Social Energy as the Driving Force behind Crowdfunding—Analysis and Classification of Selected Attributes

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Abstract: Crowdfunding has been part of sharing economy for a few decades. Research into crowdfunding usually concerns its relation to sustainable development and corporate social responsibility, influencing investment decisions, psychological, organizational and financial aspects or the success evaluation of individual campaigns or platforms. Recent research includes empirical case studies, e.g., evaluation of the crowdfunding for minor coarse cereal products through evolutionary game analysis, or the impact of crowdfunding on the willingness to visit local festivals. There is, however, no comprehensive cross-sectional approach to crowdfunding attributes that considers data from various categories. The authors aimed to analyze selected attributes of crowdfunding, namely project categories, the number of backers, campaign duration and profitability, and to classify these attributes. A novelty is the use of the term "social energy" in a different sense than previously found in the scientific literature. An original algorithm for analyzing and classifying selected crowdfunding attributes and measuring the relationship between them was also used. The value of the article is also the practical application of its results. The findings have a practical outcome: they can be used by project creators, potential backers, investors and owners of crowdfunding platforms.

Keywords: crowdfunding; classification analysis of attributes; social energy; sharing (collaborative) economy; classification methods and criteria; research areas of crowdfunding; Kickstarter platform

1. Introduction

The term "energy" is usually identified with the field of physics, and in this field, it is used in the sense of electricity. Similar terms are also chemical, thermal, nuclear and solar energy, depending on its source.

Other approaches to the term "energy", used in the colloquial sense, are vital forces and readiness for work of a given organism. It is said, "he is bursting with energy", or "he was gone by energy, because he does not continue this action". This interpretation comes from Chinese literature. Here, the source of energy is food, and the unit of measurement is the calorie, as well as proper motivation, praise and the like.

Energy is also one of the basic terms of classical metaphysics, closely related to movement and to the act whose source is Aristotle's philosophy [1].

Different from the above is the term "social energy". This is clearly a practical approach, because there are no studies or research results related to this term in the literature, and which would be a form of references to various types of applications of social renewable energy choices. In this aspect, the following terms are used: associations or foundations supporting people in need, or a network of enterprises implementing new models of services in the field of public utility, especially for socially excluded people.

In this article, the authors use the term "social energy" in a completely different, innovative sense, as a driving force, i.e., mobilization to financially support various projects. On the surface, the term "crowd energy" may seem unambiguous, but it has only a psychological aspect (for example, duplication of behavior patterns) that is also important in crowdfunding, but not as the only one. It is also about the motives for joining the

financing, from charity, devoid of expecting anything in return, to the desire to achieve certain profits or, at least, the so-called rewards. As a new, original solution, in addition to the novel use of the term "social energy", the authors bring analysis and classification of selected crowdfunding attributes and measurement of the relationships between them.

Launching such a "giant" as crowdfunding becomes possible with the participation of hundreds or even millions of people; that is, it requires great social energy. Hence, the presented research certainly fits into the area of sustainable energy and society.

The relationship between sustainable energy, economy and society was interpreted and studied in many different aspects. Some of the papers viewed the above issues from a global, international perspective; for example, there are the papers entitled "Externalities of power generation in Visegrad countries and their integration through support of renewables" [2], "Energy Efficiency in the Long-Run in the Selected European Countries" [3] and "Ranking of Baltic States on progress towards the main energy security goals of European energy union strategy". [4]

Many authors have tackled the highly important problems of energy security, which is of fundamental importance in the sustainable development of all areas of life, for example, social, economic and cultural. As a result of this research, a number of cross-sectional papers were created; for example, there are the papers entitled "Estimating the interrelation between energy security and macroeconomic factors in European countries" [5] and "Social and Economic Properties of the Energy Markets". [6]

There are also interesting publications analyzing the threats to society resulting from the energy production processes; for example, there are the papers entitled "Decomposition analysis of the impact of economic growth on ammonia and nitrogen oxides emissions in the European Union" [7] and "Sustainable agriculture and energy in the U.S.: A link between ethanol production and the acreage for corn" [8], as well as "Sustainable supply chain of the biomass cluster as a factor for preservation and enhancement of forests" [9]. The latter paper is extremely valuable, as it raises the issues of the need to care for the national welfare of forests.

However, this article highlights the role of social energy (crowd energy) that "drives" crowdfunding, the essence of which is discussed below.

Crowdfunding has become one of the most popular ways to raise money for certain goals, projects or events by natural persons. It is based on soliciting for many small amounts of money from many individuals, who are called the community or—by other authors—the crowd [10–13].

The participation of hundreds of thousands or even millions of people in crowdfunding campaigns after mere twenty-something years since the first campaign was launched shows the scale of this phenomenon. It has already gained its place in economic theory, where it is presented as a form of the so-called sharing (collaborative) economy [14–17]. The financial perspective on crowdfunding confirms its global and financially powerful nature. This is evidenced by the following sample data from 2020 (fundly.com):

- Global amount collected by crowdfunding—USD 34 billion,
- Crowdfunding's contribution to the global economy—USD 65 billion,
- Global average success rate of crowdfunding campaigns—22.4%,
- Percentage of US consumers aware of crowdfunding—64%,
- Value of average donation to a crowdfunding campaign—$99,
- 78% of successful campaigns exceed their fundraising target.

What is more, it has been predicted that, by 2025, the global crowdfunding market will almost triple.

It has already been observed that, since the outbreak of the COVID-19 pandemic, the crowdfunding market has been growing significantly, especially crowdfunding with donations that are aimed at supporting and aiding communities, people and organizations in their battle with the pandemic. For instance, in April 2020, Facebook launched "Facebook Fundraiser", a platform where people can raise funds for charity to help others during the pandemic.

Moreover, in April 2020, various crowdfunding platforms in India raised over INR 100 crores to provide financial aid to people in need. Those Internet crowdfunding campaigns help immobile migrants, everyday workers, transgender communities, circus artists, Uber drivers, Swiggy delivery workers, rural craftsmen, dancers and freelancers during the pandemic.

It is also expected that reward-based crowdfunding will experience significant growth [18,19]. It frequently involves a business (usually a start-up) raising capital before starting its activity through an online platform and offering investors gifts or "extras" for their financial contribution. This is considered a pre-sale where individual persons (projects) or companies obtain funding from capital donors who then receive a non-monetary reward. This allows companies to get involved in building networks and strive to get something which can be used later. This type of crowdfunding is usually appropriate for early-stage companies or for a specific project. For example, the Australian start-up Okra Solar offers its "smart plug-and-play controller", which makes it easier for neighbors to share energy. The company launched a reward-based crowdfunding campaign to raise funds to build the prototype and raised over $45,000. The prototype worked, and the company subsequently obtained high government subsidies for serial production.

Other similarly successful projects were "The Sun Juicer" Ultralight Parabolic Solar Cooker, where 240 backers pledged $19,152, and Nomad Energy—Radically Sustainable Energy Drink, with 257 backers pledging $16,678.

Unfortunately, due to the lack of reliable, complete and up-to-date information, some projects do not reach their financial goals, even though they concerned the production, distribution and other aspects of broadly understood issues of energy or sustainable development. These include projects such as "Long Range Electric Motorcycle (Development/Prototype)", "La ciudad consciente: A tiny house on wheels community" and "RNWBL: Goods That Fund Clean Energy Projects".

The above, albeit very general, look at the current and future state of crowdfunding gives the basis for the conclusion that the world is dealing with an extensive and developing phenomenon. Hence, the study and analysis of its attributes in various respects becomes the duty of many scientists [20,21]. It is difficult to grasp and examine or analyze the entirety of crowdfunding range, taking into account its specificity and various attributes. However, one can try to pick out its selected features and group them in order to easier analyze macrodata.

The aim of this paper is to analyze selected attributes of crowdfunding: project categories, the number of people backing the projects, campaign duration, project profitability and rewards offered, and providing their mutual classification, i.e., creating classes of attributes that are similar to each other. The starting point of the algorithm is the so-called royalty, i.e., a measure of the closeness centrality (similarity) of elements. It was assumed that, due to the large variety and frequency of features, the method that takes into account two aspects is appropriate, which allows for the inclusion of two basic classification criteria, i.e., closeness and importance (weights). The created attribute classes allow for further cross-classification.

It should be noted that applying the classification method is justified by the specificity of the problem studied and the large amount of source data within the area of each attribute. The following research hypotheses were adopted:

- Project categories in crowdfunding contain similar elements, and it is possible to group them according to the adopted attributes and determine their weights;

- Created classes are subject to another classification in terms of pairs (so-called tandems) and the strength of their correlation, i.e., the degree of interactions or lack thereof, can be defined.

The results of the research can be translated into practice and used by project creators, people considering financing their projects, including investors and owners of crowdfunding platforms.

It is worth emphasising that this practical aspect of the research is crucial. The need to conduct the study has been confirmed by reviewing academic literature and conducting a diagnostic survey among a randomly selected group of respondents. Both project creators and their potential backers expressed a lot of doubts, and there was a lack of access to full information necessary to make the right decision, e.g., which category the project should be put, how long the campaign should last, how many backers can be counted on or how to calculate the amount of the planned and necessary amount of money. Therefore, they can learn how to operate more effectively in the crowdfunding process and lead the project to success (also financial).

The main idea and importance of the presented research boils down to the right choice of crowdfunding attributes, capturing their interdependence, similarity and impact force, which enables a new, comprehensive, multifaceted movement in the maze of information about projects submitted for funding.

The proposed approach which utilizes the method of classifying categories and attributes, as well as the research results contribute to the current state of knowledge in the area of crowdfunding.

The article is organized as follows:

It begins with an introduction which emphasizes the importance of the topic, specifies the purpose of the article and its significance, and presents the hypotheses to be verified. The structure of the article is also presented. Then, a literature review of the subject in several specified areas is provided in a separate section. In the light of this analysis, the need for research provided for the purpose of the study is emphasized. The next section of the article contains the research methodology and information on the data used, included in the form of tables. The attribute classification method and statistical methods were used to determine the strength of attribute interactions. The developed algorithm takes as its starting point the so-called royalty, i.e., a measure of closeness (similarity) of components. It was assumed that, due to the large variety and frequency of features, the method that takes into account two aspects is appropriate, as it allows us to include two basic classification criteria: closeness and importance (weights). The created attribute classes were the basis for further cross-classification.

Then the results of the research were placed in a series of matrices and chains of the obtained classes along with their interpretation. The next part of the article is a discussion on the results and their interpretation in the perspective of the discussed research and the working hypotheses formulated in the introduction.

In reference to the aim of the article, the main parts of the research are cited, and the practical significance of the results, significantly broadening the horizon of information on crowdfunding mechanisms, is emphasized. Conclusions are extracted from the discussion and form the last part of the article. They present the degree of verification of the research hypotheses and the achievement of the aim of the article, as well as the main conclusions resulting from the conducted research. Research limitations are highlighted, potential weaknesses are identified and their importance is commented upon in relation to the overall interpretation of the results. The directions of future crowdfunding research are also suggested.

