

Conference on ENTERprise Information Systems / International Conference on Project
MANagement / Conference on Health and Social Care Information Systems and Technologies,
CENTERIS / ProjMAN / HCist 2015 October 7-9, 2015

Exploring functionality of mobile applications for project management

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Abstract

Mobile devices and applications are changing the way individuals gather, process and share information. A development which also applies to project management. This paper reports an explorative study on the functionality of 50 project management apps. The apps were analyzed on the variables: type of functionality, project management processes supported, methodology/standard supported, topics covered, website support, languages supported, project roles supported, number of team members supported and number of projects supported. Our analysis showed that the professionalism, functional and technical support of the apps differ hugely, with some being developed as entrepreneurial experiments and others as professional products. From the summary of our findings we concluded that the functionality of project management apps today is mainly focused on two application areas: (A) Supporting the role of the project manager individually in the planning/organizing processes of the project and (B) Supporting team communication and team collaboration.

Lacking in functionality seems to be the communication/collaboration with project sponsor and other stakeholders. Based on our study we recommend project managers to be selective when starting to use project management apps. The most professional apps that appeared in our study were developed as additions to web based project management tools or collaboration platforms.

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Peer-review under responsibility of SciKA - Association for Promotion and Dissemination of Scientific Knowledge

Keywords: Project management; project manager; mobile; apps; tooling; communication; collaboration.

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1. Introduction

With the number of available mobile applications, ‘apps’, in the leading app stores approaching 1.5 million⁵, it can be stated that apps plays a significant role in how individuals gather, process or share information. Additionally, although some of the most popular apps, such as entertainment/games or certain social media apps², may not be applied much in the professional context of the user, the landscape of professional information systems is changing as well. Nowadays, many companies use apps, either to disclose information from their business systems to employees, or to enter data. The fact that mobile devices, like smartphones and tablets, are basically always in the near proximity of the user makes them an easy-to-use device that enables quick communication³.

Smartphones and their apps appear to offer great potential to assist professionals in their work, by providing access to online information at anytime, anywhere¹. This may also be true for project managers. Although well-known providers of project management support tools, such as ProjectPlace and Basecamp have apps available for their tools, the use of apps by project managers is not explored yet in studies. This paper reports an explorative study into the available apps for project management.

In this study we followed a structured approach in selecting and classifying a selected sample of 50 apps. The next paragraph describes the selection of the apps for the study and provides the sample. Paragraph 3 describes the classification framework and the variables, used for assessing the functionality of the apps. Paragraph 4 provides the findings of the study, and paragraph 5 formulates a number of conclusions and a suggestion for further development.

This study contributes to existing research by providing an insight in the app market of project management apps. With this insight, project managers and organizations can make more informed decisions about the use of apps in their projects.

2. Selecting project management apps

The operating system platforms for smartphones and tablets appear to be settling on IOS from Apple, Android from Google and, on some distance, Windows Phone from Microsoft. The number of apps available for the IOS platform is nearing 1.5 million, with over 75 billion downloads⁵. For the Android platform, the number in the Google Play store is now approximating 1.5 million as well, with a total of over 50 billion downloads⁶. The Windows Phone store now has approximately 200.000 apps available and in total some 3 billion downloads⁴. As the Windows Phone platform is clearly trailing the IOS and Android platforms, we focused solely on the latter two.

By entering the search term ‘project management’ in both the IOS app store and the Google play store, approximately 300 apps were identified in each store. However, several prominent apps do not include the word project management in their names, for example Basecamp. In order to also identify these apps, we searched for the term ‘best project management app’ in Google, from which we also selected apps which seemed relevant and were recommended to project managers. Based upon these searches, the number of downloads of the apps in the two stores and the evaluation of the apps in the stores, we selected 50 most prominent apps for our study. For practical reasons, we omitted apps that were not available in the English language. Table 1 presents the details of our sample, with the apps in alphabetical order.

Table 1. The project management apps in the sample.

Name	Manufacturer	Platform		Version	
		IOS	Android	IOS	Android
1 Ace project	websystems inc	Yes	Yes	1.4	8
2 Agile and astute project management tips	The Anode Group Pty Ltd	Yes		1.3	
3 Apptivo	Apptivo	Yes	Yes	1.0.2	2.0.2
4 Asana	Asana	Yes	Yes	3.2.0.	1.125
5 AtTask	AtTask Inc.	Yes	Yes	1.4.0	1.7.2
6 Azendoo	Azendoo	Yes	Yes	1.18.0	1.18.0
7 Basecamp	Basecamp, LLC	Yes	Yes	1.1	1.1.7
8 Beesy	BeesApps	Yes		2.31	
9 Bitrix 24	Bitrix 24	Yes	Yes	2.7	2.6.0.2
10 Clarizen	Clarizen	Yes	Yes	5.4.0.4	5.4.0.4
11 Comidor	B.open		Yes		0.0.3

