



SUSTAINABLE WELL-BEING: AN EMPIRICAL EXPLORATION ON HUMAN NEEDS AND HUMAN INTERDEPENDENCY

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Abstract

This study is a part of an ongoing research to discover subjective indicators of sustainable well-being for Malaysia. Initial findings recognized two important notions of subjective measures of sustainable well-being. The first notion suggested that sustainable well-being manifested in human interdependency. The second notion suggested that human interdependency is attained when human needs are fulfilled. Maslow's Hierarchy of Needs was adopted to indicate the stages and examples of each needs. There were eight stages of human needs which were adapted into 24 common human needs substituted under eight components of three human needs dimensions. The dimensions were (i) basic necessities, (ii) complimentary needs, and (iii) desired opportunities. It was hypothesized that human needs influence the level of human interdependency. This paper delivers an empirical analysis testing the effects of human needs on human interdependency. The study intends to determine the influence of human needs on human interdependency. Questionnaire survey was conducted and 894 reliable samples were gathered. 192 Independent Sample T-Tests were conducted to determine statistical difference in levels of eight components of human interdependency, between respondents who claimed difficult and respondents who claimed easy to attain 24 human needs in the past year. There were statistically significant differences in most of the components of human interdependency between groups of 24 human needs. The empirical study conducted in the central regions of a developing and multicultural country, Malaysia, is a useful reference to subjective well-being studies piloted in areas of similar characteristics.

Keyword: sustainable well-being, human interdependency, human needs

INTRODUCTION

Human interdependency (HI) is growingly discussed in the field positive psychology as a strong determinant to sustainable well-being (Kjell, 2011; O'Brien, 2012). HI place attention on the change in one's well-being resulting from one's intentional and unintentional contribution to others well-being. Two recognized dimensions of human interdependency are (i) human interdependence with other humans (HIH), and (ii) human interdependence with the environment (HIE) (Bakar et al., 2015a, 2015b, 2015c). The concept of HI is similar to self-actualization and self-transcends of Maslow's Hierarchy of Needs (MHON) (Tay & Diener, 2011; Kjell, 2011).

MHON which often depicted in hierarchical pyramid was first introduced in 1943 to recognize pattern of human motivation in fulfilling human needs. The most urgent needs were placed at the bottom of the pyramid. In order for a person to be motivated in achieving higher needs, the lower needs must be fulfilled (Geller, 2015; Tay & Diener, 2011). The MHON was adopted in this study to indicate examples of human needs to represent every stage of MHON. 24 common human needs were identified and substituted under eight components of three human needs dimensions (refer to Table 2). Basic necessities represent survival factors that meant without it living system is disrupted. Complimentary needs comprise of needs which may cause difficulties in life if they were not met. Desired opportunities represent human needs that fulfil human potential, although without them lives would not be difficult. It was hypothesized that human needs influence the level of human interdependency (Tay & Diener, 2011).

METHODOLOGY

The survey questionnaires were conducted in Selangor, Putrajaya and Kuala Lumpur between November and December 2015. The survey was targeted at working Malaysians age from 18 to 65 years old. 1000 survey questionnaires were distributed and 894 samples were found reliable for statistical tests. The respondents were inquired to state whether fulfilling 24 human needs (refer to Table 1) were 'difficult' or 'easy' for them in the past year (2015). The respondents were also inquired to rate their levels of human interdependency under 80 self-reported statements. 40 of the statements account for HIH and the remaining 40 statements account for HIE. The components of HIH include (i) personal empowerment, (ii) positive relations, (iii) organizational opportunity, and (iv) community mobilization^{6,7}. The components of HIE include (i) personality and lifestyle, (ii) interaction with nature, (iii) attitude and pro-environmental behaviour, and (iv) external condition to behavior^{5,7}. Every 10 statements represent one component of HIH or HIE. Responses for the self-reported statements were on Likert-type scale that range from 0 = 'highly false' to 10 = 'highly true'. The scores were averaged to represent the overall score for each component of HIH and HIE (refer to Table 2).

