

Digitalization in Project Management

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Abstract

Digitalization is a phenomenon that is gaining more and more scope, especially with the COVID-19 pandemic, which blocked all activities and required a reinvention and restructuring of everything we know. But, although it was a difficult job, man, by his nature, found a solution: digital tools, which allowed the resumption of many activities, including online meetings (working sessions, conferences, courses or simply connecting with close ones). Digital tools also provided real support for ongoing projects, enabling activities such as business meetings, as well as the creation and transmission of documents. Therefore, in our research we propose to find out how digital tools have been used and what impact they have had on projects.

Key words: digitalization, digital tools, project, project management, project team

J.E.L. classification: C83, D81, I23, H12, M15, O22

1. Introduction

Digitalization is a phenomenon that has always been present, but has gained momentum in recent years, especially since the COVID-19 pandemic, which has affected both society and the economy. Although the pandemic has turned many activities upside down, digitalization has provided answers to existing problems and allowed the resumption of most activities in a more unusual or less used form until then: online.

Digitalization is a stage of technological development that gives technology the ability to generate changes at the behavioral level, at the level of mentality and the fundamental processes of society's functioning. Digitalization can be seen as a "technological revolution" leading to the transformation of humanity. (Tănase, Parachiv, 2018, p. 85)

Digitalization, through its tools, supports the development of interaction-type activities (work meetings, conferences, workshops, social meetings, etc.), but also lucrative activities (making documents, signing them and transmitting them online).

Both categories of activities, interaction and lucrative, within the projects were carried out through digital tools, where we will see in what form they were carried out (favorable or unfavorable), as well as the impact they had on project management, overall.

2. Literature review

The notion of *digitalization* appears since 1971, being seen as the digitalization of society, which represented both a potential and a limitation of the development of society and research with the support of digital tools.

Subsequently, digitalization is seen as the use of digital tools and data to achieve results, improve various activities, replace or transform certain processes, and create a specific environment for digital activities with an emphasis on information. (Schallmo, Williams, 2018, p. 6)

Digitalization allows the exploitation of new possibilities by integrating its tools into all types of processes, offering the possibility of their reconstruction and improvement. Although digitalization seems to only provide solutions and support to technologies and strategies, it can have certain repercussions on communication, individual and organizational skills, possibly even on innovation. (Kozarkiewicz, 2020, p. 238)

Project management plays an important role both in properly managing a project in terms of scope, time and budget, and in identifying, managing and engaging stakeholders. All these elements can influence the results of the project and have a major impact on defining the project as successful.

New technological trends, such as virtual ones, augmented reality and specific tools in the field of digitalization, represent means of facilitating the involvement of all stakeholders, enabling the creation of value.

Creating project deliverables with the help of digital tools supports more effective engagement of team members and provides the opportunity to discuss various ideas and expectations from everyone. (Kier, Huemann, 2022, p. 3)

Digitalization can lead to the expansion of the scope of a project, changes in project management methodologies, easier approaches, different implementation of certain processes (such as communication between project team members). Digital tools can radically transform the role of a project and its results. (Kozarkiewicz, 2020, p. 239)

Within a project, managers play an important role as they are responsible for managing all activities and situations encountered, with the aim of delivering good quality results, and for this they need:

- data management and analysis skills;
- innovative thinking;
- security and privacy knowledge;
- knowledge of legal and regulatory compliance;
- the ability to make decisions based on data;
- collaborative leadership skills. (Langley, 2018, p. 5)

Digital post tools simplify project management from the point of view of managing them, starting from the project idea to the total completion of the project, within the defined budget and using a certain amount of resources. The main project management activities include planning, tracking, reviewing, delegating and measuring results. (Kukhnavets, 2019)

Digital tools used in project management have enabled easier collaboration between team members. With the right tool, project managers can assign tasks to team members, who, in return, can add comments, set alerts and organize various tasks, etc. This level of collaboration leads to better results and helps foster a cooperative, synergistic environment. (Ripton, 2021)

3. Research methodology

Research objectives

The present research involves identifying the degree of knowledge of the notions of digitalization and digital tools, evaluating the use of digital tools and their impact on projects, both from the perspective of project managers and project team members.

