The potential of digitalization for increasing members' satisfaction of Bulgarian cooperatives

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Abstract. Decades after the establishment of the first modern agricultural cooperative in Bulgaria, we are observing a continuous increase in its number, then we see a decline until nowadays. In periods, when the members’ satisfaction is higher, we notice increasing of the number of cooperatives and vice versa. In each period the relation between members’ satisfaction, cooperative values and principles and existing and operating governance structures differs seriously. We identified three historical periods for this development: pre socialism, socialism and post socialism.

This paper is concentrated on the measuring the members satisfaction and to show the potential of using the new technologies (digitalization) for increasing the members satisfaction. For this purpose, we will try to evaluate the influence and application of the governance structure and cooperative values and principles on members’ satisfaction. It our research we argue that the members’ satisfaction is higher when the governance structure of the cooperative fits with the cooperative values and principles. For this fit we stand that the digitalization can contribute to the recovery of members involvement and transparency.

The methodology of the research comprises qualitative and quantitative methods. The qualitative method includes in depth interviews, observations and narrative analysis. We use Analytic Hierarchy Process (AHP) as instrument for quantitative valuation of governance structures according to the cooperative values and principles as a criterion and will use it to measure member satisfaction in each historical period.

Keywords: digitalization, members’ satisfaction, cooperatives, cooperative values and principles

1. Introduction

Despite the deep historical roots of the Bulgarian modern cooperatives and some decades of a continuous increase in their number, we observe a decline until nowadays. We identify three historical periods for this development: pre socialism, socialism and post socialism. In periods, when the members’ satisfaction is higher, we notice increasing of the number of cooperatives and vice versa. In each period the relation between members’ satisfaction, cooperative values and principles and existing and operating governance structures differs seriously.

The aim of this paper is to evaluate the impact and the application of cooperative values and principles on members’ satisfaction as a main reason for the observed decrease of the number of
cooperatives (Figure 3). We also will make an analysis of the potential of the digitalization to contribute to the recovery of members involvement and transparency.

The research proceeds from the assumption that the satisfaction of cooperative members is closely related to the practical application of the cooperative values and principles. If the cooperative values and principles are accurately followed, then the members ‘satisfaction increases and the cooperative enterprise is more sustainable. When some cooperative values and principles are not applied, the members are not satisfied and that can explain the decrease in the number of members and cooperatives over time. The digitalization can help for the intact practical application of the cooperative values and principles.

Historically, cooperative development in Bulgaria can be divided into three periods:

- First period (pre socialism) - from the establishment of the first cooperative in 1890 to 1944;
- Second period (socialist) - from 1945 to 1989;
- Third period (post socialism) - since 1990.

In our previous studies we have found [1-3] some strong relations between members' satisfaction and cooperative values and principles and their reflection in the cooperative governance structure. On this basis, we claim that members' satisfaction is higher when the cooperative governance structure corresponds with cooperative values and principles.

For each of the periods we will construct a hypothesis that we will try to measure and prove in the empirical part of the study.

H1: The pre socialist period applies the cooperative values and principles to the greatest extent. Because of that, the members’ satisfaction is high and the cooperatives are developing positively and the member is in the focus of the cooperative governance structure. The members involvement and the transparency are very high.

H2: The socialist period is characterized by values and principles that lead to compulsory membership and centralized cooperative governance structure, which focuses on the needs of communist party and communist government. Thus, the member got only the role of endorsing the decisions of the communist party and its government which is why the members’ satisfaction went to the lowest level. This is one of the reasons, why members abominate this type of organization, which also reflects on the negative image of the cooperative in the post-socialist period. The members involvement and the transparency are very low.

H3: The post socialist period practically applies in low degree the values and principles (even though they exist on paper and are presented in the cooperative governance structure and try to change the focus formal on the member, but informal, the focus is on the chairman and his management team), which is why the members are not satisfied and their number decreases as the number of cooperatives. Although the members involvement and the transparency seem higher than in the socialist period, they still seem very low.

