OPERATIONAL ISSUES IN SYSTEMATIC LAND REGISTRATION PROJECTS IN ROMANIA. A STUDY CASE IN A ROMANIAN SMALL AND MEDIUM ENTERPRISE

Vlad PAUNESCU[1], Divyani KOHLI-POLL JONKER[2], Raluca Margareta MANEA[1], Mariana CIOLACU(CALIN)[1], Alexandru Iulian ILIESCU[1]

[1]University of Agronomic Sciences and Veterinary Medicine of Bucharest, 59 Marasti Blvd, District 1, Bucharest, Romania, E-mails: vlad.paunescu@topoexim.ro, ralucamanea20@yahoo.com, mariana.ciolacu@fifim.ro, iliescualexfifim@gmail.com
[2]University of Twente, ITC - Faculty of GeoInformation and Science & Earth Observation, 8, Hallenweg, 7522 NH Enschede, Netherlands, E-mail: d.kohli@utwente.nl

Corresponding author: mariana.ciolacu@fifim.ro

Abstract

By 2024 land in only 7% of administrative units in Romania were registered through The Romanian National Program for Land Registration. This paper looks at possible delays caused by that the providers of work, the private sector, due to operational issues. Most of the companies involved in providing services are SME's. Using an action research methodology, this research employs a focus group from a Romanian SME that critically analyse the processes that take place in a project of systematic registration of land. The focus group looks: at the purpose of activities, the places in which the activities take place, the sequence in which activities are being done, the people that do the activities and the methods of realization. The research proposes a new process map to speed up the process and eliminate bottlenecks and a revision of the human resource policy and operational approach in the company studied.

Key words: systematic land registration, cadastre, operations management, processes

INTRODUCTION

The global agenda emphasizes the importance of The United Nations Sustainable Development Goals in order to address issues such as: hunger, poverty, malnutrition, climate change or environmental protection [2].
To achieve these goals, the world needs to find ways to exploit resources without depleting them and keep the balance of nature [3].
Climate change has brought a lot of uncertainty in agricultural production [47]. This is also emphasized by the European Union that calls for urgent action to stop "global warming and the loss of ecosystems and biodiversity" [22].
Reversing this trend and achieving sustainable development isn't possible without sound policies for land management.
For over 70% of the land on our planet, there is no connection between the land and the people that use it [51, 24]. This means that this asset, that people have, can't be valorised, being what [19] calls "dead capital". Poverty reduction and sustainable development may be reduced when this unregistered land will be moved into the official economy and use.

There are a few steps in the process of land registration: "land adjudication, demarcation, surveying and recording of land with the focus on recording" [67, 28].
The process of land registration is done by surveyors with the help of people in legal profession. It can be done either by state employees or by the private sector.
Usually, the operations employed in registering land, sporadically or systematically, consists of: analysis of deeds or titles, determining the spatial position of the object through different types of measurements, demarcation of boundaries with the help of the owners, a process of verification done by state officials or the private sector and the registration of the land in the cadastral documents .
Romania struggles to register all its land for over a century. The Romanian National

Program for Land Registration (PNCCF) was launched in 2015 with the aim to register all localities in the country by 2023. However, until February 2024, in spite of many attempts, only 7% of administrative units in the country are registered. The Romanian National Program of Land Registration is implemented by The National Agency for Cadastre and Land Registration (ANCPI). It is an institution that regulates the process, and has attributions in designing the legislation, verify the work and takes care of the public acquisitions.

PNCCF has been analysed by several authors. Legal aspects are treated by [59, 35, 25, 63], while more technical aspects are underlined by [9, 42]. Other authors are concerned with describing the stages, processes, 3D rights, strategy or quality issues [45, 62, 48, 40, 44, 43]. However, there are no studies concerning operational practices that the private sector employs in providing the service of systematic land registration.

There have been few attempts to view the process of systematic land registration from an operational perspective. This paper looks ate the way private companies that provide this kind of projects can avoid delays and how they can improve their operations. The analysis is conducted in an Romanian SME. The research questions are the following:

-What is the operational workflow that a company engaged in a process of systematic land registration employs?

-How can these operations be improved?

In the following chapters of the research, a literature review in which land registration is defined and the operations that take place in such a project are described. Literature concerning process monitoring and control and operational improvement are also analysed. This research is conducted in a constructivist paradigm using the methodology of action research by means of a focus group. The last section of this study presents the conclusion.