The sample and its characteristics

The sample targeted participants in the projects, both project managers and members of the project teams, without discrimination of gender, age or level of studies. A certain type of project was not targeted for carrying out the research, as digitalization is generally valid for all types of projects.

Questionnaire design

The data collection technique was based on an online questionnaire, through which the respondents were asked to answer, individually and voluntarily, predetermined questions related to digital tools, such as YES, NO, I DON'T KNOW, as well as selection options from given lists.

The questionnaire was formed into distinct parts. In the first part of the questionnaire, there was a demographic question about the respondent's position (project manager, team member, both positions) and introductory questions, intended for both positions in the project, questions such as:

- how the respondents are or are not familiar with the notions of digitization and digital tools;
- whether or not digital tools are useful within a project;
- whether digital initiatives must have certain objectives;
- the types of digital tools used within the project/projects, where applicable;
- types of documents that should be digitized.

The second part of the questionnaire contained questions specific to project managers, such as:

- whether it is important for new technologies to be understood by project managers;
- if the development of a need for digital skills or other skills to achieve project management is prioritized;

- whether the project manager must have well-defined digital skills;
- whether the project manager must be capable, prepared and willing to deal with digitization.

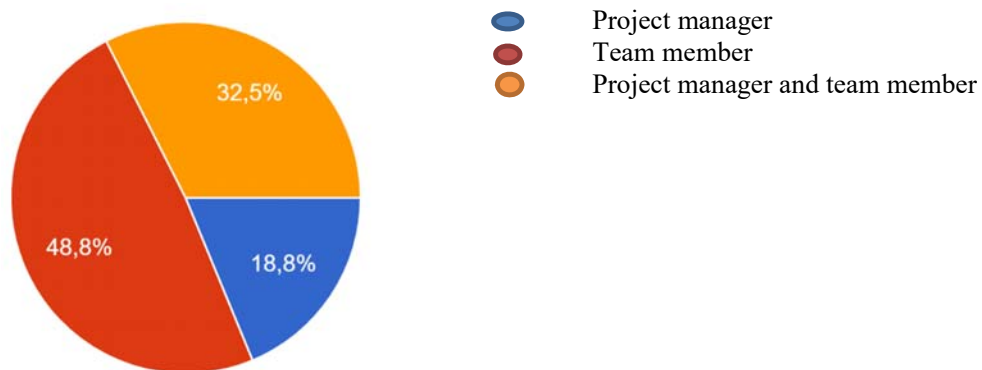
The third part of the questionnaire included specific questions to project team members, such as:

- whether digital skills were an important element in the selection of the project team;
- if the project team had well-developed digital skills;
- if digital tools have favored the way of reporting;
- if there were difficulties in using a digital tool;
- if he benefited from training to improve digital skills.

4. Findings

The response to the questionnaires sent, were received with a balanced demographic positioning: project managers 32.5%, project team members 48.8%, both positions 18.8%.

Figure no. 1. Positioning of respondents



Source: developed by the author

For the YES, NO, I DON'T KNOW questions, the respondents' answers were:

