



User feedback and continuous software evolution

Group 2



Today's Papers

- User Feedback in the AppStore: An Empirical Study
by Dennis Pagano, Wali Maalej
2013
- AppEcho: a user-driven, in situ feedback approach for mobile platforms and applications
by Norbert Seyff, Gregor Ollmann, Manfred Bortenschlager
2014

Introduction



BEWERTUNGEN

[Richtlinien für Rezensionen](#)

4.4



76'016'695
insgesamt



Karim Mohamed

★★★★★ 5. November 2018

Ist sehr gut finde icz



7



Luca Kraft

★★★★★ 4. November 2018

Tolle App



133



Nick Pidpiik

★★★★★ 3. November 2018

Seit dem neuen Update stürzt die app ab, wenn ich chats löschen bzw den chatverlauf löschen möchte



24



Horst Brockmann

★★★★★ 2. November 2018

Vielen Dank an die Macher der App, denn nun geht auch wieder das Filmen, was über Jahre auf meinem Handy nicht funktioniert hat! Auch die Gif Bilder kann ich nun sehen! Finde das eine sehr gute Leistung, denn die App ist jetzt viel umfangreicher, als je zuvor und funktioniert bei mir nun auch viel b...



86

Vollständige Rezension



Paper 1: Research Question

Can app stores serve as communication channel among users and with developers?

How can developers use app stores to better and quicker understand evolving user needs and requirements?



Approach Paper1

AppStore: Top 25 free&paid apps from
each of the 22 categories.

Table I
USER FEEDBACK BY CATEGORIES. $N = 1126453$.

#	app category	# feedback free apps	# feedback paid apps	mean price	max price
1	Books	23,962	8,641	2.43	9.99
2	Business	35,265	23,997	4.11	16.99
3	Catalogs	9,517	5,725	1.35	4.99
4	Education	16,628	16,577	1.99	3.99
5	Entertainment	45,761	38,201	1.47	4.99
6	Finance	36,182	15,259	2.99	14.99
7	Food & Drink	19,066	8,318	2.27	9.99
8	Games	38,923	43,602	1.43	6.99
9	Health & Fitness	32,845	29,657	2.39	7.99
10	Lifestyle	39,954	12,607	1.51	4.99
11	Medical	17,203	4,160	2.39	5.99
12	Music	42,001	32,218	2.91	7.99
13	Navigation	15,961	10,528	5.35	49.99
14	News	28,041	19,822	2.07	4.99
15	Photo & Video	37,786	31,770	1.67	4.99
16	Productivity	37,426	32,695	3.15	9.99
17	Reference	28,269	16,393	1.91	4.99
18	Social networking	51,899	26,691	1.59	3.99
19	Sports	22,374	7,173	3.55	29.99
20	Travel	24,350	10,939	2.91	9.99
21	Utilities	46,984	45,021	1.51	3.99
22	Weather	20,709	15,353	2.87	9.99
		$\Sigma=671,106$	$\Sigma=455,347$	$\emptyset=2.27$	≤ 49.99

