Summary of Correlation Analysis

July 18, 2018

1 Gains in Skill/Knowledge and Motivation

Table 1: Correlation matrix of Gains in Skill/Knowledge and Motivation between motivation factors and in the third empirical study

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puno	Gains in Skill/Knowledge	Intrinsic Motivation	Interest/Enjoyment	Perceived Choice	Pressure/Tension	${ m Effort/Importance}$
Gains in Skill/Knowledge	1.0000	-0.0387	-0.2761	0.0681	0.0845	0.2336
Intrinsic Motivation	-0.0387	1.0000	0.5719	0.7804	-0.4514	0.3574
$_{ m Interest/Enjoyment}$	-0.2761	0.5719	1.0000	0.2813	0.0205	-0.0995
Perceived Choice	0.0681	0.7804	0.2813	1.0000	-0.3622	0.1183
ressure/Tension	0.0845	-0.4514	0.0205	-0.3622	1.0000	-0.1196
${ m Effort/Importance}$	0.2336	0.3574	-0.0995	0.1183	-0.1196	1.0000
Level of Motivation	-0.0745	0.6146	0.7473	0.3690	0.0612	0.1801
Attention	-0.1175	0.3167	0.6965	0.1383	0.1945	-0.0681
Relevance	0.1354	0.6683	0.2263	0.5547	-0.3265	0.2608
Satisfaction	0.0212	0.6182	0.6293	0.3732	0.0744	0.3181

Table 2: Correlation matrix with p-values of Gains in Skill/Knowledge and Motivation between motivation factors and in the third empirical study

Tension Effort/Importance			0.8926 0.5106						0.0268 0.0800	0.6231 0.0312	
Pressure/								~	_		
Perceived Choice	0.653	0.000(0.0582	0.000(0.013^{2}	0.433^{2}	0.0116	0.3593	0.0001	0.0106	
Interest/Enjoyment	0.0632	0.0000	0.0000	0.0582	0.8926	0.5106	0.0000	0.0000	0.1304	0.0000	
Intrinsic Motivation	0.7983	0.000	0.000	0.000	0.0016	0.0147	0.000	0.0320	0.000	0.0000	
Gains in Skill/Knowledge	0.0000	0.7983	0.0632	0.6530	0.5766	0.1182	0.6227	0.4369	0.3698	0.8889	
round	Gains in Skill/Knowledge	Intrinsic Motivation	Interest/Enjoyment	Perceived Choice	Pressure/Tension	${ m Effort/Importance}$	Level of Motivation	Attention	Relevance	Satisfaction	method: spearman

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 ${\bf 2} \quad {\bf Gains \ in \ Skill/Knowledge \ and \ Motivation \ for} \\ \quad {\bf the \ group \ ont\hbox{-}gamified}$

Table 3: Correlation matrix of Gains in Skill/Knowledge and Motivation for the group ont-gamified between motivation factors and in the third empirical study

Effort/Importance	0.2440	0.2644	-0.1704	0.1172	-0.0484	1.0000	0.1460	-0.0056	-0.1355	0.3458
Pressure/Tension	-0.0678	-0.1981	0.2587	-0.3037	1.0000	-0.0484	0.4104	0.4061	-0.1862	0.5129
Perceived Choice	0.0806	0.8047	0.1580	1.0000	-0.3037	0.1172	0.2363	0.1021	0.6849	0.1741
Interest/Enjoyment	-0.1743	0.5411	1.0000	0.1580	0.2587	-0.1704	0.7890	0.8138	0.2769	0.6163
Intrinsic Motivation	0.0753	1.0000	0.5411	0.8047	-0.1981	0.2644	0.5593	0.4342	0.7135	0.4454
Gains in Skill/Knowledge	1.0000	0.0753	-0.1743	0.0806	-0.0678	0.2440	0.0857	0.0390	0.0749	0.2308
round	Gains in Skill/Knowledge	Intrinsic Motivation	Interest/Enjoyment	Perceived Choice	Pressure/Tension	${ m Effort/Importance}$	Level of Motivation	Attention	Relevance	Satisfaction