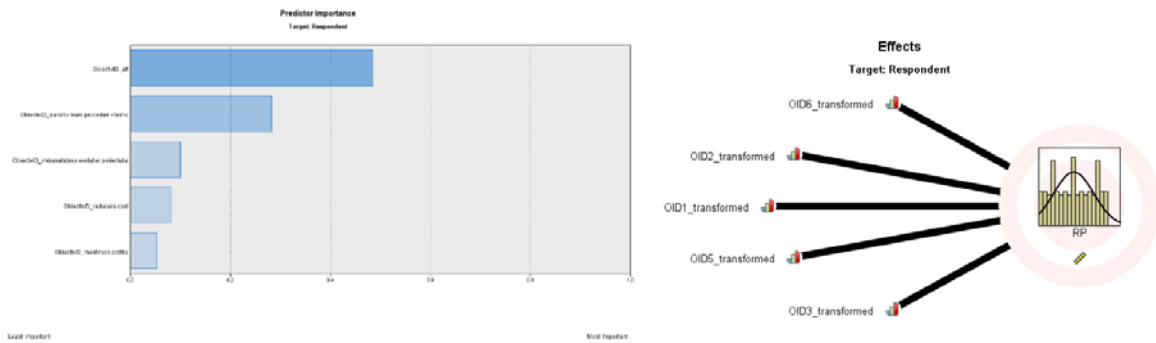
Table no. 1 Questionnaire answers

Question	Yes	No	I don't know
Familiarization with the notions of digitization and digital tools	70%	20%	10%
Digital tools are useful in a project	66,3%	11,3%	22,5%
It is important that new technologies are understood by project managers	63,4%	14,6%	22%
Priority is given to the development of a need for digital skills or other skills to achieve project management	53,7%	29,3%	17,1%
The project manager must have well-defined digital skills	53,7%	19,5%	26,8%
The project manager must be able, ready and willing to deal with digitization	61%	14,6%	24,4%
Digital skills were an important element in the selection of the project team	41,3%	33,8%	25%
The project team had well-developed digital skills	51,2%	35%	13,7%
Digital tools have favored the way of reporting	65%	15%	20%
There were difficulties in using a digital tool	60%	22,5%	17,5%
Received training to improve digital skills	38,8%	33,8%	27,5%

Source: developed by the author

Evaluating the importance of the variables included in the evaluation class Objectives of digital initiatives, the regression test was applied through automatic linear modeling. From the data analysis, it was observed that the degree of importance of the variables in the construction of the model (figure 2) had the values ObjectiveID_alt = 0.48, ObjectiveID_transformation of internal procedures = 0.28, ObjectiveID_improving the evolution of the project = 0.10, ObjectiveID_cost reduction = 0.08 and ObjectiveID_hold position = 0.05.

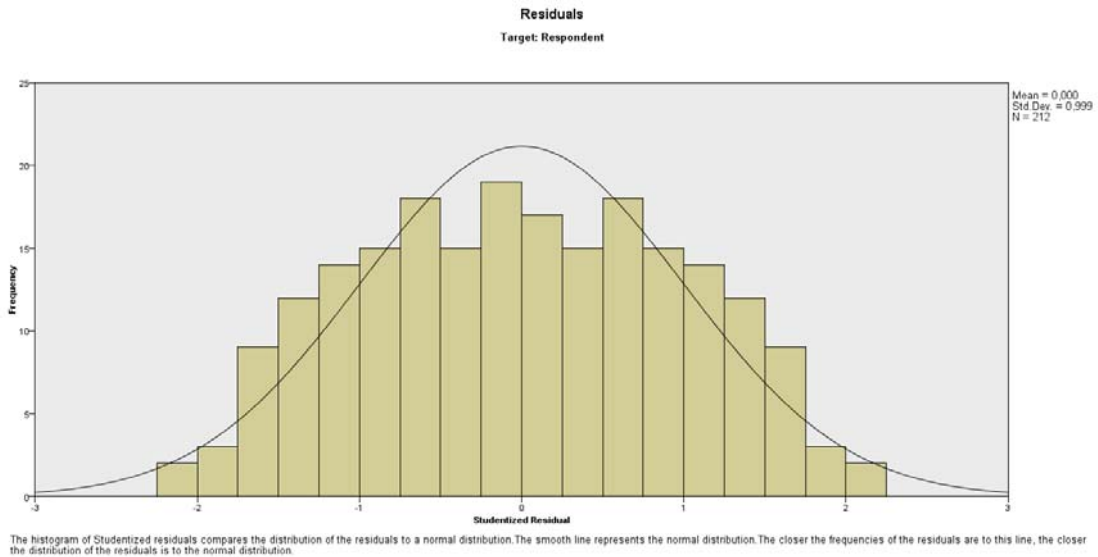
Figure no. 2. Predictor importance and effects



Source: developed by the author

Regarding the scatter diagram, figure 3, the distribution is normal, without asymmetry, without flattening index, linear, which indicates a strong suitability of the evaluation and analysis model of the Digital Initiatives Objectives to the data of the dimensions that compose it.

