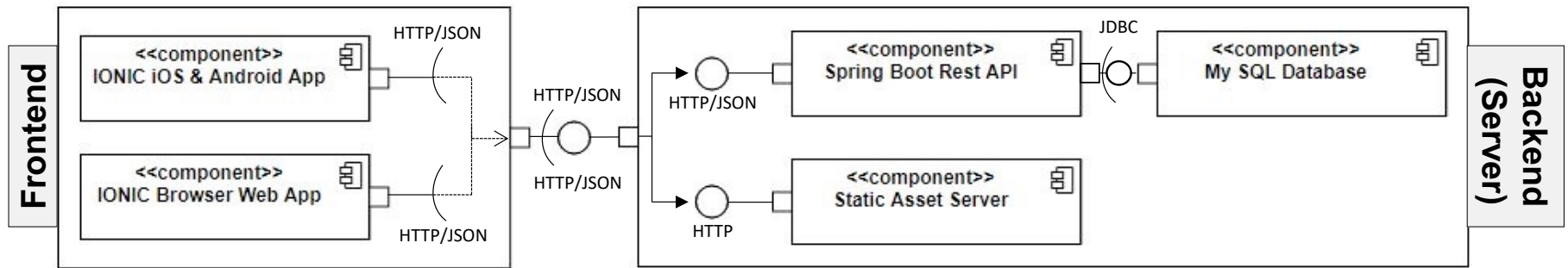


ONLINE APPENIX

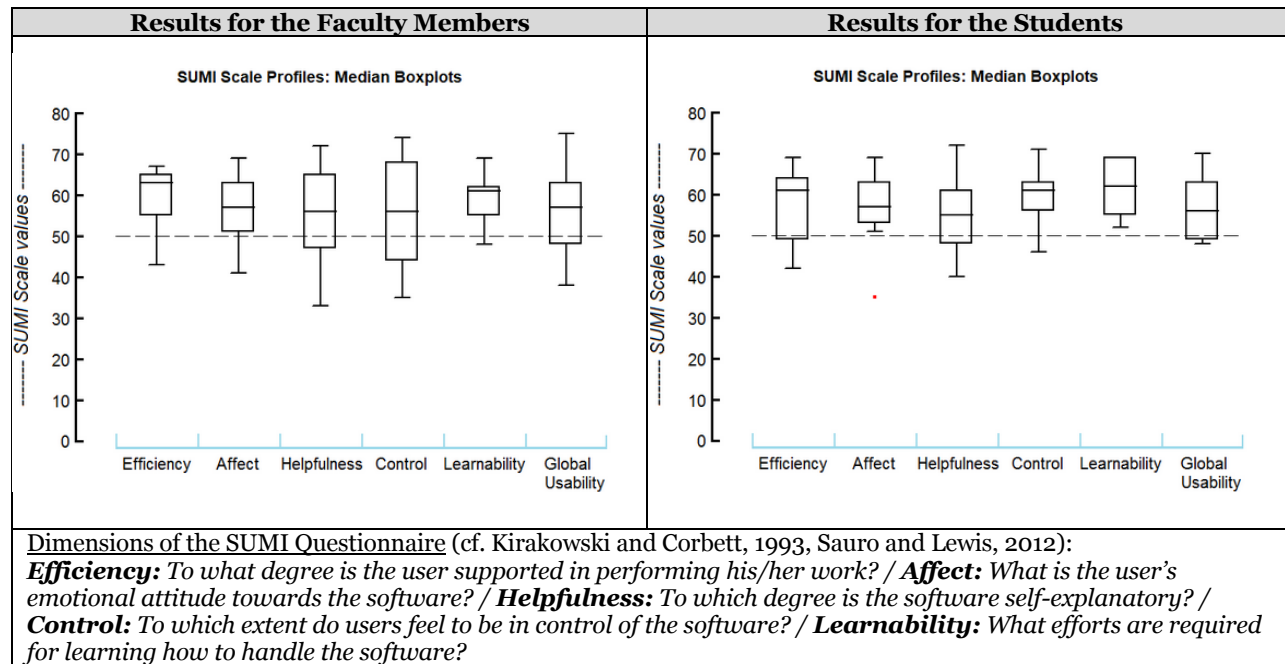
Supporting Students in the Transition to Higher Education: Evidence from a Mobile App in Accounting Education