Stages in The Romanian National Program for Land Registration

Several authors have shown the advantages of systematic land registration: increase of investments, tenure land security, covering of large areas, higher agricultural productivity, decreased costs and faster transactions and registration [4, 66, 12, 46, 21, 53]. On the other hand, the benefits of systematic land registration don't seem to appear in some cases. [13] and [8] observe that new land disputes may arise and increase uncertainty. Also, land rights don't necessarily lead to more investment in agricultural land, increase farm or eases access to credit [20, 54].

In order to complete the project, Romanian providers of services have to respect the stages required in the Technical Specifications that are as follows [5]: "contract signing, input data and analysing input data, information campaign, collection of spatial data, data processing, property titles collection, data introduction, delivery of documents to local cadastral offices, correction of errors, public display of documents, receiving complaints, final delivery of documents".

Operations management

Operations management refers to the process in which transformation processes are managed in order to produce goods and services [1]. The aim of any kind of service is to deliver good quality services or products through design of the product, process, human resources and planning and control [10].

To achieve good quality for service and products, there is a need to be able to evaluate the performance of the operations that produce them. Elements like: facility output, productivity, cost, quality, flexibility, new product introduction, innovativeness and new process introduction can be considered [50, 33]. On the other hand, areas like: financial efficiency, activity based costing, partial and total productivity measures and time based productivity measures, are seen by [60, 36, 27, 23, 17, 7] as indicators of operations success. However, most of these evaluations are based on financial aspects.

Successful operations mean more than cost efficient processes. That is why more elements, that form the mix for efficient operations have to be considered.

To judge operations, they have to be mapped first. Process maps have the purpose to control and visualize the processes that take place in an organization in order to find

solutions for improvement [31, 6]. These visual representations are useful to view the inputs, links between activities and the outputs of a project.

In designing them, [57] recommends: identifying the start and finishing points of the process, gathering data and prepare the process, transformation of the data into visual representation. After the analysis and finding of improvements, they are represented on new, "future state maps", that show the improved process [31].

Process monitoring and control

Monitoring and control of the processes has the purpose to minimize disruptions in the activity [65]. Process performance can be assessed using multiple tools and techniques like: balance scorecard, self-assessment, workflow-based monitoring or statistical process control [38, 29].

However, some of these methods concentrate on the process as a whole, while others, like the statistical approach, don't take into consideration the influence of the human factor.

An approach that is more complete and more appropriate on processes in the land administration system that can integrate the social dimension of such projects is the model that [55] proposes in order to critically analyse each step of the operations that take place.

Besides the quantitative aspects of each activity, this critical analysis takes into consideration the qualitative aspects by including the people that execute the activities. By isolating each activity, with specific questions about the way they are performed, this approach aims to find problems and bottlenecks.

To examine the process, the following problems were considered: purpose of each activity, the place in which each activity takes place, the sequence in which the activity elements are being done, who is doing the activity and the method in which the activity is realized [55].

Operations improvement

Operations are constantly observed and controlled in order for them to be improved.

Better operations mean higher efficiency and increased performances.

Lowering the costs of production, improved quality of products, services or processes that are fast and reliable can offer an organization competitive advantage in the market.

Process improvement can be done by redesigning or reengineering.

To redesign a process, means to: eliminate some parts of the activity, combine some parts of the activity, change the order in which activities are being done and simplify the activity.

However, many times there is a need for changes that affect not just processes, but the entire organization.

Reengineering processes is such an approach that consists of a number of steps enumerated by [55]: rethinking processes in order for the activities to be naturally organized in the work flow, searching for major improvements by radically rethinking and redesigning activities, redesigning the processes in order for them to be suppliers and clients for each other, people that do the activities must not be separated from those who supervise and control the activity.

MATERIALS AND METHODS

Paradigm of research

Positivist researchers make sense of reality by measuring phenomena through objective methods [18, 41, 61]. On the other hand, constructivists or interpretivists, view the reality as a social construct through interaction [37, 34, 39]. The world is perceived subjectively, the reality is put into context and it is usually studied employing qualitative methods [32]. This research is conducted in a constructivist paradigm using qualitative methodologies and methods to answer the research questions.

Methodology

"Action research seeks to bring together action and reflection, theory and practice, in participation with others in the pursuit of practical solutions, to issues of pressing concern to the people" [49]. This method is at the border between organizational consulting and research [11]. In this type of qualitative

research, the researcher and the participants construct a partnership and, through their interaction, they aim to find solutions to the research issues and, sometimes, implement them.

