

Summary of Correlation Analysis

July 6, 2018

1 Gains in Skills/Knowledge and Motivation

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

round	Gains in Skills/Knowledge	Intrinsic Motivation	Interest/Enjoyment	Perceived Choice	Pressure/Tension	Effort/Importance	Level of Motivation
Gains in Skills/Knowledge	1.0000						
Intrinsic Motivation	-0.0387	1.0000					
Interest/Enjoyment	-0.2761	0.5719	1.0000				
Perceived Choice	0.0681	0.7804	0.2813	1.0000			
Pressure/Tension	0.0845	-0.4514	0.0205	-0.3622	1.0000		
Effort/Importance	0.2336	0.3574	0.6146	0.7473	0.3690	1.0000	
Level of Motivation	-0.0745	0.6167	0.3167	0.6965	0.1383	0.0612	1.0000
Attention	-0.1175	0.6683	0.6182	0.2263	0.5547	0.1945	0.1801
Relevance	0.1354			0.6293	0.3732	-0.3265	-0.0681
Satisfaction	0.0212					0.0744	0.2608
method: spearman							0.3181

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

round	Gains in Skills/Knowledge	Intrinsic Motivation	Interest/Enjoyment	Perceived Choice	Pressure/Tension	Effort/Importance	Level of Motivation
Gains in Skills/Knowledge		0.0000	0.7983	0.0632	0.6530	0.5766	0.1182
Intrinsic Motivation			0.7983	0.0000	0.0000	0.0016	0.0147
Interest/Enjoyment				0.0632	0.0000	0.8926	0.5106
Perceived Choice					0.0000	0.0134	0.4334
Pressure/Tension						0.0000	0.4286
Effort/Importance							0.0000
Level of Motivation							
Attention							0.2311
Relevance							0.6528
Satisfaction							0.0800
method: spearman							0.0312

2 Gains in Skills/Knowledge and Motivation for the group ont-gamified

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

round	Gains in Skills/Knowledge	Intrinsic Motivation	Interest/Enjoyment	Perceived Choice	Pressure/Tension	Effort/Importance	Level of Motivation
Gains in Skills/Knowledge		1.0000	0.0753	-0.1743	0.0806	-0.0678	0.2440
Intrinsic Motivation			0.0753	0.5411	0.8047	-0.1981	0.2644
Interest/Enjoyment				1.0000	0.1580	0.2587	-0.1704
Perceived Choice					1.0000	-0.3037	0.1172
Pressure/Tension						1.0000	-0.0484
Effort/Importance							1.0000
Level of Motivation							
Attention							0.1460
Relevance							-0.0056
Satisfaction							-0.1355
method: spearman							0.3458

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

round	Gains in Skills/Knowledge	Intrinsic Motivation	Interest/Enjoyment	Perceived Choice	Pressure/Tension	Effort/Importance	Level of Motivation
Gains in Skills/Knowledge		0.0000	0.7454	0.4500	0.7284	0.7704	0.2864
Intrinsic Motivation			0.7454	0.0113	0.0000	0.3893	0.2469
Interest/Enjoyment				0.0113	0.4939	0.2575	0.4602
Perceived Choice					0.0000	0.1808	0.6129
Pressure/Tension						0.0000	0.8350
Effort/Importance							0.0000
Level of Motivation							
Attention							0.5277
Relevance							0.9808
Satisfaction							0.5582
method: spearman							0.1246

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

Table 5: Correlation matrix of Gains in Skills/Knowledge and Motivation for the group w/o-gamified between motivation factors and in the third empirical study

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

method: spearman

Table 6: Correlation matrix with p-values of Gains in Skills/ Knowledge and Motivation for the group w/o-gamified between motivation factors and in the third empirical study

round	Gains in Skills/Knowledge	Intrinsic Motivation	Interest/Enjoyment	Perceived Choice	Pressure/Tension	Effort/Importance	Level of Motivation
Gains in Skills/Knowledge		0.0000	0.0874	0.0073	0.4658	0.1421	0.9103
Intrinsic Motivation			0.0874	0.0014	0.0000	0.0002	0.1047
Interest/Enjoyment				0.0000	0.0993	0.4082	0.9927
Perceived Choice					0.0000	0.0168	0.7016
Pressure/Tension						0.0000	0.5536
Effort/Importance							0.0000
Level of Motivation							
Attention							
Relevance							
Satisfaction							
method: spearman							

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

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

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

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

round	Gains in Skills/Knowledge	Intrinsic Motivation	Interest/Enjoyment	Perceived Choice	Pressure/Tension	Effort/Importance	Level of Motivation
Gains in Skills/Knowledge		0.0000	0.4184	0.0684	0.6426	0.3694	0.4905
Intrinsic Motivation			0.0000	0.0001	0.0000	0.0462	0.0311
Interest/Enjoyment				0.0000	0.1830	0.9387	0.6089
Perceived Choice					0.0000	0.0615	0.3825
Pressure/Tension						0.0000	0.5074
Effort/Importance							0.0000
Level of Motivation							
Attention							
Relevance							
Satisfaction							
method: spearman							