H4: The digitalization of the Bulgarian cooperatives could help to make the members involvement and the transparency higher. That could lead to an increase of the members satisfaction and that can be used as a marketing strategy to increase the number of cooperative members and cooperatives.

We use Analytic Hierarchy Process (AHP) as instrument for quantitative valuation of the cooperative values and principles and will use it to measure member’s satisfaction in each historical period.

Our paper is structured as follows. First, we begin with description of the periods and values and principles that are followed. Second, we describe the methodology and apply the AHP method to measure the members’ satisfaction. We elaborate the potential of the digitalization to increase the members satisfaction. Finally, we discuss the results and make conclusions.

Barton [4] distinguishes the cooperative values and principles between four classes of principles: Rochdale, Traditional, Proportional, and Contemporary. Based on Barton’s classification we assume that the Bulgarian cooperatives use the following values and principles:

- Pre socialism period – combination of Rochdale principles with the values and principles from Friedrich Raiffeisen and Wilhelm Haas;
- Socialism - "socialist" principles;
• Post socialism - Traditional principles.

2. Method
The chosen method for conducting this study is strictly related to the historical periods of development of the cooperatives in Bulgaria and values and principles related to every historical period. We also consider the importance of the governance structure that is common in every period. We can identify three historical periods: pre socialism, socialist and post socialist period.

2.1 First period. Pre Socialism - from the establish of the first cooperative in 1890 to 1944
The first modern agriculture cooperative in Bulgaria was established in 1890. Leading role in establishing had the leaders of the society at that time: village mayor, the teacher, the priest. Remarkable was the influence of the German cooperative system on the Bulgarian cooperative low and Bulgarian cooperative development. In fact, Bulgarian cooperatives are following a combination of Rochdale principles with the values and principles from Friedrich Raiffeisen and Wilhelm Haas, which are summarized below:

1. Self-help,
2. Self-responsibility,
3. Self-management,
4. Volunteer management (without payment),
5. Democracy,
6. Equality,
7. Equity,
8. Solidarity,
9. Decentralization,
10. Independence from the state,
11. Political and religious neutrality,
12. Economization,
13. Voting is by members on democratic basis (one-member-one-vote);
14. Membership is open;
15. Equity is provided by patrons;
16. Equity ownership is share of individual patrons is limited;
17. Net income is distributed to patrons as patronage refunds on a cost basis;
18. Dividend on equity capital is limited;
19. Exchange of good and services at market prices.

These values and principles underpin the first Bulgarian cooperative law as well as the internal and external cooperative governance structure. The member is in the focus of the internal and external governance structure (see the left side of figure 2) and it is build down-up. The decisions comes and are made from the owner-members in the general assembly or from their representatives in the other governing bodies in their favor usually without agency problems (Figure 1). For consulting and assistance of one, more or all operative cooperative governing bodies, the owner-members establish an advisory board as an informal element of the internal governance structure. Usually, members of the advisory board are educated people from the village that do this job voluntary.
With their successful implementation of the values and principles and their operations, the cooperatives gained the trust and the satisfaction of their owner-members. In 1944 the number of the agricultural cooperative is 2,160 with around 2,000,000 members. These numbers show that every rural Bulgarian household is a member of minimum one cooperative.

2.2 Second Period. Socialism - from 1945 to 1989
During this period cooperatives are restructured in TKZS (Bulgarian state-owned cooperative). Based on the cooperative theory of Marks and Lenin, the restructuring is applied compulsory and violently. Compulsion, pressure, violence and centralism become the main values underpinning the communist cooperative low and corresponding government structure (see the right side of figure 2).

