

EVALUATION OF MEETING EFFECTIVENESS FOR IMPROVEMENT OF DIGITAL TOOLS

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Abstract

Meetings are an integral part of every company. During the meeting new ideas are generated, experiences are shared, decisions are made; therefore, it is necessary to make meetings more effective and productive. In today's digital age, which development was accelerated by the COVID-19 pandemic, different digital tools are being created which help to organise various meeting management stages in a more qualitative way. With the help of digital tools, it is possible to significantly facilitate the observance of meeting plans, preparation of the meeting minutes and sending meeting minutes to the participants. This study is based on data collected from a specific focus group that provided information about their company and meeting management experience. This group was selected as potential clients of meeting management tool Meetinch. Using the Chi-square Independence Test and Principal component analysis the quality of meeting organisation and the readiness of meeting organisers to pay for a meeting management tool depending on other factors were examined. It was concluded that planning a meeting and summarizing the results are important for a quality meeting organisation. The readiness of companies to pay for a meeting management tool depends on the sector of the company, number of employees, the number of participants at the meeting and the possibilities of summarising the meeting results.

Key words: meeting management, online meeting, add-in tool, meeting quality assessment.

Introduction

Communication between company's employees is one of the most important aspects in every organization. Data show that managers of large companies spend more than 75% of their time preparing, attending and managing meetings (Allen *et al.*, 2014). Since meeting is a place where information is exchanged, ideas are generated and gathered and decisions are made, it is very important that meetings are organized as efficiently as possible.

In order to make different stages of the meetings more efficient, both company managers and researchers are looking for about improving the efficiency of meeting organization. Theoretical framework of effective meeting organisation consists of three stages: preparation, implementation and summarising of results. Preparation is required before organising meeting-setting goals, selecting and informing participants, time planning, drawing up and sending out the programme. During the implementation of the meeting it is necessary to start and finish on time, to stick to the agenda, assign a recorder and time keeper, discuss next steps and allocate responsibilities. After the meeting it is necessary to send a summary to the participants with decisions made and next steps to be taken, list of responsible persons for the implementation and implementation deadlines (Koshy *et al.*, 2017). Various of the previously mentioned organisational stages can be made more efficient by using digital meeting management tools. Some studies show that a lot of meeting organizers do not use basic meeting planning methods which is the reason why most of the meetings are considered a waste of time (Geimer *et al.*, 2015). Researchers who develop recommendations

for improvement of meeting quality, identify several design characteristics related to meetings (Leach *et al.*, 2009; Cohen *et al.*, 2011). Design characteristics include using agenda, keeping meeting minutes, meeting punctuality etc. One of the characteristics that could increase meeting efficiency is the improvement of preparation of meeting minutes which usually takes a lot of time (Vermaelen & Kovach, 2021). The question on the impact of meetings on employee well-being was considered in some studies (Luong & Rogelberg, 2005). The authors found a significant positive correlation between meeting attendance and daily fatigue.

Time is the most important resource for the company and its management (Rovelli, 2020). In order to use this resource effectively, it is necessary to act strategically and need to pay close attention to the schedule. This is especially important for large companies, whose management model is a complex set of different processes and circumstances, where the organization, conduct, and planning of meetings and decision-making process plays a major role in its management. Thus, one of the main principles of efficient use of time resources is a well-thought-out and cleverly organized meeting.

In today's digital age, Information and communications technologies have played an important role in both work and daily life. In Latvia, by the year of 2021 the use of Information and communications technologies (ICT) was ensured in absolutely all enterprises (Official statistics portal, 2021). COVID-19 pandemic stimulated the ICT field more than ever and it was the biggest experiment of 'work from home' (Banjo *et al.*, 2020). During the

COVID-19 pandemic people became more active online because the pandemic changed their habits and replaced presence meetings, conferences, meetings with friends and communication at work with different telecommunication online tools. The above mentioned improvements and innovations have increased the productivity, cooperation and significantly reduced the amount of waste resources (Attaran, M., Attaran, S., & Kirkland, 2019). In comparison with the time before the COVID-19 pandemic, the number of online meetings has doubled. This COVID-19 pandemic-driven online activity highlights the potential of Information and communications technologies (Mouratidis & Peters, 2022).