Category	Design Requirement (DR)	Student factors addressed by the DR			Primary source of the DR
		Students' experience	Learning strategies	Self-organization	
Course attendance/ reminders	DR 1: Tracking and monitoring of course attendance	⊙	-	●	I, III(s, ft), IV(s)
	DR 2: Pop-up messages with reminders of lectures and important academic events (advanced timetable planning)	⊙	⊙	●	I, III(s, ft), IV(s)
Support of study phases	DR 3: Provision of training and exam-oriented exercises for learning control and training purposes	⊙	●	●	I, II, III(s, ft), IV(s, ft)
	DR 4: Performance tests via quizzes	-	●	⊙	I, II, III(s, ft), IV(s)
	DR 5: Control of learning process and comparison with a peer group	●	●	●	I, III(s, ft), IV(s)
Technical requirements	DR 6: Design as a hybrid app	-	-	-	II, III(ft), IV(ft)
	DR 7: Separation between front-/back-end, with an easy management of the content in the back-end.	-	-	-	III(ft), IV(ft)
	DR 8: Data transfer via HTTP and JSON	-	-	-	III(ft), IV(ft)
Legend: ●: fully supported; ⊙: partly supported; -: little supported; I: user story; II: market research; III(s/ft): user requirement student/faculty member & teaching staff; IV(s/ft): user journey student/faculty member & teaching staff					

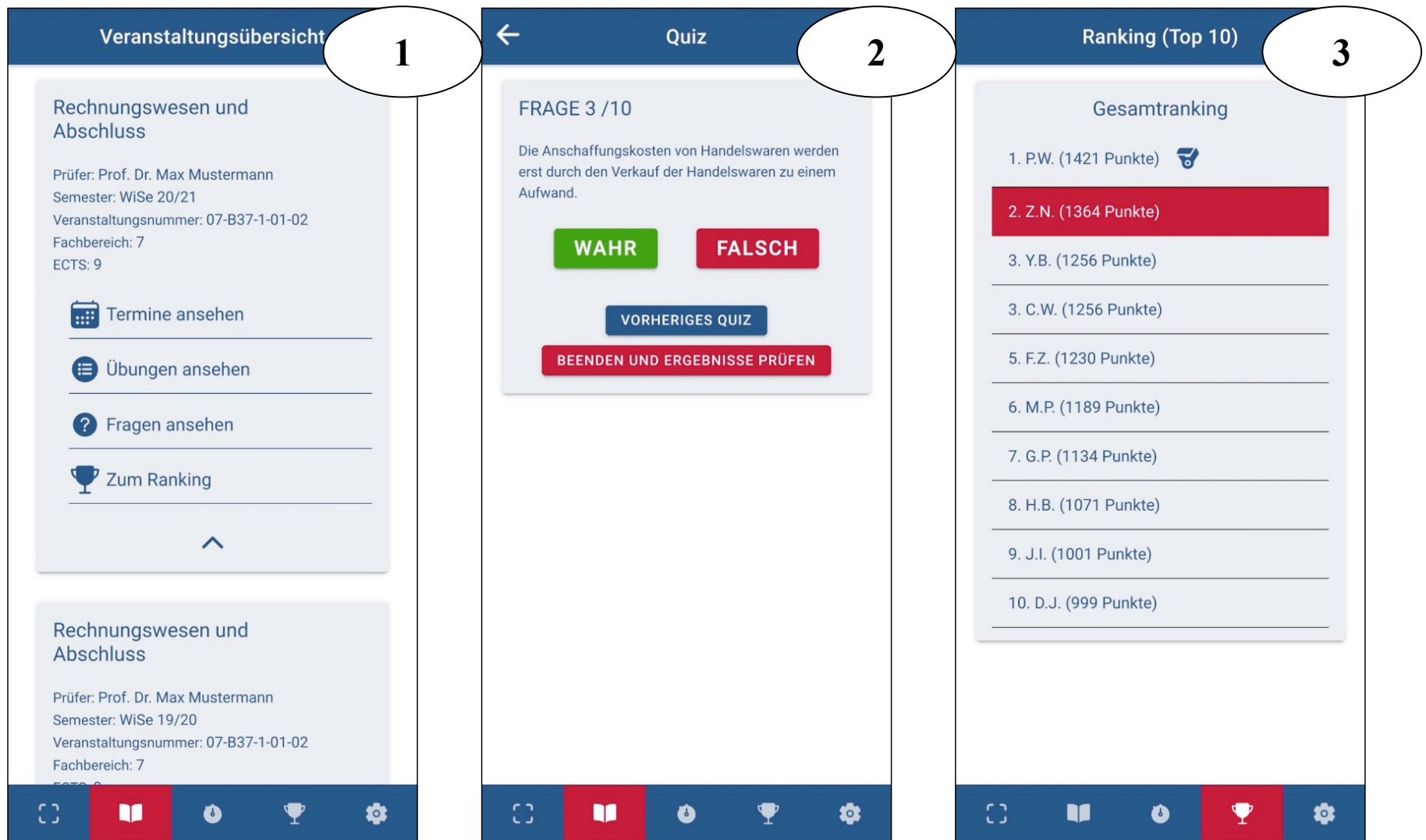
Appendix A. Requirements for the Mobile Application.