Table 4: Correlation matrix with p-values of Gains in Skill/Knowledge and Motivation for the group ont-gamified between motivation factors and in the third empirical study

Effort/Importance	0.2864	0.2469	0.4602	0.6129	0.8350	0.0000	0.5277	0.9808	0.5582	0.1246	
Pressure/Tension	0.7704	0.3893	0.2575	0.1808	0.0000	0.8350	0.0646	0.0678	0.4190	0.0174	
Perceived Choice	0.7284	0.0000	0.4939	0.0000	0.1808	0.6129	0.3023	0.6595	0.0006	0.4504	
Interest/Enjoyment	0.4500	0.0113	0.0000	0.4939	0.2575	0.4602	0.0000	0.0000	0.2244	0.0029	
Intrinsic Motivation	0.7454	0.0000	0.0113	0.0000	0.3893	0.2469	0.0084	0.0492	0.0003	0.0430	
Gains in Skill/Knowledge	0.0000	0.7454	0.4500	0.7284	0.7704	0.2864	0.7117	0.8667	0.7470	0.3141	
round	Gains in Skill/Knowledge	Intrinsic Motivation	$\operatorname{Interest/Enjoyment}$	Perceived Choice	Pressure/Tension	Effort/Importance	Level of Motivation	Attention	Relevance	Satisfaction	method: spearman

3 Gains in Skill/Knowledge and Motivation for the group w/o-gamified

Table 5: Correlation matrix of Gains in Skill/Knowledge and Motivation for the group $\rm w/o\mbox{-}gamified$ between motivation factors and in the third empirical study

П											
Effort/Importance	0.0237	0.3322	0.0019	-0.0806	-0.1244	1.0000	0.2736	0.0369	0.3852	0.3006	
Pressure/Tension	0.3022	-0.6753	-0.1730	-0.4735	1.0000	-0.1244	-0.2626	-0.0015	-0.5435	-0.3437	
Perceived Choice	-0.1528	0.7306	0.3371	1.0000	-0.4735	-0.0806	0.4376	0.2384	0.3839	0.4328	
Intrinsic Motivation Interest/Enjoyment Perceived Choice	-0.5229	0.6022	1.0000	0.3371	-0.1730	0.0019	0.6990	0.6219	0.1290	0.6586	
Intrinsic Motivation	-0.3489	1.0000	0.6022	0.7306	-0.6753	0.3322	0.6543	0.3059	0.6238	0.7364	
Gains in Skill/Knowledge	1.0000	-0.3489	-0.5229	-0.1528	0.3022	0.0237	-0.3617	-0.2876	0.0379	-0.4126	
round	Gains in Skill/Knowledge	Intrinsic Motivation	Interest/Enjoyment	Perceived Choice	Pressure/Tension	${ m Effort/Importance}$	Level of Motivation	Attention	Relevance	Satisfaction	method: spearman

method: spea

Table 6: Correlation matrix with p-values of Gains in Skill/Knowledge and Motivation for the group $\rm w/o\textsc{-}gamified$ between motivation factors and in the third empirical study

e Pressure/Tension Effort/Importance	0.1421	0.0002	0.4082 0.9927	0.0168	0.0000		0.2048	0.9941	0.0050 0.00572	0.0925
Perceived Choice	0.4658	0.000	0.0993	0.000	0.016	0.7016	0.0287	0.251	0.0581	0.0307
Interest/Enjoyment	0.0073	0.0014	0.0000	0.0993	0.4082	0.9927	0.0001	0.000	0.5387	0.0003
Intrinsic Motivation	0.0874	0.000	0.0014	0.000	0.0002	0.1047	0.0004	0.1370	0.0009	0.0000
Gains in Skill/Knowledge	0.0000	0.0874	0.0073	0.4658	0.1421	0.9103	0.0756	0.1632	0.8571	0.0404
round	Gains in Skill/Knowledge	Intrinsic Motivation	Interest/Enjoyment	Perceived Choice	Pressure/Tension	m Effort/Importance	Level of Motivation	Attention	Relevance	Satisfaction