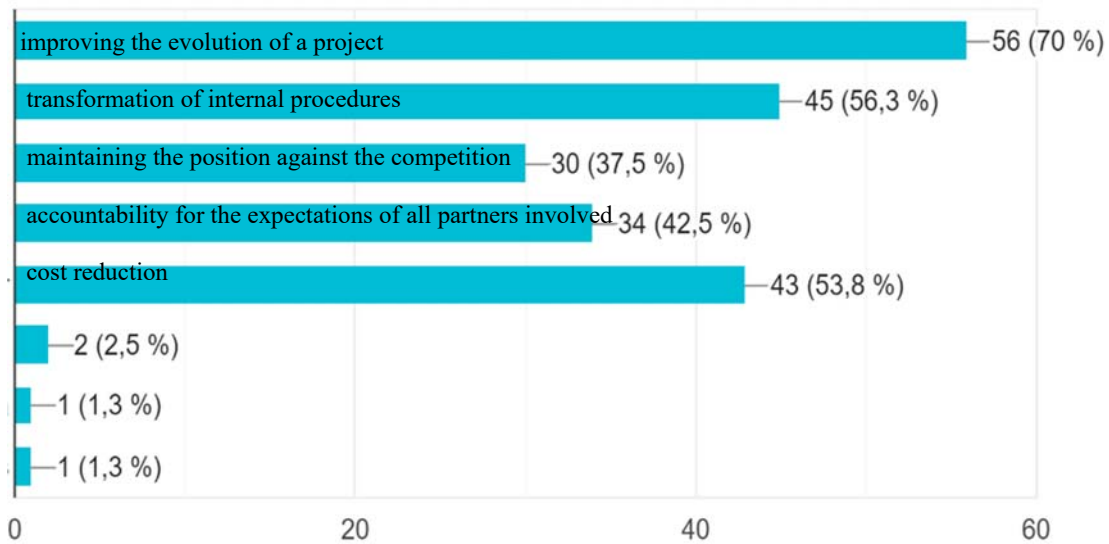
Figure no. 3. Residuals



Source: developed by the author

For the selection from a preset list of choice questions, the respondents' answers were:

Figure no. 4. Objectives of digital initiatives

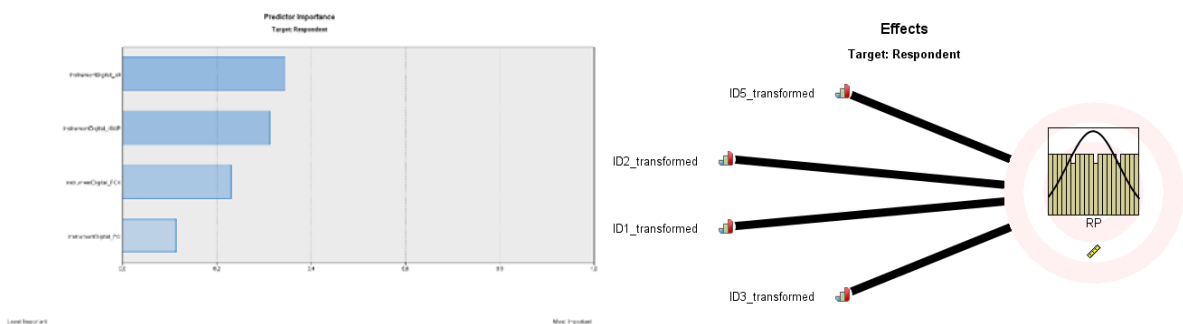


Source: developed by the author

As can be seen, 70% of respondents believe that the main objective of digital initiatives is to improve the evolution of a project, followed by the transformation of internal procedures with 56.3%, closely followed by cost reduction with 53.8%, accountability for the expectations of all partners involved with 42.5% and maintaining the position against the competition with 37.5%.

Evaluating the importance of the variables included in the evaluation class Digital tools used in the project, the regression test was applied through automatic linear modeling. From the data analysis, it was observed that the degree of importance of the variables in the constitution of the model (figure 5) had the values InstrumentDigital_alt = 0.34, InstrumentDigital_ISMP = 0.31, InstrumentDigital_FCX = 0.23 and InstrumentDigital_PC = 0.11.