Appendix B. General Architecture of the Mobile Application.

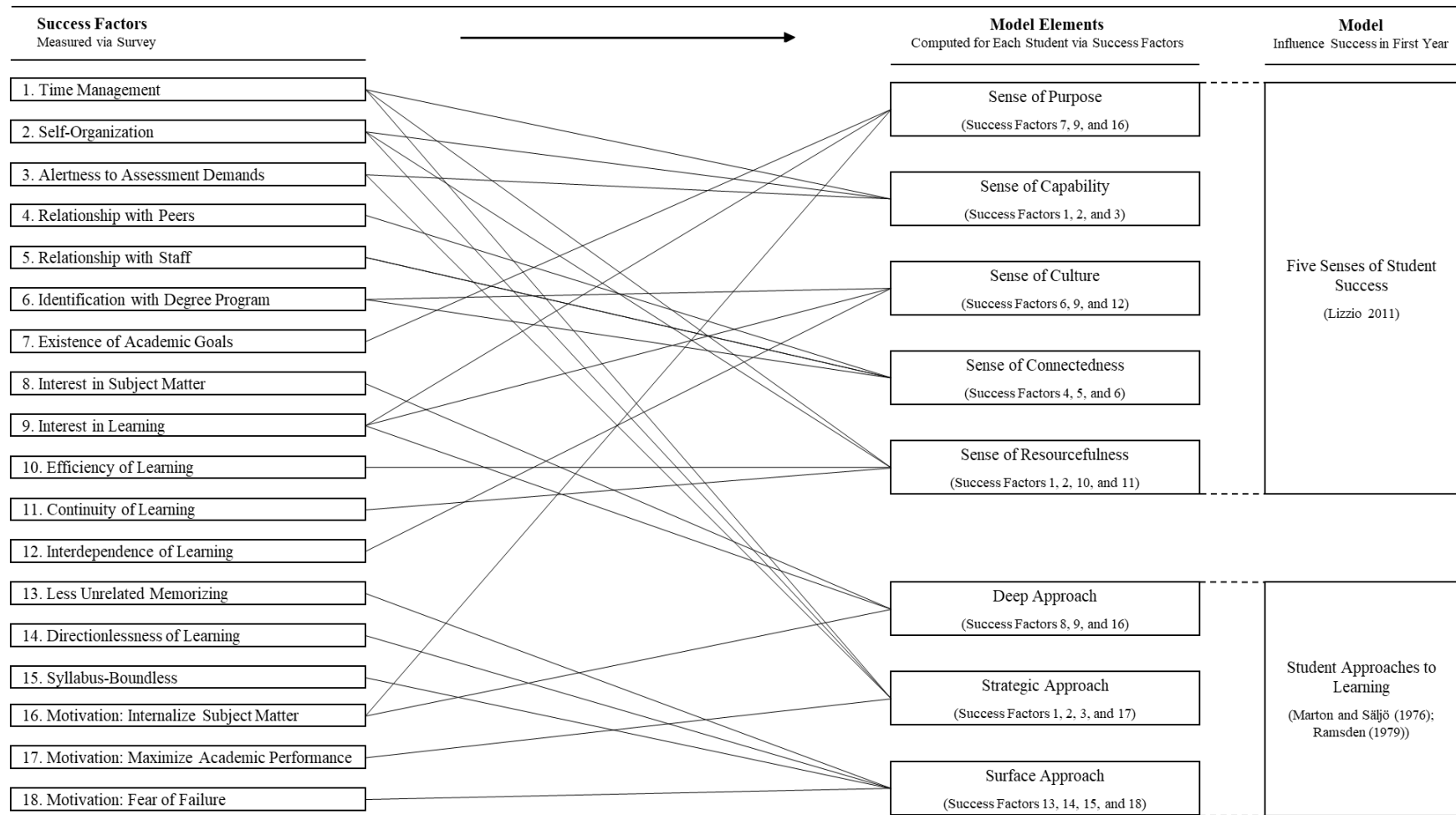


Appendix C. Results of a SUMI Usability Study.
(graphics provided by the Human Factors Research Group)



Appendix D presents exemplary screenshots of the mobile learning app in which: (1) students can navigate through the course dates, exercises, and videos, (2) test their knowledge in quizzes, or (3) compete on the leaderboard.

Appendix D. Exemplary Screenshots of the Mobile Learning App.



Appendix E presents a schematic illustration of our research design. We measure whether app usage supports students in the first year of university using the *Five Senses of Student Success* (Lizzio 2011) and *Student Approaches to Learning* (Marton and Säljö (1976); Ramsden (1979)) models. In the first step, we survey whether students feel supported by the app in 19 areas (for example, time management, self-organization, etc.). In the second step, we then aggregate the success factors on the level of the model elements (i.e., *Sense of Purpose*, *Sense of Capability*, etc.). These indicate how much a student is supported in a respective area. Within the framework of the models, this allows conclusions about possible support by app usage for first-year students.

Appendix E. Research Design.

Questionnaire Item	Success Factor	Mean	SD
The app has increased the level of self-reliance in my learning.	Independence of Learning	1.409	1.290
The app has helped me identify with my course of study.	Identification with Degree Program	-0.591	1.630
The app has increased my interest in academic learning.	Interest in Learning	-0.176	1.714
The app has increased my motivation to pass the exam (with a good grade).	Motivation: Maximize Academic Performance	1.239	1.486
