MANAGEMENT TECHNIQUES AND TOOLS IN PROJECT PLANNING – PART 2. QUALITATIVE RESULTS OF RESEARCH

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Summary: The paper is the second part of the elaboration on identifying processes in a planning phase of a project. The theoretical background in the field of project management, methodology of the research, the content of the experiment and features of research tools was presented in the complementary paper called "Management Techniques and Tools in Project Planning – Part 1. Quantitative Results of the Research". The paper presents a short description of human resources management in projects (team building, creative thinking and decision making) as a theoretical background the experiment conducted with 10 managers of small projects. There are conclusion and notices about these aspects of human resources management during a planning phase of the project. Qualitative results of the experiment are completed by opinions of participants of the experiment about working with tools and without online management tools it the planning phase of the project.

Keywords: project management, managerial technique, managerial tool, goal, task

1. Introduction

This paper is the second part of the publication in the field of using managerial techniques and tools for project planning. The complementary paper entitled „Management Techniques and Tools in Project Planning – Part 1. Quantitative Results of the Research" refers to selected managerial techniques useful to plan a project and quantitative results about the planning phase gathered by recording activities of experiment participants by the online management tools which they used in order to plan the project. Main goal of these two papers is to identify processes in a planning phase of a project.

This paper presents qualitative results about the planning phase gathered by observing the participants of experiment and examining them by a survey about working with and without online management tools.

Specific objectives within the main goal of the paper are as follows:
– describing notices about human resources management during a planning phase of the project according to the Tab. 1 in the paper entitled „Management Techniques and Tools in Project Planning – Part 1. Quantitative Results of the Research",
– presenting opinions of participants of the experiment about working with tools and without them when planning the project focused on advantages and disadvantage of tools in management.

The methodology of the research was presented in details in the Section 4 of the paper entitled „Management Techniques and Tools in Project Planning – Part 1. Quantitative Results of the Research". Necessary explanations of experiment conditions were also mentioned in appropriate sections of this paper.

It is worth adding that the methodology of the research contained three different methods: recording actions of managers working with online tools (numeric data about behaviour), observing participants behaviour by one of the researchers (an intended

observation with a questionnaire) and examining participants with a questionnaire (a survey after the experiment). Such expanded way of data gave an opportunity to unveil the planning phase of the project in details and to draw quantitative and qualitative conclusions.

In the paper there was used a concept of the system of organizational terms [1] and online management tools [2]. In the same time the management tools were used as research tools to gather data about managers behavior in project planning.

2. Human Resources Management Techniques in Project Planning

As it was described in Tab. 1 in the complementary paper called „Management Techniques and Tools in Project Planning – Part 1. Quantitative Results of the Research", actions taken in the first stages of a project consist of human resources management, i.e. skills of building a project team and being a leader of that team and interpersonal communication and decision making. Both areas were examined in the research by intended observation conducted by researchers and by a survey technique.

In order to make results of both techniques of the research clearer it is necessary to described a theoretical background which was taken into consideration during preparing research questionnaires for the observation and the survey.

The first area of qualitative analysis of the results concerns team building. The idea of teamwork is based on the synergy effect which means that an effect of work done by a few cooperating persons is bigger than a sum of effects achieved by each person individually (without others). Therefore project management is usually done in teams [3]. That is why we can distinguish several types of projects teams. The list there is in Tab. 1.

Tab. 1. Types of projects teams

Name of the project team	Features
Executive Team	A cross-functional group headed by chief executive. Members are chosen by role. The team meets regularly, depends on information from lower levels of a firm.
Cross-Functional Team	A multi-disciplinary team, found in any level of an organization. It is to removes obstacles in exchanging new ideas and skills.
Business Team	A group of people in charge of the long-term running of a project or unit within their organization. It runs a particular unit and strongly depends on the leader.
Formal Support Team	A team providing support and services, such as finance, information systems, administration. The team depends on processes and is to raise productivity of the area.
Task Team	A team selected and kept together for the duration of a project, such as the construction of a new facility. The efficiency depends on close understanding among members and well-organized work practices.
Change Team	A group of experts briefed to achieve change. Value depends on collective ability. It must be led by believers in change, with a high level dedication to their organization.
Hot Group	An autonomous body set apart from the rest of an organization, often in a remote site. Flexible, independent and high-achieving groups of people getting fast results.
Temporary Taskforce	A short-term body set up to study or solve a specific problem or issue and report back to management. Useful in establishing new procedures under intense time pressures.