[58] see the methodology as having five stages: diagnosing, action planning, action taking, evaluating and learning, while a four stages model consisting of: planning, acting, observing and reflecting, is proposed by [30].

Having many stages similar to the process of consulting, there is much debate, among different authors, if this methodology has indeed scientific value or not [16, 52, 26, 11]. One difference is that a consultant is paid by an organization to find solutions to problems and create value [64], while the researcher wants to contribute to the development of the body of knowledge in the researched field without financial gain. Another difference consists in the fact that in action research, co-participants are treated as co-researchers, sharing the research experience, basing their approach on theoretical explanations. While a consultancy is done "on people", the research is done "with people" [11]. Through action research, an organization learns from itself. However, the most important difference is that the researcher disseminates the knowledge acquired in the process to enrich the knowledge in the field of study, while a consultant benefits from the experience and uses the knowledge in other projects for his/her own benefit.

This research studies the operations that take place in a Romanian company that implements a systematic land registration project in Romania in The National Program of Systematic Land Registration.

The stages of action research used in this study were:

-*Problem diagnosing*. Consisted on finding the specific problems that the organization has by looking at internal documents concerning profitability of the project, deadlines respected and polls that show employees complaints;

-*Action planning*. The research method was chosen (focus group) and the co-participants in the research;

-*Action taking*. Consisted in analysing the processes in the projects of systematic land registration that take place inside the organization and find solutions for improvement together with the co-researchers;

-*Evaluation*. This stage takes place after the solutions are implemented. However, for this research, this stage is not considered as the implementation process is undergoing;

-*Learning*. Consisted in a questionnaire that evaluated the learning process of the co-researchers.

Method

In the problem diagnosing stage, to analyse the problems that the organization is facing, an analysis regarding delays in the systematic registration projects was performed taking into consideration the deadline of the contracts and the actual finish date of the project.

The method chosen for the action planning stage was the focus group. That usually consist groups of 6 to 12 people debating certain topics [56].

For anonymity reasons, the company in which the focus group was held will be called company A.

The meetings lasted between one and two hours and were programmed during four days. All meetings had predefined subjects: process mapping, process analysis (2 meetings), process reengineering and redesign.

For each activity of the operations analysed, the topic was put in the discussion in the group.

During the discussion, the moderator encouraged exchanging of ideas, questions and explanations in order to obtain what is called "the group effect" [15,14].

There was no obligation to get involved in the discussions, every member of the group decided on the amount of personal implication. The meetings were audio recorded.

Six persons were considered in the focus group, with an equal number of men and women. These people have an extended experience in projects of systematic land registration (between 3 and 11 years).

The first task of the focus group was to analyse the processes in systematic registration of land that they performed for the organization and map them.

Then every stage of the project was critically analysed by the group following the model proposed by [55]. For each stage, the questions in the table were asked to the participants in the focus group.

RESULTS AND DISCUSSIONS

Problem diagnosing

Out of 40 projects of systematic land registration that Company A has worked on, 9 of the were analysed to observe delays. As seen in Table 1, all the localities in analysis registered delays from 32 to 128 weeks.

Table 1. The 9 localities analysed in Company A

Administrative unit name	Contract duration (weeks)	Real duration of project (weeks)	Difference (weeks)
Cerbal	76	120	44
Chinteni	76	204	128
Ciugud	76	207	131
Ghelari	76	119	43
Lelese	76	152	76
Madaras	76	179	103
Santimbru	76	189	113
Tulca	76	128	52
Vultureni	76	108	32

Source: Paunescu, et al., 2024.

The problem that Company A faces is that the project of systematic land registration has significant delays.

Action planning

For finding solutions to reduce the delays that Company A faces, an analysis of the operations that are employed by the company is necessary.

This will help decision makers in the organization to find out what processes are not properly done, where are the bottlenecks in the processes and what processes need to be redesigned or reengineered. For this, a focus group composed of six middle managers from Company A will analyse the operations of systematic registration of land.

Action taking

Process mapping. The first step in analysing the process was to ask the members of the focus group to draw a workflow for systematic registration processes.