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

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

round	Gains in Skills/Knowledge	Intrinsic Motivation	Interest/Enjoyment	Perceived Choice	Pressure/Tension	Effort/Importance	Level of Motivation
Gains in Skills/Knowledge		1.0000	0.3168	0.0265	0.5347	-0.5118	0.2343
Intrinsic Motivation			1.0000	0.4229	0.7731	-0.6452	0.4614
Interest/Enjoyment				1.0000	0.4029	0.2226	-0.0199
Perceived Choice					1.0000	-0.4810	0.0288
Pressure/Tension						1.0000	-0.4171
Effort/Importance							1.0000
Level of Motivation							
Attention							
Relevance							
Satisfaction							
method: spearman							

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

round	Gains in Skills/Knowledge	Intrinsic Motivation	Interest/Enjoyment	Perceived Choice	Pressure/Tension	Effort/Importance	Level of Motivation
Gains in Skills/Knowledge		0.0000	0.2697	0.9285	0.0488	0.0614	0.4202
Intrinsic Motivation			0.2697	0.1319	0.0012	0.0127	0.0968
Interest/Enjoyment				0.0000	0.1532	0.4443	0.9461
Perceived Choice					0.0000	0.0816	0.9222
Pressure/Tension						0.0000	0.1379
Effort/Importance							0.0000
Level of Motivation							
Attention							0.7466
Relevance							0.9281
Satisfaction							0.0345
method: spearman							0.7340

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

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

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

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

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

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

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

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

method: spearman

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

round	Gains in Skills/Knowledge	Intrinsic Motivation	Interest/Enjoyment	Perceived Choice	Pressure/Tension	Effort/Importance	Level of Motivation
Gains in Skills/Knowledge							
Intrinsic Motivation	0.0000		0.0123	0.7578	0.0067	0.0073	0.0579
Interest/Enjoyment	0.0123		0.0000	0.9694	0.0028	0.0005	0.0085
Perceived Choice	0.7578	0.0067	0.9694	0.0000	0.7283	0.8734	0.8922
Pressure/Tension	0.0067	0.0073	0.0028	0.0000	0.0000	0.0005	0.0162
Effort/Importance	0.0073	0.0079	0.0005	0.8734	0.0005	0.0000	0.0176
Level of Motivation	0.0579	0.4976	0.0085	0.8922	0.0162	0.0176	0.0000
Attention	0.4976		0.3536	0.2890	0.5560	0.5742	0.1019
Relevance	0.9694	0.9694	0.9694	0.7857	0.8780	0.6582	0.5133
Satisfaction	0.0489	0.0489	0.0408	0.4479	0.0085	0.0130	0.1790
	0.3104	0.3104	0.3104	0.2633	0.5040	0.5423	0.1876

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

Table 15: Correlation matrix of Gains in Skills/Knowledge and Motivation for the group w/o-gamified.Apprentice between motivation factors and in the third empirical study

round	Gains in Skills/Knowledge	Intrinsic Motivation	Interest/Enjoyment	Perceived Choice	Pressure/Tension	Effort/Importance	Level of Motivation
Gains in Skills/Knowledge		1.0000	-0.2473	-0.7037	-0.1149	0.0866	0.0804
Intrinsic Motivation			1.0000	0.6049	0.7469	-0.9039	0.4071
Interest/Enjoyment				1.0000	0.2129	-0.4590	-0.0057
Perceived Choice					1.0000	-0.7869	0.1300
Pressure/Tension						1.0000	-0.2665
Effort/Importance							1.0000
Level of Motivation							
Attention							0.3648
Relevance							0.0698
Satisfaction							0.3685
method: spearman							0.4109

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

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

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

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

round	Gains in Skills/Knowledge	Intrinsic Motivation	Interest/Enjoyment	Perceived Choice	Pressure/Tension	Effort/Importance	Level of Motivation
Gains in Skills/Knowledge	1.0000						
Intrinsic Motivation	-0.6307	1.0000					
Interest/Enjoyment	0.0545	0.6307	1.0000				
Perceived Choice	-0.0091	0.3964	0.6307	1.0000			
Pressure/Tension	0.5964	-0.1773	0.3964	0.6307	1.0000		
Effort/Importance	-0.2883	0.1071	-0.1773	0.5467	0.0994	1.0000	
Level of Motivation	0.0901	0.5357	0.1071	-0.0721	-0.7207	0.1773	1.0000
Attention	0.2342	0.3571	0.5357	0.8829	0.5946	0.6502	-0.0357
Relevance	-0.4220	0.6183	0.3571	0.7928	0.4144	0.7881	0.1071
Satisfaction	-0.3784	0.7143	0.6183	0.1284	-0.1927	-0.1806	0.4910
method: spearman			0.7143	0.7388	0.7748	0.1970	-0.1786

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

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

method: spearman