Source: [4, 5]

If a company is dealing with several independent projects the selection of team members and their adaptation is a key problem for a project manager. Team building starts from a forming stage. On the forming stage a manager uses recruitment and selection techniques and should remember about an adequate composition of a team and different roles played by its members. After forming a team usually enter into a stage of storming. Team members establish norms of behaviour, procedures, goals for the future months and plans to realise them. During this stage main managerial techniques are focused on resolving conflicts within the responsibility for work effects and decisions. After forming and norming in team building there is a stage of effective teamwork. This stage should be accomplished during project realisation, after its planning [6].

In the research three of these stages were examined by the method of observation. The performance level of the project will not be elaborated in the paper.

Stages within project planning are mainly based on managerial techniques which help generate new ideas and which are the second area of qualitative analysis in the research. All those techniques use a mechanism of a human perception and information analysis [7]. The literature presents a statement that the most frequent method used by companies is a brainstorming [8]. The brainstorming session should not last longer than an hour. Proceedings are conducted by a leader who should motivate group members to discuss. It is worth remembering that ideas cannot be assessed during the same session, but a few days later [9].

The third area of human management techniques in project management is decision making [10]. Consequences of them are visible on the stage of project performance. Decision making has been a popular and extensive field of study for many years. Researchers from numerous disciplines, from the Social Sciences to Mathematics and Neurology, have searched for routes to arrive at optimal decisions. Decision implementation, on the other hand, has been fairly neglected. It has often been assumed that if you arrive at the correct decision, implementation would take care of itself [16].

The issue of decision making is an important problem described in the literature on organisational behaviour [11] and project management [12]. Authors, who deal with the issue, state that decision making process includes stages like: preparation (problem defining, goal setting, diagnosis of the situation), projecting and selecting options of problem solution, implementing and controlling results of the decision [13].

However, in the project management such a procedure is rarely used and decision making is strongly connected with an effect of influencing group members on each other. Taking into consideration the fact that in project management decisions are made both individually and by a group, we can indicate strengths and weaknesses of those ways. Individual decisions are undoubtedly made faster that in a group [11]. As an advantage of individual decisions is their accordance with values which are important for a decision maker. Group decisions, comparing to individual ones, are based on more information and knowledge gathered by a group about a particular decision problem [11]. Additionally, a group gives a higher level of acceptance for a selected solution. Moreover the literature of the subject states that group decisions are more effective than individual ones [14].

In this research areas of human resources management were assessed by qualitative research methods. The results of the observation was presented in the Section 2. Additionally, the Section 3 contains results of the survey technique used in order to discover what are the most important differences between working with and without online management tools at the stage of the stages called "setting project goals" and "setting task".

3. Qualitative Findings about Project Planning

Details of the methodology of the research was described in the Section 4 in the complementary paper called „Management Techniques and Tools in Project Planning – Part 1. Quantitative Results of the Research". In this place it is worth to present shortly the project which was given to participants of the experiment.

Managers who participated in the research used many management techniques which ware described in paper called „Management Techniques and Tools in Project Planning – Part 1. Quantitative Results of the Research" and in the Section 2 above. The researcher gave the participants the following instruction: "Prepare a plan consisted of goals and tasks which will allow you to prepare your team project (bachelor theses)". According to theoretical foundations in the Section 2 there were three groups of soft management techniques which were observed by the researchers during the experiment.

The first group of techniques concerns team building and it appeared at the first stage of the experiment – when the participants worked without online management tools. During the research students were forming groups of maximum 4 persons. According to new formal regulations at the WSB University concerning preparing bachelor theses a number of student who form a project team should be 3 or 4 persons. A real forming stage of project groups was done in the previous semester, but referring to the methodology of the research and the theoretical background presented in the Section 2, during classes students eventually had to form real groups. The result of the forming stage was that all groups were the real project groups. Groups started to plan the project and during their work some behaviours evidenced a storming stage of team building (arguments and communication problems). The bachelor projects are managed by a lecturer, who plays a very important role for each team. Students who prepare their theses in groups have to be approved by a teacher and report to him (her) about results of their work. The observation of the their work lets draw a conclusion that respondents formed teams that can be classified as task teams comparing to its definition in Tab. 1.