12	Contractor: Project Management	Jobcrafts		Yes		2.5.5
13	Droptask	Think Productivity Ltd	Yes		1.4.2	
14	Easy Team Projects	Azendoo	Yes	Yes	1.9.5	1.9.5
15	Evernote	Evernote Corporation	Yes	Yes	7.6.5	0.9
16	eXo	eXo platform	Yes	Yes	2.4.1	2.4.1
17	EZ Share Pro	Antecia Inc.	Yes		3.0.1	
18	Gantter VU	InQuest Technologies	Yes		1.1.0	
19	GanttMan	Martin Doudera		Yes		1.3.2
20	Google +	Google Inc.	Yes	Yes	4.8.3	5.1.1.88991728
21	GQueues	GQueues	Yes	Yes	1.2.1	1.3.1
22	Hall	Hall.com	Yes	Yes	2.5.1	3.1.10
23	Huddle	huddle.net	Yes	Yes	2.5.3	1.1.0
24	Insightly	Insightly Inc	Yes	Yes	3.3.4	3.3.0
25	Learn Project Management	WAGmob		Yes		14.2
26	LiquidPlanner	LiquidPlanner Inc	Yes	Yes	4.53.0	4.53.0
27	Microsoft OneNote	Microsoft	Yes	Yes	2.10.1	1.0
28	Mindjet Tasks	Mindjet LLC	Yes	Yes	2.3.1	1.1
29	Ontraport	Landon Ray		Yes		1.0.3
30	Paymo	Paymo S.L.R.	Yes	Yes	1.0.3	1.0
31	PM Connector	Ricardo Viana Vargas	Yes	Yes	2.1	2.0
32	Podio	Podio ApS	Yes	Yes	4.6.9	3.2.4
33	Project Management	Apps Educations		Yes		1.2
34	Project Management Magazine	Project Management	Yes	Yes	1.17	2.1
35	Project Management System	Expert Village Media Technologies		Yes		2.4.4
36	Project Management Training	Projectmanager.com	Yes	Yes	1.0	3.0
37	Project Manager	Farid Kilani		Yes		1.1.1
38	Project Planner HD	Peritum.Net	Yes		2.5.1	
39	Project Planning	J. de Montcheuil		Yes		4.1.3
40	Project Planning Pro	i2e Consulting LCC	Yes	Yes	1.7.7	1.4.4
41	Project Schedule (Free)	Thorsten Krämer		Yes		1.11.7
42	Pushbullet	Pushbullet	Yes	Yes	1.9	15.6.5
43	Smartsheet Project Management	Smartsheet.com	Yes	Yes	2.2.1	2.1.0.28
44	Sqwiggle	Sqwiggle Inc	Yes		0.1.9	
45	Teamwork	Teamwork.com	Yes	Yes	2.2	2.1.6
46	Trello	Trello Inc.	Yes	Yes	2.7.1	3.1.0.566
47	Wrike - Project Management	Wrike Inc.	Yes	Yes	1.1.6	1.5.3.2
48	Wunderlist	6 Wunderkinder GmbH	Yes	Yes	3.2.0	3.3.1
49	xPlan	adnX SARL	Yes		3.7	
50	Zoho Projects	Zoho Corporation		Yes		1.6.14

A first observation that can be made from Table 1 is that the availability of apps is still platform dependent. Of the 50 apps in our sample, only 31 apps (62%) are available on both the IOS and Android platforms. Moreover, of these 31 apps, only 5 apps have the same version number on the two platforms, which could indicate that the other apps are available on both IOS and Android, may have version differences between the platforms. Of the 19 apps that are only available on one of the platforms, 11 apps are only available on Google play store, and 8 only in Apple's IOS app store.

3. Classification framework

As our study has an explorative nature, we were mostly interested in describing and analyzing the functionality of the apps. For this we developed the framework presented in Table 2.

Table 2. Classification framework for the project management apps.

Variable	Answer values
Type of functionality	Educational / instructional Informative Executive Collaborative

	Administrative
Project management processes supported	Initiating processes Planning / organising processes Implementing / execution processes Controlling / monitoring processes Closing processes
Methodology supported	No specific method PM BOK® PRINCE2® ISO 21500 AGILE/SCRUM Other, ...
Topics covered / supported	Requirements / scope Deliverables / Products Activities / WBS (Human) Resources Materials Suppliers Budget Time / Schedule Stakeholders Communication Risks Issues Reports
Also accessible through a website?	Yes
Languages available / supported	English German Spanish French Chinese Others,
Which project roles supported?	Project manager Project sponsor Project team member Other stakeholders
How many team members supported per project?	1 2-5 6-10 >10 N/A
How many projects supported simultaneously	1 2-5 6-10 >10 N/A

The following section describes the variables and the answer values in more detail.