The app has improved communication with faculty.	Relationship with Staff	-1.572	1.152
The app prepared me for the assessment demands of the exam.	Alertness to Assessment Demands	0.579	1.934
The app has helped me manage my time better.	Time Management	0.918	1.671
The app has helped increase my interest in accounting.	Interest in Subject Matter	-0.182	1.773
The app has increased my self-organization.	Self-Organization	1.409	1.260
The app has helped me know what I need to learn.	Directionlessness of Learning	1.723	1.233
The app has made my learning more efficient.	Efficiency of Learning	1.409	1.290
The app has led to more communication between me and my fellow students.	Relationship with Peers	-0.981	1.721
The app made me start studying for the exam earlier.	Continuity of Learning	0.843	1.821
The app has helped me develop academic goals for myself.	Existence of Academic Goals	-0.849	1.384

Appendix F. Full Questionnaire.

Panel A: Serious User ($N = 158$; see Table 4)					
Characteristic	Serious User		Non-Serious User		Difference
	N	Mean	N	Mean	
<i>Semester</i>	79	1.59	79	2.35	-0.76***
<i>Grade</i>	79	4.01	79	4.25	-0.24
<i>A-Level-Grade</i>	77	2.60	78	2.69	-0.09
<i>Female</i>	79	0.54	79	0.45	0.09

Panel B: A-Levels Grades ($N = 156$; see Table 5)					
Characteristic	Very Good A-Level ≥ 3.0		Other A-Level < 3.0		Difference
	N	Mean	N	Mean	
<i>Usage Time</i>	25	2,662.05	131	1,825.14	836.91
<i>Semester</i>	25	2.04	131	1.98	0.06
<i>Grade</i>	25	3.46	131	4.28	-0.82**
<i>Female</i>	25	0.56	131	0.50	0.06

Panel C: Semester ($N = 158$; see Table 6, Panel A)					
Characteristic	First Semester		Higher Semester		Difference
	N	Mean	N	Mean	
<i>Usage Time</i>	112	2183.17	46	1406.78	776.39**
<i>Grade</i>	112	4.11	46	4.17	-0.06
<i>A-Level-Grade</i>	109	2.62	46	2.70	-0.08
<i>Female</i>	112	0.53	46	0.43	0.10