Results Paper1

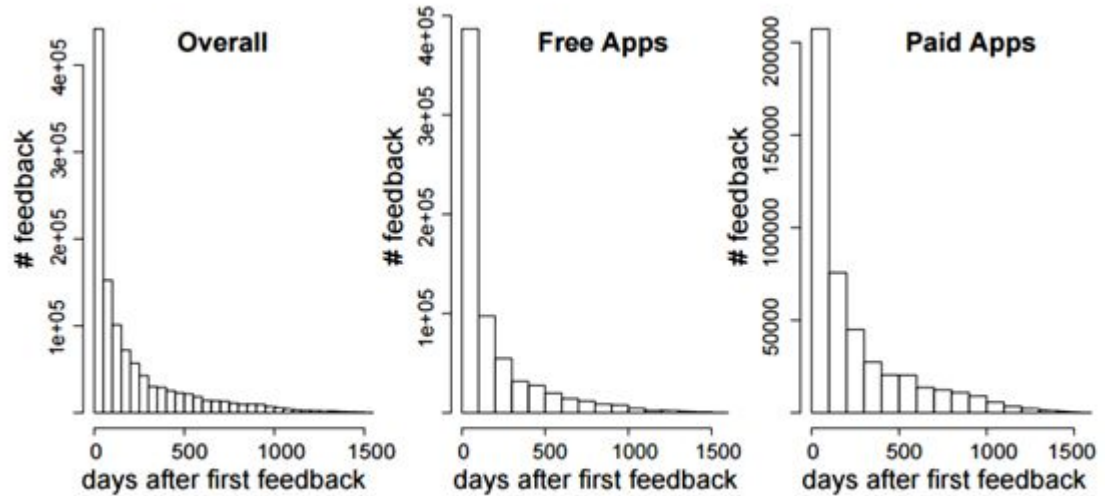


Figure 3. Relative distributions of feedback over time.



Results Paper1

Table IV
USER FEEDBACK TOPIC CATEGORIES. $N = 1100$.

category	topics	frequency
rating	t1, t12, t15	856 (77.82%)
user experience	t2, t3	359 (32.64%)
requirements	t4, t5, t6, t11, t14	340 (30.91%)
community	t7, t8, t10, t13, t16, t17	146 (13.27%)

Table III
TOPICS IN USER FEEDBACK. $N = 1100$.

#	topic	description	freq.
t1	praise	expresses appreciation	75.36%
t2	helpfulness	scenario the app has proven helpful for	22.45%
t3	feature information	concrete feature or user interface	14.45%
t4	shortcoming	concrete aspect, user is not happy with	13.27%
t5	bug report	bug report or crash report	10.00%
t6	feature request	asks for missing feature	6.91%
t7	other app	reference to other app, e.g. for comparison	3.91%
t8	recommendation	suggests acquisition	3.82%
t9	noise	meaningless information	3.27%
t10	dissuasion	advises against purchase	3.27%
t11	content request	asks for missing content	2.91%
t12	promise	trades a better rating for a specific improvement	2.00%
t13	question	asks how to use specific feature	1.27%
t14	improvement request	requests improvement (e.g. app is slow)	1.18%
t15	dispraise	opposite of praise	1.18%
t16	other feedback	references or answers other feedback	1.09%
t17	howto	explains other users how to use app	0.91%

Results Paper1

Table VI
DISTRIBUTION OF RATINGS ACROSS TOPICS IN USER FEEDBACK.
– 1 STAR, 2 STARS, 3 STARS, 4 STARS, 5 STARS.

#	topic	$\bar{\theta}$ rating	rating distribution
t8	recommendation	4.88	
t2	helpfulness	4.85	
t3	feature info.	4.81	
t17	howto	4.80	
t1	praise	4.78	
t11	content request	4.25	
<i>$\bar{\theta}$ sample rating</i>		4.08	
t14	impr. request	3.92	
t7	other app	3.91	
t6	feature request	3.89	
t9	noise	3.67	
t16	other feedback	3.67	
t13	question	2.86	
t12	promise	2.27	
t4	shortcoming	2.10	
t5	bug report	1.84	
t15	dispraise	1.69	
t10	dissuasion	1.39	



Results Paper1

Table VII
TOP FIVE TOPICS PER RATING.

#	1 star ($N = 138$)	2 stars ($N = 56$)	3 stars ($N = 58$)	4 stars ($N = 166$)	5 stars ($N = 682$)
1	shortcoming (50.00%)	shortcoming (55.36%)	shortcoming (31.03%)	praise (92.77%)	praise (97.07%)
2	bug report (46.38%)	bug report (33.93%)	bug report (22.41%)	helpfulness (18.67%)	helpfulness (31.23%)
3	dissuasion (18.84%)	dissuasion (12.50%)	feature request (22.41%)	feature request (18.07%)	feature inform. (19.21%)
4	promise (7.25%)	feature request (7.14%)	praise (20.69%)	feature inform. (15.66%)	recommendation (5.43%)
5	other app (5.07%)	promise (5.36%)	noise (12.07%)	shortcoming (10.84%)	feature request (3.67%)



Results Paper1

Conclusion of the authors:

App Stores are useful. Provide insight into customers experience.

