IJCAI-ECAI-2018 Notification

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Dear author,

I am pleased to inform you that your paper 3130:"Customer Sharing Mechanism Design for Economic Networks with Trading Costs" has been accepted for publication in the proceedings of IJCAI-ECAI-2018. Congratulations!

All papers will be presented both orally and as posters in specific poster sessions.

The review process has been extremely selective: out of 3470 submissions, only 710 have been accepted. The reviews (and sometimes a metareview explaining the decision) are attached below. More information about the review and decision process can be found at this link: http://www.lamsade.dauphine.fr/~lang/IJCAI-ECAI-2018/FAQ-notifications.html

In a later message we will provide you with detailed copyright and formatting instructions, extra page purchase, so that you can prepare the final camera-ready version. You are allowed 6 pages + 1 page for references in the proceedings. If needed, extra pages can be added at a cost.

Although there will be no further review of your paper, in some cases, the acceptance decision was influenced by the assumption that you would improve your paper according to the reviewer comments and/or according to your author response. As you prepare the final version of your paper, please take all the comments into account in order to publish the best possible paper.

For your paper to be published, at least one author must register at IJCAI-ECAI 2018 and plan to attend in order to present it. Registration will be open in a few days. When registering you will be allowed to request for an invitation letter in case you need one.

The conference program will be available on the conference website shortly. Please also keep in mind the tutorial, workshop, competition, doctoral mentoring programs, and the co-located conferences. For full details check the website https://www.ijcai-18.org/

Best regards, and looking forward to meeting you in Stockholm,

Jérôme Lang
IJCAI-ECAI-2018 Program Chair

========== Meta Review Comments ==========

* Meta Review:

The reviewers praised the clarity and novelty of the work, but was criticized by one reviewer for lacking in terms of contribution. Many of the concerns that were initially raised were addressed by the authors in their rebuttal, but these should be clarified in the final version of the paper.

========== Meta Review Comments ==========

* Meta Review:

========== Reviewer Comments ==========

* Originality: 5

* Technical Quality: 6

* Significance: 4

* Relevance: 7

* Quality of writing: 6

* Scholarship: 8

* Overall Score: 7

* Confidence: 5

* Comments:

The authors investigate a mechanism design settings in a network structure where buyers are interested in purchasing a good for a seller, and this transaction is completed through several intermediaries, each incurring a transaction cost. The solution which maximises the social welfare chooses the buyer with the highest valuation whilst choosing the shortest path to transact with the buyer. The work builds on previous work, but in this case the networks are more general (not just trees) and there are transaction costs.

The paper assumes there is a centralised mechanism which has an overview of all intermedaries, buyers and sellers in the market, and also centrally allocates the route through which the goods should travel. Given the distributed nature of the market (after all, that's why there is a network of intermediaties), this seems unrealistic. THerefore, it is not entirely clear where such a mechanism would be practical.

Also, the paper seems to assume that the tranaction costs "c", i.e. the valuation function of the intermediaries, are known. Therefore, the only thing that is not known about the intermediaries is their connections. This seems to significantly simplify the problem and reduce its significance.

========== Reviewer Comments ==========

* Originality: 8

* Technical Quality: 8

* Significance: 8

* Relevance: 9

* Quality of writing: 9

* Scholarship: 9

* Overall Score: 8

* Confidence: 7

* Comments:

This paper introduces new customer sharing mechanisms in economic networks with trading costs. As clearly described in the paper, the key element to optimize the seller's revenue and the social welfare relies in the information diffusion mechanism. Two diffusion mechanisms are proposed : IDM-TC when the economic network has a tree structure and CSM for more general structures. Both are proven to be Individually Rational, Incentive Compatible and Budget Balanced. All these concepts are clearly defined, and the formalism proposed here is sound and efficient.

With IDM-TC, only the diffusion agents of the winner may have a non-negative utility, the other diffusion agents only recover their costs and trading costs are covered by the winner. It seems to work well in a (very) simple with few agents.

In CSM, one do not focus only of the diffusion agents of the winner. The mechanism is quite more sophisticated here, where the buyer pays a payment which equals to the social welfare decrease of the others caused by their participation. This is certainly an efficient method, under the condition that this decrease could be known / computed in any (complex) configurations. However, the proof is sound and works in a small example.

The paper is clearly and well written, and the approach looks promising and appealing. My main criticism (and frustration) is in the lack of a larger validation section, where the mechanisms are applied in several (and large) examples, in order to precisely assess the performance of the method, and compare them to previous approaches (on the same significant set of examples).

However, the approach looks promising enough, and thanks also to the technical quality of the paper, I recommend to accept this paper for IJCAI-ECAI 2018, especially if the authors could present the validation results I advocated for during their oral presentation.