Table 1 Dimensions and Components of Human Needs – Independent Variables

Dimension	Components: MHON	Code	Human Needs	Diff. (%)	Easy (%)	
(D1) Basic Necessities <i>Without it living system is disrupted</i>	C1: Biological & Physiological Needs <i>Survival elements</i>	HN 1	Nutritious food	6.6	93.4	
		HN 2	Medical treatment	8.6	91.4	
		HN 3	Clean water for washing and drinking	5.5	94.5	
		HN 4	Well-functioned toilet	28.3	71.7	
		HN 5	Adequate electricity supply	7.6	92.4	
	C2: Safety & Security Needs <i>Long-term survival and stability:</i>	HN 6	Affordable house & surrounding amenities	22.3	77.7	
		HN 7	Financial stability	49.6	50.4	
		HN 8	Personal security	46.9	53.1	
		HN 9	Clean air	42.8	57.2	
		HN 10	Health and wellness assurance	43.6	56.4	
(D2) Complimentary Needs <i>Without it, living system is not disrupted, but lives would be difficult</i>	C3: Belonging & Love Needs <i>Affiliation and acceptance</i>	HN 11	Balance between personal & work time	52.6	47.4	
		HN 12	Social Tolerance	44.7	55.3	
		HN 13	Communication line	3.9	96.1	
		HN 14	Internet line/ hotspot	19.2	80.8	
	C4: Esteem Needs <i>Achievement and recognition</i>	HN 15	Primary school education	3.0	97.0	
		HN 16	Secondary school education	5.8	94.2	
		C5: Cognitive Needs <i>Knowledge & understanding</i>	HN 17	Tertiary/higher education	12.1	87.9
			HN 18	Job opportunity	41.6	58.4
(D2) Desired Opportunities <i>Without it, living system is not disrupted, and lives would not be difficult</i>	C6: Aesthetic Needs <i>Order and beauty</i>	HN 19	Clean & well-maintained recreational park	42.7	57.3	
		HN 20	Diversity of plants and animal species	46.0	54.0	
	C7: Self-Actualization Needs <i>Realization of potential</i>	HN 21	Rights to choose leaders	59.3	40.7	
		HN 22	Freedom of speech	64.8	35.2	
		C8: Self-Transcends Needs <i>Self-functioning</i>	HN 23	Corruption free opportunities	69.9	30.1
			HN 24	Freedom to express arts & diversity	48.8	51.2

Table 2 Human Interdependency – Dependent Variables

Human Interdependency (HIH)	Code	Components of Human Interdependency	Mean
Human Interdependence with other Humans (HIH)	PE	Personal Empowerment	
	PR	Positive Relations	
	OO	Organizational Opportunity	
	CM	Community Mobilization	
	PL	Personality and Lifestyle	

Human Interdependence with the Environment (HIE)	IN	Interaction with Nature
	AP	Attitude and Pro-Environmental Behaviour
	EC	External Condition to Behaviour

Independent sample t-tests were conducted to determine the levels of human interdependency (HI) of four components of HIH and four components HIE (refer to Table 1) between respondents who claimed ‘easy’ and respondents who claimed ‘difficult’ to fulfil 24 human needs (HN). The Independent T-Test assumed that the variance of the two groups being compared to be equal. The homogeneity of variance was tested using Levene's Test for Equality of Variances. It is to be observed that for some of the HNs, the number of respondents who claimed ‘difficult’ and the number of respondents who claimed ‘easy’ extremely differ. Thus violate the assumption of homogeneity and the tests can result to Type 1 error. In order to overcome the violation of the homogeneity assumption, the Welch-Satterthwaite method were used to adjust the degree of freedom (df) and resulted to increased p-value above the significance level of 0.05.

EMPIRICAL FINDINGS

Descriptive statistics in Table 3 indicated that the mean of all components of HIH was higher for respondents who claimed easy than those claimed difficult in fulfilling all of the HNs. Almost all mean of HIE components were higher for respondents who claimed easy than those claimed difficult in fulfilling all of the HNs. A few outputs yielded intriguing descriptive statistics for HIE components (HN 1, IN; HN 3, PL; HN 13, IN; HN 15, EC and AP).