While in the pre-socialist period, the member-owner (in red) is in the focus of the activity of the cooperative and its governance structures, in the socialist cooperative and its governance structure, the focus is changed and is no longer on the individual member. It is on the communist party and on the communist state. The governance structure is reordered from down-up to top-down. We identify the following values and principles:

1. Compulsory membership
2. State-sponsored and state-controlled
3. Authoritarian management
4. Party Dependence
5. Party Control
6. Equity ownership is share of state
7. Concern for Party
8. Net income is distributed to state
9. The benefits are for the state
10. Nationalized private property

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**Figure 1.** Extended innovative cooperative internal governance structure

Source: own figure

Legend:
- Formal structure
- Informal structure
- Formal relation
- Informal relation

With their successful implementation of the values and principles and their operations, the cooperatives gained the trust and the satisfaction of their owner-members. In 1944 the number of the agricultural cooperative is 2,160 with around 2,000,000 members. These numbers show that every rural Bulgarian household is a member of minimum one cooperative.
The autonomy of the cooperative is lost, whereby the governing bodies of the communist party-and the communist state only dispose of the land and the distribution of income. Another important feature is the members’ placement at the bottom of the governance structure, i.e. their voice is no longer needed, they are practically not included in the cooperative governance. They are instrumentalized and only used as the labour resource of the production unit as well as entity for affirmation of the communist party’s decisions. The function of the General Assembly has been completely seized by the party secretary as an executive of the communist party and communist state. Thus, the cooperative governance structure is practically merged with the communist party and communist state.

![Figure 2](image_url). A comparison between pre socialism and socialist cooperative governance structure.
Source: Boevsky,Laurinkari [5].

2.3 Third Period. Post socialism - a period of democratic change since 1990
Since 1989 political changes have taken place in Bulgaria in all spheres of the socio-political life. The changes also affected on the Bulgarian cooperatives, giving a political and economic opportunity for the development of a new type of cooperative governance structures. Figure 3, 4 and 5 represent the traditional model of cooperative governance structure from the post socialist period. The common between these three structures is that all of them have General Assembly, Supervisory Board and Board of Directors. The last chooses the Chairman, Manager or both. That structure has become a problem through the years because Board of directors enters into an unregulated relationship with Chairman or Manager or (as shown on figure 5) group of members create informal structures and coalitions. In an effort to prevent the negative impact of these informal relationships, has been introduced changes in the legislation. The new and innovative governance structure is shown in Figure 6. According to the new governance structure the Board of Directors, the Supervisory Board and the Chairman are directly elected by the general meeting.
Figure 3. A cooperative governance structure during post socialist period: Traditional extended model

Figure 4. A cooperative governance structure during post socialist period: Traditional extended model
Figure 5. A cooperative governance structure during post socialist period: Traditional extended model

Source: own figure
Legend:  
- Formal structure
- Formal relation
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Figure 6. A cooperative governance structure during post socialist period: Innovative model
Cooperative values and principles during this period generally follow the cooperative values and principles of the pre-socialist period. For this reason, we will not list them in detail, as they have already been shown when presenting the pre-socialist period.

In the period 1992-1996 there was an increased in the number of agricultural cooperatives, with the increase being over 140% (Figure 7). In 1997-1999 there was a stabilization. Since 1999, the number of agricultural cooperatives has been decreasing. In 2005, only half (1525) of those employed in 1998 functioned. In the period 2005-2016, they gradually lost their attractiveness and continued to reduce the number of agricultural cooperatives. During these years, over 50% reduction was recorded, with only 767 cooperatives remaining in operation in 2016. This is the result of the membership drop caused the dissatisfaction of members due to the failure to respect the cooperative values and principles.

![Figure 7. Dynamics in the number of agricultural cooperatives in Bulgaria](image)

Source: Agrostatistics, MAF [6], 2018 is an estimation

2.4 Research approach

The research methodology of subjective concepts such as satisfaction may be different. There are various methods in the literature for studying qualitative phenomena. For example, a modern and contemporary methodology is used from Bozhuk, Krasnov [7] when they want to measure the consumer characteristics in internet. The characteristics of a consumer can be summarised consumer’s portrait which can be also normal or digital [8]. A significant problem can be when the researcher tries to quantify qualitative data. One of the methods that can be used for this is the Analytic Hierarchy Process.

The Analytic Hierarchy Process (AHP) is part of multi-criteria approach as a decision-making model constructed for synthesis of information. Its main benefits are when one has to solve problems that does not have clear quantitative measure, especially when the problem is related to social elements, subjective opinions, etc. The application of the model can be complicated and often requires a complex methodology.