2. Literature Review

The analysis of the literature published especially in recent years has allowed to identify several areas of crowdfunding research.

The first area includes a series of publications discussing the role of crowdfunding in achieving sustainable development and, particularly, a sustainable society. Some of the papers are reviews that show the relationship and effects of these elements. Examples of such a synthetic approach include Heidingsfelder and Beckmann [22], Testa et al. [23], Motylska-Kuzma [24] and Martínez-Climent et al. [25]. On the other hand, there is also research on selected aspects of crowdfunding affecting sustainable development, for example, the paper by Wehnert et al. [26] that analyzed the success of crowdfunding as a signal to increase trust in sustainable product goals, and the article by Liang et al. [27] that presented research on the impact of information description on the success of crowdfunding in a sustainable economy. The perspective of information communication that is outlined by these authors is also interesting. The presentation of the place of crowdfunding in sustainable retail and the formulation of the theoretical framework of success criteria by Konhäusner [28] is also noteworthy, as well as the paper by Jelinčić and Šveb [29] that shows the relationship between financial sustainability of cultural heritage based on an overview of crowdfunding in Europe.

The second research area of crowdfunding covers issues related to its impact on investments and the condition of companies' finances. Several significant publications should be mentioned here: Rossi et al. [30] discussed investment-based crowdfunding in the aspect of cross-platform analysis, Dilger et al. [31] assessed the crowdfunding potential for business model innovation of energy co-operatives, Wallmeroth et al. [32] discussed venture capital and crowdfunding of entrepreneurial ventures, Ter Wal et al. [33] presented issues of equity retention and social network theory in equity crowdfunding, Chu et al. [34] discussed open innovation in crowdfunding and Miglo [35] discussed some of the crowdfunding patterns of entrepreneurial firms in Canada.

Relatively few publications compare and analyze crowdfunding platforms. The paper by Rossi and Vismara [36] deserves attention for showing what crowdfunding platforms do and comparing investment platforms in Europe. Yu et al. [37] presented a specialized paper which used an interesting tool to assess the crowdfunding platform of minor coarse cereal products through evolutionary game analysis. Kang and Kim [38] answered the question of who can survive on an ICT-based crowdfunding platform, and Flórez-Parra et al. [39] discussed the role of a collective platform in strengthening economic and sustainable projects.

The most interesting papers are the ones in which crowdfunding is analyzed as part of behavioral economics, psychology, and sociology. The authors rightly see the need for behavioral research, especially the motivation of both investors and people co-financing various projects. The crowd syndrome has already been emphasized in this study, because it is the size of the reaction, attitude, reasons for joining the crowdfunding "machine" that determines the final success of the campaigns of given projects. Many works in this area deserve special attention.

Bretschneider and Leimeister [40] wrote interestingly about creating incentives for funding in reward-based crowdfunding systems; Pérez et al. [41] conducted an exploratory study on donation intentions to rural development; Zhang et al. [42] concentrated on the consumer's intent to purchase crowdfunding products or services in terms of costs and benefits; Kim and Hall [43] wondered if analyzing types of co-creation and crowdfunding can predict donor behavior and build an extended model of goal-directed behavior; Miglo [44] studied crowdfunding in a competitive environment; Seo and Park [45] analyzed the impact of other people's participation in investments on the psychological value of crowdfunding projects. On the other hand, Song and Tian [46] quoted the statements of managers and assessed customer involvement in crowdfunding; and Rodriguez-Ricardo et al. [47] emphasized that trust, altruism and a sense of internal control affect the motivation to participate in crowdfunding. The role of trust and investor intentions is also the focal point of the paper by Alharbey and Van Hemmen [48]. Mutual altruism and legitimacy in donation-based crowdfunding are also emphasized by Khurana [49], who cited evidence from India. A fairly original approach to crowdfunding was presented by Mohammadi

and Shafi [50], whose paper analyzed the donation patterns of equity investors by gender. The results of a survey on motivations for equity-based crowdfunding in an emerging market were presented by Wasiuzzaman et al. [51] and answered the question of what institutional factors drive crowdfunding volumes can be found in the work of Kukk and Laidroo [52]. Kim et al. [53] presented an interesting study on behavioral influences on crowdfunding initiatives, emphasizing the importance of personality and subjective well-being. Yang et al. [54], based on the crowdfunding investment intentions model, showed the prospects of social exchange and the prospects of customer value.

Publications on broadly understood rewards for backers can also be placed in the field of behavioral economics. Virtually every project, goal or event for which funds are raised offers rewards and their aim is to encourage donations and promote a given initiative. The subject of incentives has been raised by relatively few authors and is most often associated with research on the success of a given campaign; for example Dikaputra et al. [55] analyzed the success factors of reward-based campaigns, using the so-called multi-theory approach. Comeig et al. [56] emphasized the importance of rational "herding" in reward-based crowdfunding. On the other hand, a comparative study of China and the United Kingdom conducted by Usman et al. [57] was designed with regard to the influence of signals on investment decisions.

Scientific research on crowdfunding in terms of description and correlation of financial success was conducted by Sauermann et al. [58] and Hörisch [59], who analyzed crowdfunding of environmental projects. Similar research on the success of distribution network campaigns can be found in the collective paper by Ter Wal et al. [60]. Usman et al. [61] tried to answer the question whether the role of the media and previous successes of the campaign's founder mitigate the problem of information asymmetry. The issue of what determines success on Kickstarter, with the emphasis on the role of anonymity and team, has been discussed by Ullah and Zhou [62], and empirical research determining the key success factors of a crowdfunding campaign of a given project was published by Fernandez-Blanco et al. [63].

A clearly behavioral approach was adopted in the article by Schraven et al. [64], called "Predictions of Crowdfunding Campaign Success: The Influence of First Impressions on Accuracy and Positivity". Venturelli et al. [65] also took on a behavioral perspective when investigating the relationship between gender and ethnic origin of the person submitting the project and its backers.

The research studies of Chen [66] (on the impact of competition and incentive design on the performance of crowdfunding projects on the example of independent films) and von Selasinsky and Lutz [67] (on the influence of pro-social and pro-environmental orientation) are more specialized studies on the impact of crowdfunding.

The above literature review allows for a conclusion that the interest of academics in the subject of crowdfunding seen from various perspectives is still significant, which can certainly be justified by the fact that this type of financing is developing dynamically. It takes different forms, which is reflected in research targeting large areas and models for donation, rewards, loans and equity. Therefore, the issue of continuing research remains relevant and worthy of attention.

3. Materials and Methods

The study was based on data downloaded from webrobots.io, which provides indexing and scraping services for websites. The robot crawls on websites and collects data from selected crowdfunding platforms in the format of ready-made CSV files. This indexing is carried out once a month, and this study was based on data collected for the Kickstarter platform on 17 June 2021.

The choice of Kickstarter as a data source can be explained by its leading position and wide popularity, as it appears in the five hundred most searched sites in the world, and it has brought success to over 205,000 projects since its inception.

The data provided by webrobots.io are part of a public "raw" dataset that has also been used by other authors, for example, Reference [63]. There are data on over 31,000 campaigns in the analyzed set, of which over 20,000 were successful (Table 1).

Table 1. Breakdown of projects according to their status.

Project Status	Number of Campaigns
Canceled	1609
Failed	7799
Live	1209
Successful	20,604

Source: webrobots.io/kickstarter-datasets, data from 17 June 2021.

In the obtained project dataset, the following project attributes were selected for detailed research, taking into account data availability:

- Category—a group of subjects which the projects belong to;
- Number of people supporting the project;
- Campaign duration—calculated in days as the difference between the end date and the start date of the project;
- Project profitability, as the sum of collected donations;
- Rewards for supporters, offered by project creators.

When analyzing the first four attributes, no problems were encountered in identifying or systematizing them according to the adopted measures, which were quite obvious: subject, number of people, time and financial value. However, the attribute of "rewards" turned out to be impossible to assess unambiguously due to the great variety of the rewards. Other problems encountered when trying to analyze rewards were varied time periods in which they were offered or the fact that the number of rewards sometimes was limited and sometimes was not. All in all, rewards showed practically no repeatability in projects.

An additional problem was the fact that one of the most popular rewards—a discount on the purchase of the project result—was offered at almost every possible percentage and it most often depended on the amount of the donation. Moreover, the information about rewards appears and disappears from the offer according to unknown rules or rewards are turned into other rewards, such as a discount voucher to purchase two or more products, a digital product, a personalized thank-you for the supporter posted in the media, a design creator's handshake, a T-shirt, a mug or another gadget. The variety of currencies in the projects is also a big obstacle. The problem of rewards, in a very fragmentary scope, is illustrated in Table 2, which presents three randomly selected projects from different categories.

Taking the above factors into account, it was decided to exclude the "reward" attribute from further analyses and research, because any simplifications such as merely dividing rewards into discounts, gadgets, honorable mentions, etc., would make the credibility of such research—and thus its results in this respect—doubtful.

Data on the four attributes to be processed in the subsequent stages of the analysis and classification were specially prepared for the purposes of the methodology presented below:

- The names of the main and detailed categories were established by extracting these names from the general fields of the source data (Table 3);
- The ranges of the values of the attributes were specified—the number of backers, campaign duration and profitability—by analyzing various distributions of their values many times (the list of categories is presented in Table 4).

Table 2. Sample rewards for 3 selected projects in selected categories.

Project Category	Rewards Project 1	Rewards Project 2	Rewards Project 3
music	$239 for 20% off; $269 for a 10% discount	$69 + product; $79 + product; $99 + accessories; $345 + a few products	$104 for 30% discount; $179 for 40% discount; $246 for 45% discount on 3 products
wearables	$899 for 27% discount; $1048 for 24% discount	$69 for 50% discount; $79 for 39% discount; $148 for 42% discount (on 2 products); $209 for 45% discount (on 3 products)	$129 for 48% discount; $256 for 48% discount (on 2 products); $384 for 48% discount (on 3 products)
art	$6 for a 25% discount; $21 for 30% discount (set); $70 for 22% discount (another set)	EUR5 (digital product); EUR10 (5 digital products); EUR30 (physical product); EUR60 (full edition)	£100 for 33% discount (on a product); £100 for 33% discount (on another product);
graphic novels	$25 for 16% discount; $40 for 20% discount (on another product); $40 for 20% discount (product and merchandise);	$75 for a set; $20 for a gadget; $25 for another gadget	$10 for 33% discount (digital product); $25 for a product; $30 for a set of digital products; $150 for a collector's set
photography	$10 support; $75 first release; $175 box; $250 set + extras; $325-5 copies of the product	CAD68 product; CAD124-2 copies of the product; CAD282-5 copies of the product	CHF44 product; CHF88-2 products; CHF319-set; 365CHF-set + extras

Source: kickstarter.com, data from 17 June 2021.