We need to filter data to extract the useful information.

Our own conclusions

App Stores can be useful, but are primarily meant as user-to-user reviews rather than user-to-developer. Dataset authors used might be biased since they took the top apps, they received mostly positive feedback.



AppEcho: a user-driven, in situ feedback approach for mobile platforms/applications

by Norbert Seyff, Gregor Ollmann, Manfred Bortenschlager
2014



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AppEcho: Research Questions

RQ 1: To what extent does the mobile feedback approach **support users in providing feedback** on a mobile platform and applications **in situ**?

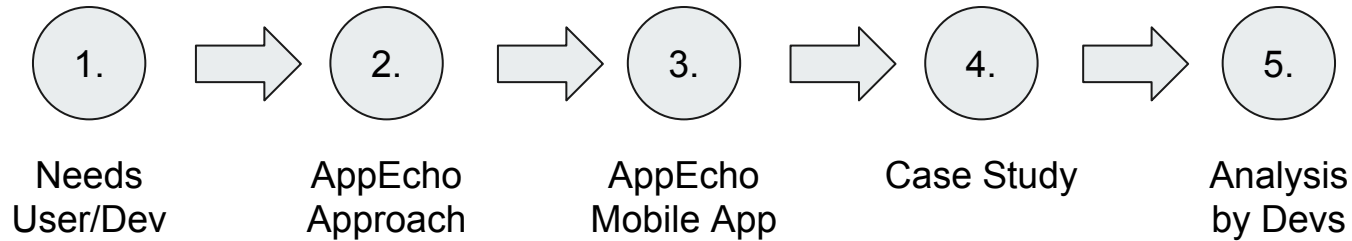
RQ 2: To what extent do users **apply the mobile feedback approach continuously over time**?

RQ 3: To what extent is the feedback gathered **understandable for developers**?

RQ 4: To what extent is the feedback gathered **useful for** mobile platform and application **improvement**?



AppEcho: Approach





AppEcho



Needs User/Dev

User Needs:

- Easy To Use
- Ubiquitous availability
- Unobtrusive support
- Ad-hoc and quick support
- Respect privacy of users
- Provide guidance and support
- Different ways of feedback documentation

Developer Needs:

- Receive understandable feedback
- Context information
- Ask questions for clarification
- Scalable
- Platform independent
- Feedback from different user types



AppEcho



AppEcho Approach

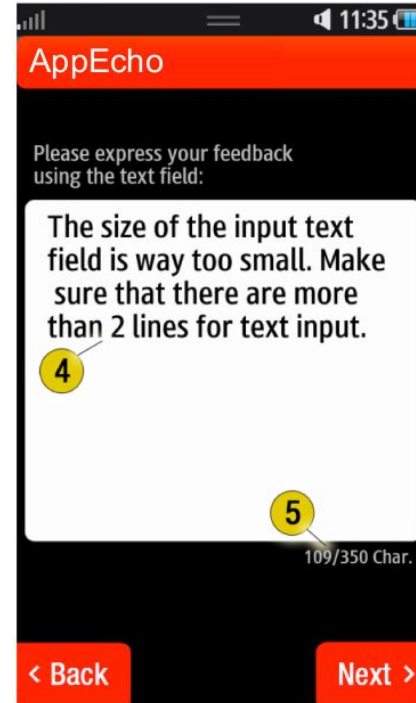
- Document feedback in a few, simple steps
- Enable quick feedback documentation
- Extend mobile platform -> unified mechanism for all apps
- Different types of feedback
- User driven feedback
- Send feedback to predefined address