The AHP together with Analytic Network Process (ANP) were introduced and their theoretical frame were developed by T. Saaty [9] Historically and logically the AHP is the first model that appears [10]. AHP can help with weighing of various alternatives according to a set of criteria, when the influences between alternatives and criteria are hierarchical. At the top of the hierarchy is the decision-making goal (Figure 8).
When evaluating the influence of the criteria, it is necessary to make pairwise comparisons between them. In fact, we create a matrix where the criteria are used as rows and columns. These comparisons are made on a scale from 1/9 to 9, where 1 means that both criteria have equal influence on the alternatives, 9 means that the criteria on the row has very strong influence and the factor on the column has no influence, 1/9 means that the criteria on the column has very strong influence and the criteria on the row has no influence. In table 1 are summarized possible scores and their explanation for the estimation of the elements.

**Table 1. The scale for estimation**

| Numerical | Intensity of Importance | Definition | Explanation |
|-----------|-------------------------|------------|-------------|
| 1         | Equal Importance        |            | Two activities contribute equally to the objective |
| 2         | Weak or slight          |            | Experience and judgement slightly favour one activity over another |
| 3         | Moderate importance     |            |            |
| 4         | Moderate plus           |            | Experience and judgement strongly favour one activity over another |
| 5         | Strong importance       |            | An activity is favoured very strongly over another; its dominance demonstrated in practice |
| 6         | Strong plus             |            |            |
| 7         | Very strong or demonstrated importance | | The evidence favouring one activity over another is of the highest possible order of affirmation |
| 8         | Very, very strong       |            |            |
| 9         | Extreme importance      |            |            |

Source: Saaty, Vargas [11]

The next step is to make pairwise comparison of the alternatives according every criterion. The process is visualized on figure 9.
Figure 8. The process for pairwise comparison of the alternatives according every criteria. Source: Saaty, Vargas [11]

During the process of the application of the AHP model, we first define the alternatives. In the recent study our purpose is to evaluate the three historical periods that are described in the text above. This is the reason we use the tree periods as alternatives:

Table 2. Alternatives of the model

| Alternative 1 | Pre socialism |
|---------------|--------------|
| Alternative 2 | Socialism    |
| Alternative 3 | Post socialism|

Source: own table

Second, we have to define the criteria. We would like to evaluate the historical periods (alternatives) according the cooperative values and principles and we are going to use the cooperative values and principles which we identified and described earlier in the paper. The values and principles that we are going to use as criteria are shown in table 3. The reason we choose these seven values and principles as a criterion is because they are a combination of basic values and principles that the cooperatives are trying to apply. We also limit the number of values and principles up to 7, because if we use more values and principles the amount of the questions in the questionnaire will grow dramatically. So, at the end we choose the most important combination of values and principles according to the authors of the study (table 3) and continue the application of the AHP method.

Table 3. Criteria of the model

| Criteria 1                  | One Member – one vote |
|-----------------------------|-----------------------|
| Criteria 2                  | Voluntary and Open Membership |
| Criteria 3                  | Non-interference from the state |
| Criteria 4                  | Self-help and Solidarity |
| Criteria 5                  | Democratic Management and Member Control |
| Criteria 6                  | Member Economic Participation |
| Criteria 7                  | Proportional remuneration |

Source: own table

The next step is to create a questionnaire that the experts have to estimate the pairwise comparison between alternatives according to every criterion. The estimates were done by eight experts independently and the results are calculated based on the averages of the estimates. In previous researches concentrated on agricultural cooperatives we used only experts because we identified that the members of the governing bodies of the cooperatives do not possess the necessary knowledge in
historical aspect to make justified estimate. Now we study the cooperatives in general and we are using managers estimates too. Every expert has to make 42 estimations. We use the average of their estimation to create the final result from the application of AHP.