Panel D: Course of Study ($N = 158$; see Table 6, Panel B)					
Characteristic	Business Students		Other Students		Difference
	N	Mean	N	Mean	
<i>Usage Time</i>	99	1922.67	59	2014.95	-92.28
<i>Semester</i>	99	1.88	59	2.14	-0.26
<i>Grade</i>	99	4.28	59	3.88	0.40*
<i>A-Level-Grade</i>	98	2.67	57	2.59	0.08
<i>Female</i>	99	0.64	59	0.27	0.37***

Panel E: Gender ($N = 158$; see Table 6, Panel C)					
Characteristic	Female		Male		Difference
	N	Mean	N	Mean	
<i>Usage Time</i>	79	2109.38	79	1804.89	304.49
<i>Semester</i>	79	1.99	79	1.96	0.03
<i>Grade</i>	79	4.19	79	4.07	0.12
<i>A-Level-Grade</i>	77	2.61	78	2.67	-0.06

Appendix G shows the composition of the groups used for the split-sample analysis in the additional analysis (Tables 4 and 5) as well as the robustness checks (Table 6) with respect to the student characteristics depicted in the descriptive statistics (Table 2). We distinguish between serious and non-serious app users based on the app usage time (Panel A), students with extraordinarily good A-Level grades and others (Panel B), first-semester and higher-semester students (Panel C), business students and students from other courses of study (Panel D), and female and male students (Panel E). We report the mean values for the corresponding student characteristics in both groups as well as the differences between the respective groups with the corresponding results of the two-sided t-tests for mean differences. ***, **, and * indicate statistical significance at 1 %, 5 %, and 10 % level, respectively.

Appendix G. Differences between Split-Samples.

Supporting Students in the Transition to Higher Education

Characteristic	Items	Sample (N = 158)		App User Population (N = 465)		Difference
		Frequency	Percentage	Frequency	Percentage	
Semester	1	112	70.89	289	62.15	8.74**
	2-3	24	15.19	102	21.94	-6.75*
	4-5	14	8.86	45	9.68	-0.82
	> 5	8	5.06	29	6.24	-1.18
Age (in years)	< 20	37	24.03	92	19.96	4.07
	20-25	110	71.43	347	75.27	-3.84
	26-30	5	3.25	19	4.12	-0.87
	> 30	2	1.30	3	0.65	0.65
Study Course	Business Studies	99	62.66	262	56.34	6.32
	Economics	25	15.82	88	18.92	-3.10
	Engineering and Management	21	13.29	83	17.85	-4.56
	Information Systems and Management	13	8.23	32	6.88	1.35
Course Attendance	(Almost) always (> 90 %)	16	10.13	34	7.31	2.82
	Often (90-60 %)	16	10.13	36	7.74	2.39
	Sometimes (60-40 %)	21	13.29	41	8.82	4.47
	Rarely (40-10 %)	39	24.68	117	25.16	-0.48
	(Almost) never (< 10 %)	66	41.77	237	50.97	-9.20**
Grade	Very good (1.0-1.3)	6	3.80	10	2.15	1.65
	Good (1.7-2.3)	16	10.13	33	7.10	3.03
	Satisfactory (2.7-3.3)	20	12.66	51	10.97	1.69
	Sufficient (3.7-4.0)	22	13.92	58	12.47	1.45
	Insufficient (5.0)	94	59.49	313	67.31	-7.82*
A-Levels Grade	1.0-1.49	3	1.92	8	1.76	0.16
	1.5-2.49	51	32.69	126	27.75	4.94
	2.5-3.49	98	62.82	304	66.96	-4.14
	3.5-4.0	4	2.56	16	3.52	-0.96
Gender	Male	79	50.00	244	52.47	-2.47
	Female	79	50.00	221	47.53	2.47

Appendix H shows the composition of the sample (N = 158) on which this study is based and the composition of the entire app user population (N = 465) as well as the differences between these both with the corresponding results of the two-sided t-tests for mean differences. ***, **, and * indicate statistical significance at 1 %, 5 %, and 10 % level, respectively.

Appendix H. Differences between Sample and Underlying Population of App Users.