AppEcho

- Quickstart
- Select feedback aspect
- Select documentation method



AppEcho App



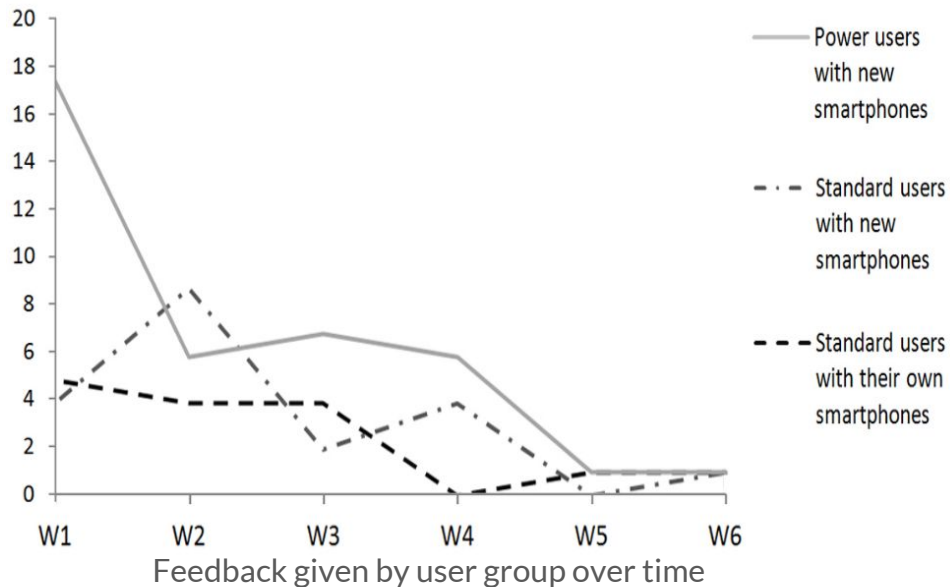
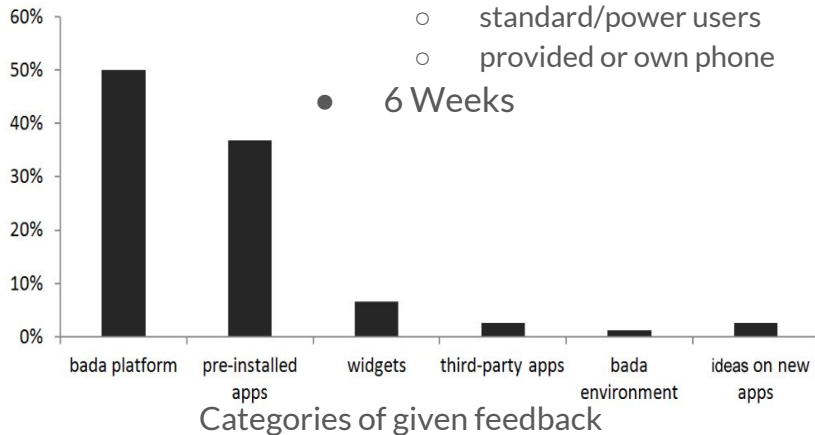
- Document issue
- Submit feedback

AppEcho



Case Study

- Case study for evaluation
- Bada with pre-installed apps
- 14 participants
 - standard/power users
 - provided or own phone
- 6 Weeks