Table 3. Summary of general source data.

Main Category	Detailed Category	Number of Campaigns	Number of Backers	Average Campaign Duration in Days	Campaign Profitability in USD
art	art	938	95,553	24	4,911,459.55
	ceramics	256	29,058	29	2,653,205.10
	conceptual art	494	35,415	29	2,198,793.39
	digital art	152	11,527	26	562,192.97
	illustration	658	125,899	26	7,617,559.68
	installations	7	1110	29	188,940.77
	mixed media	92	6717	26	410,450.14
	painting	54	7761	30	891,525.83
	performance art	14	2540	01	531,851.32
	public art	25	2286	30	297,294.11
	Sculpture	33	3271	27	351,546.65
	social practice	20	1378	30	158,321.30
	Textiles	23	4047	29	251,218.17
	video art	8	637	05	66,423.69
comics	graphic novels	2338	669,144	29	34,782,426.91
dance	dance	1367	90,446	23	7,302,683.56
	performances	1626	100,678	23	8,606,656.83
	residencies	127	6419	20	554,838.90
	spaces	93	10,074	22	1,043,785.50
	workshops	59	3169	25	282,334.26

Table 3. *Cont.*

Main Category	Detailed Category	Number of Campaigns	Number of Backers	Average Campaign Duration in Days	Campaign Profitability in USD
fashion	jewelry	616	50,181	21	4,568,444.84
film and video	narrative film	2257	487,842	26	47,507,147.04
	romance	82	6077	22	566,799.42
	science fiction	412	85,221	23	7,506,190.07
games	games	51	35,348	19	2,462,546.05
	gaming hardware	262	257,645	24	30,413,630.32
	live games	10	1229	31	109,664.97
	mobile games	5	2113	12	92,548.07
	playing cards	168	64,514	21	4,897,754.09
	puzzles	24	7798	21	517,103.64
	tabletop games	1352	1,393,194	16	113,999,051.57
	video games	122	206,962	23	9,827,824.51
music	classical music	1937	158,512	29	13,928,401.89
photography	animals	149	30,943	24	3,424,682.11
	fine art	708	49,860	23	4,723,761.69
	nature	242	23,957	25	2,435,551.70
	people	250	21,417	26	1,694,268.07
	photobooks	1058	168,445	26	16,364,353.13
	photography	434	58,047	27	9,147,290.89
	places	127	11,804	25	791,674.10
publishing	poetry	709	46,635	26	2,394,154.92
	radio and podcasts	570	152,192	27	7,335,097.90
	translations	49	7639	30	504,963.28
technology	wearables	626	563,938	30	83,124,663.17

Source: webrobots.io/kickstarter-datasets, data from 17 June 2021.

Table 4. List of categories and their weights.

Category	Name	Weight	Category	Name	Weight
graphic novels	K1	2338	playing cards	K22	168
narrative film	K2	2257	digital art	K23	152
classical music	K3	1937	animals	K24	149
Performances	K4	1626	places	K25	127
Dance	K5	1367	video games	K26	122
tabletop games	K6	1352	spaces	K27	93
photobooks	K7	1058	mixed media	K28	92
art	K8	938	romance	K29	82
poetry	K9	709	workshops	K30	59
fine art	K10	708	painting	K31	54

Table 4. *Cont.*

Category	Name	Weight	Category	Name	Weight
illustration	K11	658	games	K32	51
wearables	K12	626	translations	K33	49
jewelry	K13	616	sculpture	K34	33
radio and podcasts	K14	570	puzzles	K35	24
conceptual art	K15	494	textiles	K36	23
photography	K16	434	social practice	K37	20
science fiction	K17	412	performance art	K38	14
gaming hardware	K18	262	live games	K39	10
ceramics	K19	256	video art	K40	8
people	K20	250	installations	K41	7
nature	K21	242	mobile games	K42	5

Source: authors' own compilation based on webrobots.io/kickstarter-datasets, data from 17 June 2021.

It must be emphasized that when choosing only one platform to analyze, there is no need to systematize terminology, which would have to take place when examining multiple platforms, since practically each of them uses different (although often similar) nomenclature of categories or their internal structure. The study focuses only on those projects which were successful, thereby eliminating those campaigns which were canceled by the platform or by the creator, ongoing projects or failed ones. As a result, a dataset with 20,604 highly representative records was obtained.

The following tables contain the input data used in the study (Tables 5–7).

Ranges P1 to P41 represent the tiers in the attribute of the number of backers. The tier changes every 50 supporters and the last one represents the number of above 2000 people.

Ranges P1 to P31 represent the tiers in the attribute of the campaign duration. The tier changes every 2 days and the last one represents the duration of over 60 days.

Ranges P1 to P41 represent the tiers in the attribute of project's profitability. The tier changes every $1000, and the last one represents the amount of over $40,000. The amounts in US dollars were taken directly from the source databases.

The numerical values presented above were obtained by processing the source data in accordance with the established value ranges of the attributes. The "side" of the tables includes detailed project categories (K1, . . . , K42), sorted by decreasing weights, i.e., the number of projects in a given category. The "head" of the table shows ranges of the attributes: (P1, . . . , Pn). If in a given category there are projects within specified ranges, the number of these projects is placed at the intersection of the row and the column.

After the introductory stage, i.e., analyzing the crowdfunding attributes and preparing research data, the actual classification procedure can begin. First, it must be determined which classification method is adequate, that is, which best distinguishes various limitations or specific conditioning of the datasets.

In the general theoretical papers dedicated to the issues of classification, two basic concepts are present. The first is mainly represented by set theorists and mathematical logicians. According to the theory of Batley [68], classification understood as a whole is a "creation of the mind", in accordance with a certain accepted agreement. The existence of this whole raises many doubts about the structure of dependence on the mind that shapes it. The practical application of this concept causes many difficulties.

Table 5. Numerical input data in terms of the number of backers (categories/ranges).

Ranges	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	P11	P12	P13	P14	P15	P16	P17	P18	P19	P20	P21	P22	P23	P24	P25	P26	P27	P28	P29	P30	P31	P32	P33	P34	P35	P36	P37	P38	P39	P40	P41
Category																																									
K1	440	207	115	55	37	28	14	10	6	5	3	4	2	0	2	3	2	0	3	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
K2	108	64	42	18	10	4	1	2	0	0	2	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	2
K3	308	106	33	16	13	2	2	3	3	1	0	3	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0
K4	82	34	17	8	5	2	0	1	0	1	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
K5	233	143	93	45	26	30	16	12	5	9	4	1	7	4	6	0	3	1	1	2	1	1	0	0	0	1	1	0	0	1	0	0	2	1	0	1	0	0	1	1	6
K6	2	2	0	1	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
K7	50	22	10	5	0	3	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
K8	33	8	4	2	1	0	0	2	0	0	0	1	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
K9	4	4	1	0	1	1	1	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
K10	12	12	2	4	0	0	1	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
K11	14	2	1	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
K12	8	5	2	2	1	2	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
K13	4	2	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
K14	415	492	330	247	153	123	91	70	52	47	45	23	40	24	18	8	10	21	9	10	8	5	9	3	5	4	7	9	3	3	1	5	2	5	2	1	0	3	2	3	30
K15	717	442	106	60	22	6	6	3	2	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
K16	872	502	148	56	28	12	0	0	4	2	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
K17	29	35	11	8	3	2	1	1	0	0	0	0	1	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
K18	34	19	1	2	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
K19	345	156	43	22	10	9	9	2	4	3	0	3	2	2	0	2	0	1	1	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
K20	812	570	316	159	94	100	39	33	28	17	11	10	11	2	6	4	7	1	4	1	3	2	1	0	1	0	0	0	1	1	3	0	1	0	1	1	1	1	0	0	15
K21	53	16	5	3	1	2	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
K22	182	101	30	22	15	10	3	5	5	2	4	2	2	3	2	3	2	1	1	1	1	1	2	0	0	1	1	0	2	0	0	0	1	0	0	0	0	1	0	1	5
K23	14	7	3	1	7	3	3	1	0	0	1	0	0	0	1	0	0	1	0	1	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	1	5
K24	75	33	27	14	13	7	11	5	6	10	1	4	2	6	4	1	3	0	0	3	2	1	2	1	1	1	2	2	0	1	0	1	1	1	0	0	2	0	1	0	18
K25	2	2	3	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
K26	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
K27	22	25	19	20	9	10	6	10	5	4	3	4	3	3	3	4	0	1	1	1	3	2	1	1	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	1	5
K28	4	2	4	2	3	2	0	1	1	0	0	0	0	0	0	1	0	2	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
K29	130	189	168	123	103	67	66	40	32	29	25	34	26	17	23	18	15	6	8	7	8	4	6	6	4	6	2	7	6	4	5	4	8	7	3	2	2	2	5	3	132
K30	18	7	5	9	8	6	5	3	1	1	4	4	2	5	2	1	0	2	2	2	2	0	2	1	0	2	1	0	0	2	1	2	0	1	0	0	1	0	0	0	20
K31	917	639	207	91	25	19	8	4	4	4	1	1	2	1	0	1	0	0	1	1	0	0	0	0	1	1	1	0	1	1	0	1	0	0	0	0	0	0	0	0	5
K32	61	27	8	9	4	9	3	4	7	0	2	1	0	2	0	0	0	0	2	0	2	0	6	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
K33	454	135	52	23	11	13	4	2	0	0	3	0	0	0	0	2	0	4	2	0	1	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0

Table 5. *Cont.*

Ranges	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	P11	P12	P13	P14	P15	P16	P17	P18	P19	P20	P21	P22	P23	P24	P25	P26	P27	P28	P29	P30	P31	P32	P33	P34	P35	P36	P37	P38	P39	P40	P41
Category																																									
K34	124	60	22	9	4	7	4	4	2	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
K35	133	48	33	6	11	4	4	3	4	1	1	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
K36	312	225	162	106	73	58	32	17	13	12	8	6	2	6	4	2	1	5	1	1	1	2	0	1	1	1	1	0	0	0	0	1	0	0	0	0	0	1	0	0	3
K37	237	87	30	18	9	8	7	7	3	6	2	1	2	0	0	5	1	2	0	0	2	1	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	1	0	0	3
K38	78	26	8	4	4	2	2	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
K39	429	184	46	13	8	10	8	3	2	1	1	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0
K40	227	133	59	31	27	18	15	10	5	7	4	3	4	2	1	1	1	0	4	1	2	1	2	1	1	0	0	0	0	1	1	0	1	0	0	0	0	0	0	0	7
K41	19	12	2	2	5	2	1	1	3	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
K42	79	67	57	36	41	33	32	15	15	20	15	14	14	8	11	9	15	5	10	7	7	4	2	1	5	1	3	2	1	4	5	3	3	0	3	0	2	4	4	3	66

Source: authors' own compilation based on webrobots.io/kickstarter-datasets, data from 17 June 2021.