The aim of this study is to analyse previous meeting quality dependence from other factors (e.g. sector, number of employees, time spent in meetings, use of digital tools, etc) and meeting organisers' readiness to pay for the digital meeting management tool depending on other factors. To mitigate the use of wasteful resources this paper focuses on a comparison of organising planned meetings with or without digital-based assets.

Materials and Methods

In the middle of 2020 a company WeAreDots developed the tool Meetinch- meeting management solution which helps to plan, manage and follow on meetings and its results. In the autumn 2020, the company WeAreDots in cooperation with Latvia University of Life Sciences and Technologies organised study in order to find out efficiency, usability of the tool, and possibility to improve functional requirements, economical usefulness and efficiency. In order to achieve these goals, a customer identification survey was developed. At the

end of 2021 in total 889 users were registered in the Meetinch database.

In total, 15 questions were included in the survey to identify the initial situation of customers. The survey was conducted in the summer of 2021. Survey was conducted for a specific focus group selected by the customer (WeAreDots) who provided information on their company and experience with meetings.

Survey questions were divided into several groups. First three questions described company- field and sector in which it operates, and company's size in terms of employee number in the company. The aim of the next seven questions was to ascertain previous company's experience in organizing meetings. The average time spent in meetings, whether they start and end in time, the average time spent planning meetings, summarizing results and sending them to the meeting participants was ascertained. The last five questions were intended to ascertain information on previous experience of respondents of using digital tools for meetings.

The obtained data were analysed using quantitative methods. The Chi-square Independence Test was used to determine if there is a significant relationship between the two categorical variables. Principal component analysis was used to reduce the dimension of the data set by transforming a larger set of variables into a smaller one.

Results and Discussion

Survey results showed that respondents represent five sectors: sector of financial services, non-governmental sector, research and educational sector, state's administration sector and entrepreneurship, which were represented most (Figure 1). In order to identify specific target groups more precisely,

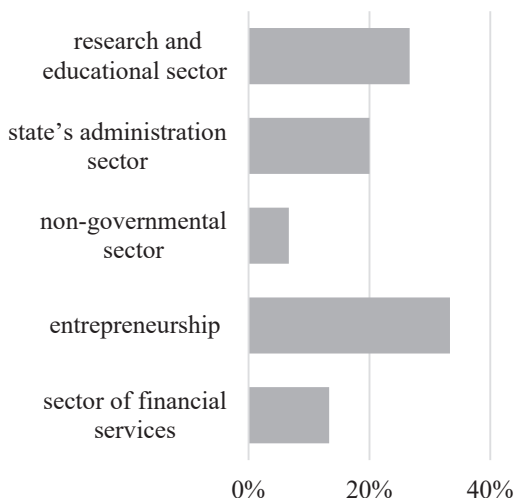


Figure 1. Sectors represented by the survey respondents.

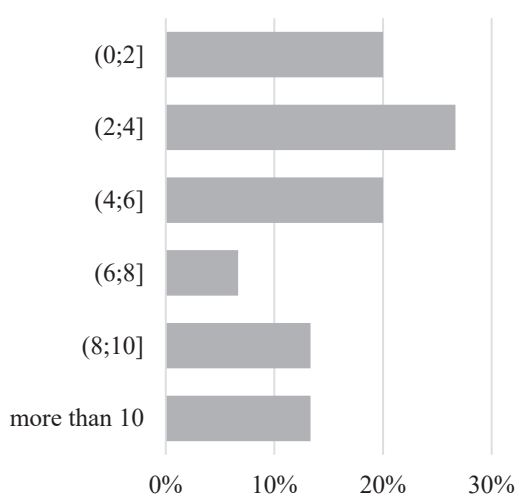


Figure 2. Average time (in hours) which is spent in meetings during the week.

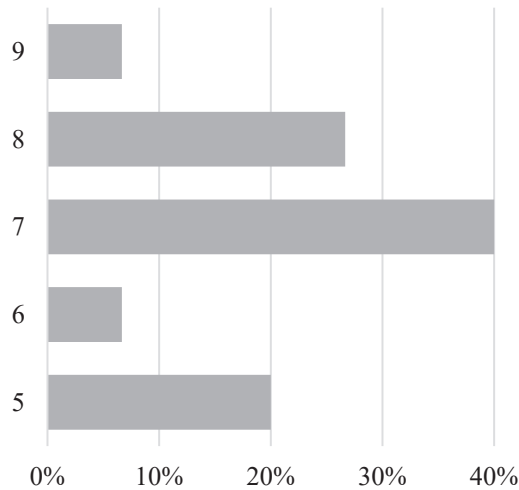


Figure 3. Evaluation of meeting quality in a ten-point grading scale.