Figure 1 shows the workflow adopted in systematic land registration projects. After the contract signing (stage 1), the provider gathers all relevant data from local cadastral offices and other institutions and analyses them (stage 2). Citizens in the administrative unit are informed about the project through an information campaign (stage 3). In the next stages, data is collected through geodetic measurements in the field (stage 4), parcels are constructed with the help of specialized software. For this stage, the people in the focus group showed that the process can be done in two ways: collect property titles from the owners (stage 6) and introducing the data collected in stage 7 or do it together with the data processing (drawing of parcels and data introduction done simultaneously), stage 5.1.
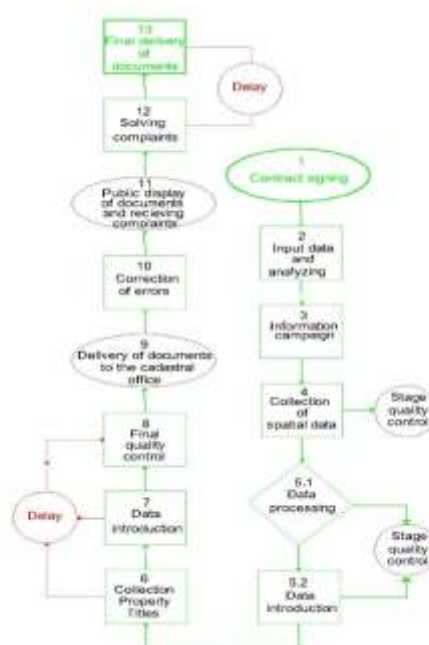

Fig. 1. Process map of the process in systematic land registration projects
Source: Original figure.

The work goes to the local cadastral office for verification (stage 8). After the correction of errors, the work is displayed to the public and the people can issue complaints if they consider necessary (stages 9 and 10). The provider, together with representatives from the local cadastral office and the administrative unit personnel solve the complaints, and the final documents are delivered (stages 11 and 12). The focus group identified delays in the project in stages 6, 7, 9 and 11.

Process analysis

Purpose of each activity. The focus group was of the opinion that there are certain activities that can be done in a different way. Even if the administrative unit is obliged by the law to help with the registration, the focus group agreed that in the stages of information campaign, collection of data and public display, the administrative unit personnel should be more involved in the process in order for the people in the administrative unit to gain trust and participate in the process. Another issue raised by the focus group at this stage was that people doing activities 5 and 7 have to be better trained by the company and more emphasize on the quality control should be taking into consideration.

The place in which each activity takes place. Where the activity takes place is more or less defined in the Terms of Reference issued by ANCPI. For example, the data collection must happen in the field because the parcels are there. On the other hand, there are activities that could be done elsewhere: data collection can be done with higher precision for urban areas and lower precision for rural areas, while data processing can also be done at places in the administrative units in order to be closer to the source of information if any problems occur. However, the focus group considered that the place in which the activities are being done at the moment are mostly suitable for the efficiency of the process.

The sequence in which the activity elements are being done. There is agreement in the focus group that the data collection (measurements in the field) has to be done before collecting ownership data from the citizens. In this way, the textual data will be the referenced to the graphic component, not the other way around, in order to have spatial reference. As observed in Figure 1, some members in the focus group do the data introduction in the data base before collecting all the information from the owners. This happens because most of the data concerning property titles is already available from other sources and the property title collection stage is used only to complement or to verify the data base with the data that is collected from

the owners. On the other hand, members of the focus group propose something else. Because available sources that contain the property titles may not be complete, so the focus group propose that the data from these titles be introduced after they are collected.

A part of the focus group considers that collecting the property titles directly from the owners and then introducing them is a safer method. The focus group found that there are some changes that should be done, but they mainly consist on changing the sequence set by ANCPI. The public display of the documents should be done before the verification of the cadastral office, not like it is done now. This would shorten the process significantly as at the verification time of 60 days, the time for correction is added.

Who is doing the activity? Company A works in project teams that consist of 2-4 people for every project. These teams have a Technical Responsible that deals with the technical component of the project. For every 3-4 projects there is a Project Manager that supervises and implements the operational strategy for every project.

The main problem observed by the focus group consists on working with subcontractors.

They are of the opinion that all processes should be done by the company in order to ensure the quality of the work.

However, one of the issues raised was that the teams, many times, lack in sufficient personnel or the personnel is poorly trained. This is causing significant delays in execution and lower quality of the work.

The method in which the activity is realized. The focus group sees most of the methods they are using as being appropriate.

However, the stages in which the focus group agrees improvements should be made are:

-Information campaign. The members of the focus group want a higher level of involvement from the administrative unit's employees.

-Data processing with data introduction. The members of the focus group agree that the process should be done in collaboration with personnel of the administrative unit. On the other hand, some members of the focus group

see the stage of data introduction as being done later in the process.