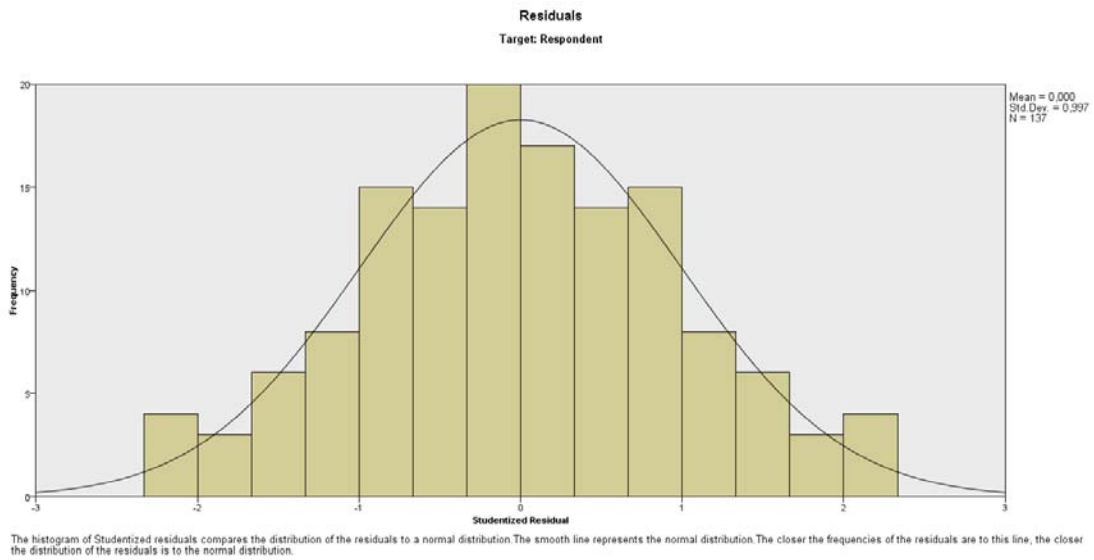
Figure no. 5. Predictor importance and effects



Source: developed by the author

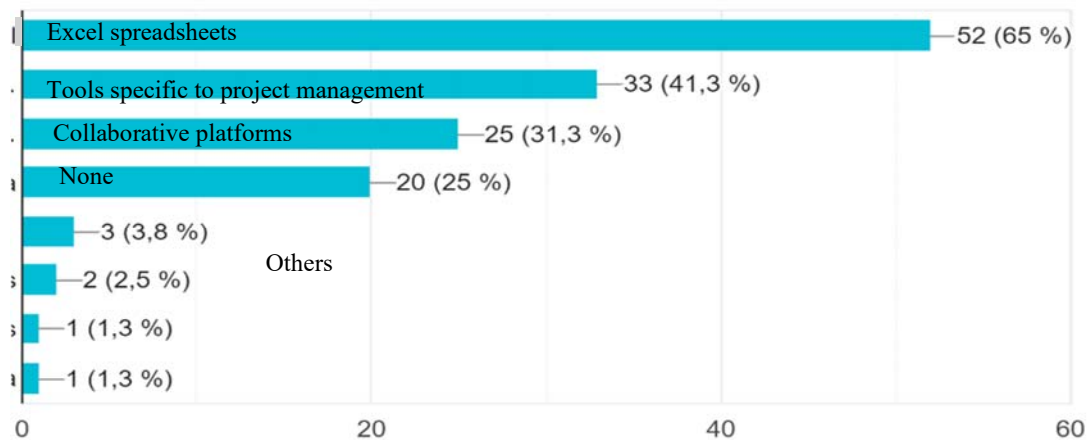
Regarding the scatter diagram, figure 6, the distribution is normal, without asymmetry, without flattening index, linear, which indicates a strong suitability of the evaluation and analysis model of the Digital Tools used in the project to the data of the dimensions that compose it.