The second group of techniques consisted of creative thinking sessions. Actually during both stages of the experiment students did only the brainstorming session, although at the second stage the session took less time. This technique turned out to be very useful and easy for participant of the experiment. Managers were discussing in their groups and giving ideas. The problem to solve presented by the teacher (described above) changed into a simple question: "What to do?". The results of brainstorming in all groups were lists of tasks and goals. However, it is worth saying that the results after the first stage of the experiment were prepared on a various level of details. Some managers paid attention to dates, verbs, features etc. and some of they did not.

Another finding is that students working in groups argued very often. A researcher observed their arguments and helped to solve some problems. Most of the students during their discussions forgot to make notes, so later on they did not write complete information in the tools (the goaler and the tasker). It seems that despite the fact they knew rules of the brainstorming, they did not obey them and, actually, they did not use this technique of management.

The third kind of management techniques concerns decision making. Decision making appeared on both stages of the experiment. Observed process of making decisions in groups was realized taking into account following stages:

- defining decision problems ("How to plan things to do", "Who should do particular tasks", "How long should it take to realize goals and tasks"),

– creating options for particular problems and choosing solutions,
– correcting decisions and plans.

Students were discussing the questions and in the first part of the research spontaneously wrote lists of goals and tasks on sheets of paper. After analysing their work it is possible to notice that the distinction between goals and tasks was not clear. The managers made mistakes and treated goals as tasks and in the opposite way. The second stage of the experiment, when they worked with the online tools, were more ordered and better named. Managerial tools not only let separate tasks and goals but also make their definitions more understandable.

Students worked in groups so they were influenced by effects of decision making by a group. They were arguing about goals and tasks. This happened more frequently on the first stage of the experiment because students had not any patterns to use (they worked with empty sheets of paper) and were forced to invent them. The second part of the experiment – working with the online tools – was running more agreeably and decisions were changed due to the additional instructions given by the researcher after consulting work results and participants' considerations about the project. It is possible to claim that a solid and structured management tools can make decision making faster and participant of the team are more conscious of decisions' consequences.

4. Comparison of Planning with and without Management Tools

As it was mentioned above and described in details in the complementary paper called „Management Techniques and Tools in Project Planning – Part 1. Quantitative Results of the Research", the experiment consisted of two stages. The project planning was done twice: firstly - on sheets of paper and, secondly - using online management tools (the goaler and the tasker). Both versions of the project planning were done during the 2-hour session.

Results of managers' work were analysed from the point of view of describing goals and tasks by the experiment's participants. Firstly, the work of all managers were checked if results of their work were different or similar in paper and online version. Secondly, work's results of two managers were selected for a further analysis which was aimed to identify similarities in both versions of the project.

The majority of managers planned the project similarly on the paper and using the goaler and the tasker. For the in-depth analysis of the content authors selected two managers who got the most different and the most similar results in both versions of the project. The Tab. 2 and the Tab. 3 present the content of notes made by those managers (the first stage) and recorded by online tools (the second stage of the experiment).

In the first version of the task manager 5 created a lot of tasks (21 items) and none of goals. The content of tasks presents a very detailed list of what has to be done from the beginning to the end of the project. In the second version (online management tools) this manager set one goal and six tasks which have to lead to achieve the goal. Similar content concerns such issues:
– choosing a subject of the thesis,
– formulating a hypothesis,
– tasks division in the group,
– conducting research (a survey),
– elaborating research results,
– literature study for the case study,
– giving the text to the promotor.

Tab. 2. The most different versions of the project (manager 5 in Tab. 1)

Version 1 (plan on the paper sheets)	Version 2 (goals and tasks saved in online tools)
Goal 1: not written	Goal 1: Writing and defending the bachelor's thesis
Tasks to achieve the goal 1: **1. Choosing the subject of the project** 2. Delegating tasks and duties 3. Planning the structure of the project **4. Formulating a hypothesis** **5. Giving tasks to group members in the first stage of work** 6. Collecting materials 7. Closing the first stage of the project 8. Starting the second stage of the project 9. Constructing a questionnaire. **10. Conducting a survey** 11. Conducting interviews 12. Collecting results **13. Describing results** 14. Closing the second stage of the project 15. Starting the third stage of the project **16. Collecting literature for the case study** 17. "Own" summary of the project **18. Giving the text to the promotor** 19. Correction of the text 20. Making a Powerpoint presentation 21. Closing the project and appearing on the exam	Tasks to achieve the goal 1: 1. **Choosing the subject of the project** – select the subject according to interests of the group **2. Formulating a hypothesis** **3. Tasks division on the first stage of work** 4. Preparing a survey and **conducting research, elaborating results** and creating charts 5. **Designing a case study – gather information from the literature** and the interview with coach 6. Thesis defending – **giving the text to promotor** and pass the exam on 4,5 or 5 grade

Source: Own elaboration.