AppEcho



Analysis
by Devs

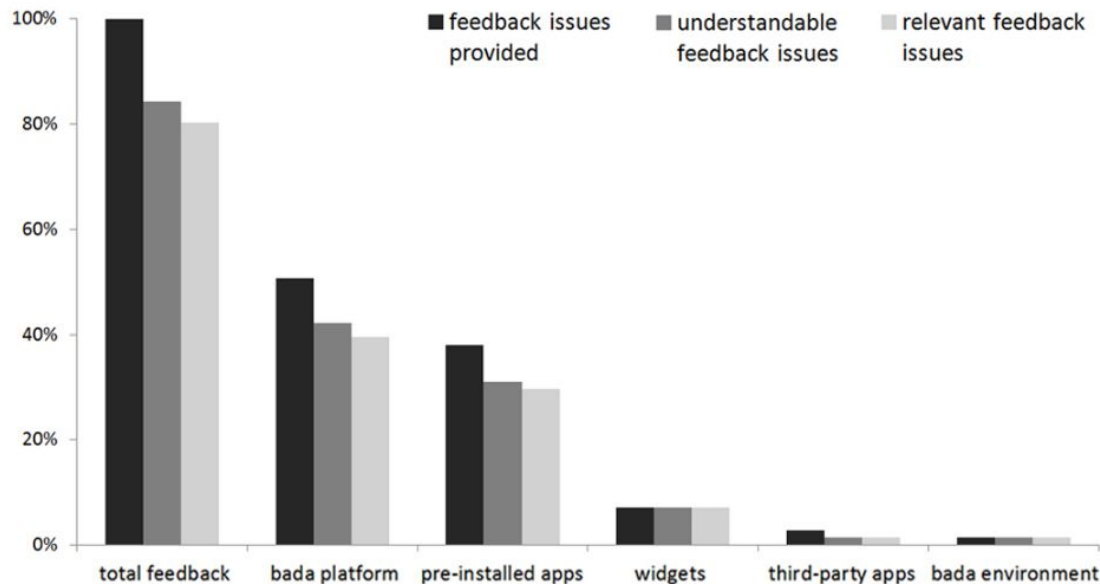
Total

76 issues

64 (84.2%)
understandable

61 (80.3%) useful

Some duplicates





AppEcho: Research Questions

RQ 1: To what extent does the mobile feedback approach **support users in providing feedback** on a mobile platform and applications **in situ**?

RQ 2: To what extent do users **apply the mobile feedback approach continuously over time**?

RQ 3: To what extent is the feedback gathered **understandable for developers**?

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AppEcho: Results

RQ 1: To what extent does the mobile feedback approach support users in providing feedback on a mobile platform and applications in situ?

- Hard to say ... results are not compared with other approaches
- All 14 participants provided feedback
 - power users more than average users
- 80% of feedback was documented in situ



AppEcho: Results

RQ 2: To what extent do users apply the mobile feedback approach continuously over time?

- Majority of feedback in first 2 weeks
- Received feedback even after 10 weeks
- No sign why feedback should stop

- More long term studies needed



AppEcho: Results

RQ 3: To what extent is the feedback gathered understandable for developers?

- 84.2 % of the feedback provided as understandable.



AppEcho: Results

RQ 4: To what extent is the feedback gathered useful for mobile platform and application improvement?

- 80.3 % of the total feedback issues gathered to be useful for mobile system improvement.



Conclusion

Synthesis

Both papers talked about getting feedback from users concerning mobile applications. One approach is to extract information from appstores, the other one is to make a separate app to get feedback from the user directly.

Appstores are too noisy. Too short feedbacks, mostly not useful. Installing a separate app (or in the papers case having a separate phone) to give review might be an obstacle for users. Something built into OS would be best.



Discussion

What are potential benefits and limitations of using user feedback for requirements engineering?

How can we ensure high quality feedback?

What review types would you consider most useful for developers, and how would you extract/filter those from an app store?

What does existing social software lack for requirements engineering?



What does existing social software lack to support Requirements Engineering?

Social software is currently not adjusted for RE.

Current approach is to filter out useful reviews from users

Reviews are primarily meant for other users, catching sentiment

The provided information is mostly not sufficiently detailed to identify requirements

- > more structured feedback needed

Information mostly flows in one direction

- > communication to user needs to be established for more information