Table 6. Numerical input data in terms of campaign duration (categories/ranges).

Ranges.	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	P11	P12	P13	P14	P15	P16	P17	P18	P19	P20	P21	P22	P23	P24	P25	P26	P27	P28	P29	P30	P31
Category																															
K1	0	0	4	18	6	11	54	73	33	75	74	32	52	27	321	80	5	18	5	6	4	4	9	2	3	2	1	1	0	12	6
K2	0	1	0	1	0	1	9	2	5	5	10	9	17	11	103	35	15	8	0	3	0	0	6	0	1	0	1	0	0	13	0
K3	3	1	3	10	9	9	15	24	11	17	27	8	17	11	159	41	18	9	5	13	9	5	15	2	6	4	0	3	2	23	15
K4	0	0	0	1	1	3	5	8	4	11	11	2	5	6	54	17	3	6	4	1	1	0	2	0	1	3	0	0	4	2	1
K5	0	1	1	7	3	8	20	51	16	36	47	26	33	30	224	73	14	17	4	6	6	3	8	1	2	2	0	4	0	15	0
K6	0	0	0	0	0	0	0	1	1	0	0	0	0	0	2	1	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0
K7	0	0	0	0	2	2	5	4	5	4	6	2	5	4	24	11	2	2	2	3	0	3	2	0	0	0	0	0	0	4	0
K8	0	0	0	0	1	0	0	1	1	3	0	2	3	2	20	4	2	5	3	2	0	0	1	0	0	0	0	0	0	3	1
K9	0	0	0	1	0	0	0	0	1	0	1	0	0	1	5	0	0	0	1	0	1	1	0	0	0	0	0	0	0	2	0
K10	0	0	0	0	0	0	1	0	0	6	2	3	1	1	13	2	0	1	0	1	0	0	0	0	0	1	0	0	0	1	0
K11	0	0	0	0	0	0	1	1	0	0	1	0	0	1	7	3	2	0	1	1	0	1	0	0	0	0	0	0	0	0	1
K12	0	0	0	0	0	0	0	1	0	2	1	1	0	0	9	3	1	2	1	0	0	0	0	0	0	1	0	0	0	1	0
K13	0	0	0	0	0	0	0	0	0	0	0	0	1	0	4	0	0	0	0	0	0	0	1	1	0	0	0	0	0	1	0
K14	0	3	2	6	17	14	27	58	19	38	73	51	65	51	1041	389	104	91	47	44	17	20	46	4	7	5	4	3	4	68	20
K15	255	1	5	8	10	8	20	32	15	52	62	27	56	52	348	118	44	25	27	39	16	24	35	9	8	6	6	7	7	42	3
K16	334	2	1	10	13	11	14	36	21	35	76	40	69	55	403	120	63	69	33	34	13	13	34	7	10	12	4	3	6	72	13
K17	17	0	2	1	1	1	2	3	0	4	8	1	2	1	27	5	1	2	4	1	1	1	4	0	0	1	1	0	0	2	0
K18	11	1	0	0	0	0	1	1	2	1	2	0	2	3	13	10	2	0	0	1	0	0	2	0	1	0	0	0	1	5	0

Table 6. *Cont.*

Ranges.	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	P11	P12	P13	P14	P15	P16	P17	P18	P19	P20	P21	P22	P23	P24	P25	P26	P27	P28	P29	P30	P31
Category																															
K19	109	2	4	6	7	3	17	25	8	18	31	12	19	14	215	53	11	25	1	8	1	2	11	1	2	0	0	0	0	9	2
K20	414	1	1	7	15	8	18	38	17	44	73	30	68	52	677	182	73	84	37	57	29	20	83	17	14	20	7	8	9	92	62
K21	15	0	0	1	1	0	2	6	1	7	2	1	1	3	21	7	1	3	0	2	1	0	0	1	1	1	0	0	0	3	1
K22	84	1	1	4	2	3	12	7	5	15	7	11	12	13	115	34	14	12	3	11	5	3	11	2	0	1	2	2	2	17	1
K23	8	0	1	0	0	2	6	4	1	1	2	2	0	2	15	2	1	0	0	3	0	0	0	0	0	0	0	0	0	1	0
K24	56	0	0	0	1	1	2	5	0	5	7	5	4	4	92	26	6	9	4	9	3	3	5	2	1	0	0	0	0	11	1
K25	0	0	0	0	0	0	1	0	0	0	0	0	0	0	4	2	0	1	1	0	0	0	0	0	0	0	0	0	0	1	0
K26	2	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
K27	33	0	0	3	1	2	5	6	5	3	6	5	5	7	58	11	1	1	5	2	2	0	1	0	3	0	0	0	0	3	0
K28	3	0	0	1	0	0	0	2	0	1	1	1	2	1	10	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
K29	280	2	5	22	27	17	199	94	50	40	86	42	45	35	289	65	6	13	2	8	1	3	7	1	1	0	0	0	0	12	0
K30	28	0	0	0	0	0	1	2	0	0	1	1	4	2	54	13	1	3	3	0	1	0	3	0	0	0	0	0	0	5	0
K31	211	1	2	12	14	14	22	26	33	36	94	33	49	48	589	163	52	68	37	57	33	22	65	16	14	15	13	9	8	138	43
K32	17	0	0	2	2	0	8	5	0	2	8	6	10	7	42	14	1	6	0	5	3	1	0	0	0	0	0	0	0	8	2
K33	59	0	33	66	11	15	6	20	5	19	34	2	21	17	213	75	18	16	8	4	10	6	18	0	1	2	4	2	2	20	1
K34	34	0	0	3	3	2	5	4	5	5	7	5	8	9	75	31	4	3	5	5	1	2	11	0	0	2	0	0	0	5	8
K35	32	1	0	3	5	4	4	7	6	7	5	6	7	4	81	20	6	7	1	4	1	1	11	1	1	2	1	0	1	16	5
K36	110	2	20	16	9	5	3	17	11	15	51	19	22	34	387	111	36	40	20	20	6	7	31	7	6	3	3	1	1	38	7
K37	46	0	2	1	6	5	7	12	5	16	14	10	13	15	144	28	14	12	4	15	5	4	15	6	3	4	0	0	3	23	2
K38	16	0	0	2	2	2	1	6	1	6	1	5	2	4	43	11	5	4	0	1	1	0	3	1	3	0	0	1	0	5	1
K39	87	2	4	7	3	3	12	19	7	17	32	10	14	15	257	53	21	28	11	14	9	6	20	0	4	6	0	6	1	28	13
K40	67	0	3	4	2	5	10	10	5	12	22	6	16	9	211	50	18	13	3	10	11	8	20	1	2	5	3	2	2	33	7
K41	6	0	0	0	0	0	0	1	1	0	1	1	0	0	17	4	4	1	2	2	0	0	3	1	1	0	0	0	0	0	4
K42	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8

Source: authors' own compilation based on webrobots.io/kickstarter-datasets, data from 17 June 2021.

Table 7. Numerical input data in terms of project profitability (categories/ranges).

Ranges	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	P11	P12	P13	P14	P15	P16	P17	P18	P19	P20	P21	P22	P23	P24	P25	P26	P27	P28	P29	P30	P31	P32	P33	P34	P35	P36	P37	P38	P39	P40	P41
Category																																									
K1	167	258	233	205	167	154	126	87	90	63	67	52	40	44	33	34	36	30	24	18	27	17	18	18	13	20	16	17	9	9	15	10	9	4	10	9	3	4	3	3	176
K2	147	177	179	179	104	161	101	96	85	38	134	55	58	31	21	73	40	30	18	21	45	21	22	13	10	36	22	14	10	5	21	12	12	12	8	17	6	7	5	5	206
K3	168	275	242	210	157	181	110	95	87	37	88	25	39	22	15	32	26	9	9	5	9	11	5	3	3	8	4	1	2	0	7	5	3	2	5	3	2	3	1	0	28
K4	140	242	262	202	132	178	74	88	70	28	64	16	26	10	6	28	4	0	4	8	14	0	2	2	0	12	2	2	0	0	2	0	0	0	0	0	0	0	0	0	8
K5	124	229	220	195	116	136	54	52	42	19	48	15	22	8	6	21	4	2	4	3	8	3	3	1	2	6	1	2	0	0	1	5	1	0	1	3	0	0	2	1	7
K6	125	135	123	93	73	58	49	35	27	32	34	19	21	26	18	20	21	5	9	10	8	14	9	10	7	14	15	3	5	8	8	6	8	6	5	7	6	5	8	2	265
K7	134	78	66	53	48	62	39	31	36	28	30	28	26	25	27	21	22	21	18	15	17	11	15	14	10	13	10	11	12	11	13	8	4	3	4	6	3	4	5	1	75
K8	289	171	103	67	60	36	33	26	21	14	16	10	11	2	5	8	8	9	5	4	5	0	6	1	2	0	0	1	3	1	0	1	0	2	0	1	0	3	0	0	14
K9	245	145	126	61	24	32	15	6	7	3	7	4	7	2	1	1	2	2	2	2	2	0	0	0	0	2	1	1	0	1	0	0	0	0	0	2	0	0	2	0	4
K10	216	118	68	55	31	32	26	7	12	9	15	9	6	12	13	13	11	2	1	2	2	0	2	3	2	6	0	3	4	4	2	0	0	1	0	2	0	2	0	2	15
K11	140	116	66	42	26	25	22	21	20	15	14	12	17	6	8	10	9	2	8	2	3	2	2	1	3	2	3	3	2	2	0	4	1	0	1	1	0	2	2	3	40
K12	19	16	9	11	6	16	9	7	7	8	12	7	7	5	2	13	12	10	8	8	6	9	10	8	1	8	5	6	4	6	8	8	6	8	1	3	5	3	4	4	321
K13	190	108	66	41	18	21	27	11	11	13	8	11	7	2	4	8	4	4	6	3	4	2	2	2	4	3	2	5	0	0	1	2	0	1	1	1	1	0	0	1	21
K14	105	92	47	42	38	43	21	18	16	10	11	5	9	6	4	10	7	7	2	1	4	9	2	4	1	4	2	2	1	3	4	2	1	2	2	0	1	0	1	1	30
K15	144	103	60	51	28	25	10	9	9	5	6	3	8	4	1	4	4	2	1	0	4	1	0	1	3	0	0	0	0	0	0	1	0	0	2	0	1	0	0	0	4
K16	104	75	43	28	24	16	15	10	9	6	9	8	5	8	1	3	6	4	1	2	2	1	1	1	0	5	2	2	0	0	2	1	1	2	2	2	1	2	0	2	28
K17	44	62	35	32	22	29	15	15	11	8	14	4	5	10	3	9	9	1	7	2	7	3	2	2	0	5	2	2	2	1	2	3	1	0	1	0	0	0	0	0	42
K18	34	26	11	15	14	12	7	3	6	3	4	8	2	5	3	2	4	2	1	0	0	2	4	1	1	1	2	1	8	1	1	0	1	3	1	1	1	0	0	0	71
K19	27	29	27	22	24	16	13	13	10	4	9	4	7	4	2	5	3	2	3	2	2	1	1	0	2	6	1	1	2	0	0	1	0	0	1	2	1	0	1	1	7
K20	53	44	25	16	18	14	8	8	4	1	11	4	3	3	2	3	2	2	4	1	4	0	0	2	2	2	2	2	2	0	3	0	0	1	0	0	1	1	0	0	2
K21	57	40	18	23	19	6	4	3	4	7	2	2	4	3	6	8	1	3	2	2	0	0	1	0	0	6	0	0	0	0	2	0	2	2	0	2	0	2	0	0	11
K22	5	10	7	8	11	13	9	9	4	8	6	2	0	4	4	4	2	3	0	0	5	2	2	2	0	0	1	2	1	1	0	1	1	1	2	0	1	1	0	3	33
K23	60	28	19	6	13	4	4	3	2	2	3	1	0	0	2	0	0	0	1	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
K24	27	24	14	11	2	3	6	5	6	2	4	0	2	2	1	2	6	2	2	0	0	0	0	1	0	0	0	1	2	0	3	0	0	0	0	0	0	0	0	0	21
K25	41	23	17	9	5	4	3	2	2	0	4	4	0	0	0	0	1	0	2	4	0	1	1	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	2
K26	10	9	4	2	6	3	0	2	0	5	2	5	3	3	0	2	1	2	1	0	3	1	1	1	0	1	1	0	1	2	3	0	0	2	1	4	3	0	0	0	38
K27	6	5	6	4	9	7	7	4	4	2	6	6	4	2	0	2	4	1	2	0	1	2	1	0	0	1	0	0	0	0	2	0	0	0	0	0	0	0	0	0	5
K28	30	19	10	7	4	5	2	1	2	2	1	2	1	0	1	0	0	1	0	0	0	2	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	30	1
K29	19	13	10	7	4	5	4	6	1	1	1	0	1	1	0	1	0	1	0	1	0	2	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	2
K30	9	11	9	9	2	6	2	1	3	0	2	0	0	0	1	1	1	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table 7. *Cont.*