Type of functionality

With this variable we intended to analyze whether the nature of the app was:

- educational / instructional: learning / developing / testing project management competences;
- informative: providing information / data resources / knowledge on project management;
- executive: supporting the execution of project management processes;

- collaborative: supporting communication within the project team and/or other stakeholders;
- administrative: recording and/or archiving data about the project and/or project management processes.

An app could score in multiple functionality types.

Project management processes supported

This variable scored the process group in which the app would most likely be used. For the identification of project management process groups, we used the five generic process groups that the PM BOK® and ISO 21500 recognize. As an app can support more than one process group, also on this question multiple answers were allowed.

Methodology/standard supported

This variable scored whether the app supported a specific methodology or standard. We identified the following methodologies/standards for this question: PM BOK®, PRINCE2®, ISO 21500 and AGILE/SCRUM.

Topics covered / supported

In this variable we scored which project management topics/themes/knowledge areas the app supported. For this we identified the following topics: Requirements / scope, Deliverables / Products, Activities / WBS, (Human) Resources, Materials, Suppliers, Budget, Time / Schedule, Stakeholders, Communication, Risks, Issues, Reports.

Also accessible through a website?

This question refers to whether the app, or the database that the app accesses, is also accessible through a website.

Languages available / supported

As we used English as one of the selection criteria for our sample, this question refers to whether the app supports any languages other than English.

Which project roles supported?

This variable assessed the project roles that were supported by the apps. We distinguished the following roles in our analysis: Project manager, Project sponsor, Project team member and Other stakeholders.

How many team members supported per project?

This variable scored the number of team members in a project that could use the app in their specific project.

How many projects supported simultaneously?

This variable scored the number of simultaneous projects that a user could use the app for.

Analysis of the apps was based on qualitative ‘scoring’ of functionality as presented in descriptions and on screenshots. Reviews of the apps were studied for additional information. The researchers scored the apps independently of each other and compared their analysis in order to enhance objectivity.

Next to the variables analyzing the functionality of the apps, the researchers recorded descriptive data of the apps: name, manufacturer, availability for IOS and Android mobile platforms, number of downloads from the Apple app store and the Google Play store, evaluation of the app in these stores and information on pricing.

4. Findings

In this paragraph we will report the data of our analysis in a condensed way. The findings are structured by variable.

Type of functionality

Table 3 presents an overview of the functionality found in the apps in our sample.

Table 3. Overview of functionality of the project management apps.

Variable	Answer values	# apps	Percentage
Type of functionality	Educational / instructional	5	10%
	Informative	4	8%
	Executive	25	50%
	Collaborative	28	56%
	Administrative	23	46%

From table 3 it appears that collaboration, by supporting communication within the project team and/or other stakeholders, is the most frequently (56%) found functionality in the apps. Given the personal character of the mobile devices that apps are used on, these apps may be quite suitable for use in communication and collaboration. 50% of the apps support the execution of project management processes, and 46% provide administration functions. Informative and educational/instructional functionality appear in only 8% and 10% of the apps.

Project management processes supported

Table 4 shows that the most covered (94%) process group in the apps is planning/organizing. The second scoring process group is controlling/monitoring, that was covered by 74% of the apps.

Table 4. Coverage of project management process groups.

Variable	Answer values	# apps	Percentage
Project management processes supported	Initiating processes	25	50%
	Planning / organizing processes	47	95%
	Implementing / execution processes	24	48%
	Controlling / monitoring processes	37	74%
	Closing processes	11	22%

The least covered process group is closing, with a coverage of only 22%. Apparently these processes are less suitable for the characteristics of the use of apps at this moment.

Methodology/standard supported

The apps in our sample all supported 'generic' project management. They did all not apply any specific project management method such as PRINCE2® or SCRUM. On a more detailed level of the support functionality, such as planning and scheduling of project activities, some apps supported specific methods such as Gantt chart, PERT and CPM.

Topics covered / supported

In this variable we scored which project management topics/themes/knowledge areas the app supported. As is presented in Table 5, the highest scoring topics were Time/schedule (94%) and Activities/WBS (88%). The high scores of these topics are likely to relate to the high scoring planning/organizing process group in the coverage of the project management process groups (Table 4). Also the topics (Human) Resources and Communication score high (76% and 66%), which appears to be consistent with the high scoring collaborative functionality we found earlier.

Table 5. Project management topics supported.