Figure no. 6. Residuals



Source: developed by the author

Figure no. 7. The digital tools used in the project

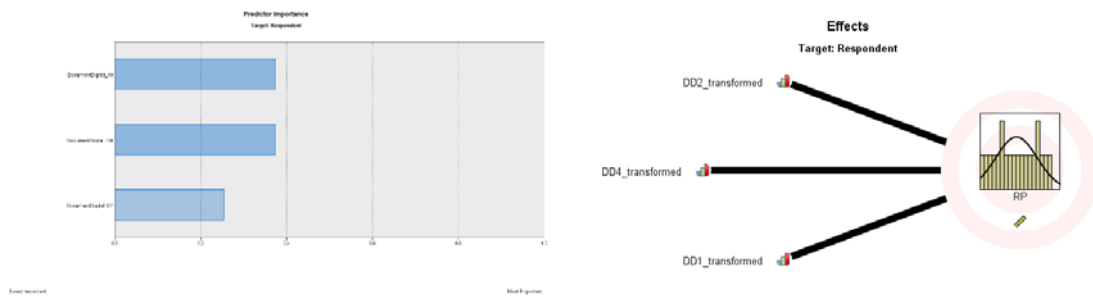


Source: developed by the author

Regarding the digital tools used, the most used were Excel Spreadsheets with 65%, followed by specific project management tools with 41.3%, collaborative platforms with 31.3%.

Evaluating the importance of the variables included in the Digitized documents evaluation class, the regression test was applied through automatic linear modeling. From the data analysis, it was observed that the degree of importance of the variables in the constitution of the model (figure 8) had the values DocumentDigital_alt = 0.37, DocumentDigital_RA = 0.37 and DocumentDigital_FP = 0.25.

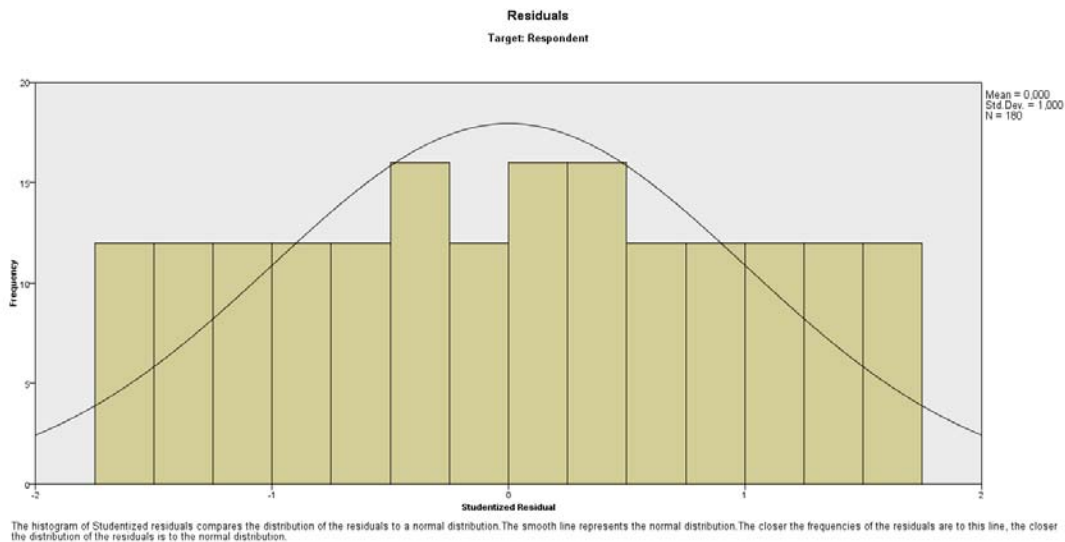
Figure no. 8. Predictor importance and effects