3. Results
After the estimation we take the averages of the pairwise estimates from the experts and create the cluster matrix. The cluster matrix gives the weights of the different criteria (table 4) and is used to calculate the final results. According the experts’ estimation the principle Democratic Management and Member Control has 21.4% weight and is the most important for the cooperative development. The second important principle is Self-help and Solidarity with 16%. All the other values and principles that take part of the research have weight between 10.5% and 14.5%.

|                             |      |
|-----------------------------|------|
| One Member – one vote       | 13,1%|
| Voluntary and Open Membership| 14,5%|
| Non-interference from the state| 10,7%|
| Self-help and Solidarity    | 16,0%|
| Democratic Management and Member Control | 21,4%|
| Member Economic Participation| 10,5%|
| Proportional remuneration   | 13,8%|

The final results from the calculations of the AHP model are presented on figure 9. The result after applying AHP classifies the alternatives in percentage terms, with the sum of the individual scores being 100. We can observe, which of the alternative best suits the values and principles used as criteria. Subsequently, we will use the results to confirm or reject the hypotheses made at the beginning of the study. According to the expert estimations Pre socialist period corresponds to the greatest extent to the cooperative principles and values – 53%. Post socialist period with 37% corresponds less. And finally, the Socialism period corresponds only 9%. As noticed in the beginning of the study the research assumption is that the satisfaction of cooperative members is closely related to the practical application of the cooperative values and principles. When we have higher % that corresponds to a higher level of members satisfaction because the values and principles are applied in high degree.

Figure 9. Weights of the alternatives (historical periods)
4. Discussion

We can conclude that the hypothesis 1 is confirmed by the results. The pre socialist period applies the values and principles of cooperatives to the greatest extent (53%), which is why the satisfaction of the members is high and the cooperatives are developing positively. That result is also influenced by the practically applied governance structure that is shown on figure 1.

During the socialist period the values and principles are applied in very low extend and as a result the members’ satisfaction was very low. That confirm the second hypothesis H2. These results are logical, because the period is characterized by values and principles that lead to compulsory membership and centralized cooperative governance structure. Thus, the cooperative’ focus on the needs of communist party and communist government. The member has only the role of endorsing the decisions of the communist party and its government. This explains, why the members’ satisfaction went to the lowest level.

The result for post socialist period with 37 % is well below the estimation of pre socialist period. That means that cooperative values and principles are not strictly applied. Although they exist in the legislation and are presented in the cooperative governance structure. However, this result shows that only the existence of formal cooperative governance structures is not sufficient for effective implementation of the cooperative values and principles. Furthermore, informal governance structures and coalition in the operative cooperative governing bodies can change the focus of the cooperative enterprise’ operations from the member-owners to these informal structures and coalitions. That is the reason, why the cooperatives do not perform well in the last decade. In this way we can consider that hypothesis 3 is confirmed. In fact, the number of cooperatives has a strong growth at the beginning of the post socialist period (Figure 7), which continues about 8 years. We can explain that growth with the initial enthusiasm in the farmers and cooperative members. After that, the number of cooperatives slowly decreases for the last about 20 years. The main reason for that is the low practical application of the cooperative value and principles. The initial enthusiasm is expired and the cooperatives cannot make use of it and gain growth. The members start to see the real problems – that the cooperatives serve mainly for the purposes of the management team (informal structures and coalitions), not for the individual cooperative member-owner.

4.1 The role of the digitalization for the members satisfaction increase

We think that the digitalization can serve as a boost the transparency, increase members participation, and based on this member involvement in the governance. The ability of the Internet to do business is exploited to a large extent by private corporations. On the agenda, we believe, is the increasing use of new digital technologies for structuring and managing cooperatives. This is also a statement of Martinelli, F., et al [12]:

“Following cooperation definition and its principles (International Cooperative Alliance 1995) and applying them to digital platforms, the technology becomes a tool in service of workers and consumers and it may be used in a logic of inclusion, sharing, participation, mutualism, sustainability, and attention to diversity. In this frame, a new generation of internet entrepreneurship is growing all over the world contrasting large-scale for-profit corporations that are exploiting online collaboration among peers. At the same time, already existing cooperatives in many countries in the world are recognizing themselves in the theoretical framework of the movement. This is leading both to experimentations around shared ownership and shared governance in the digital economy, and to the introduction of platform technology in long-history cooperatives. “

Many eGovernment tools need to be developed to contribute to decentralization, transparency, and member involvement in governance. The problems related to the structure of digitized cooperatives are also significant. These issues are addressed in Boudes, M. [13].