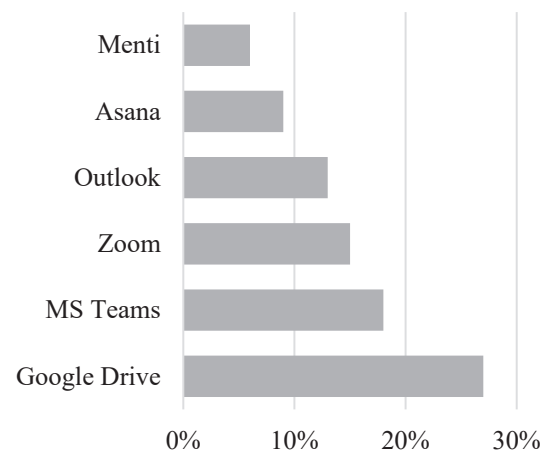


Figure 4. Digital tools using for online meetings.

sectors of represented companies were analysed and it was ascertained that most companies were from the financial sector and from the sector of research and education, the percentage of other sectors was lower. Survey respondents most often represent companies which employ more than 50 employees (63%), the less represented companies were those which employ up to 10 employees (17%).

After the analysis of the company's previous experience in organizing meetings, an issue regarding the average time spent in meetings during one week was examined. Most of the respondents (20%) indicated an approximate time of 5 hours, only 6% of respondents indicated 1 hour, whereas 14% of respondents indicated that they spend about 15 hours at meetings during the week (Figure 2). After the survey a conclusion was drawn that respondents from the non-governmental sector is the part who spend most of the time in meetings. In research organizations an unanimous decision was not reached in this matter; however it can be concluded that time spent in meetings in general correlates with the number of employees in the research organization.

Analysing the quality of previous meetings, respondents were asked to evaluate meetings from 1 to 10 (where 10 is the highest grade). None of the respondents evaluated it with 10, only 7% of all respondents evaluated with 9 but also none of the respondents evaluated lower than with 5 (Figure 3). Quality of the meeting with the highest rate was evaluated by the people who work at the state's administration, while those who work in the business sector and non-governmental sector often rated their meetings as satisfactory- representatives of these sectors were those who gave the lowest rate.

The practice shows that only part of the employees participates in the meetings; therefore

a question regarding the number of participants in organized meetings was included in the survey. A survey data show that most of the meetings are organized for 5-10 participants (67%), less common are small meetings for up to 5 participants (20%) and large meetings for more than 10 participants (13%). Looking at the correlation between the average number of meeting participants and the sector in which companies operate, a conclusion can be made that large meetings are more common at the entrepreneurship and financial service sector, while smaller- at all sectors. Significantly, that companies from non-governmental sectors organize smaller meetings with less participants; therefore, it is necessary to investigate why representatives of this sector evaluated the quality of the meetings as low.

In order to develop software, the issue regarding meeting time in accordance with the planned time was very vital. To be more precise, it was examined how often meetings begin and end on time. Survey results demonstrated that only 12.5% of the meetings always start on time, whereas there were no respondents who ascertained that meetings always end at the scheduled time.

Analysing the average time spent summarizing and sending the results of the meeting, it was concluded that 33% of all respondents spend more than 30 minutes for this job and most of them are employed in companies with more than 50 employees.

To examine market trends, it was ascertained what tools potential clients use to make meetings more qualitative and productive. The most commonly used tool was Google Drive with spreadsheets which was not designed as a meeting management tool but was often indicated by the respondents as a tool for organizing meetings (27%). The most popular online meeting management tools

are MS Teams (18%) and Zoom (15%), Outlook calendar with notification option was mentioned in 13% of cases. Add-ins of Meetinch tool were adjusted to MS Team user needs. Quite often the tool Asana (9%) which is project management tool and Mentimeter (6%) which are online voting and online brainstorming tools were mentioned (Figure 4). Also, such tools as Slack, ToDoList, SharePoint, miro, Doodle.com, Qtime were mentioned. None of the respondents mentioned tool Meetinch, so it can be concluded that the product was not so well-known in the market at that time.