Out of 192 statistical analyses conducted, 140 of them yielded significant outputs ($p < 0.05$). Thus implied that HI significantly differ between groups of HNs. Out of the 140 significant outputs, 65 of the tests were between groups of equal variance ($p > 0.05$) and 75 of the tests were between groups of unequal variance ($p < 0.05$) based on the Levene's Tests of Equality of Variance (refer to Table 3). The analyses on HIH components yielded slightly more significant statistical results (72 tests) compared to HIE components (68 tests) (refer to Table 4).

12 HNs out of 24 HNs had statistically significant effects on the mean of all HIH and HIE components. Majority of the mentioned HNs belonged in D1, which meant without fulfilment of these needs, living system would be disrupted. These HNs were HN 4, well-functioned toilet (C1, D1); HN 7, financial stability (C2, D1); HN 8, personal security (C2, D1); HN 9, clean air (C2, D1); HN 10, health and wellness assurance (C2, D1); HN 11, balance between personal and work time (C3, D2); HN 12, social Tolerance (C3, D2); HN 16, secondary school education (C4, D2); HN 19, clean and well-maintained recreational park (C6, D3); HN 20, diversity of plants and animal species (C6, D3); HN 22, freedom of

speech (C7, D3); and finally, HN 24, freedom to express arts and diversity (C8, D3). Among the 12 HNs mentioned, one in particular (HN 16, secondary school education) had equal variance between groups in all of the tests. Overall, the results implied that the mean of HIH and HIE were statistically higher for respondents who claimed that attaining the mentioned human needs were easy compared to those who claimed difficult.

The mean of PE (personal empowerment) in particular significantly differ between groups of 21 HNs. 10 of the statistical tests had groups of equal variance. The HNs were HN 1, nutritious food (C1, D1); H2, medical treatment (C1, D1); HN 3, clean water for washing and drinking (C1, D1); HN 4, well-functioned toilet (C1, D1); HN 5, adequate electricity supply (C2, D1); HN 6, affordable houses and surrounding amenities (C2, D1); HN 14, internet line or hotspot (C3, D2); H16, secondary school education (C4, D2); HN 17, tertiary or higher education (C5, D3); HN 21, rights to choose leaders (C7, D3). The results implied that the level of personal empowerment was statistically higher for respondents who claimed that attaining the mentioned human needs were easy compared to those who claimed difficult.

The analysis yielded intriguing outputs for HN 13 and HN 15. There were no statistical differences in levels of all HIH and HIE components between groups of HN 13 (communication line) and HN 15 (primary school education). Similarly, HN 14 (internet connection or hotspot) and HN 6 (affordable house and surrounding amenities) also had only one significant statistical effect on PE. D2 represents HN 13, HN 14 and HN 15, which meant without these needs, living system would not be disrupted but lives would be difficult. HN 6 belongs in D1 which suggested that without it, living system would be disrupted. The results suggested that the level of HIH and HIE was relatively independent from fulfilment of (i) affordable house, (ii) communication line, (iii) internet connection, and (iv) primary school education.

Table 3 Human Needs and Human Interdependency

IV	Descriptive Statistics				Inferential Statistics				
	DV	Diff.	Easy	F	Sig.	t	df	Sig.	MD
H N	PP	6.83	7.22	0.030	0.86	-2.389	892	0.02	-0.39
	PR	6.81	7.26	3.955	0.04	-2.271	63.5	0.03	-0.45
	OO	6.95	7.27	4.192	0.04	-1.622	63.7	0.11	-0.33
	CM	6.38	6.85	1.870	0.17	-2.729	892	0.01	-0.47
	PL	6.98	7.05	1.247	0.26	-0.439	892	0.66	-0.07
1	IN	6.72	6.68	5.736	0.02	0.166	63.1	0.87	0.04
	AP	6.33	6.56	0.737	0.39	-1.131	892	0.26	-0.23
	EC	5.94	6.37	1.424	0.23	-2.140	892	0.03	-0.42
H N	PP	6.83	7.23	0.319	0.57	-2.760	892	0.01	-0.39
	PR	6.79	7.28	2.703	0.10	-3.284	892	0.00	-0.48
	OO	6.83	7.29	2.782	0.10	-3.043	892	0.00	-0.46
	CM	6.48	6.85	0.809	0.37	-2.443	892	0.02	-0.37
	PL	6.76	7.07	1.663	0.20	-2.125	892	0.03	-0.31
2	IN	6.55	6.69	0.837	0.36	-0.906	892	0.37	-0.14
	AP	6.21	6.58	0.596	0.44	-2.064	892	0.04	-0.37