-Correction of errors. Members of the focus group agree that the correction of errors procedure has to be changed. Instead of the cadastral office verifying the work and sending the errors to be corrected by the provider, a more collaborative process should be designed.

-Public display of documents and receiving complaints. The public display method should be changed in the focus group member's opinion.

Because the people don't really understand what is displayed, members of the focus group state that a solution would be to issue provisional land book extras that the people would understand better. In the cadastral plan, instead of the identification number, the name of the owner should be written.

Also, the sporadic registration, which goes in parallel with the systematic registration, should be put on hold during the period of complaints solving and data actualization.

Operational improvements

In the last stage of this this research, the members of the focus group had to find operations improvements for activities mentioned in sections 3.3 and 3.4.

These solutions had to be consistent with the principles of operational redesign and reengineering.

Some processes are added to improve the relation between them, while other activities are designed to improve the process.

These were the following:

Process map.

The focus group is of the opinion that quality is a prerequisite of a successful project.

They believe that keeping a tight control on the project and managing every phase will ensure that the technical specifications are applied and the work is at the required standards. A higher quality of work is mandatory because the errors will be less present and the delays caused by corrections will diminish. In light of these findings, the focus group proposes the following:

-Every stage of the project should have *quality control performed* by the Technical Responsible *during the execution* of the process

-A separate team in the company should do *quality control after the finalization* of the process

With these solutions applied, there will be no more need for extensive repairs and the bottlenecks will be eliminated.

The focus group proceed at drawing a new process map. Quality control was added in certain stages of the process and at the end of it as shown in Figure 2.

Fig. 2. Improved process map of the process in systematic land registration projects
Source: Original figure.

-*Process analysis*. Following the process analysis the first recommendation of the focus group for Company A is to redesign the human resource policy. A high turnover of personnel leads to insufficient members in the teams which, in turn, lead to higher times for execution. The focus group considers that the number of people working in the project teams should be increased from 2-4 to 6. Keeping experienced personnel in the company should be a priority. The focus group members recommend measures like: salary increases, performance bonuses and a decrease in the work burden for team members in order to create a better balance between work and personal life. Another

proposal was for the company to design a specific training program in the induction phase for people that are newly hired. The enlargement of the teams should give more time to managers to concentrate on training people instead on operational activities.

The personnel of administrative units need to get involved more in the process especially in the stage of information campaign and public display of documents in order to get more support from the citizens.

ANCPI can think to redesign the project. According to the focus group members, the stage of public display of documents should be done before OCPI verification because, usually, the projects stay in the process of verification for more than the 60 legal days. If this approach changes, corrections, verifications and complaints solving can be done after the public display.

Learning

The last step in the action research is to evaluate what was learned by applying the methodology of action research. For this a questionnaire was designed (Table 2). Two of the respondents learned how other teams solve the same problems that they also encountered, while three members learned new ideas for process innovation. The members of the focus group appreciated the group interaction and the dynamics that occurred during the discussions. The sharing of information showed, what are the activities that every team makes and that was considered helpful by some of the participants. All members of the focus group declared that they will participate again in such activities.

Table 2. Answers for the learning questionnaire for the learning aspect of action research

Question	Answer	Number of answers
What have I learned during this focus group?	different ways of solving the problems	5
	ideas for innovation	3
How would you describe the activities that you took part in?	the flow of ideas and the group interaction was appreciated	4
	helpful in finding out how other teams work	2
Would you participate in such activities in the future?	Yes	5

Source: Original data.

CONCLUSIONS

This research presented an operational overview of the activities that take place in a Romanian SME that is involved with projects of land registration in a systematic way. The activities were analyzed using a focus group of six people from the company in a process of action research. The focus group analyzed in a critical way the activities and found ways for improvement.

The main findings of the study, for each aspect analysed are:

-A new improved process map. The new process map proposed by the focus group shows the way improvements in the process, mainly the addition of a quality control stage, can eliminate errors that cause delays.

-Process improvement. For the way processes are being performed, the focus group recommends introducing better training procedures and increasing the number of people in project teams. Together with these, the focus group agreed that involving more the administrative unit in the process and the stage of public display should be done before the verifications performed by the local cadastral offices in order to gain time. Recommendations are also done for administrative unit's personnel in order to be more involved in the process.

Projects of systematic land registration don't benefit from an extended literature. These findings can be viewed as attempting to bring this subject in attention for public authorities and scholars. Organizations that face similar problems can benefit from this research in the following way:

-To apply a new methodology for identifying operational challenges that their companies face

-To redesign their processes using findings from this research

-To apply a different workflow to improve their processes.