Ranges	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	P11	P12	P13	P14	P15	P16	P17	P18	P19	P20	P21	P22	P23	P24	P25	P26	P27	P28	P29	P30	P31	P32	P33	P34	P35	P36	P37	P38	P39	P40	P41
Category																																									
K31	12	10	4	5	3	3	3	2	1	0	2	0	0	0	0	0	0	1	0	2	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	4
K32	6	7	1	2	6	2	1	1	0	0	2	1	0	3	1	2	2	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	11
K33	3	7	5	6	1	4	5	1	1	0	3	1	2	0	0	0	0	0	2	1	0	1	1	0	0	1	0	0	0	1	0	0	0	0	1	0	0	0	0	0	2
K34	4	4	2	5	4	1	2	2	2	0	0	0	0	1	1	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	2
K35	0	3	0	1	2	2	1	1	2	0	0	1	1	0	0	1	2	0	0	0	0	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4
K36	3	3	2	0	0	3	2	1	0	1	0	2	1	2	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
K37	5	3	2	3	0	1	1	1	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
K38	2	2	1	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	4
K39	0	2	0	0	1	1	0	1	1	0	0	0	1	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
K40	1	2	1	0	0	1	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
K41	1	1	0	1	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1
K42	2	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1

Source: authors' own compilation based on webrobots.io/kickstarter-datasets, data from 17 June 2021.

The second concept, also known as the concept of linguistic classification, presents a more traditional approach to this issue. This approach is represented by Ishibuchi et al. [69], who believe that classifying is an act of dividing a set into classes. The result of this activity is a classification, i.e., a set of features with specific relations between their ranges and the classified set.

One of the basic logical requirements of correct classification is the postulate of being complete and disjoint. Being complete requires that each element belonging to the classified set must belong to at least one group (class), whereas being disjoint means that the scopes of individual classes should not overlap. Both postulates of logical correctness of classification require that each element within the scope of the classified set must belong to one and only one class, and therefore that neither element is omitted while classifying nor classified more than once.

Classification should also be rational. Rationality ensures the optimal implementation of the purpose for which this classification was created. The rationality of classification is subject to relativization with regard to the classified set and the purpose of the classification. A desirable feature of classification is also its clarity, i.e., how easy it is to navigate its structure. The use of classification as a tool for understanding reality improves the orientation in the apparent chaos of objects.

The academic literature [70,71] uses the terms "classification" and "component binding" interchangeably. The latter term is used especially when choosing the method of combining objects. There is, for example, multi-aspect binding (according to many criteria) and single-aspect binding (according to one criterion).

The so-called royalty, that is a measure of the closeness centrality (similarity) of elements, is usually assumed as the basis of classification. It should be noted that the selection of the similarity function does not significantly affect the result of binding. The measure of similarity has been successfully used by many authors of methods for classification and information retrieval. Some of these methods require determining a priori the target number of classes, e.g., factor analysis [72]. Other more classical methods, for instance, the Rocchio [73] algorithm or Hill [74] method, allow us to regulate the number of classes. The Vaswani method [75] uses indirect connections between the elements of future classes, and the method developed by Datolii [76,77] assumes that the set is a priori divided into so-called starting classes. Some methods are based on single-aspect classification, and others use more criteria, e.g., the Gitman–Lewine method [78]. This is the approach adopted in this article.

The criterion for qualitative evaluation of a particular binding algorithm is complex, subjective and dependent on predetermined parameters. Such parameters may include the number of elements, their coherence, the degree of internal homogeneity, etc. Unless an unequivocal division of the set into classes is given a priori by experts, each criterion for assessing the quality of the classification method is subjective. So far, many different criteria for optimizing classification methods have been developed, for example minimizing the entropy of a set or minimizing the risk function. However, these criteria are of little use in practice. Therefore, one often has to be content with the so-called quasi-optimal classification, the assessment of which is presented in a simplified manner.

It is important to emphasize that the type of classified objects does not affect the choice of method. What does, however, influence it is the required degree of accuracy, i.e., the number of classification criteria it takes into account and whether the order of the classified objects affects the final result.

For the purposes of further discussion, it is assumed that the name is a constant, non-measurable component of the object that makes up the terminology system. It identifies a given object in a set of similar objects in the convention of the adopted description language. It has a scheduling (from the point of view of its form), pragmatic (from the point of view of its use in information and decision-making processes) and semantic (from the point of view of the content of the name) meaning. Value, on the other hand, is a variable and

measurable part of the component, reflecting, for example, a measurement. Therefore, values can be considered, as already mentioned, as object occurrences.

Since solving the issue of data-identification methods is not the purpose of this paper, the identified list of data names (categories and attributes) was taken as a starting point for further considerations. The binding method should therefore meet the following conditions:

- It cannot depend on a set of bound components,
- The order in which the objects are bound would not affect the result of binding,
- The result of binding must be stable in the sense that a small change in the set of objects will also cause small changes in the result,
- Objects similar to each other must belong to the same class,
- The amount of average loss resulting from an incorrect assignment of an object to a given class should be minimal.

The analysis of binding methods leads to the conclusion that the method of binding derived from the designer and two-aspect approach will be the closest to the assumptions adopted in the paper. The designer aspect creates the possibility to bind components omitting the limitations resulting from the actual state of the tested system. The two-aspect feature allows us to include two key criteria of binding components: closeness and validity (weight).

Taking into account the above considerations, the presented methodology can be divided into the following stages:

1. Classification of project categories (K) according to the adopted attributes:
   - Presenting data from Tables 5–7 in the form of a (0,1) matrix KA (that is, category attribute), which will have the following structure:

$$KA = \begin{bmatrix} p_{11} & \cdots & p_{1j} \\ \vdots & \ddots & \vdots \\ p_{i1} & \cdots & p_{ij} \end{bmatrix}$$

   where p_{ij} = {1—when the category contains projects related to a given attribute within the specified range, 0—otherwise}
   - Transforming the KA matrix into the area of category proximity, also presented in the form of the matrix: BKA. The following proximity function was adopted as the basis for the transformation:

$$b\left(k_i,\ k_j\right) = \frac{p_i \cap p_j}{p_i \cup p_j}, \text{ where } b \in\ <0,\ 1>,$$

   - Based on this function, the pairs of categories from the KA area are compared and the logical conjunction and the logical disjunction equal to 1 are determined. The rows and columns of the BKA matrix correspond to the categories, and its elements are the values of the proximity function, the so-called closeness factors:

$$BKA = \begin{bmatrix} b_{11} & \cdots & b_{1j} \\ \vdots & \ddots & \vdots \\ b_{i1} & \cdots & b_{ij} \end{bmatrix}, \text{ wherein, for } i = j,\ b_{ij}\ = 1 \text{ is adopted,}$$

   It is worth emphasizing that the presented procedure does not use the conversion of the BKA matrix to a binary matrix, as in other methods, because this conversion, based on the assumption of a certain subjective threshold value, would reduce the accuracy of the formula.

2. Creating chains of K_w and K_b categories: the K_w chain consists of categories ordered by weight, and the K_b chain contains categories ordered by decreasing values of the

b function (diminishing similarities), i.e., k_i precedes k_j if $b(k_{1b}, k_{ib}) > b(k_{1b}, k_{jb})$. If $b(k_{1b}, k_{ib}) = b(k_{1b}, k_{jb})$, and then the k_{ib} category precedes the k_{jb} category if its weight $w(k_{ib}) > w(k_{jb})$. If, however, $w(k_{ib}) = w(k_{jb})$, then the order of the categories in the chain is arbitrary;

3. Comparing the components of so formed chains K_w and K_b, i.e., weight and category closeness chains in order to determine the minimum value of the mk parameter, i.e., the first category with a different i-th index in both chains. Tandems of previously equal categories will initially create a subset of the set of categories–the first class,

4. Cyclical repetition (until all the categories in the K_w and K_b chains are exhausted) of the following sequence of operations: categories with the mk index are selected from the K_w chain, that is, components with the lower index in the unequal tandem, and it is then checked whether the following is true:

- This category is a candidate for more than one of the classes created so far; if so, it will be included in only one, namely in the class in which there is the category with a higher weight in terms of function b;
- This category is not a candidate for any of the previously created classes; then it becomes the creator of a new class; afterwards, all the single-component classes are combined into one atypical class.

As a result of carrying out the classification procedures according to the three attributes, the following three groups of classes were obtained: KLP—class of project categories according to the number of backers, KLT—class of project categories according to the campaign duration, KLF—class of project categories according to profitability.