========== Reviewer Comments ==========

* Originality: 5

* Technical Quality: 5

* Significance: 4

* Relevance: 6

* Quality of writing: 5

* Scholarship: 4

* Overall Score: 4

* Confidence: 7

* Comments:

This paper discusses a mechanism design setting in which there are three types of agents involved, among which two act strategically:

The non-strategic seller and the strategic buyers and intermediary agents. All agents are embedded in a directed graph, where they are represented by a node in the graph. The seller sells a single item. Buyers have valuations for the item which are privately held. A seller can sell to an agent through a path in the graph, but does not know the graph structure. Intermediaries' hold private information about their neighborhood. They can report to the mechanism any subset of their true set. Transferring an item to a buyer through an intermediary incurs an intermediary-specific cost which is not privately held.

The authors present two mechanisms: one that works on trees and one that works on arbitrary graphs. They are both shown to be efficient (maximizes utility), weakly budget balanced (seller makes a profit), incentive compatible (misreporting is never beneficial to anyone), and individually rational (non-negative utility is guaranteed for everyone). One of the mechanisms works on graphs and one of them on the special case of trees.

The technique is to allocate the item to the welfare maximizing agent, taking also in consideration the path through which the item travels. Then the remaining properties are achieved by appropriate payments.

This result is of some value, but I find the contribution too small. The contribution of the paper is just the two mechanisms, and they are proved correct by techniques that are relatively straightforward. Also, one of the mechanisms is strictly more powerful than the other, which means that one of the mechanisms has no use (as far as I see, but do correct me in the rebuttal if that is not true). So I am afraid that the contribution of this paper is on the small side.

There are a few secondary things that I hope the authors could improve: The model should be defended better. Right now I do not see why it is natural that the costs of the intermediates are public but their neighborhoods are not. Are there some more concrete applications for this setting? The text in the final section of the paper addresses this a bit; I hope that this motivation can be moved to the front of the paper and can be extended. Secondly, I do not think that the authors describe sufficiently the novelty of their work in comparison to other works. What are precisely the differences with the works that you cite and what is it that is new here in comparison with those papers?

The paper is well-written otherwise. There are some strange/invalid expressions and typos at various places but that is not such a big deal. On the technical side it would be good if the authors could be more precise, and some math notation should be corrected. See the list below for that.

The main point remains that it seems that the contribution is limited. The authors should consider to extend this study with considering mechanism design for a more general model, such as when the costs are also private. Or maybe they can additionally consider the revenue optimization objective as an extension on this study.

Some small points:

- The hyphenation is wrong when breaking words across multiple lines. See for example the abstract: "direc-t" and "customer-s". This happens many times.

- The first sentence of the introduction is not true.

- overlapping -> overlap

- local optimal -> locally optimal

- can not -> cannot

- an inefficient selling -> inefficiency

- "However, (..)". Give an example here of a more important trading cost.

- exists -> extist

- of the costs -> the costs

- private known -> privately known

- It is confusing to say that intermediaries can be other sellers.

- inforamtion -> information

- the economic -> an economic

- privation -> private

- cost , -> cost,

- T is defined as a union but it should be a cartesian product

- informed -> informed of

- the nil-option seems unnecessary to include, as reporting the empty set has the same effect?

- Definition 2: there seems something wrong with the construction "iff (..) if".

- The structure of the sentence in Definition 6 is not logical and easily misread.

- You use the terminology of intermediaries "sharing the sale information to their neighbors" but it is not clear what that means exactly, and I also do not see it reflected in Def 7. As far as I see there is simply a mechanism to which the agents report their types.

- rephrase "clear and not changed"

- "severe deficit". Do you mean to say here that weak budget balance is not satisfied?

- The expression "Following (..)" which is used multiple times is not something that I commonly see and I would suggest to think of a different word here. ("Subsequently"?)

- in next -> in the next

- should d_E be d_{-E}?

- What do you mean with "apply efficient allocation in IDM-TC"

- What is IDM?

- non-negative -> positive

- by Vickrey -> by the Vickrey

- if there is -> if there are

- what are "return guarantees"?

- Definition 10 suggest that the threshold neighborhood is unique. This is not clear to me and it might require a proof. I am not sure if the correctness of the mechanism further relies on uniqueness?

- figure -> Figure

- "If the winner is not changed". Rephrase this.

- in customer -> in the customer

- since VCG -> since the VCG

- "there comes out two cases". Rephrase this.

- "has changed to another buyer". This is not clear and should be reformulated.

- balancing the budget -> the budget balance property

- changing -> changes

- anther -> another

- apply in -> apply to

- private -> a private

- compose of -> be composed of

- can be -> can often be

- in real practice -> in practice

- declares -> declare

- future researching -> future research

========== Reviewer Comments ==========

* Originality: 7

* Technical Quality: 9

* Significance: 8

* Relevance: 7

* Quality of writing: 9

* Scholarship: 9

* Overall Score: 8

* Confidence: 9

* Comments:

The contribution of this paper to the literature in algorithmic mechanism design is really good. It presents a new mechanism such that, for networks with trading costs, ensures not only truthfulness but also information sharing, without hampering competition.