	EC	5.99	6.37	1.860	0.17	-2.194	892	0.03	-0.38
	PP	6.76	7.22	0.088	0.77	-2.615	892	0.01	-0.46
	PR	6.82	7.26	7.333	0.01	-1.964	51.5	0.06	-0.44
H	OO	7.12	7.26	1.592	0.21	-0.758	892	0.45	-0.14
N	CM	6.64	6.83	1.115	0.29	-1.003	892	0.32	-0.19
	PL	7.16	7.04	0.007	0.93	0.671	892	0.50	0.12
3	IN	6.62	6.69	3.132	0.08	-0.356	892	0.72	-0.07
	AP	6.42	6.56	0.592	0.44	-0.600	892	0.55	-0.13
	EC	6.17	6.35	2.958	0.09	-0.828	892	0.41	-0.18
	PP	7.03	7.26	0.325	0.57	-2.491	892	0.01	-0.22
	PR	7.04	7.31	0.148	0.70	-2.884	892	0.00	-0.26
H	OO	7.09	7.32	0.340	0.56	-2.385	892	0.02	-0.22
N	CM	6.53	6.93	3.985	0.05	-4.227	892	0.00	-0.40
	PL	6.80	7.15	12.964	0.00	-4.129	536.6	0.00	-0.35
4	IN	6.46	6.77	0.055	0.82	-3.207	892	0.00	-0.32
	AP	6.25	6.66	3.870	0.04	-3.887	526.0	0.00	-0.41
	EC	5.95	6.49	4.090	0.04	-5.233	512.4	0.00	-0.54
	PP	6.83	7.22	1.670	0.20	-2.579	892	0.01	-0.39
	PR	6.60	7.29	0.064	0.80	-4.410	892	0.00	-0.68
H	OO	6.81	7.29	0.252	0.62	-2.993	892	0.00	-0.48
N	CM	6.73	6.83	0.126	0.72	-0.610	892	0.54	-0.10
	PL	6.69	7.08	2.672	0.10	-2.463	892	0.01	-0.38
5	IN	6.39	6.71	0.047	0.83	-1.865	892	0.06	-0.31
	AP	6.26	6.57	1.695	0.19	-1.601	892	0.11	-0.31
	EC	6.10	6.36	4.070	0.04	-1.591	83.6	0.12	-0.25
	PP	7.04	7.24	0.023	0.88	-2.084	892	0.04	-0.20
	PR	7.11	7.27	0.826	0.36	-1.596	892	0.11	-0.16
H	OO	7.22	7.26	0.348	0.56	-0.348	892	0.73	-0.04
N	CM	6.72	6.85	0.269	0.60	-1.211	892	0.23	-0.13
	PL	6.91	7.09	1.003	0.32	-1.761	892	0.08	-0.17
6	IN	6.72	6.67	0.004	0.95	0.505	892	0.61	0.05
	AP	6.43	6.58	4.045	0.04	-1.362	354.9	0.17	-0.16
	EC	6.28	6.35	7.279	0.01	-0.702	371.5	0.48	-0.08
	PP	7.06	7.33	9.347	0.00	-3.424	883.1	0.00	-0.27
	PR	7.12	7.35	8.972	0.00	-2.818	886.1	0.01	-0.23
H	OO	7.11	7.40	3.436	0.06	-3.432	892	0.00	-0.29
N	CM	6.61	7.02	9.828	0.00	-4.799	878.8	0.00	-0.41
	PL	6.89	7.21	9.380	0.00	-3.890	883.8	0.00	-0.32
7	IN	6.54	6.82	7.361	0.01	-3.239	882.4	0.00	-0.29
	AP	6.32	6.77	6.591	0.01	-4.531	880.9	0.00	-0.46
	EC	6.02	6.65	12.635	0.00	-6.662	879.6	0.00	-0.64
	PP	7.00	7.36	8.750	0.00	-4.500	891.7	0.00	-0.36
	PR	7.10	7.36	6.277	0.01	-3.166	891.5	0.00	-0.26
H	OO	7.12	7.37	1.903	0.17	-3.049	892	0.00	-0.26
N	CM	6.64	6.98	9.011	0.00	-3.952	891.9	0.00	-0.34
	PL	6.83	7.24	6.704	0.01	-5.131	891.0	0.00	-0.42
8	IN	6.50	6.84	4.397	0.04	-3.874	891.7	0.00	-0.34
	AP	6.31	6.75	3.968	0.04	-4.383	891.9	0.00	-0.44
	EC	6.07	6.57	15.110	0.00	-5.186	889.2	0.00	-0.50
	PP	7.10	7.26	4.859	0.03	-2.022	857.1	0.04	-0.16
	PR	7.11	7.33	8.984	0.00	-2.711	869.1	0.01	-0.22
H	OO	7.10	7.37	4.154	0.04	-3.253	856.8	0.00	-0.27
N	CM	6.61	6.97	6.748	0.01	-4.259	869.0	0.00	-0.36
	PL	6.93	7.14	4.636	0.03	-2.464	845.8	0.01	-0.20
9	IN	6.56	6.78	1.865	0.17	-2.436	892	0.02	-0.22
	AP	6.34	6.70	8.790	0.00	-3.603	882.1	0.00	-0.36
	EC	6.10	6.52	0.716	0.40	-4.318	892	0.00	-0.42