The rest content created by the manager 5 is different in both versions of the project.

Manager 4 prepared very similar versions of goals and tasks. It is hard to say which version is more complex. In the paper version there is one goal and four big tasks detailed in bullet points. The second version (online management tools) presents two goals and nine tasks. Besides the different number of goals there are only a few differences between both versions. Similar content includes following goals and tasks:

 – writing and defending the bachelor's thesis (goals),
 – preparation, meeting and choosing the subject,
 – collecting materials,
 – writing a table of content, bibliography,
 – conducting research, elaborating its results,
 – preparing conclusions,
 – promotor's acceptation of the text.

Differences that appeared in the Tab. 3 could be caused by using different words for the same activity. Nevertheless, the results of work performed by manager 4 allow to say that the content is very similar.

Tab. 3. The most similar versions of the project (manager 4 in Tab. 1)

Version 1 (plan on the paper sheets)	Version 2 (goals and tasks saved in online tools)
Goal 1: **Writing and defending the bachelor's project**	Goal 1: **Writing the bachelor's project**
Tasks to achieve the goal 1: **1. Preparing** **a) meeting and choosing the subject** b) allocation of duties **c) collecting materials** **2. Writing** a) Stage 1: - familiarisation with materials - analysis and selection materials and methods b) Stage 2 - **table of content** - **preparing a bibliography** - chapter I (theoretical) - chapter II (**research): projecting research, conducting it, analysis of its results and conclusions** c) Stage 3 – summary **3. Promotor's acceptance of the project's content** 4. Defending the project	Tasks to achieve the goal 1: **1. Preparing – meeting and choosing the subject** **2. Collecting materials** **3. Writing – table of content** **4. Writing – bibliography** 5. Individual interviews with employees of the examined organisation **6. Research results' analysis – preparing charts and description of results** **7. Conclusions –** linking the theory with research results and conclusions
Goal 2: not written	Goal 2: **Defending the bachelor's project**
Tasks to achieve the goal 2: not written	Tasks to achieve the goal 2: **1. Promotor's acceptance –** sending the whole elaboration 2. Learning – preparing a presentation and learning for the final exam

Source: Own elaboration

4. Opinions about Work with and without Management Tools

After the planning phase of the project students were asked to fill a questionnaire with their remarks and insights on work with and without management tools (the goaler and the tasker). Opinions expressed by managers on open questions were mostly about using managerial tools. The approving and disapproving statements about both versions of accomplishing the project planning are presented in the Tab. 4.

The analysis of respondents' opinions shows that working with the goaler and the tasker is an advantageous method of work. Seven of ten managers expressed positive views on that. Nevertheless, paper versions of project planning were also assessed quite well (6 positive opinions). Three managers gave negative features of working with tools and only one respondent criticised the paper version of the project.

The qualitative analysis of the opinions shows that most of them are connected with such issues: time of work, obtained results, flexibility, accessibility of work results and creativity in group (Tab. 5).

Tab. 4. Opinions of students on planning with and without managerial online tools

Stage of the experiment	Advantages	Disadvantes
Planning without tools (1st version of the project)	"Paper version of the project is better than online one. It is **less time consuming** and we can **always have it on hand**" [manager 8] "It is faster when it is on the paper" [manager 7] "All group considers the paper version as **more effective because requires less time.** We are traditionalists and a **written word is more important for us**". [manager 1] "Preparing a plan on the paper was more effective and **the group was more engaged in the process**" [manager 6] "The plan on the paper is **more flexible**" [manager 9] "Preparing the plan on the paper is **faster than online**" [manager 3]	"**Modification** of a paper plan causes its **illegibility**. A paper sheet **can be lost or destroyed easily**" [manager 3]
Planning with tools (2d version of the project)	"Thanks to this tool the **work is much easier**. The tool helps **systematise work** and set terms of particular tasks. The application gives a possibility of effective gathering all literature for the thesis" [manager 4] "The tool is very helpful, **guides towards particular issues and tasks division**. It forces giving answers" [manager 5] "In the application we can precisely **link goals with tasks.** **Long-term planning and planning a lot of tasks** is easier with tools" [manager 7] "Planning goals with the online system is **very clear**. Although inputting information is quite complicated and long lasting (many repetitions) a final summary is clear". [manager 10] "Tools **help organise work**" [manager 9]	"The negative feature of the tool is the fact that it is **time consuming and requires a lot of necessary descriptions, often repeated**" [manager 5] "The application **releases from thinking and responsibility**. It includes schemes that it **kills creativity**" [manager 1] "The management tools made work **longer**. We think that tools did not make it easier. Schemes were not matched to our needs" [manager 6]

