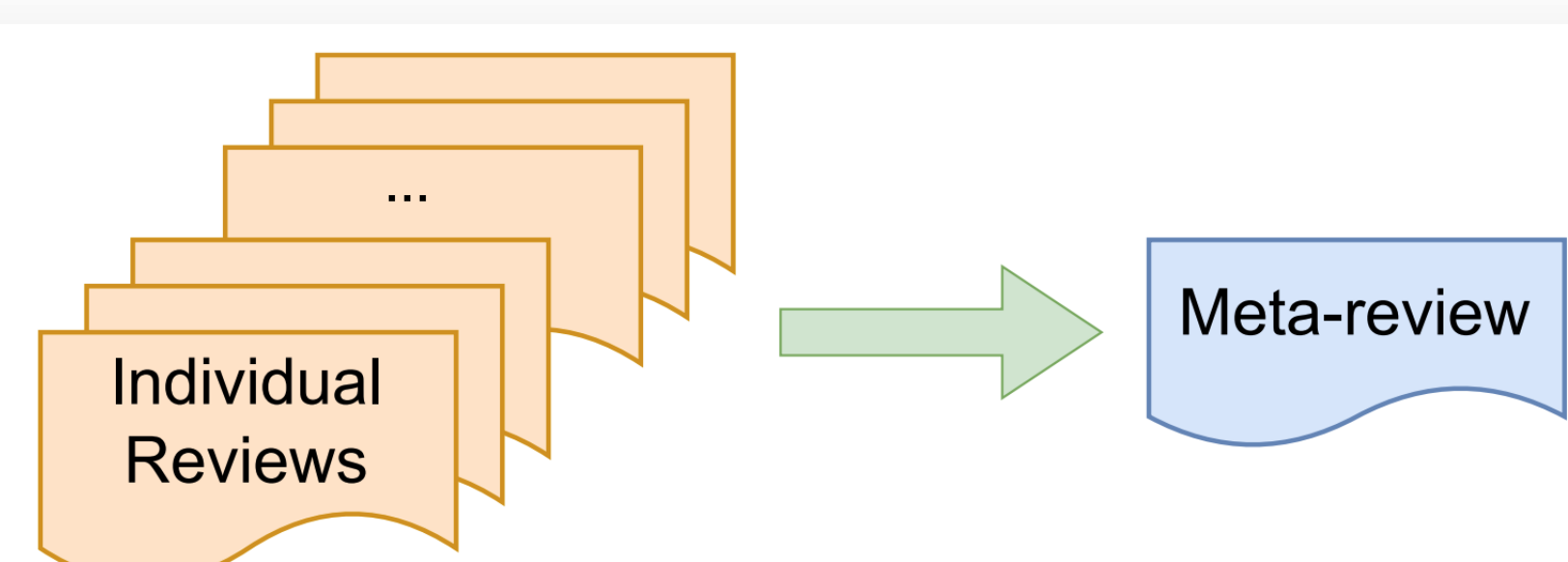


Aspect-aware decomposition enables LLMs to produce more grounded, transparent and higher-quality meta-reviews across diverse domains, while significantly helping humans summarize reviews faster and better