5. After carrying out the procedure three times, three sets of classes of categories similar in terms of the examined attributes are subjected successively (i.e., class by class), to the procedure of examining their similarity on a cross-basis, i.e., all sets of classes with each other. Then the strength of correlations between the attributes is determined, using the sample table (Table 8):

Table 8. Cross-arrangement of classes of the similarity of attributes: project profitability/campaign duration.

	KLT1	**. . .**	**KLTn**
KLF1	-	-	-
. . .	-	-	-
KLFn	-	-	-

Source: authors' own study.

The presented research methodology at the category level can also be used for analyzing each category separately, for the classification of projects submitted to it. This way more detailed information is obtained. Nevertheless, it should be emphasized that project categories are more stable within one given crowdfunding platform, hence their classifications and the analysis of attributes allow for greater generalizations when formulating conclusions.

4. Results

After applying the methodology described above and using the prepared source data, the following results were obtained (Tables 9–11).

Table 9. KA matrix: project categories according to the number of people backing the projects.

Ranges	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	P11	P12	P13	P14	P15	P16	P17	P18	P19	P20	P21	P22	P23	P24	P25	P26	P27	P28	P29	P30	P31	P32	P33	P34	P35	P36	P37	P38	P39	P40	P41
Category																																									
K1	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	0	X	X	X
K2	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	0	X	0	0	0	X	X	X	0	X	0	X	X	X	X	X	X	0	0	0	X
K3	X	X	X	X	X	X	X	X	X	X	X	X	X	0	X	0	0	X	X	0	0	0	0	X	X	X	0	X	X	0	X	0	0	0	0	0	0	0	0	0	X
K4	X	X	X	X	X	X	0	0	X	X	0	X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
K5	X	X	X	X	X	X	X	X	X	0	0	0	X	0	0	0	0	0	X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	X
K6	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
K7	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	0	X	X	X	X	0	0	0	0	0	X	0	0	0	0	0	X	0	0	X
K8	X	X	X	X	X	X	X	X	X	X	X	X	X	0	X	X	X	0	X	0	0	0	0	0	X	0	0	0	0	0	0	0	0	0	0	0	X	0	0	0	0
K9	X	X	X	X	X	X	X	X	X	X	X	0	0	0	X	0	0	0	0	0	0	X	0	0	0	0	0	0	X	0	0	0	0	X	0	0	0	0	0	0	0
K10	X	X	X	X	X	X	X	X	0	0	X	0	0	0	0	X	0	X	X	0	X	0	0	0	0	0	0	X	0	0	0	0	0	0	0	0	0	0	0	0	0
K11	X	X	X	X	X	X	X	X	X	X	X	X	X	X	0	X	X	X	X	X	X	X	0	0	0	X	X	0	0	X	0	0	X	X	0	X	0	0	X	X	X
K12	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	0	X	0	X	X	X	X	X
K13	X	X	X	X	X	X	X	X	X	X	X	0	X	X	X	0	X	0	X	0	0	0	X	0	0	0	X	0	0	0	0	0	0	0	0	0	0	0	0	0	0
K14	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	0	X	X	X	X	X	X	X	X	X	X	0	0	0	X	X	0	X	0	0	0	0	0	0	0
K15	X	X	X	X	X	X	X	X	X	0	X	0	X	0	0	0	0	0	0	X	0	0	0	0	0	0	0	0	0	0	0	X	0	X	0	0	0	0	0	0	0
K16	X	X	X	X	X	X	X	X	X	X	X	X	X	0	0	X	X	0	X	0	0	X	0	0	0	0	0	0	0	0	0	0	0	0	X	0	0	0	X	X	X
K17	X	X	X	X	X	X	X	X	X	X	X	X	X	X	0	X	X	X	X	X	X	X	X	X	0	0	X	X	0	X	0	0	0	X	0	0	0	X	0	X	X
K18	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	0	0	X	X	X	X	X	X	X	0	X	0	X	X	X	0	0	X	0	X	0	X	X
K19	X	X	X	X	X	X	X	X	0	0	X	X	0	0	0	0	0	0	0	0	0	X	0	0	0	0	0	0	0	0	X	0	0	0	0	0	0	0	0	0	X
K20	X	X	X	X	X	X	X	X	X	X	X	X	0	0	X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
K21	X	X	X	X	X	X	X	X	X	X	X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	X
K22	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	0	X	X	X	X	X	X	X	0	0	0	0	0	0	0	0	X	0	0	0	0	X	0	X
K23	X	X	X	X	X	X	0	X	0	X	X	0	0	0	X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
K24	X	X	X	X	X	X	X	X	X	0	X	X	0	X	0	0	0	0	X	0	X	0	X	0	0	X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
K25	X	X	X	X	X	X	X	0	X	0	0	0	0	0	0	0	0	X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	X
K26	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	0	X	X	X	X	0	X	X	0	X	X	0	0	X	X	X	0	X	0	0	X	0	X	0	0	X
K27	X	X	X	X	X	X	X	X	0	0	0	0	X	0	X	0	0	X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
K28	X	X	X	X	0	X	0	X	0	0	0	0	0	0	X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
K29	X	X	X	X	X	X	0	0	0	X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	X	0	0	0	0	0	0	0	0	0	0	0	0	0	0
K30	X	X	X	X	X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
K31	X	X	X	X	X	0	0	X	0	0	0	X	0	X	0	0	X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	X
K32	X	X	X	X	X	X	X	X	0	0	X	0	0	0	X	0	0	X	0	X	0	0	0	0	0	0	X	0	0	X	0	0	0	0	0	0	0	0	0	X	X
K33	X	X	X	X	X	X	X	X	X	0	0	0	0	0	0	0	0	0	0	X	0	X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table 9. *Cont.*

Ranges	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	P11	P12	P13	P14	P15	P16	P17	P18	P19	P20	P21	P22	P23	P24	P25	P26	P27	P28	P29	P30	P31	P32	P33	P34	P35	P36	P37	P38	P39	P40	P41
Category																																									
K34	X	X	X	X	0	0	X	0	X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
K35	X	X	X	X	X	X	0	X	X	0	0	0	0	0	0	X	0	X	0	0	X	0	X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
K36	X	X	X	X	X	X	0	X	X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
K37	X	X	X	X	0	X	X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
K38	X	X	X	0	X	X	X	0	X	0	0	0	0	0	X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
K39	X	X	X	X	X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
K40	X	X	X	0	0	X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
K41	X	X	0	X	0	X	0	0	0	0	X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
K42	X	X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	X	0

Source: authors' own study.

Table 10. KA matrix: project categories according to the duration of the campaign.

Ranges	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	P11	P12	P13	P14	P15	P16	P17	P18	P19	P20	P21	P22	P23	P24	P25	P26	P27	P28	P29	P30	P31
Category																															
K1	0	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
K2	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
K3	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
K4	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	0
K5	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
K6	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	0	X	0	0	0	0	X	0
K7	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
K8	0	0	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	0	0	X	X
K9	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	0	X	X
K10	X	0	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	0	X	X	X	0	X	X	0
K11	0	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	0	X	0	X	0	0
K12	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	0	0	0	0	X	0

<div align="center">Table 10. <i>Cont.</i></div>

Ranges	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	P11	P12	P13	P14	P15	P16	P17	P18	P19	P20	P21	P22	P23	P24	P25	P26	P27	P28	P29	P30	P31
Category																															
K13	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
K14	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	0	X	X	X
K15	X	0	X	0	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	0	X	X	0
K16	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	0	X	X	X	0
K17	X	0	0	0	X	X	X	X	0	X	X	X	X	X	X	X	X	X	X	X	0	X	X	X	0	0	0	0	X	X	0
K18	0	X	0	X	0	X	X	X	X	X	X	X	X	X	X	X	X	X	0	X	0	0	X	0	X	0	X	0	0	X	0
K19	X	X	0	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	0	X	X	X	0
K20	X	0	X	X	X	0	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	0	X	0	0	0	0	X	X
K21	X	0	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	0	X	0	X	0	0	0	0	0	X	0
K22	0	0	0	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	0	0	X	0	X	X	0	0	0	X	0
K23	X	0	0	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	0	X	X	X	0	0	0	0	0	0	X	0
K24	X	X	0	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	0	X	X	0	X	X	X	0	0	X	X	0
K25	X	0	0	0	0	0	X	X	0	0	X	X	X	X	X	X	X	0	X	X	0	X	0	X	0	0	0	0	0	X	0
K26	X	0	X	X	X	X	X	X	0	X	X	X	X	X	X	X	X	X	X	X	X	X	X	0	X	0	X	0	0	X	0
K27	0	0	0	0	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	0	0	0	0	0	0	X	0
K28	X	0	0	X	X	0	X	X	X	X	X	0	X	X	X	X	0	X	0	X	X	0	X	0	X	X	0	0	0	X	0
K29	X	X	0	0	0	0	X	X	X	X	X	0	X	X	X	X	X	0	0	X	0	0	X	0	X	0	0	0	X	X	0
K30	0	0	0	0	X	0	0	X	X	X	0	X	X	X	X	X	X	X	X	0	0	X	0	0	0	0	0	0	0	X	0
K31	X	0	X	0	X	X	X	X	X	X	X	X	0	X	X	X	X	0	0	X	0	0	0	0	0	0	0	0	0	X	0
K32	X	0	0	0	0	0	X	0	X	0	X	X	0	0	X	X	X	X	X	X	0	0	X	X	X	0	0	0	0	X	X
K33	0	0	0	0	0	0	X	0	0	X	X	X	X	X	X	0	0	X	0	X	0	0	0	0	X	0	0	0	0	X	0
K34	X	0	0	X	0	0	X	X	0	X	X	X	X	X	X	0	0	X	0	0	0	0	0	0	0	0	0	0	0	0	0
K35	0	0	0	0	0	0	0	X	0	X	X	X	0	0	X	X	X	X	0	0	0	0	0	0	0	X	0	0	0	X	0

Table 10. *Cont.*

Ranges	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	P11	P12	P13	P14	P15	P16	P17	P18	P19	P20	P21	P22	P23	P24	P25	P26	P27	P28	P29	P30	P31
Category																															
K36	0	0	0	0	0	0	X	0	0	0	X	0	0	X	X	X	X	0	X	X	X	0	0	0	0	0	0	0	0	X	0
K37	0	0	0	X	0	0	0	0	X	0	X	0	0	X	X	0	0	0	X	0	X	0	0	0	0	0	0	0	0	X	0
K38	0	0	0	0	0	0	X	0	0	0	0	0	0	0	X	X	0	X	X	0	0	0	0	0	0	0	0	0	0	X	0
K39	0	0	0	0	0	0	0	0	0	0	0	0	X	X	X	0	0	0	0	0	0	0	X	X	0	0	0	0	0	X	0
K40	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	X
K41	0	0	0	0	0	0	0	X	0	0	0	0	0	0	X	0	0	0	0	0	0	0	X	0	X	0	0	0	0	0	0
K42	X	0	X	0	0	0	0	0	0	0	0	0	0	0	X	0	0	X	0	0	0	0	0	0	0	0	0	0	0	0	0

Source: authors' own study.