4 Gains in Skill/Knowledge and Motivation for the group Apprentice

Table 7: Correlation matrix of Gains in Skill/Knowledge and Motivation for the group Apprentice between motivation factors and in the third empirical study

Effort/Importance	0.1264	0.3817	-0.0940	0.1597	-0.1216	1.0000	0.1709	-0.1000	0.1884	0.3614	
Pressure/Tension	0.1641	-0.3550	-0.0142	-0.3343	1.0000	-0.1216	0.0526	0.1541	-0.2013	0.0850	
Perceived Choice	-0.0853	0.7542	0.2415	1.0000	-0.3343	0.1597	0.3487	0.1121	0.5275	0.3776	
Interest/Enjoyment	-0.3262	0.6225	1.0000	0.2415	-0.0142	-0.0940	0.7721	0.7502	0.2153	0.6901	
Intrinsic Motivation	-0.1482	1.0000	0.6225	0.7542	-0.3550	0.3817	0.6716	0.3851	0.6293	0.7112	
Gains in Skill/Knowledge	1.0000	-0.1482	-0.3262	-0.0853	0.1641	0.1264	-0.1221	-0.1367	0.0802	0.0143	
round	Gains in Skill/Knowledge	Intrinsic Motivation	Interest/Enjoyment	Perceived Choice	Pressure/Tension	${ m Effort/Importance}$	Level of Motivation	Attention	Relevance	Satisfaction	method: spearman

Table 8: Correlation matrix with p-values of Gains in Skill/Knowledge and Motivation for the group Apprentice between motivation factors and in the third empirical study

round	Gains in Skill/Knowledge	Intrinsic Motivation	Interest/Enjoyment	Perceived Choice	Pressure/Tension	Effort/Importance
Gains in Skill/Knowledge	0.0000	0.4184	0.0684	0.6426	0.3694	0.4905
Intrinsic Motivation	0.4184	0.0000	0.0001	0.0000	0.0462	0.0311
Interest/Enjoyment	0.0684	0.0001	0.0000	0.1830	0.9387	0.6089
Perceived Choice	0.6426	0.0000	0.1830	0.0000	0.0615	0.3825
Pressure/Tension	0.3694	0.0462	0.9387	0.0615	0.0000	0.5074
Effort/Importance	0.4905	0.0311	0.6089	0.3825	0.5074	0.0000
Level of Motivation	0.5056	0.0000	0.0000	0.0505	0.7751	0.3496
Attention	0.4557	0.0295	0.0000	0.5414	0.3996	0.5859
Relevance	0.6626	0.0001	0.2367	0.0019	0.2691	0.3018
Satisfaction	0.9380	0.0000	0.0000	0.0331	0.6435	0.0421

5 Gains in Skill/Knowledge and Motivation for the group Master

Table 9: Correlation matrix of Gains in Skill/Knowledge and Motivation for the group Master between motivation factors and in the third empirical study

Effort/Importance	0.2343	0.4614	-0.0199	0.0288	-0.4171	1.0000	0.0950	0.0266	0.5670	0.0999	
	-0.5118	-0.6452	0.2226	-0.4810	1.0000	-0.4171	0.1084	0.4491	-0.5577	-0.1223	
Perceived Choice Pressure/Tension	0.5347	0.7731	0.4029	1.0000	-0.4810	0.0288	0.5138	0.1867	0.5967	0.4164	
Interest/Enjoyment	0.0265	0.4229	1.0000	0.4029	0.2226	-0.0199	0.7233	0.4972	0.1680	0.5150	
Intrinsic Motivation	0.3168	1.0000	0.4229	0.7731	-0.6452	0.4614	0.4070	0.0397	0.8027	0.3978	
Gains in Skill/Knowledge	1.0000	0.3168	0.0265	0.5347	-0.5118	0.2343	0.2126	0.0033	0.3642	0.0553	
round	Gains in Skill/Knowledge	Intrinsic Motivation	Interest/Enjoyment	Perceived Choice	Pressure/Tension	m Effort/Importance	Level of Motivation	Attention	Relevance	Satisfaction	method: spearman