Miao Li^{1,2}, Jey Han Lau², Eduard Hovy^{2,3}, Mirella Lapata¹

1. The Meta-review Generation Task



Research challenges

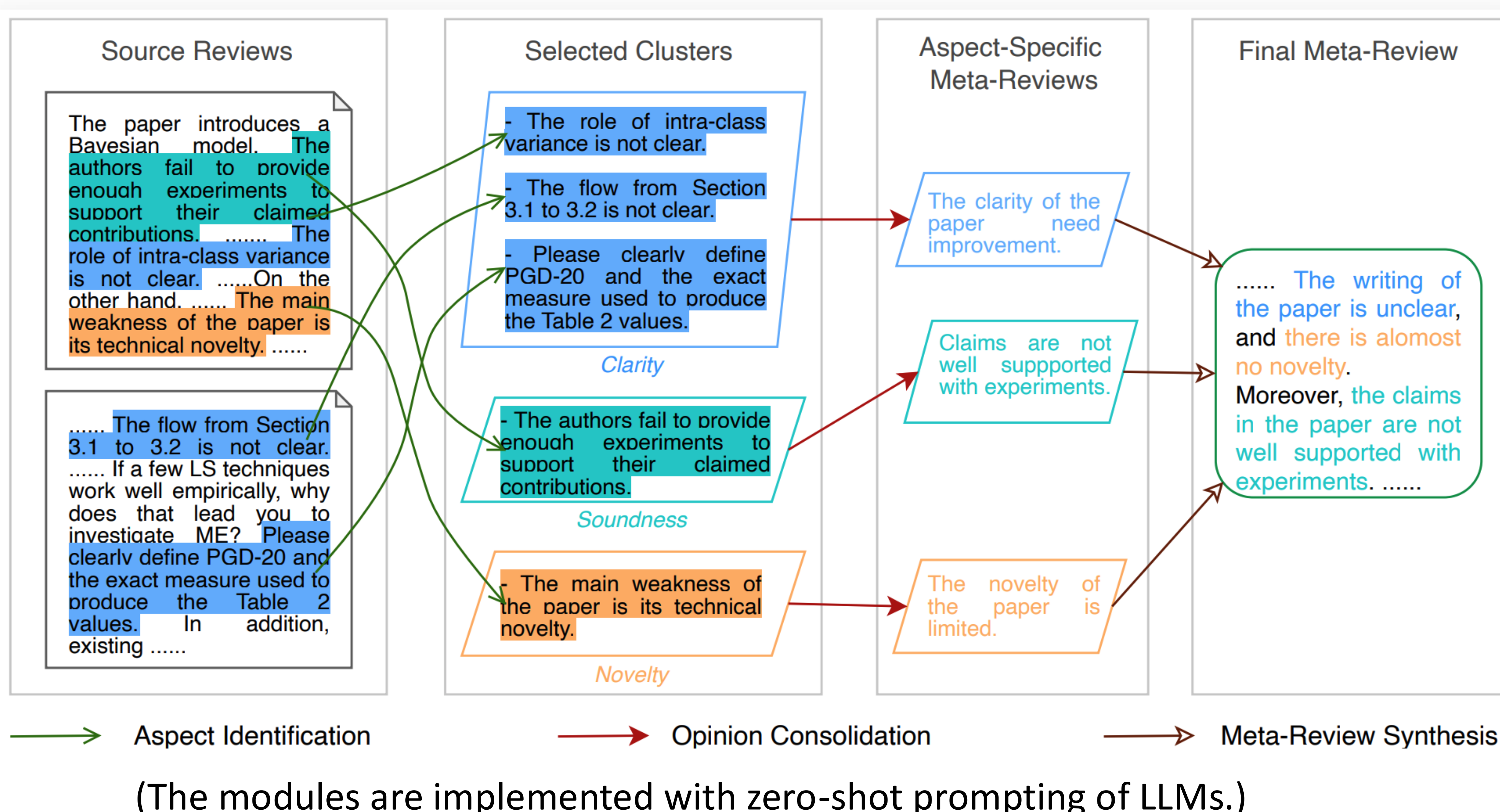
- No large-scale labelled data
- Most important aspects related to the entity need to be covered
- Evidence to justify the generation

Limitations of existing work

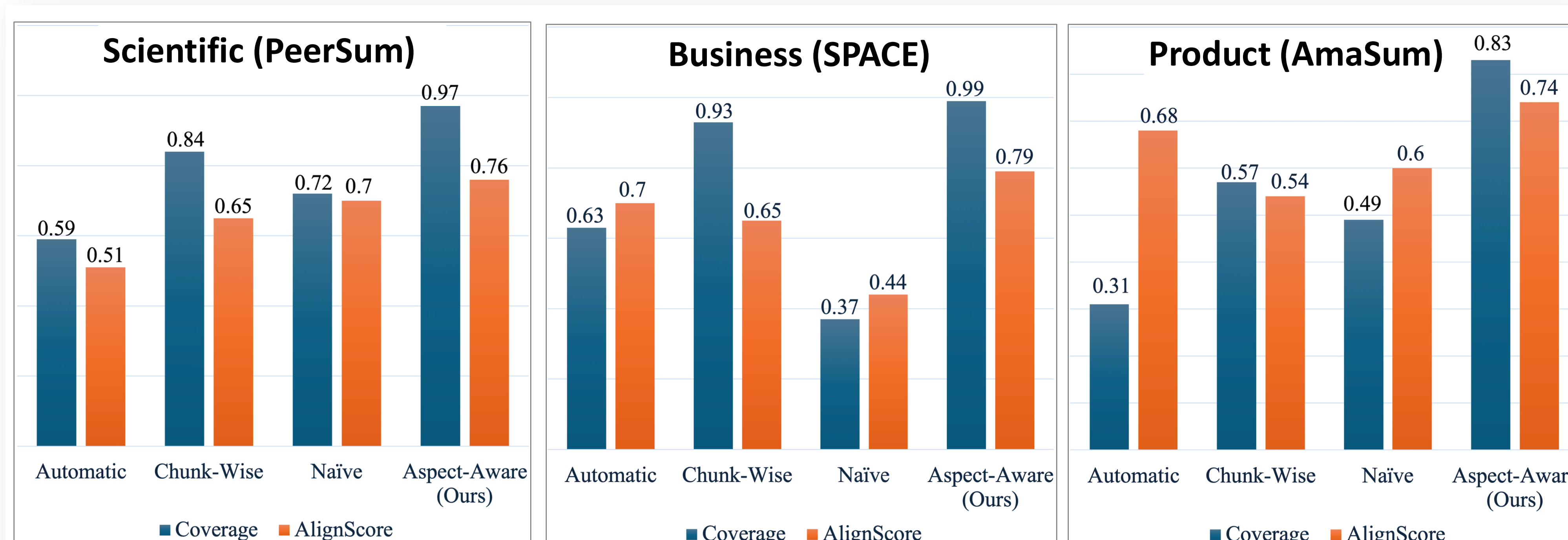
- Neither transparent nor controllable
- Most only work on specific domains

How to make it more grounded and transparent across domains?