	PP	7.04	7.31	11.697	0.00	-3.330	880.8	0.00	-0.26
	PR	7.08	7.35	13.156	0.00	-3.394	884.7	0.00	-0.28
H	OO	7.04	7.42	8.981	0.00	-4.514	867.3	0.00	-0.38
N	CM	6.58	7.01	21.280	0.00	-5.170	889.7	0.00	-0.43
	PL	6.76	7.27	15.788	0.00	-6.364	883.1	0.00	-0.51
10	IN	6.53	6.80	7.946	0.01	-3.071	879.6	0.00	-0.27
	AP	6.28	6.75	7.156	0.01	-4.665	873.9	0.00	-0.47
	EC	6.00	6.60	5.128	0.02	-6.342	867.0	0.00	-0.61
	PP	7.08	7.33	6.566	0.01	-3.101	862.6	0.00	-0.25
	PR	7.13	7.34	4.938	0.03	-2.528	871.8	0.01	-0.21
H	OO	7.11	7.41	5.203	0.02	-3.557	871.6	0.00	-0.30
N	CM	6.65	7.01	10.794	0.00	-4.211	856.0	0.00	-0.36
	PL	6.86	7.26	8.756	0.00	-4.935	851.3	0.00	-0.41
11	IN	6.54	6.84	1.286	0.26	-3.389	892	0.00	-0.30
	AP	6.26	6.87	0.626	0.43	-6.113	892	0.00	-0.61
	EC	6.02	6.69	0.342	0.56	-6.895	892	0.00	-0.66
	PP	7.07	7.29	9.487	0.00	-2.810	887.5	0.01	-0.22
	PR	7.12	7.33	9.411	0.00	-2.501	883.0	0.01	-0.20
H	OO	7.12	7.36	10.817	0.00	-2.916	882.1	0.00	-0.24
N	CM	6.60	6.99	13.523	0.00	-4.605	888.5	0.00	-0.39
	PL	6.81	7.24	20.994	0.00	-5.287	891.2	0.00	-0.43
12	IN	6.59	6.76	9.432	0.00	-1.991	883.3	0.04	-0.18
	AP	6.30	6.75	4.017	0.04	-4.433	880.0	0.00	-0.45
	EC	6.02	6.59	1.282	0.26	-5.893	892	0.00	-0.57
	PP	6.99	7.20	0.018	0.89	-1.026	892	0.31	-0.21
	PR	6.93	7.25	0.843	0.36	-1.475	892	0.14	-0.31
H	OO	7.14	7.26	0.179	0.67	-0.518	892	0.60	-0.11
N	CM	6.55	6.83	0.092	0.76	-1.278	892	0.20	-0.28
	PL	6.91	7.05	0.343	0.56	-0.666	892	0.51	-0.14
13	IN	6.72	6.68	0.329	0.57	0.157	892	0.88	0.04
	AP	6.22	6.56	0.509	0.48	-1.297	892	0.20	-0.34
	EC	6.29	6.34	0.271	0.60	-0.192	892	0.85	-0.05
	PP	6.83	7.28	1.015	0.31	-4.510	892	0.00	-0.46
	PR	7.22	7.24	4.407	0.04	-0.181	240.9	0.86	-0.02
H	OO	7.11	7.29	3.754	0.05	-1.682	892	0.09	-0.18
N	CM	6.71	6.84	0.474	0.49	-1.193	892	0.23	-0.13
	PL	6.84	7.10	12.024	0.00	-2.255	234.1	0.03	-0.26
14	IN	6.56	6.71	0.439	0.51	-1.290	892	0.20	-0.15
	AP	6.51	6.56	0.619	0.43	-0.339	892	0.74	-0.04
	EC	6.26	6.36	1.343	0.25	-0.772	892	0.44	-0.10
	PP	6.90	7.20	0.059	0.81	-1.285	892	0.20	-0.30
	PR	6.84	7.25	0.024	0.88	-1.677	892	0.09	-0.40
H	OO	6.94	7.26	0.410	0.52	-1.280	892	0.20	-0.32
N	CM	6.75	6.82	1.425	0.23	-0.271	892	0.79	-0.07
	PL	6.96	7.05	1.942	0.16	-0.363	892	0.72	-0.09
15	IN	6.57	6.69	1.881	0.17	-0.457	892	0.65	-0.12
	AP	6.69	6.54	0.538	0.46	0.501	892	0.62	0.15
	EC	6.57	6.33	1.003	0.32	0.849	892	0.40	0.24
	PP	6.58	7.23	0.007	0.93	-3.794	892	0.00	-0.65
	PR	6.54	7.28	0.189	0.66	-4.193	892	0.00	-0.73
H	OO	6.39	7.31	0.946	0.33	-5.124	892	0.00	-0.91
N	CM	6.37	6.85	0.060	0.81	-2.623	892	0.01	-0.48
	PL	6.40	7.09	1.932	0.17	-3.902	892	0.00	-0.68
16	IN	6.10	6.72	0.112	0.74	-3.249	892	0.00	-0.62
	AP	6.13	6.57	0.054	0.82	-2.024	892	0.04	-0.44
	EC	6.02	6.36	3.056	0.08	-1.636	892	0.10	-0.34
H	PP	6.76	7.25	0.036	0.85	-4.010	892	0.00	-0.49