Future research is needed to expand the findings of this study. In order to increase the reliability of such researches there is a need to expand it to other companies that do similar projects and see if the results are in accordance with those obtained here. There is

a need for thoroughly analysis of operational aspects not only in the companies that execute the work for PNCCF, but also for the state institutions that take care of these projects.

ACKNOWLEDGEMENTS

REFERENCES

[1]Academy-of-Management, 2022. aom.org. https://aom.org/network/divisions-interest-groups-(digs), Accessed on 31 October 2022.

[2]Akpan, S.B, Patrick, I. V., Essien C.A., 2024, The attainment of the united nation sustainable development goal (SDG) number two: assessment of some indicators in Nigeria. Scientific Papers. Series "Management, Economic Engineering in Agriculture and rural development", Vol. 24(1), 25-38.

[3]Alakbarov, F., Engindeniz, S., Mustafayeva, R., Alakbarov M., 2023, The assessment of sustainable development factors in the rural areas - a case study from Azerbaijan. Scientific Papers. Series "Management, Economic Engineering in Agriculture and rural development", Vol. 23(4), 31-44.

[4]Ali, D., Deininger, K., Duponchel, M., 2016, Sustaining the Success of the Systematic Land Tenure Registration in Rwanda, Washington, DC, USA: World Bank Group.

[5]ANCPI, National Agency of Cadastre and Real Estate Advertising, 2020, Order no.1/2020 for the approval of the Regulation regarding the realization, verification and reception of the systematic cadastre works and the ex officio registration of buildings in the land Register. Official Gazzette 7 January, 2020 (Ordinul nr.1/2020 pentru aprobarea Regulamentului privind realizarea, verificarea si receptia lucrarilor sistematice de cadastru si inscrierea din oficiu a imobilelor in cartea funciara. Monitorul Oficial, 07 January 2020). In Romanian.

[6]Anjard, R., 1998, Process mapping: a valuable tool for construction management and other professionals. Facilities, Vol.16(3-4), 79-81.

[7]Arnold, J., 1991, Introduction to Materials Management. Englewood Cliffs: Prentice-Hall.

[8]Atwood, D. A., 1990. Land registration in Africa: The impact on agricultural production. World development, 18(5), pp. 659-671.

[9]Badescu, G., Calina, A., Calina, J., Milut, M., Babuca, N., Buzatu, C., 2017, Ccomparative study on the use of GNSS technology and total stations in the general cadastre works in Romania. Annals of the University of Craiova-Agriculture, Montanology, Cadastre Series, 47(1), 470-476.

[10]Bamford, D., Forrester, P., 2009, Essential guide to operations management: concepts and case notes. John Wiley & Sons. 224p.

[11]Baskerville, R. L., 1997, Distinguishing action research from participative case studies. Journal of systems and information technology. 1(1), 24-43.

[12]Biraro, M., Zevenbergen, J., Alemie, B. K., 2021, Good practices in updating land information systems that used unconventional approaches in systematic land registration. Land, 10(4), p. 437.

[13]Brokensha, D., Glazier, J., 1973, Land Reform among the Mbeere of Central Kenya. Africa, 43(3), 182-206.

[14]Carey, M., 1994, The group effect in focus groups: planning, implementing and interpreting focus group research. In: J. Morse, ed. Qualitative Research Methods. Thousand Oaks: Sage, pp. 225-241.

[15]Carey, M. A., Smith, M.W., 1994, Capturing the group effect in focus groups: a special concern in analysis. Qualitative Health Research, Vol. 4(1), 123-127.

[16]Collis, J., Hussey, R., 2014, Business Research a Practical Guide for Undergraduate and Postgraduate Students. 4th ed. London: Red Globe Press.

[17]Craig, C. E., Harris, R. C., 1986, Total productivity measurement at the firm level. Sloan Management Review, 14(3), p. 13.

[18]Crotty, M., 2020, The foundations of social research: Meaning and perspective in the research process. Routledge. 256 p.

[19]De Soto, H., 2000, The mystery of capital: Why capitalism triumphs in the West and fails everywhere else. 1st ed. Civitas Books.

[20]Deininger, K., Chamorro, J. S., 2004, Investment and equity effects of land regularisation: the case of Nicaragua. Agricultural Economics, 30(2), 101-116.