Table 10: Correlation matrix with p-values of Gains in Skill/Knowledge and Motivation for the group Master between motivation factors and in the third empirical study

Effort/Importance	0.4202	0.0968	0.9461	0.9222	0.1379	0.0000	0.7466	0.9281	0.0345	0.7340	
Choice Pressure/Tension Ef	0.0614	0.0127	0.4443	0.0816	0.0000	0.1379	0.7122	0.1072	0.0382	0.6769	
Perceived Choice	0.0488	0.0012	0.1532	0.0000	0.0816	0.9222	0.0602	0.5227	0.0243	0.1386	
Interest/Enjoyment	0.9285	0.1319	0.0000	0.1532	0.4443	0.9461	0.0035	0.0704	0.5660	0.0595	
Intrinsic Motivation	0.2697	0.0000	0.1319	0.0012	0.0127	0.0968	0.1486	0.8928	0.0005	0.1590	
Gains in Skill/Knowledge	00000	0.2697	0.9285	0.0488	0.0614	0.4202	0.4657	0.9910	0.2004	0.8510	
round	Gains in Skill/Knowledge	Intrinsic Motivation	Interest/Enjoyment	Perceived Choice	Pressure/Tension	${ m Effort/Importance}$	Level of Motivation	Attention	Relevance	Satisfaction	method: spearman

6 Gains in Skill/Knowledge and Motivation for the group ont-gamified.Apprentice

Table 11: Correlation matrix of Gains in Skill/Knowledge and Motivation for the group ont-gamified. Apprentice between motivation factors and in the third empirical study

	Gains in Skill/Knowledge	Intrinsic Motivation	Interest/Enjoyment	Perceived Choice	Perceived Choice Pressure/Tension	Effort/Importance
Gains in Skill/Knowledge	1.0000	-0.2659	-0.0687	-0.1720	0.1545	-0.1879
	-0.2659	1.0000	0.6541	0.7652	0.4746	0.2305
	-0.0687	0.6541	1.0000	0.1802	0.6303	0.0474
	-0.1720	0.7652	0.1802	1.0000	0.1406	-0.0505
	0.1545	0.4746	0.6303	0.1406	1.0000	0.0865
	-0.1879	0.2305	0.0474	-0.0505	0.0865	1.0000
	0.0990	0.6315	0.8591	0.2638	0.7702	0.1086
	0.0968	0.5435	0.9301	0.1071	0.7083	0.0325
	-0.0597	0.6195	0.2634	0.5794	0.5022	-0.2061
	0.1257	0.6417	0.8343	0.2511	0.7497	0.1852

Table 12: Correlation matrix with p-values of Gains in Skill/Knowledge and Motivation for the group ont-gamified. Apprentice between motivation factors and in the third empirical study

round	Gains in Skill/Knowledge	Intrinsic Motivation	Intrinsic Motivation Interest/Enjoyment	Perceived Choice	Perceived Choice Pressure/Tension	Effort/Importance
Gains in Skill/Knowledge	0.0000	0.3573	0.8154	0.5566	0.5979	0.5199
Intrinsic Motivation	0.3573	0.0000	0.0112	0.0014	0.0864	0.4280
Interest/Enjoyment	0.8154	0.0112	0.0000	0.5376	0.0157	0.8721
Perceived Choice	0.5566	0.0014	0.5376	0.0000	0.6315	0.8638
Pressure/Tension	0.5979	0.0864	0.0157	0.6315	0.0000	0.7687
m Effort/Importance	0.5199	0.4280	0.8721	0.8638	0.7687	0.0000
Level of Motivation	0.7363	0.0154	0.0001	0.3621	0.0013	0.7116
Attention	0.7420	0.0446	0.0000	0.7156	0.0046	0.9122
Relevance	0.8393	0.0181	0.3629	0.0299	0.0672	0.4796
Satisfaction	0.6685	0.0134	0.0002	0.3865	0.0020	0.5262
method: spearman						