2. Our Solution: Domain-agnostic Aspect-aware Decomposition



3. How Good Are Our Generated Meta-Reviews in Diverse Domains?



Automatic: Automatic decomposition, Chunk-Wise: Chunk-wise decomposition, Naïve: Naïve aspect-aware prompting, Aspect-Aware: Our decomposition [Llama3.1-70B]

4. What's the Intermediate Output Quality of Our Approach?

Models	Recall↑	Precision↑	F ₁ ↑
GPT-4o	0.82	0.27	0.40
Llama-3.1-8B	0.80	0.25	0.38
Llama-3.1-70B	0.74	0.34	0.46

Eval of Scientific Aspect Identification

Models	AlignScore↑	Rouge↑
GPT-4o	0.86	18.40
Llama-3.1-8B	0.82	18.24
Llama-3.1-70B	0.87	16.93

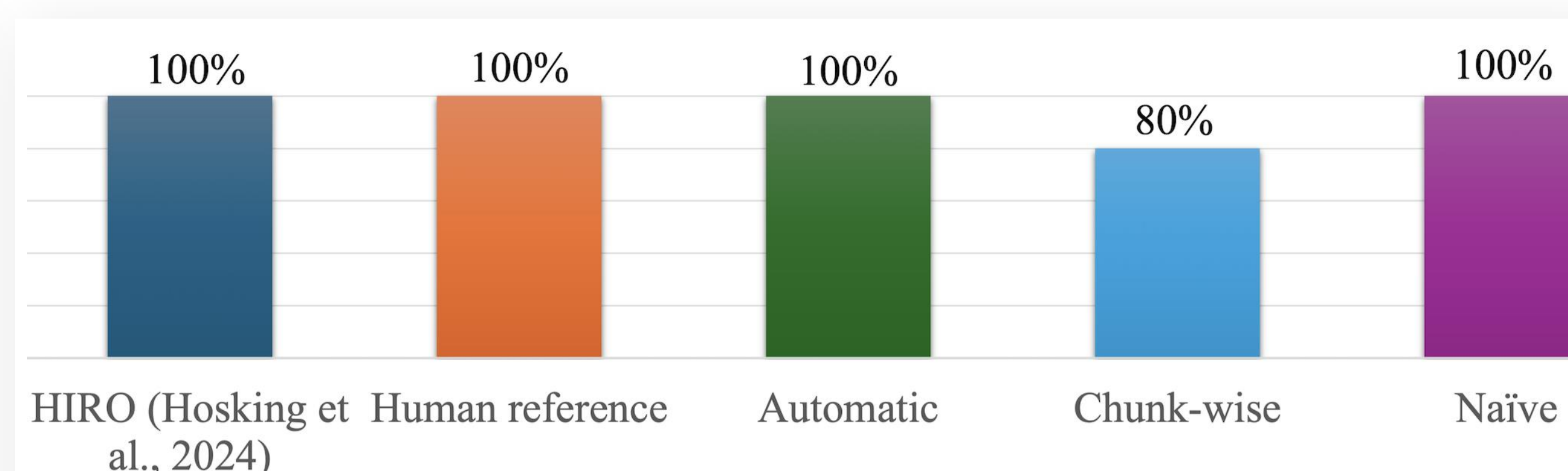
Eval of Scientific Opinion Consolidation

5. Which Module is The Most Important in Our Decomposition?

	Scientific		Business		Product	
Modules	Coverage↑	AlignScore↑	Coverage↑	AlignScore↑	Coverage↑	AlignScore↑
AI+OC+MS	0.97	0.79	0.99	0.80	0.83	0.74
OC+MS	0.98	0.78	0.99	0.83	0.69	0.72
AI+MS	0.97	0.75	0.55	0.62	0.61	0.69
AI [†] +OC+MS	0.97	0.69	-	-	-	-

(AI: Aspect Identification, OC: Opinion Consolidation, MS: Meta-review Synthesis, AI[†]: text fragments selected by humans.)

6. Do Humans Prefer Our Generated Meta-reviews?



Compared to other approaches, humans mostly prefer our generated meta-reviews for hotel reviews (SPACE).



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