5. Conclusion

Our study shows the importance of the cooperative value and principles for the members’ satisfaction in the Bulgarian cooperatives. Furthermore, we observe it is not sufficient to have they embodied in the
relevant cooperative law and in the cooperative governance structures but to implement them into practice for gaining member’s satisfaction. In socialist and post socialist periods, the agricultural cooperatives have the characteristic of pseudo-cooperative. Same economic groups or political actors as well as mixture of these both set up only pro-forma the cooperative values and principles and the cooperative governance structures to make their own profit or strengthen their powerful positions. A contemporary solution of discussed problems may be a digitalization of cooperatives in terms of membership, governance, operations etc.

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References
[1] Boevsky, I., Sarov, A. (2017a). "Governance Structure in Bulgarian Agricultural Cooperatives", in Proceeding Scientific Conference "The Role of Family Businesses for Sustainable Rural Development" (22 and 23 February 2017) Plovdiv: pp. 129-140.
[2] Boevsky, I., Sarov, A. (2017b). Cooperative Governance - Challenges and Perspectives: Proceeding Scientific Forum The XXI Century Business - Trends and Challenges, UNWE, Sofia, pp. 366-377.
[3] Sarov, A., Boevsky, I. (2018) „Governance Structures Of The Agricultural Co-Operatives In Bulgaria – Concepts And Practices“, „One World Many Cultures“, Bydgoszcz, Poland, Roczniki Ekonomiczne Kujawsko–Pomorskiej Szkoły Wyższej W Bydgoszczy. PL, 11(2018), pp. 215-231.
[4] Barton, D.G. (1989). “What is a cooperative?,” In: D.W. Cobia (ed.) Cooperatives in agriculture Englewood Cliffs, NJ, Prentice Hall, pp. 1-20.
[5] Boevsky, I., Laurinkari, J. (2017). Die Zukunftsperspektiven des Genossenschaftswesens als Teil der Sozialwirtschaft - Grundstrukturen des Genossenschaftswesens am Beispiel BulgariensEuropäischer Hochschulverbund, Wismar, Deutschland.
[6] Ministry of Agriculture and Food (2019), Agrostatistics.
[7] Bozhuk, S., Krasnov, A. (2017). “Methodics of research of consumers psychographic characteristics in the Internet”, 017 International Conference "Quality Management,Transport and Information Security, Information Technologies" (IT&QM&IS), St. Petersburg, 2017, pp. 166-172.
[8] Hanisch, M. (2003). Property Reform and Social Conflict, Shaker, Aachen. Berlin, Humboldt-University, Diss.
[9] Krasnov, A., Chargazia, G., Griffith, R., Draganov, M. (2019). Dynamic and static elements of a consumer’s digital portrait and methods of their studying. IOP Conference Series: Materials Science and Engineering. 497. 012123. DOI: 10.1088/1757-899X/497/1/012123.
[10] Saaty T. L. (2001). The Analytic Network Process. RWS Publications: Pittsburgh, PA.
[11] Saaty, T.L. (1980) The Analytic Hierarchy Process. McGraw-Hill, New York
[12] Saaty, T., Vargas L. (2006). Decision Making with the Analytic Network Process: Economic, Political, Social and Technological Applications with Benefits, Opportunities, Costs and Risks, Springer.
[13] Boudes, M. (2019) “Collective Interest Cooperatives and Platform Economy”, Cooperatives And The Transformation Of Business And Society, ICA - CCR European Research Conference, Berlin, Germany
[14] Martinelli, F., Bozzonib, S., Carolic, S., Tamascellid, F., Guerinie, G. (2019). “Digital Platform Cooperatives In Europe: A Way To Include And Protect New Workers And Share A Fair Value With Prosumers And Local Communities”, Cooperatives And The Transformation Of Business And Society, ICA - CCR European Research Conference, Berlin, Germany