Source: developed by the author

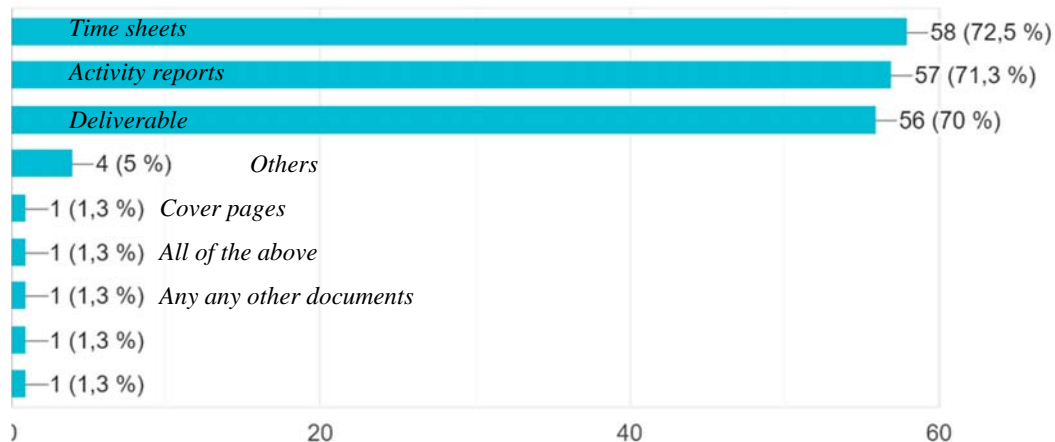
Regarding the scatter diagram, figure 9, the distribution is normal, without asymmetry, without flattening index, linear, which indicates a strong suitability of the evaluation and analysis model of Digital Documents to the data of the dimensions that compose it.

Figure no. 9. Residuals



Source: developed by the author

Figure no. 10. Types of documents that should be digitized



Source: developed by the author

Regarding the documents that should be digitized, the respondents consider that the priority would be time sheets with 72.5%, activity reports with 71.3%, deliverables with 70%, as well as any other types of documents.

5. Conclusions

Digitalization, although it has been around since 1971, has been gaining momentum in recent years, integrating itself into almost all aspects of society, from everyday life to the way we work, individually and in teams.

Digitalization is also very present in projects and project management, especially with the emergence and "disappearance" of the COVID-19 pandemic, when all project work procedures and methodologies had to be transformed and reinvented.

Within projects, the project manager is the central pillar as he is responsible for managing all project activities and his team, in order to successfully complete a project and achieve the desired results. As it emerges from the present research, the project manager must understand the new technologies, have the digital skills necessary to achieve project management, must be able, prepared and willing to face the impact of digitization.

Also, the project team should not be inferior either, as digital skills are a plus in the process of selecting the project team, and if they encounter difficulties in using them, they are encouraged to ask for support and can be given training to improve these skills, where applicable.

Project members, based on the research results, are familiar with the notions of digitization and digital tools used in project management, consider them useful in a project and favor the reporting method.

Evaluating the importance of the variables included in Objectives of digital initiatives, in Digital tools used in the project and in the Digitized documents evaluation class, the regression test was applied through automatic linear modeling.

The scatter diagram has the distribution normal, without asymmetry, without flattening index, linear, which indicates a strong suitability of the evaluation and analysis model of the Digital Initiatives Objectives, the Digital Tools and Digital Documents to the data of the dimensions that compose it, also for the Digital Tools used in the project

So digitization and its tools offer many advantages when used according to the requirements of each project, but it is up to each person to continuously improve their digital skills in order to improve the quality of work.

6. Acknowledgment

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7. References

- Kier, Ch., Huemann, M., 2022. *Digitalization as a Game Changer in Project Stakeholder Management*. Project Management Institute.
- Kozarkiewicz, A., 2020. General and specific: The impact of digital transformation on project processes and management methods. *Foundations of Management*, Vol. 12, pp. 237-248, <https://doi.org/10.2478/fman-2020-0018>
- Kukhnavets, P., 2019. Digitalization of Management Processes: How it Affects Projects, Hygger, [online] Available at: <https://hygger.io/blog/digitalization-management-processes-how-it-affects-projects/> [Accessed 24.05.2023]
- Langley, M. A., 2018. *The Project Manager of the future. Developing Digital-Age Project Management Skills to Thrive in Disruptive Times*. Project Management Institute.
- Ripton, J., 2021, How Digital Transformation Is Changing Project Management, Small Business Trends, [online] Available at: <https://smallbiztrends.com/2021/06/digital-transformation-project-management.html> [Accessed 24.05.2023]

- Schallmo, D. R. A., Williams, Ch. A., 2018. *Digital Transformation Now! Guiding the Successful Digitalization of Your Business Model*. Cham, Springer International Publishing, https://doi.org/10.1007/978-3-319-72844-5_3
- Tănase, V. I., Paraschiv, R. V., 2018. Digitization, Digitalization and Digital Transformation. *Philosophical-psychological Research Journal*, no. 2, pp. 85-92.