7 Gains in Skill/Knowledge and Motivation for the group ont-gamified.Master

Table 13: Correlation matrix of Gains in Skill/Knowledge and Motivation for the group ont-gamified.Master between motivation factors and in the third empirical study

Effort/Importance	0.7388	0.8829	0.0636	0.8469	-0.8415	1.0000	0.6667	0.3000	0.5727	0.5636	
Pressure/Tension	-0.8895	-0.9636	0.0748	-0.9636	1.0000	-0.8415	-0.2594	0.2057	-0.8602	-0.2805	
Perceived Choice	0.9286	0.9643	-0.1622	1.0000	-0.9636	0.8469	0.2857	-0.0721	0.8829	0.3063	
Interest/Enjoyment	-0.1441	0.0180	1.0000	-0.1622	0.0748	0.0636	0.4685	0.1273	-0.3455	0.4909	
Intrinsic Motivation	0.8929	1.0000	0.0180	0.9643	-0.9636	0.8829	0.4286	-0.0180	0.7748	0.4505	
Gains in Skill/Knowledge	1.0000	0.8929	-0.1441	0.9286	-0.8895	0.7388	0.3214	-0.0180	0.7568	0.4505	
round	Gains in Skill/Knowledge	Intrinsic Motivation	Interest/Enjoyment	Perceived Choice	Pressure/Tension	m Effort/Importance	Level of Motivation	Attention	Relevance	Satisfaction	

Table 14: Correlation matrix with p-values of Gains in Skill/Knowledge and Motivation for the group ont-gamified.Master between motivation factors and in the third empirical study

round	Gains in Skill/Knowledge	Intrinsic Motivation	Interest/Enjoyment	Perceived Choice	Pressure/Tension	Effort/Importance
Gains in Skill/Knowledge	0.0000	0.0123	0.7578	2900:0	0.0073	0.0579
Intrinsic Motivation	0.0123	0.0000	0.9694	0.0028	0.0005	0.0085
Interest/Enjoyment	0.7578	0.9694	0.0000	0.7283	0.8734	0.8922
Perceived Choice	2900.0	0.0028	0.7283	0.0000	0.0005	0.0162
Pressure/Tension	0.0073	0.0005	0.8734	0.0005	0.0000	0.0176
m Effort/Importance	0.0579	0.0085	0.8922	0.0162	0.0176	0.0000
Level of Motivation	0.4976	0.3536	0.2890	0.5560	0.5742	0.1019
Attention	0.9694	0.9694	0.7857	0.8780	0.6582	0.5133
Relevance	0.0489	0.0408	0.4479	0.0085	0.0130	0.1790
Satisfaction	0.3104	0.3104	0.2633	0.5040	0.5423	0.1876

8 Gains in Skill/Knowledge and Motivation for the group w/o-gamified. Apprentice

Table 15: Correlation matrix of Gains in Skill/Knowledge and Motivation for the group $\rm w/o\mbox{-}gamified.$ Apprentice between motivation factors and in the third empirical study

Effort/Importance	0.0804	0.4071	-0.0057	0.1300	-0.2665	1.0000	0.3648	0.0698	0.3685	0.4109	
Pressure/Tension	9980.0	-0.9039	-0.4590	-0.7869	1.0000	-0.2665	-0.6475	-0.3365	-0.7353	-0.6019	
Perceived Choice	-0.1149	0.7469	0.2129	1.0000	-0.7869	0.1300	0.3811	0.1389	0.4849	0.3398	
Interest/Enjoyment	-0.7037	0.6049	1.0000	0.2129	-0.4590	-0.0057	0.6537	0.5784	0.1327	0.6326	
Intrinsic Motivation	-0.2473	1.0000	0.6049	0.7469	-0.9039	0.4071	0.6846	0.3294	0.6712	0.7465	
Gains in Skill/Knowledge	1.0000	-0.2473	-0.7037	-0.1149	0.0866	0.0804	-0.4669	-0.4901	0.1585	-0.3892	
round	Gains in Skill/Knowledge	Intrinsic Motivation	Interest/Enjoyment	Perceived Choice	Pressure/Tension	m Effort/Importance	Level of Motivation	Attention	Relevance	Satisfaction	11 1.