N	PR	6.67	7.31	0.025	0.88	-5.162	892	0.00	-0.65
	OO	6.70	7.33	0.973	0.32	-4.898	892	0.00	-0.63
17	CM	6.43	6.87	0.946	0.33	-3.374	892	0.00	-0.44
	PL	6.72	7.09	0.042	0.84	-2.983	892	0.00	-0.38
	IN	6.41	6.72	0.121	0.73	-2.297	892	0.02	-0.31
	AP	6.40	6.57	2.132	0.15	-1.046	892	0.30	-0.16
	EC	5.97	6.39	8.157	0.00	-3.096	147.4	0.00	-0.42
	PP	7.12	7.25	1.423	0.23	-1.635	892	0.10	-0.13
	PR	7.14	7.30	0.001	0.98	-1.917	892	0.06	-0.16
H	OO	7.11	7.35	2.769	0.10	-2.874	892	0.00	-0.25
N	CM	6.67	6.92	3.705	0.06	-2.901	892	0.00	-0.25
	PL	6.85	7.19	5.621	0.02	-4.054	839.2	0.00	-0.33
18	IN	6.59	6.75	1.041	0.31	-1.821	892	0.07	-0.16
	AP	6.40	6.65	2.947	0.09	-2.494	892	0.01	-0.26
	EC	6.05	6.55	5.666	0.02	-5.171	830.6	0.00	-0.50
	PP	7.04	7.31	4.560	0.03	-3.445	852.2	0.00	-0.28
	PR	7.01	7.40	4.740	0.03	-4.669	844.4	0.00	-0.38
H	OO	7.05	7.41	1.750	0.19	-4.238	892	0.00	-0.36
N	CM	6.58	7.00	6.378	0.01	-4.887	858.4	0.00	-0.41
	PL	6.88	7.18	19.493	0.00	-3.699	883.4	0.00	-0.30
19	IN	6.50	6.82	4.231	0.04	-3.620	862.0	0.00	-0.32
	AP	6.23	6.78	0.250	0.62	-5.419	892	0.00	-0.55
	EC	5.89	6.68	3.949	0.04	-8.321	844.1	0.00	-0.79
	PP	7.09	7.28	4.878	0.03	-2.412	884.6	0.02	-0.19
	PR	7.04	7.40	6.570	0.01	-4.443	886.4	0.00	-0.36
H	OO	7.08	7.40	1.480	0.22	-3.689	892	0.00	-0.31
N	CM	6.57	7.03	4.943	0.03	-5.430	877.6	0.00	-0.46
	PL	6.91	7.17	14.561	0.00	-3.236	891.7	0.00	-0.26
20	IN	6.48	6.86	1.073	0.30	-4.268	892	0.00	-0.38
