

**Summary of Ph. D. thesis written under the scientific guidance of
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"Econometric modelling of the seller's reputation on the auction platform"

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E-commerce has very high sales growth. It is estimated that it is 23% per annum¹ in comparison to 4.6% of total retail sales². Sales through electronic channels are characterised by the lack of direct contact between the seller and the customer. Retail auction platforms are examples of this type of transactions. An auction platform provides an opportunity to present an offer, and the role of the seller is to display it appropriately and to provide information regarding themselves. The customer is therefore looking for an item but must bear in mind that they do not make a purchase from the auction platform but from the vendor who is obliged to follow the platform's regulations signed at the time of registration.

The only piece of information available to the customer is the one provided by the merchant and presented by the platform. In such conditions, making a purchase decision is no longer a mere choice of the best offer. Other factors that also play a role in this process are credibility of the seller and his or her perceived position among other sellers.

The most important factor is the seller's reputation. The reputation on auction platforms is determined with the use of points awarded during seller's previous transactions with other customers.

This perception of reputation is consistent with one way of defining it, i.e. as an attribute of previous activity of the company³. On auction platforms, the reputation value increases by one, if a transaction is successfully completed or, in the case of customer's negative perception, it is reduced by one.

In this thesis, a transaction, understood in the way described above, is considered to be a variable the seller can influence directly. Because the seller's influence on auction platforms is limited to certain activities allowed by auction platforms, it is assumed that the seller's

¹ Bonek, T., "Report E-Commerce," Interaktywnie.com sp. z o.o., Wrocław, 2018.

² Biernat, J., Dec, A., Nerlewska, M., Friday, S., Rajkowska, M., Magdalena, S., Wołodkiewicz-Donimirski, R., and Adach-Stankiewicz, E. (ed.), "Internal market in 2016 information and statistical studies.", in Adach-Stankiewicz, E. (ed.), Warszawa: Main Statistical Office, 2017.

³ Rindova, V.P., Williamson, I.O., and Petkova, A.P., "Being good or being known: an empirical examination of the dimensions, antecedents, and consequences of organizational reputation," *Academy of Management Journal*, vol. 48, No. 6, pp. 1033-1049, 2005.

reputation is modeled with the use of variables that are within the seller's discretion. It is assumed that reputation, understood as points received on the auction platform, is not a mere sum of points obtained as a result of certain comments, but it is the overall and permanent effect of the entrepreneur work.

However, the analysis of reputation requires designing a whole set of projects through which it is possible to collect all data regarding the seller that the customer can access.

The main objective of the thesis was to create a reputation model based on the information for potential buyers presented on auction platform Allegro.pl by sellers. Due to the limitations of collecting data about millions of platform users, the survey was carried out in the sales category in which price competition between sellers was not hugely important. A category of iPad tablets was chosen; their manufacturer - Apple Inc. - had significant reputation. Because the study had to cover all sellers in this category, it was necessary to prepare an IT system that would allow to collect the data without restrictions to pre-chosen seller's auctions. A system based on physical infrastructure of 5 computers with CPU units containing 2 to 6 cores and proprietary software was designed to analyze and download data using C#, VBA programming languages and R scripts. Thanks to this system 119,061 auctions were collected and analysed. Obtained data were allocated to appropriate groups of sellers and then appropriate sets of variables describing each seller were created. In subsequent stages, sets of variables were selected and an original procedure was created, the procedure which included substantive analysis of variables and their statistical selection. The final stage was to find an econometric model that could describe reputation. More than 33 million models were analysed and the best models were chosen as resultant.

The theoretical and cognitive objective of the thesis was to systematize knowledge about the essence, factors, patterns of functioning, and developmental tendencies of the online seller's reputation on the Polish auction platform market. Another objective of the thesis was to identify measurable factors influencing the reputation of an online retailer available for the user. These objectives were important because, while building a seller's description using variables, first you had to determine variables available on the platform and downloadable by the system. For each seller the system collected an initial set of 160 variables which were reduced to the basic 38 variables. The variables were selected following the literature review of the subject concerning predominantly English-language sales platforms, as there were no similar studies for the Allegro.pl platform.⁴ In the absence of information regarding a particular variable,

⁴ e.g. Melnik, M.I., and Alm, J., "Does a Seller's eCommerce Reputation Matter? Evidence from EBay auctions, in *The Journal of Industrial Economics*, pp. 337-349, September 2002.

additional studies that could indicate its cognitive value were carried out.

Application objective of the thesis was to use the reputation function in the process of building the company's image on the auction platform. Its implementation was based on the analysis of the obtained models and the choice of the model which illustrated in what way the variables used by the seller affect reputation.

The thesis was divided into six chapters. The first one presents the literature review, methods of building up reputation and references to the electronic market. It also presents the objectives and research hypotheses. The second chapter describes research methods, including limitations related to data collection, ways the sampling frame was created, and the IT system used to collect and analyse the data. The third chapter describes methods of searching for econometric models and selection of variables. It presents stages that allowed to find the best models in terms of the statistics and econometric seller's reputation models which could be subject to economical interpretation. Chapter four presents conclusions of the obtained models and hypothesis verification process. Chapter five presents indications related to the potential use of the obtained models. The sixth chapter consists of summary and presentation of the current trends in the development of e-commerce and the scale of impact on perception of the seller's reputation.

The author's intention was to explore curious existence of the economic principles that control the seller's reputation on the auction platform. Intuition, supported by comments from market users and experts' indications, demonstrates that factors influencing sales do exist. Reputation studies carried out in this way are niche studies. The opportunity to discover a new way of looking at the seller's reputation is a great benefit, if it is supported by the results in the form of econometric models. For this purpose, an original system has been created. This system includes methods of selection of variables, analysis and construction of econometric models, and IT infrastructure including software development. It has been demonstrated that this approach is economically justified, as it may allow the seller to control their reputation on the auction platform.



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