[21]Feder, G., Nishio, A., 1998, The Benefits of Land Registration and Titling: Economic and Social Perspectives. Land Use Policy, Vol. 15, pp. 25-43.

[22]Frone, D. F., Frone, S., 2020, Issues and trends of progress towards sustainable development goals in Romania. Scientific Papers Series Management, Economic Engineering in Agriculture & Rural Development, 20(2), 237-245.

[23]Ghalayini, A. M., Noble, J. S., Crowe, T. J., 1997, An integrated dynamic performance measurement system for improving manufacturing competitiveness. International Journal of production economics, 48(3), 207-225.

[24]GLTN, 2012, Handling Land: Innovative Tools for Land Governance and Secure Tenure, GLTN/UNHabitat.

[25]Gresita, I. C., Grigorie, T. L., 2017, Systematic Cadastre for Agricultural Land in Romania. International Multidisciplinary Scientific GeoConference: SGEM, Vol. 17, pp. 673-678.

[26]Gummesson, E., 2000, Qualitative Methods in Management Research. 2nd ed. Thousand Oaks: Sage.

[27]Gupta, M., Galloway, K., 2003, Activity-based costing/management and its implications for operations management. Technovation, 23(2), 131-138.

[28]Henssen, J., 2010, Land Registration and Cadastre Systems: Principles and Related Issues, Lecture Notes, Masters Program in Land Management and Land Tenure, Munchen: TU Munchen.

[29]Juran, J., Gryna, F., 1993, Quality Planning and Analysis: From Product Development through Use. New York: McGraw-Hill.

[30]Kemmis, S., McTaggart, R., 1988, The Action Research Planner. 3rd ed. Geelong: Deakin University Press.

[31]Klotz, L., Horman, M., Bi, H. H., Bechtel, J., 2008, The impact of process mapping on transparency. International Journal of Productivity and Performance Management (1741-0401), 57(8), 623-636.

[32]Krauss, S. E., 2005, Research paradigms and meaning making: A primer. The qualitative report, 10(4), 758-770.

[33]Leong, G. K., Snyder, D. L., Ward, P. T., 1990, Research in the process and content of manufacturing strategy. Omega, 18(2), 109-122.

[34]Lincoln, Y. S., Guba, E. G., 1985, Naturalistic inquiry. Sage. 416 p.

[35]Manea, G., 2021, Cadastrul general-garantul dreptului de proprietate (General cadastre-guarantee of the property right). Proceedings of Conference "Teoria și Practica Administrarii Publice", Chișinău, Moldova, 21 May 2021, pp.365-369.

[36]Maskell, B. H., 1991, Performance measurement for world class manufacturing: A model for American companies.1 st Ed. Productivity Press, 431 p.

[37]Maxwell, J. A., 2012, Qualitative research design: An interactive approach. Sage publications. 218 p.

[38]McLellan, M., 1996, Workflow metrics: one of the great benefits of workflow. In: H. Osterle & P. Vogler, eds. Praxis des Workflow-Management. Braunschweig: Vieweg Verlag, pp. 301-318.

[39]Merriam, S. B., 1998, Qualitative Research and Case Study Applications in Education. Revised and Expanded from Case Study Research in Education. San Francisco: Jossey-Bass Publishers.

[40]Moscovici, A. M., Paunescu, V., Salagean, T., Calin, M. C., Iliescu, A. I., Suba, E. E., Grecea, C., Manea, R., 2019, 3D Cadastre: A Smart Approach for Road Infrastructure. AgroLife Scientific Journal, 8(1).

[41]Neuman, W. L., 2003, Social Research Methods: Qualitative and Quantitative Approaches. 7th ed. Boston: Allyn and Bacon. 599 p.

[42]Oniga, V. E., Chirilă, C., Macovei, M., 2016, Low-cost unmanned aerial systems in cadastral applications. International Multidisciplinary Scientific GeoConference: SGEM, Vol. 2, pp. 947-954.

[43]Păunescu, V., Iliescu, A. I., Sălăgean, T., Șuba, E. E., Nap, M. -E., 2024, An analysis of strategic goals and public procurement strategy regarding the implementation of The National Program for Land Registration in Romania. Land Use Policy, 146 C, 107334.

[44]Păunescu, V. , Iliescu, A.I., Calin, M.C., Salagean, T., Kohli, D., Nap, M.-E., Suba, E.-E., 2023, A quality assessment of the Romanian National Program of Systematic Land Registration the point of view of local cadastral offices directors. Survey Review, 56:396, 284-299.