Table 11. KA matrix, in terms of project categories according to profitability.

Ranges	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	P11	P12	P13	P14	P15	P16	P17	P18	P19	P20	P21	P22	P23	P24	P25	P26	P27	P28	P29	P30	P31	P32	P33	P34	P35	P36	P37	P38	P39	P40	P41
Category																																									
K1	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
K2	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
K3	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	0	X	X	X	X	X	X	X	X	X	X	0	X
K4	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	0	X	X	X	0	X	X	0	X	X	X	0	0	X	0	0	0	0	0	0	0	0	0	X
K5	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	0	0	X	X	X	0	X	X	0	0	X	X	X	X
K6	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
K7	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
K8	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	0	X	X	X	0	0	X	X	X	0	X	0	X	X	0	X	0	X	0	X	0	X
K9	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	0	0	0	0	X	X	X	0	X	0	0	0	0	0	X	0	0	X	0	X	0	X
K10	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	0	X	X	X	X	0	X	X	X	0	0	X	0	X	0	X	0	X	0	X	X	X
K11	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	0	X	X	0	X	X	0	X	X	X	X	X	X
K12	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
K13	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	0	0	X	X	0	X	X	0	X	X	X	0	0	X	X	X
K14	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	0	X	0	X	X	X	X
K15	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	0	X	X	0	X	X	0	0	0	0	0	0	X	0	0	X	0	X	0	0	0	X

Table 11. *Cont.*

Ranges	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	P11	P12	P13	P14	P15	P16	P17	P18	P19	P20	P21	P22	P23	P24	P25	P26	P27	P28	P29	P30	P31	P32	P33	P34	P35	P36	P37	P38	P39	P40	P41
Category																																									
K16	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	0	X	X	X	0	0	X	X	X	X	X	X	X	X	0	X	X	X
K17	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	0	X	X	X	X	X	X	X	0	X	0	0	X	0	0	0	0	X
K18	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	0	0	X	X	X	X	X	X	X	X	X	0	X	X	X	X	0	0	X	X	X	0	0	X
K19	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	0	X	X	X	X	X	0	0	X	0	0	X	X	X	0	X	X	X	0	X	X	X
K20	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	0	0	X	X	X	X	X	0	X	0	0	X	0	0	X	X	0	0	X	0	X
K21	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	0	0	X	0	0	X	0	0	0	0	X	0	X	X	0	X	0	X	0	0	0	X
K22	X	X	X	X	X	X	X	X	X	X	X	0	X	X	X	X	X	0	0	X	X	X	X	0	0	X	X	X	X	0	X	X	X	X	0	X	X	0	X	X	X
K23	X	X	X	X	X	X	X	X	X	X	X	0	0	X	0	0	0	X	0	X	0	X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	X
K24	X	X	X	X	X	X	X	X	X	X	X	0	X	X	X	X	X	X	X	0	0	0	0	X	0	0	0	X	X	0	0	X	0	0	0	0	0	0	0	0	X
K25	X	X	X	X	X	X	X	X	X	X	0	X	X	0	0	0	0	X	0	X	0	X	0	X	0	0	0	X	X	0	0	0	0	0	0	0	0	0	0	0	X
K26	X	X	X	X	X	X	0	X	0	X	X	X	X	X	0	X	X	X	X	X	0	X	X	X	X	0	X	X	0	X	X	X	0	0	X	X	X	X	0	0	X
K27	X	X	X	X	X	X	X	X	X	X	0	X	X	X	0	X	X	X	X	X	0	X	X	X	0	0	X	0	0	0	0	X	0	0	0	0	0	0	0	0	X
K28	X	X	X	X	X	X	X	X	X	X	X	X	X	0	X	0	0	X	0	0	0	X	0	X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	X
K29	X	X	X	X	X	X	X	X	X	X	X	0	X	0	X	0	X	0	X	0	X	0	X	0	0	0	0	0	X	0	X	0	0	0	0	0	0	0	0	0	X
K30	X	X	X	X	X	X	X	X	X	0	X	0	0	0	X	X	X	0	0	0	0	0	0	0	0	X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
K31	X	X	X	X	X	X	X	X	X	0	X	0	0	0	0	0	0	X	0	X	0	0	X	0	0	0	X	0	0	0	0	0	0	0	0	0	0	0	0	0	X
K32	X	X	X	X	X	X	X	X	0	0	X	X	0	X	X	X	X	X	0	X	X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	X
K33	X	X	X	X	X	X	X	X	X	0	X	X	X	0	0	0	0	0	X	X	0	X	X	0	0	X	0	0	0	X	0	0	0	0	X	0	0	0	0	0	X
K34	X	X	X	X	X	X	X	X	X	0	0	0	0	X	X	X	0	0	X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	X	0	0	0	0	0	X
K35	0	X	0	X	X	X	X	X	X	0	0	X	X	0	0	X	X	0	0	0	0	X	X	X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	X
K36	X	X	X	0	0	X	X	X	0	X	0	X	X	X	0	0	X	0	0	X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	X
K37	X	X	X	X	0	X	X	X	0	0	0	0	0	0	0	0	0	X	0	X	0	0	0	0	0	0	X	0	0	0	0	0	0	0	0	0	0	0	0	0	X
K38	X	X	X	X	X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	X	0	0	0	X	0	0	0	0	0	0	0	0	0	X
K39	0	X	0	0	X	X	0	X	X	0	0	0	X	X	0	0	0	0	0	0	0	0	0	X	0	0	0	0	0	0	0	X	0	0	0	0	0	0	0	0	0
K40	X	X	X	0	0	X	0	0	0	0	X	0	0	0	0	0	0	X	0	0	0	0	0	0	0	0	0	0	X	0	0	0	0	0	0	0	0	0	0	0	0
K41	X	X	0	X	0	0	0	0	0	X	0	0	0	0	0	0	X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	X	0	0	0	X
K42	X	0	0	0	0	0	X	0	0	0	0	0	0	0	0	0	X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	X

Source: authors' own study.

The specified 42 detailed categories of projects (Table 9) were grouped into six classes of similar categories after carrying out the classification procedure:

- KLP1 = {K14, K25, K27, K28, K29, K30, K42},
- KLP2 = {K6, K9, K10, K17, K23, K26},
- KLP3 = {K2, K5, K12, K20, K24, K36},
- KLP4 = {K1, K15, K16, K22, K31, K40, K41},
- KLP5 = {K4, K7, K13, K18, K19, K32, K34, K35, K39},
- KLP6 = {K3, K8, K11, K21, K33, K37, K38}.

When analyzing the six classes of project categories according to the number of backers, it can be noticed that the number of categories in a given class is similar, and it ranges from seven to nine categories; that is, the number of supporters in the established ranges is similar. On the other hand, categories grouped by this attribute formed classes that were quite loosely related to each other thematically, for example KLP4 = {K1 (comics), K15 (conceptual art), K16 (photography), K22 (playing cards), K31 (painting), K40 (video art), K41 (mobile games)} or KLP6 = {K3 (classical music), K8 (art), K11 (illustrations), K21 (nature), K33 (translations), K37 (social practice) and K38 (performance art)}.

The specified 42 detailed categories of projects (Table 10) were grouped into five classes of similar categories after carrying out the classification procedure:

- KLT1 = {K17, K19, K20, K23, K24, K27, K30, K34},
- KLT2 = {K15, K16, K18, K21, K22},
- KLT3 = {K28, K31, K32, K33, K35, K36, K37, K38, K39, K40, K41},
- KLT4 = {K1, K2, K3, K4, K5, K7, K8, K9, K10, K11, K12, K13, K14, K25, K42},
- KLT5 = {K6, K26, K29}.

The project categories, classified according to the campaign duration, created five classes with greater than previously numerical variation within the class, namely from 3 to 15 categories. The thematic connection within classes is greatest in KLT5 = {K6 (board games), K26 (video games), K29 (romances)}, and the weakest in KLT1 = {K17 (science fiction), K19 (ceramics), K20 (people), K23 (digital art), K24 (animals), K27 (spaces), K30 (workshops) and K34 (sculpture)}.

The specified 42 detailed categories of projects (Table 11) were grouped into five classes of similar categories after carrying out the classification procedure:

- KLF1 = {K6, K12, K18, K22, K26, K27, K32, K35, K38, K41, K42},
- KLF2 = {K1, K2, K7, K17, K24, K34},
- KLF3 = {K3, K4, K5, K19, K30, K33},
- KLF4 = {K11, K14, K16, K21, K31, K37},
- KLF5 = {K8, K9, K10, K13, K15, K20, K23, K25, K28, K29, K36, K39, K40}.

When analyzing five classes of project categories according to profitability, it can be noticed that the number of categories in a given class is different than in the case of the previous attributes, as it ranges from 6 to 13 categories, with three out of seven classes having an equal number of categories (six each). The thematic scope is quite varied in all classes, for example KLF3 = {K3 (classical music), K4 (performances), K5 (dance), K19 (ceramics), K30 (workshops) and K33 (translations)}.

The results of the cross-interaction of the grouped classes are shown in Tables 12–14. The following ranges were included:

- >0.9–very strong correlation,
- 0.7–0.9–quite strong correlation,
- 0.4–0.7–moderate correlation,
- 0.2–0.4–weak correlation,
- <0.2–no correlation.

Table 12. Results of the similarity study on a cross-basis of the class set KLF-KLT.

	KLT1	KLT2	KLT3	KLT4	KLT5
KLF1	1	2	4	2	2
KLF2	3	0	0	3	0
KLF3	2	0	1	3	0
KLF4	0	2	2	2	0
KLF5	2	1	4	4	1
	0.28				
	−0.88	0.91			
	−0.94	0.77	0.19		
	0.08	−0.46	−0.92	−0.22	
	−0.61	0.16	−0.22	−0.51	−0.41

Source: authors' own study.

Table 13. The results of the similarity study on a cross-basis of the class set KLP-KLT.

	KLT1	KLT2	KLT3	KLT4	KLT5
KLP1	2	0	1	2	1
KLP2	2	0	0	2	2
KLP3	2	0	1	3	0
KLP4	0	3	3	1	0
KLP5	2	1	3	3	0
KLP6	0	1	3	3	0
	−0.53				
	−0.41	0.56			
	−0.77	0.62	0.34		
	0.15	−0.33	−0.64	0.12	
	−0.51	0.26	−0.06	−0.41	−0.3
	−0.59	0.43	0.1	−0.28	−0.41

Source: authors' own study.

The following sets of similar classes were obtained according to the strength of the correlation:

- >0.9 = {KLF2-KLT2},
- 0.7–0.9 = {KLF3-KLT2},
- 0.4–0.7 = {},
- 0.2–0.4 = {KLF1-KLT1},
- < 0.2 = {KLF2-KLT1, KLF3-KLT1, KLF4-KLT1, KLF5-KLT1, KLF4-KLT2, KLF5-KLT2, KLF3-KLT3, KLF4-KLT3, KLF5-KLT3, KLF4-KLT4, KLF5-KLT4, KLF5-KLT5}.