| | "The **plan** in the system is **more precise and can be simply modified**. Files on the server are **available in any time**. Although using tools requires more time it gives profits to the group in the stage of goals' and tasks' performance. The online version of the plan is more effective" [manager 3]
"**Planning** with tools was **easier** than on paper. **Modifications** of goals and tasks were **done faster**" [manager 2] | |

Source: Own elaboration

Tab. 5. The most important features of work with and without tools

Criteria	Planning without tools (1 version of the task)	Planning with tools (2 version of the task)
Time of working	Short	Long
Obtained results	-	Very precise, clear
Flexibility	Difficult to modify, but it can be done faster	Easier to modify, but it takes time
Accessibility of list of goals and tasks	Any time	Any time
Creativity in group	High	Low
Other features	A paper sheet can be lost, destroyed. A paper word is more important	Online tools are helpful to organise, systemise work. Results are clear, very precise. It is better to deal with a lot of tasks. Tools link goals and tasks.

Source: Own elaboration

As it is presented in Tab. 5, unequivocal assessment of the tools and working without them is not possible. However, forms of the goaler and the tasker have some strenghts and also weaknesses. It has to be mention that the goaler and the tasker are prototypes of management tools which will be improved in the future. Nevertheless, even these prototypes helped managers to plan the project and make it much more precise than only having a technique and an empty sheets of paper.

5. Conclusions

The first part of this elaboration ("Management Techniques and Tools in Project Planning – Part 1. Quantitative Results of the Research") showed numeric data about managers behaviour during planning phase of the experiment. The main conclusion was that there was no dominant way of planning projects even when it was the same project for 10 managers and its idea was very simple.

In this paper we presented results which concern issues in human resources management such as team building, creative thinking in groups and decision making. Particular conclusions and notices in these areas of "soft management" were presented in the Section 3. They were structured according to the theoretical foundations described in the Section 2. The main finding derived from the observing the participants was they behaved mostly similar to theories or concepts in team building and decision making. However, the participant did not use brainstorming properly even though they knew this method of creating thinking. They put aside rules and tried to create new solutions rather by intuition than a methodological approach.

According to the Section 3 we can conclude about not only the way of planning (presented in "Management Techniques and Tools in Project Planning – Part 1. Quantitative Results of the Research") but also about the content of goals and tasks created with and without management tools. On one hand, using the management techniques gave some opportunities in creating something new, unique and original. In the first stage of the experiment (working without tools) most of ideas appeared and some essential decision were made. Nevertheless, this initial stage of any project should be followed by systematic and detailed approach. This way of planning was not possible without the management tools. The tools used in the second stage made the information written in the pieces of paper more practical and easy to implement. According to the students opinions about the tools it seems that the management tools gave them a feeling of certainty and a clear vision of the project. However, despite the fact that both stages were one after another, participant did not remember content of goals and tasks created just a few minutes ago.

The Section 4 contains the literal opinions of the experiment participant about working with and without tools and our general conclusions in Tab. 5. We established six criteria of this comparison. In five of them the way of project planning differs quite much.

The authors are aware of some limitations of such conclusions – the experiment was carried out among students of management studies and in the very specific topic of their activity. However, the results of the experiment and the conclusions gave a perspective of the future development of the system of management tools (transistorshead.com) in other tools required in other managerial activities. The research was one of a few such experiments carried out by authors in the field of management techniques and tools and it proved also a necessity of the system of the organizational terms which was invented by one of the authors. This approach to management research gives possibility of comparing results of different research in different fields of management as well as recording real actions of managers (participants of experiments) by the management tools.

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