	AP	6.30	6.76	1.329	0.25	-4.462	892	0.00	-0.45
	EC	5.93	6.69	4.667	0.03	-8.070	883.4	0.00	-0.76
	PP	7.12	7.30	8.060	0.01	-2.097	734.9	0.04	-0.17
	PR	7.19	7.30	2.091	0.15	-1.389	892	0.17	-0.12
H	OO	7.20	7.33	4.430	0.04	-1.486	743.0	0.14	-0.13
N	CM	6.70	6.99	3.093	0.08	-3.267	892	0.00	-0.28
	PL	6.91	7.25	3.017	0.08	-4.118	892	0.00	-0.34
21	IN	6.60	6.80	1.449	0.23	-2.203	892	0.03	-0.20
	AP	6.40	6.76	6.011	0.01	-3.375	725.5	0.00	-0.36
	EC	6.12	6.66	0.113	0.74	-5.474	892	0.00	-0.54
	PP	7.06	7.43	9.705	0.00	-4.281	596.1	0.00	-0.37
	PR	7.15	7.39	5.567	0.02	-2.707	606.3	0.01	-0.24
H	OO	7.15	7.44	5.340	0.02	-3.152	607.2	0.00	-0.28
N	CM	6.71	7.02	4.337	0.04	-3.418	597.1	0.00	-0.31
	PL	6.88	7.35	8.468	0.00	-5.337	579.8	0.00	-0.47
22	IN	6.56	6.91	4.448	0.04	-3.753	596.7	0.00	-0.36
	AP	6.39	6.84	6.582	0.01	-4.083	586.7	0.00	-0.45
	EC	6.09	6.80	3.791	0.05	-7.186	892	0.00	-0.72
	PP	7.12	7.37	5.828	0.02	-2.764	476.4	0.01	-0.25
	PR	7.20	7.31	3.730	0.05	-1.255	892	0.21	-0.11
H	OO	7.22	7.33	6.034	0.01	-1.211	473.3	0.23	-0.12
N	CM	6.76	6.95	1.876	0.17	-2.056	892	0.04	-0.19
23	PL	6.98	7.21	8.905	0.00	-2.490	452.1	0.01	-0.24
	IN	6.61	6.85	1.549	0.21	-2.445	892	0.02	-0.24
	AP	6.46	6.76	8.832	0.00	-2.553	448.3	0.01	-0.30
	EC	6.20	6.67	1.381	0.24	-4.476	892	0.00	-0.47
H	PP	7.08	7.30	9.516	0.00	-2.738	888.6	0.01	-0.22
N	PR	7.13	7.33	17.587	0.00	-2.353	882.5	0.02	-0.19
	OO	7.10	7.39	13.925	0.00	-3.482	888.9	0.00	-0.29