The survey was prepared in order to examine the desire of the potential customers for Meetinch add-in tool, to explore what respondents expect from a meeting management tool. After the analysis of this qualitative indicator it was concluded that the most essential functions and features of meeting tool that users expect are: (1) convenient and clear interface; (2) meeting planning function, which allows you to enter the agenda of the planned meeting in the tool, schedule the time for each question and list of participants; (3) function to keep the minutes of decisions taken and tasks set with option to add transcript to the meeting minutes of the issues discussed and possibility to add presented material with all notes; (4) function to control the implementation of tasks set with the possibility to set the execution deadline, and with possibility to add document of implemented tasks; (5) creating archive of meetings which allows to see issues discussed, meeting minutes, progress of the implementation of set tasks. According to the survey data, it can be concluded that the weakest points in the organization of meetings in companies are the preparation of the meeting plan and preparation of the meeting minutes as well as control of decisions

made and tasks set. Therefore, from the point of view of the authors it would be necessary to focus on the development of these functions in the meeting management tool.

To evaluate survey respondents' previous meeting quality evaluation dependence from other factors Chi-Square Test of Independence was carried out. Let's define the null hypothesis H0: quality evaluation of previous meetings (X) does not depend on the factor (Y) and such an alternative hypothesis H1: quality evaluation of previous meetings (X) depends on the factor (Y). Results achieved are summarized in Table 1. Examination of hypothesis was carried out at the significance level $\alpha=0.05$. Since value $p=0.032<0.05$ it can be concluded that meeting quality significantly depends on the company's sector but does not depend on other factors because in all other cases value p is greater than 0.05.

To evaluate survey respondents' readiness to pay for the meeting management tool depending on other factors, the following null hypothesis was considered H0: respondents' readiness to pay for the meeting management tool (X) depends on factor (Y) and such an alternative hypothesis H1: respondents' readiness to pay for the meeting management tool (X) does not depend on factor (Y). Results achieved are summarized in Table 2. Examining the results, it can be concluded that the readiness to pay for the meeting management tool depends on the end time of the meeting ($p=0.017<0.05$). Respondent readiness to pay for the meeting management tool does not significantly depend on other factors.

The conclusions were drawn after the analysis of data from Table 1 and Table 2 motivated to continue study and to carry out so-called Principal Component Analysis (PCA) for further data analysis. The PCA

Table 1

The results of Chi-Square Test of Independence on the quality of meetings depending on other factors

Factor (Y)	Pearson Chi-Square value	Asymptotic Significance (2-sided), p-value
Entrepreneurship	27.958	0.032
Number of employees at company	12.833	0.118
Time spent in meetings	31.250	0.306
Start of meetings at the scheduled time	24.250	0.835
End of meetings at the scheduled time	17.750	0.604
Average amount of meeting participants	8.250	0.409
Time spent for planning of the meeting	5.625	0.229
Time spent to process meeting data	5.469	0.706
Usage of digital tools for meetings	4.773	0.311
Usage of Microsoft 365 or Google G Suite productivity solutions	0.938	0.919

Table 2

The results of Chi-Square Test of Independence on readiness to pay for the meeting management tool

Factor (Y)	Pearson Chi-Square value	Asymptotic Significance (2-sided), p-value
Entrepreneurship	7.894	0.444
Number of employees at company	2.727	0.604
Time spent in meetings	14.394	0.421
Start of meetings at the scheduled time	9.182	0.906
End of meetings at the scheduled time	21.727	0.017
Average amount of meeting participants	1.394	0.845
Time spent for planning of the meeting	0.545	0.761
Time spent to process meeting data	3.614	0.461
Usage of digital tools for meetings	3.223	0.200
Usage of Microsoft 365 or Google G Suite productivity solutions	3.843	0.146

Table 3

Rotation Component Matrix (coefficients with an absolute value of less than 0.5 were excluded)

