of 'Arguing'.

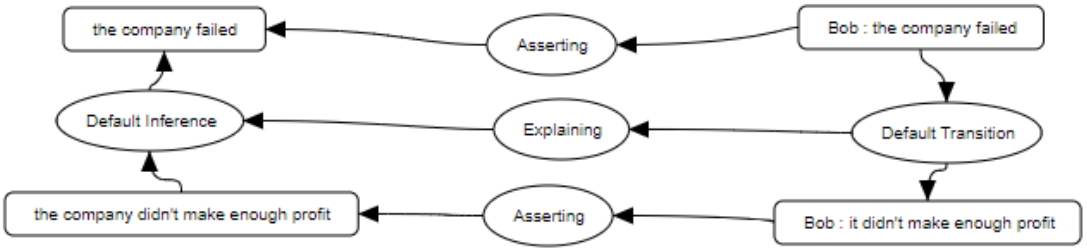

Figure 2: An example of an explanatory relationship between locutions. The *explanans* of the pair, i.e., the aspect that needs to be explained, is the upper proposition: a statement of a fact that is assumed to be known by the interlocutor. In this case, it configures as a negative effect, the cause of which needs to be addressed. The *explanans* is the stemming proposition of the inference edge and constitutes the cause for the above mentioned effect. The fact represented by it (i.e., the lack of profit) may or may not be known by the interlocutor beforehand, but it is assumed to be reasonably considered a cause for the given effect. The added value of the interaction lies providing the linking inference between the proposition which, to signal this type of relationship, is anchored in the speech act of 'Explaining'.

B. Tables

Table 1
Distribution of requests across financial quarters

	Q1	Q2	Q3	Q4	total
clarification	5	4	1	4	14
commitment	0	0	0	0	0
confirmation	12	8	1	5	26
data	13	6	2	12	33
elaboration	3	16	5	15	39
explanation	8	3	7	3	21
justification	1	2	0	0	3
opinion	24	16	4	19	63
expl+clar on total	17.6%	12.7%	40.0%	12.1%	35

Table 2
Distribution of dialogical relations with respect to requests for explanation (across financial quarters)

	*Q*1			*Q*2			*Q*3			*Q*4		
	expl	clarif	*total*	expl	clarif	*total*	expl	clarif	*total*	expl	clarif	*total*
arguing	13	12	25	2	5	7	11	0	11	8	1	9
explaining	5	7	12	4	2	6	3	1	4	6	5	11
conflict	7	10	17	3	3	6	10	0	10	6	3	9

Table 3
Dialogical relations & question formulation related to questions in MIUs

MIU		**relation**		**formulation**
question(s)	of which explanation	arguing	explaining	constraining question
3	3	3	3	✗
2	2	1	1	✗
1	1	1	1	✗
3	2	6	0	✓
1	1	1	1	✓
2	2	1	3	✗
2	1	1	0	✗
3	1	2	1	✓
2	2	3	1	✓
4	2	0	0	✗
1	1	3	1	✓
1	1	1	1	✓
2	2	5	4	✗
3	1	2	1	✗
4	1	4	4	✗
3	1	3	2	✓
1	1	1	0	✓
1	1	4	1	✗
3	2	0	0	✓
2	1	3	2	✓
2	1	2	0	✗
1	1	0	1	✓
2	1	1	4	✗
2	2	0	1	✓