24	CM	6.66	6.97	12.100	0.00	-3.572	887.3	0.00	-0.30
	PL	6.85	7.24	16.449	0.00	-4.776	878.7	0.00	-0.39
	IN	6.49	6.86	4.676	0.03	-4.169	890.9	0.00	-0.37
	AP	6.31	6.78	5.863	0.02	-4.705	889.6	0.00	-0.47
	EC	6.00	6.66	3.064	0.08	-6.844	891.9	0.00	-0.65

Table 3 Summary of Statistical Outputs

Human Needs	HIE								Total Count	
	PE	PR	OO	CM	PL	IN	AP	EC		
D1	HN 1	*S	S	NS	*S	NS	NS	NS	*S	3*S / 1S / 4NS
	HN 2	*S	*S	*S	*S	*S	NS	*S	*S	7*S / 0S / 1NS
	HN 3	*S	S	NS	NS	NS	NS	NS	NS	1*S / 1S / 6NS
	HN 4	*S	*S	*S	*S	S	*S	S	S	5*S / 3S / 0NS
	HN 5	*S	*S	*S	NS	*S	NS	NS	NS	4*S / 0S / 4NS
	HN 6	*S	NS	NS	NS	NS	NS	NS	NS	1*S / 0S / 7NS
	HN 7	S	S	*S	S	S	S	S	S	1*S / 7S / 0NS
	HN 8	S	S	*S	S	S	S	S	S	1*S / 7S / 0NS
	HN 9	S	S	S	S	S	*S	S	S	1*S / 7S / 0NS
	HN 10	S	S	S	S	S	S	S	S	0*S / 8S / 0NS
D2	HN 11	S	S	S	S	S	*S	*S	*S	3*S / 5S / 0NS
	HN 12	S	S	S	S	S	S	S	*S	1*S / 7S / 0NS
	HN 13	NS	NS	NS	NS	NS	NS	NS	NS	0*S / 0S / 8NS
	HN 14	*S	NS	NS	NS	NS	NS	NS	NS	1*S / 0S / 7NS
	HN 15	NS	NS	NS	NS	NS	NS	NS	NS	0*S / 0S / 8NS
	HN 16	*S	*S	*S	*S	*S	*S	*S	*S	8*S / 0S / 0NS
	HN 17	*S	*S	*S	*S	*S	*S	NS	S	6*S / 1S / 1NS
	HN 18	NS	NS	*S	*S	S	*S	*S	S	4*S / 2S / 2NS
D3	HN 19	S	S	*S	S	S	S	*S	*S	3*S / 5S / 0NS
	HN 20	S	S	*S	S	S	*S	*S	S	3*S / 5S / 0NS
	HN 21	*S	NS	NS	*S	*S	*S	*S	*S	6*S / 0S / 2NS
	HN 22	S	S	*S	S	S	S	S	*S	2*S / 6S / 0NS
	HN 23	S	NS	NS	*S	S	*S	S	*S	3*S / 3S / 2NS
	HN 24	S	S	S	S	S	S	S	*S	1*S / 7S / 0NS
Total Count	10*S 11 S 3 NS	5*S 12 S 7 NS	11*S 5 S 8 NS	8*S 10 S 6 NS	5*S 13 S 6 NS	9*S 7 S 8 NS	7*S 9 S 8 NS	10*S 8 S 6 NS	65*S 75 S 52 NS	

NS : No statistical significance between groups
S : Statistically significant between groups of equal variance not assumed
*S : Statistically significant between groups of equal variance assumed

SUMMARY AND CONCLUSION

There were three general yet inquisitive findings recognized from the statistical results. The following points summarized these findings.

1. The descriptive statistics suggested that fulfilments of HN 1 (nutritious food), HN 3 (clean water for washing and drinking), HN 13 (communication line) and HN 15 (primary school education) were likely lowering the levels of HIE. Yet the mean differences were trivial and the analyses did not yield significant statistical results.
2. In comparison to HIE, HIH was slightly more dependent on HN, particularly PE (personal empowerment). This could be resulting from the fact that the concept of PE is more related to self-actualization in

MHON, which is closer to the rest of the needs compared self-transcend (refer to Table 2).

3. HIH and HIE were almost independent from HN 6 (affordable housing and surrounding amenities), HN 13 (communication line), HN 14 (internet connection or hotspot) and HN 15 (primary school education). That is, neither difficulties nor ease in fulfilling the mentioned HNs were strongly influencing levels of HIH and HIE.

The future direction of the research is to empirically model HIH and HIE with items representing subjective well-being (SWB) using Structural Equation Modelling. The research will also explore the variance of HIH and HIE between groups of HNs through more robust statistical model.

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