After carrying out subsequent classification procedures, it was found that the profitability and campaign duration attributes have similar category classes with the correlation strength >0.9 and 0.7–0.9 in two cases. However, most of these tandems, namely eighteen, have the correlation strength of <0.2.

Table 14. Results of the similarity study on a cross-basis of the class set KLP-KLF.

	KLF1	KLF2	KLF3	KLF4	KLF5
KLP1	2	0	1	1	3
KLP2	2	2	0	0	3
KLP3	1	2	1	0	2
KLP4	2	0	0	2	2
KLP5	3	2	2	0	2
KLP6	1	0	2	3	1
	0.62				
	0.79	0.27			
	0.42	0.76	0.43		
	0.65	−0.67	0.33	0.61	
	0	0.25	0.49	−0.61	0.58
	−0,31	−0.48	−0.16	0.69	−0.72

Source: authors' own study.

The following sets of similar classes were obtained according to the strength of the correlation:

- >0.9 = {},
- 0.7–0.9 = {},
- 0.4–0.7 = {KLP2-KLT2, KLP3-KLT2, KLP6-KLT2},
- 0.2–0.4 = {KLP5-KLT2, KLP3-KLT3},
- <0.2 = {KLP1-KLT1, KLP2-KLT1, KLP3-KLT1, KLP4-KLT1, KLP5-KLT1, KLP4-KLT2, KLP4-KLT3, KLP5-KLT3, KLP6-KLT3, KLP4-KLT4, KLP5-KLT4, KLP6-KLT4, KLP6-KLT5}.

The following attributes were used: the number of backers and the campaign duration were grouped—as a result of carrying out the classification procedure—into similar classes of categories with the correlation strength of 0.4–0.7 and 0.2–0.4 (five tandems) and <0.2 (thirteen tandems). The study has shown that there was no great correlation between these attributes, as the ranges >0.9 and 0.7–0.9 are empty sets.

The following sets of similar classes were obtained according to the strength of the relationships:

- >0.9 = {},
- 0.7–0.9 = {KLP2-KLF1, KLP3-KLF2},
- 0.4–0.7 = {KLP1-KLF1, KLP3-KLF1, KLP4-KLF1, KLP3-KLF3, KLP5-KLF3, KLP4-KLF4, KLP6-KLF4, KLP5-KLF5},
- 0.2–0.4 = {KLP2-KLF2, KLP5-KLF2, KLP4-KLF3},
- <0.2 = {KLP5-KLF1, KLP6-KLF1, KLP4-KLF2, KLP6-KLF2, KLP6-KLF3, KLP5-KLF4, KLP6-KLF5}.

On the other hand, the correlation between the attributes of the number of backers and project profitability turned out to be quite strong and moderately strong in ten cases, and weak in three compared classes. No correlation occurred in seven cases.

5. Discussion

The literature review has allowed for a conclusion that certain attributes of crowdfunding were separately analyzed in a few studies. It is true that some elements of taxonomy and clustering methods used to analyze and forecast the success or failure of projects are contained in the abovementioned paper by Fernandez-Blanco et al. [63], but no clear-cut solution has been presented for examining the relationships of attributes in terms of similarity or classification of their groups, which were created by taking into account various criteria.

The results of this study can be viewed as a supplement to the research presented by Usman et al. [61] concerning the problem of information asymmetry in decision-making processes in crowdfunding. As already mentioned, the lack of "fairly" available information is particularly noticeable here, and when such a situation occurs, decisions can be highly influenced by emotions or the first impressions, as discussed by Schraven et al. [64]. The analysis and classification of crowdfunding attributes presented in this paper provides a large amount of information that may constitute the basis for more rational decisions, especially taking into account that the research results are presented in various cross-sections, and the obtained category classes of projects or attributes make it possible to capture their similarity and the strength of correlation.

Therefore, it can be concluded that the purpose of this study was achieved, and the proposed approach with the use of the classification method, as well as the results of crowdfunding research, contributes to the current state of knowledge in the field of behavioral economics. These results may be helpful in the decision-making process, which is influenced by emotions, certain sympathies or preferences, especially in a situation of information asymmetry.

The aim of the article was to analyze selected crowdfunding attributes: project categories, the number of people backing the project, the duration of the campaign, the profitability of the project and the rewards offered, as well as their mutual classification, i.e., the creation of classes of similar attributes.

The first part of the research concerned establishing the names of the main and detailed categories by extracting them from the general fields of the source data. The remaining attributes were analyzed in terms of data availability and comparability in the projects. At this stage, one attribute was eliminated from further stages of the research, namely backer rewards, since this attribute did not meet the condition of comparability. Then, the value ranges of the attributes were specified by analyzing the various distributions of their values multiple times.

The numerical data prepared in this way were subjected to the classification procedure, developed in accordance with the specifics of dataset research, and three groups of project category classes were obtained, and they are similar in terms of each of the three attributes.

The second part of the research concerned the cross-correlations within the created category classes, but according to different attributes and the determination of the strength of their dependence on each other.

As it has already been emphasized, the results of this study, apart from the scientific aspect, also have a practical application. This is important because the information provided by platform owners is, in many cases, insufficient for the participants in the crowdfunding process, i.e., for the platform owners themselves, the creators of projects posted on them and for people backing projects or considering such a possibility, including potential investors.

For example, the Kickstarter platform makes information available by presenting it according to the following criteria:

- Popularity of the project,
- The number of people backing the project,
- Duration of the campaign of a given project (ending or newest),
- Geographically closest projects that can be supported,
- The highest-financed projects,
- The most frequently financed projects (according to the number of donors),
- Project status (active, successful, failed and canceled).

There are, however, no analyses or exploration of knowledge helpful for the participants of the crowdfunding process. It is easy to notice that a vast majority of these are very detailed pieces of information, provided at the level of individual projects. On an average day there are tens of thousands projects with the "active" status only on this one studied platform. As it transpires from the analyzed literature [36–39], the platform owners themselves, despite the use of robots crawling this immense amount of data, would be

interested in information provided in various cross-sections and at different levels of detail, which would encourage both project creators and backers (including investors) to choose this platform, which in turn could entail financial success. The research results presented here, and especially the methodology of obtaining them, for example every day or week, could significantly improve the information offer of the platform (Table 3).

The aforementioned investors, who, unlike a large group of backers, want to generate income on their—hopefully correct—decision to invest in a group of projects, will find in the presented overviews information about the categories of projects that quickly become financially successful, about the correlation (defined on a five-point scale) between the amount of money collected and the duration of the campaign (Table 12) or the strength of the correlation between the duration and the number of people backing projects in a given category (Table 13). These data can also be obtained from a historical perspective by repeating selected classifications at desired intervals, which is of particular importance in strategic decisions.

The project creator, on the basis of selected overviews, can choose the category to which they want to submit their project, not only on the basis of its name but also on the information whether it is in a class supported by a significant number of people (Table 13) or in the one where the projects become financially successful the fastest (Tables 7 and 14). Of course, the name of the category should reflect the contents of the specific project, but the owner can choose, for example, between Category 8 (art) or 31 (painting) or between Category 20 (people) or 37 (social activity).

In-depth knowledge exploration may also be very helpful for project creators in determining the desired duration of the campaign or financing tiers (which should obviously be performed in accordance with the planned project budget), and also in deciding what type of financing to allow, e.g., flexible or fixed (Table 7). Project backers will be able to assess their decisions, for instance, taking into account the duration of the campaign (Table 6), which categories of projects achieve financial success in similar time periods (Tables 7 and 10), or which were supported by similarly sized groups of people (Tables 5 and 11). Moreover, when going to the project level within a category (which is possible thanks to the presented methodology), it would be possible to compare thematically similar projects according to selected attributes.

6. Conclusions

It should be noted that the analysis of crowdfunding attributes and the course of the classification procedure have allowed to confirm the first research hypothesis with regard to four selected attributes—project category, the number of backers, campaign duration and project profitability—since after determining their weights, it was possible to group them using the assumed similarity measure.

On the other hand, the "reward" attribute was not subjected to the classification procedure–it turned out to be impossible to clearly identify their names and (especially) weights, due to the great variety of rewards, varying time periods, or whether their number was limited. Moreover, there was practically no repeatability of rewards in projects. This problem is explained in more detail in Section 3 of this paper.

The second research hypothesis was also positively verified as subsequent classification procedures, the so-called cross-classification procedures, were carried out, and the obtained results allowed to demonstrate the strength of mutual correlation of attributes.

The aim of the article has been achieved for four out of the five crowdfunding attributes. It has been shown that the attributes can be classified using the presented procedure based on two parameters: closeness (similarity) and category weights.

Based on the research results included in the tables and class chains of project categories and their cross-comparisons, we can conclude the following:

- Project categories classified according to the selected attributes are combined into classes of different sizes, which means that they belong to different ranges of the

attributes' values, and the number of classes within the attributes is similar (here: five and six).

- After carrying out the majority of the classification procedures, the weights assigned to the categories are no longer relevant, as they are assigned to different classes whose thematic scope is very wide.
- The correlation between the studied attributes was the highest in the tandem of profitability—campaign duration in two category classes, and the weakest in the tandem of the number of backers and campaign duration; the maximum correlation amounted to 0.4–0.7.
- The correlation was the weakest in the tandem of the number of supporters and duration of the campaign, as 14 pairs of classes show no correlation whatsoever.

One research limitation may be basing the analyses and classification of crowdfunding attributes on only one platform. Kickstarter is the leading platform due to the number of projects posted there and the number of successful projects, but each platform has its own specificity, subject, nomenclature and number of categories. It may result in the necessity to modify the input data before running the classification procedures according to the presented algorithm. The weaknesses of the conducted research include the omission of the "reward" attribute, which was explained in Section 3 of this article. However, it does not have any essential significance in relation to the general interpretation of the obtained results.

These research findings may prove useful in facilitating the decision-making process of all crowdfunding partners: crowdfunding platform owners, project owners and creators, and people considering backing certain projects, including strategic investors.

The prognoses for crowdfunding seem very promising (according to fundly.com), thus it is worth proposing future research directions for this phenomenon of social energy. They may concern the following, among others:

- Comparing and analyzing the specificity of small and large crowdfunding platforms,
- Analyzing crowdfunding models according to their various attributes,
- Changes and trends in creating project categories,
- The issue of rewards; the possibility of limiting them to a certain framework; and analyzing whether their various combinations and changes have the desired (financial) effect, whether rewards are so important to project backers that they should be offered in a certain form, or whether the backers are also lost in their analysis.

The authors of this paper intend to further study the fascinating world of crowdfunding with its many aspects, traps and victories, and, at the same time, we wish our dear colleagues good luck in discovering the secrets of sharing economy.

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