Table 16: Correlation matrix with p-values of Gains in Skill/Knowledge and Motivation for the group w/o-gamified.Apprentice between motivation factors and in the third empirical study

round	Gains in Skill/Knowledge	Intrinsic Motivation	Interest/Enjoyment	Perceived Choice	Pressure/Tension	Effort/Importance
Gains in Skill/Knowledge	0.0000	0.3225	0.0011	0.6498	0.7325	0.7513
Intrinsic Motivation	0.3225	0.0000	0.0078	0.0004	0.0000	0.0936
Interest/Enjoyment	0.0011	0.0078	0.0000	0.3963	0.0554	0.9821
Perceived Choice	0.6498	0.0004	0.3963	0.0000	0.0001	0.6073
Pressure/Tension	0.7325	0.0000	0.0554	0.0001	0.0000	0.2850
m Effort/Importance	0.7513	0.0936	0.9821	0.6073	0.2850	0.0000
Level of Motivation	0.0508	0.0017	0.0033	0.1187	0.0037	0.1366
Attention	0.0389	0.1820	0.0119	0.5825	0.1722	0.7833
Relevance	0.5300	0.0023	0.5996	0.0414	0.0005	0.1324
Satisfaction	0.1104	0.0004	0.0048	0.1678	0.0082	0.0903
method: spearman						

9 Gains in Skill/Knowledge and Motivation for the group w/o-gamified. Master

Table 17: Correlation matrix of Gains in Skill/Knowledge and Motivation for the group w/o-gamified.Master between motivation factors and in the third empirical study

Pressure/Tension Effort/Importance	0.5964 -0.2883	-0.1773 0.1071	0.5467 -0.0721	0.0994 -0.7207		0.1773 1.0000			-0.1806 0.4910	0.1970 -0.1786	
Perceived Choice	-0.0091	0.3964	0.6364	1.0000	0.0994	-0.7207	0.5946	0.4144	-0.1927	0.7748	
Interest/Enjoyment	0.0545	0.6307	1.0000	0.6364	0.5467	-0.0721	0.8829	0.7928	0.1284	0.7388	
Intrinsic Motivation	-0.6307	1.0000	0.6307	0.3964	-0.1773	0.1071	0.5357	0.3571	0.6183	0.7143	
Gains in Skill/Knowledge	1.0000	-0.6307	0.0545	-0.0091	0.5964	-0.2883	0.0901	0.2342	-0.4220	-0.3784	
round	Gains in Skill/Knowledge	Intrinsic Motivation	Interest/Enjoyment	Perceived Choice	Pressure/Tension	m Effort/Importance	Level of Motivation	Attention	Relevance	Satisfaction	

Table 18: Correlation matrix with p-values of Gains in Skill/Knowledge and Motivation for the group w/o-gamified. Master between motivation factors and in the third empirical study

round	Gains in Skill/Knowledge	Intrinsic Motivation	Interest/Enjoyment	Perceived Choice	Pressure/Tension	Effort/Importance
Gains in Skill/Knowledge	0.0000	0.1289	0.9075	0.9846	0.1575	0.5307
Intrinsic Motivation	0.1289	0.0000	0.1289	0.3786	0.7037	0.8397
Interest/Enjoyment	0.9075	0.1289	0.0000	0.1244	0.2041	0.8780
Perceived Choice	0.9846	0.3786	0.1244	0.0000	0.8321	0.0676
Pressure/Tension	0.1575	0.7037	0.2041	0.8321	0.0000	0.7037
m Effort/Importance	0.5307	0.8397	0.8780	0.0676	0.7037	0.0000
Level of Motivation	0.8477	0.2357	0.0085	0.1591	0.1139	0.9635
Attention	0.6132	0.4444	0.0334	0.3553	0.0353	0.8397
Relevance	0.3456	0.1389	0.7837	0.6790	0.6984	0.2632
Satisfaction	0.4026	0.0881	0.0579	0.0408	0.6720	0.7131
method: spearman						