[45]Păunescu, V., Kohli, D., Iliescu, A.I., Nap, M.-E., Suba, E.-E., Salagean, T., 2022, An Evaluation of the National Program of Systematic Land Registration in Romania Using the Fit for Purpose Spatial Framework Principles. Land, 11(9), p. 1502.

[46]Place, F., Migot-Adholla, S. E., 1998, The economic effects of land registration on smallholder farms in Kenya: evidence from Nyeri and Kakamega districts. Land Economics, 74(3), 360-373.

[47]Plesa (Chiriacescu), M., 2023, Study on the use of computer based information systems in production management. Scientific Papers. Series "Management, Economic Engineering in Agriculture and rural development", Vol. 23(1), 571-576.

[48]Pop, S., Pop, N., 2021, Realization of the general cadastre in Chinteni commune, Cluj county. Annals of the University of Craiova-Agriculture, Montanology, Cadastre Series, 51(2), 455-462.

[49]Reason, P., Bradbury, H., 2001, Inquiry and Participation in Search of a World Worthy of Human Aspiration. In: P. Reason & H. Bradbury, eds. Handbook of Action Research: Participative Inquiry and Practice. London: Sage.

[50]Richardson, P. R., Gordon, J. R., 1980, Measuring total manufacturing performance. Sloan Management Review (pre-1986), 21(2), p. 47.

[51]Roberge, D., 2012, Land Governance Key to Sustainability: GIM International Interviews Daniel Roberge. Land Governance Key to Sustainability: GIM International Interviews Daniel Roberge, 26 March, p. 3.

[52]Robson, C., 2011, Real World Research. Chichester: Wiley.

[53]Salagean, T., Rusu, T. P., Deac, J., Manea, R., Virsta, A., Calin, M., 2016, Aspects regarding the achieving of a geographic information system specific for real estate domain. AgroLife Scientific Journal, 5(2).

[54]Singirankabo, U. A., Ertsen, M.W., 2020, Relations between land tenure security and agricultural productivity: Exploring the effect of land registration. Land, 9(5), p. 138.

[55]Slack, N., Chambers, S., Johnston, R., 2010, Operations Management. 5th ed. Pearson Education.

[56]Smithson, J., 2008, Focus groups. The Sage handbook of social research methods, pp. 357-370.

[57]Soliman, F., 1998, Optimum level of process mapping and least cost business process re-engineering. International Journal of Operations & Production Management. 18(9-10), 810-816.

[58]Susman, G., Evered, R., 1978, An assessment of the scientific merits of action research. Administrative Science Quarterly, 23 December, Vol. 23, pp. 582-603.

[59]Sztranyiczki, S., Coltea, A., 2020, Legal Splinters with Regard to the National Programme for Land Registration and the Land Registry. Acta Universitatis Sapientiae, Legal Studies, Vol. 9(1), 179-190.

[60]Tangen, S., 2003, An overview of frequently used performance measures. Work study, 52(7), 347-354.

[61]Ulin, P. R., Robinson, E. T., Tolley, E. E., 2005, Qualitative Methods in Public Health: A Field Guide for Applied Research. Medicine and Science in Sports and Exercise, 37(7), 1249. San Francisco: Jossey-Bass.

[62]Ungur, A. B., Barb, M. A., Styliadis, A. D., Styliadou, A. A., 2019, Topo-cadastral works performed for the registration in the integrated system of cadastre and real estate advertising of the real estates from UAT Jidvei, Alba county. Pangeea, pp. 91-99.

[63]Ursu, M. A., Ursu, C. A., Dima, N., Filip, L. O., 2015, Importance and the particularities of introducing systematic cadastre in România. Annals of the University of Petrosani Mining Engineering, Vol. 16, 97-102.

[64]Wickham, L., Jeremy, W., 2016, Management Consulting: Delivering an Effective Project. 5th ed. Harlow: Pearson.

[65]Wilson, N. H. M., Macchi, R. A., Fellows, R. E., Deckoff, A. A., 1992, Improving Service on the MBTA Green Line Through Better Operations Control. Transportation research record, Vol. 1361, pp. 296-304.

[66]Yubaidi, R. S., 2020, The role of land deed official regarding legal certainty of complete systematic land registration. Jurnal Hukum dan Peradilan, 9(1), 27-42.

[67]Zevenbergen, J., Augustinus, C., Antonio, D., Bennett, R., 2013, Pro-poor land administration: Principles for recording the land rights of the underrepresented. Land use policy, Vol. 31, 595-604.