	Components			
	PC1	PC2	PC3	PC4
Entrepreneurship	0.850			
Number of employees at company	0.801			
Time spent in meetings	-0.795			
End of meetings at the scheduled time		-0.844		
Usage of digital tools for meetings		0.807		
Start of meetings at the scheduled time		-0.651		
Time spent to process meeting data			0.937	
Average amount of meeting participants			0.689	
Time spent for planning of the meeting				0.774
Usage of Microsoft 365 or Google G Suite productivity solutions				-0.745

was performed using the Varimax rotation method, as a result instead of the original 10 covariates, a data set of four realized principal components (PC) was estimated. PCA selects linear combinations of covariates with maximum variance, called principal components (PC). The first and second PCs correlate with the three original variables each, with an absolute value of the correlation coefficient of more than 0.6 in both cases. The third and fourth PCs correlate with two initial variables each, with an absolute value of the correlation coefficient greater than 0.6 and 0.7, respectively (Table 3).

The first principal component PC1 includes company's sector, number of employees and time

of the meeting, so this component can be viewed as a measure of the Company. The second principal component PC2 contains beginning and end time of the meeting, usage of digital tools, the PC2 can be viewed as a measure of the Meeting Implementation. The third principal component PC3 includes obtaining of meeting results and number of respondents, so it can be viewed as a measure of the Meeting Results. The last component PC4 contains the use of necessary time for meeting and productivity solutions, the PC4 can be viewed as a measure of Meeting Planning. The component scores to different meeting evaluations are given in Table 4. Assuming that qualitative are those meetings evaluated with grade 8 and above

Table 4

Report on meeting quality indicator coherence

Evaluation of meeting quality (10 grade scale)	PC1	PC2	PC3	PC4
5	0.8176383	-0.1670270	0.4140102	-0.5571515
6	-2.2957528	-1.1142941	-0.9876959	0.5477468
7	0.2673273	0.2254453	-0.2493188	0.0561672
8	-0.5136799	0.0756683	0.4966761	-0.0090893
9	0.2935941	-0.0399699	-0.7451265	0.8230618

Table 5

Report on readiness to pay for meeting management tool

Fee for meeting management tool (for one user per month)	PC1	PC2	PC3	PC4
Up to 5 EUR	-.1435239	.0951008	-.0542897	.1334475
From 5 to 10 EUR	.1380697	.1524529	-.1193510	-.5622416
More than 10 EUR	1.1645539	-1.5034680	.9552398	.2188022

the most essential value indication 0.8230618 is for Meeting Results component (PC4) when evaluated with grade 9. The result of 0.49666761 which shows Meeting Implementation component (PC3) impact on meeting quality. Therefore, a conclusion can be drawn that qualitative meetings need planning and simplified summarization of the results, whereas, allocation with lower grades points out greater allocation differentiation (e.g. grade 5 and Company component PC1).

The component scores, depending on the amounts that the meeting organiser would be ready to pay for the meeting management tool for one meeting participant are given in Table 5. Software developer is interested in finding out the criteria on which customer would be ready to pay a higher fee for the product. After the analysis it was concluded that when there is a readiness to pay more than 10 EUR per month the most essential value indication of 1.1645539 has the company factor (PC1) and for value indication of 0.9552398 has the result factor (PC3). Thus, it can be concluded that the company sector and number of employees, as well as the ability to summarise results and the number of meeting participants have a significant impact on the readiness of companies to pay more for the meeting management tool.

It was concluded that the meeting quality depends on the planning of the meeting and simplified summarization of meeting results. Analysis showed that Meetinch developers have correctly chosen to include these stages into their product offering

to automatize meeting planning (development of schedule and time management, notifications), as well as process of summarising results (recording, saving meeting minutes and sending them to the participants), indication of responsible persons of set tasks and control of task accomplishment. Since the result factor was more essential than readiness to pay for the product higher price, further improvements should focus mainly on the development and improvement of the features of this tool.

Conclusions

1. Weakest points in the process of meeting organisation are preparation of the meeting plan and preparation of the meeting minutes, as well as control of decisions taken and tasks set; therefore it is essential to focus on the development of these functions in the meeting management tool.
2. Evaluation of meeting quality significantly depends on the sector of the company but readiness of meeting organisers to pay for a meeting management tool depends on the end time of the meeting.
3. In order to organise a qualitative meeting, planning of the meeting and summarization of results is very essential.
4. Readiness of companies to pay for a meeting management tool mostly depends on the sector of the company, number of employees, the number of participants at the meeting, as well as the possibilities of summarising the meeting results.

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