Variable	Answer values	# apps	Percentage
Topics covered / supported	Requirements / scope	8	16%
	Deliverables / Products	8	16%
	Activities / WBS	44	88%
	(Human) Resources	38	76%
	Materials	7	14%
	Suppliers	8	16%
	Budget	18	36%
	Time / Schedule	47	94%
	Stakeholders	9	18%
	Communication	33	66%

Risks	4	08%
Issues	8	16%
Reports	13	26%

The topics Risk (8%), Materials (14%), Issues (16%), Requirements/scope (16%), Suppliers (16%), Deliverables/Products (16%) and Stakeholders (18%) all score relatively low. For the topic Stakeholders this is unexpected, because the communicative nature of the apps may provide good opportunities for stakeholder engagement.

Also accessible through a website?

68% of the apps were also accessible through a website, which enhances their use in group collaboration. The others only had the app as user interface. Most of the apps that were also accessible through a website were additions to already existing websites or collaboration platforms.

Languages available / supported

From the English download/viewing in the app-store in English it was often not made clear whether the apps also provide support of other languages. Only eight apps (16%) explicitly provide support of other languages. For three of these, one other language is supported, where five apps provide support of a relatively large number of languages. Language support may be an important feature for international projects in which not all participants master the English language. Of course an app in the English language can still be used to support communication in another language which is put in by the user to communicate with other users.

Which project roles supported?

Not surprisingly, the apps in the study all supported the role of the project manager (Table 6). Next to this role, 70% of the apps also supported the team member role.

Table 6. Project management roles supported.

Variable	Answer values	# apps	Percentage
Supporting which roles?	Project manager	50	100%
	Project sponsor	6	12%
	Project team member	35	70%
	Other stakeholders	4	8%

Other roles in and around the project, sponsor (13%) and other stakeholders (8%), are supported by only a handful of apps. This appears to be in line with the low score of the topic stakeholders reported in Table 5 above.

How many team members supported per project?

Table 7 shows that 38% of the apps support only one team member using the app, indicating individual use. The paid versions of these apps, however, often support more users. 16 Apps support over 10 team members in a project. These apps may be considered in cases where the use of the app is aimed at team communication and collaboration.

Table 7. Maximum number of team members supported per project.

Variable	Answer values	# apps	Percentage
How many team members supported per project?	1	21	42%
	2-5	5	10%
	6-10	0	0%
	>10	16	32%
	N/A	8	16%

How many projects supported simultaneously?

This variable scored the number of simultaneous projects that a user could support using the app. Table 8 shows that on this aspects of functionality, the sample included two groups of apps. One group that can support an individual

project (22% of the apps) and one (44%) that can support multiple projects. This last group may be considered the more professionally positioned group of apps.

Table 8. Number of projects supported simultaneously.

Variable	Answer values	# apps	Percentage
How many projects supported simultaneously	1	11	22%
	2-5	2	4%
	6-10	0	0%
	>10	22	44%
	N/A	15	30%

We should mention, however, that some apps provide a free-of-charge version that is limited in the number of projects supported, and a priced version with more functionality.

5. Conclusion

Apps are changing the way individuals gather, process and share information. This development also applies to the project management profession. This paper analyzed a sample of 50 project management apps on the variables Type of functionality, Project management processes supported, Methodology/standard supported, Topics covered / supported, Accessibility through a website, Languages available / supported, Project roles supported, Number of team members supported per project and Number of projects supported simultaneously. Our analysis showed some interesting findings:

- The availability of apps is still platform dependent. Of the 50 apps in our sample, only 62% are available on both the IOS and Android platforms, but version differences may appear.
- The professionalism, functional and technical support of project management apps differ hugely, with some being developed as experiment by entrepreneurial individuals and others being developed as professional products and extensions of other professional project management products.
- A substantial number of project management apps are additions to web based project management tools or collaboration platforms.
- Project management apps typically support the roles of the project manager and the team members, based on a generic approach to project management.
- Collaboration and communication within the project team appears to be the most frequently found functionality in the apps. Other frequently mentioned functionalities are the execution of project management processes and administration functions.
- The most covered process groups in the apps are planning/organizing and controlling/monitoring.

From the findings summarized above, it could be concluded that the functionality of project management apps today is mainly focused on two application areas.

- A. Supporting the role of the project manager individually in the planning/organizing processes of the project, including specific planning methods such as WBS, Gantt chart, PERT and CPM.
- B. Supporting team communication and team collaboration in the executing, monitoring and controlling processes of the project.

Lacking in functionality seems to be the communication/collaboration with project sponsor and other stakeholders. Given the potential role of mobile devices in communication, this may be a potential direction of further development. Mobile apps could also be used more extensively for educational purposes, which is now still relatively unexplored.

Based on our study we recommend project managers to be selective when starting to use project management apps. The number of stars or evaluations in the app-stores are quite often not very informative, making the case for a more serious selection process. The most professional apps that appeared in our study were developed as additions to web based project management tools or collaboration platforms, for example: Asana, Basecamp, Trello, Pushbullet, Podio, Evernote, Wunderlist and Google+.

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