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RESEARCH ARTICLE

AMARTYA SEN'S CAPABILITY APPROACH TO HUMAN DEVELOPMENT: AN EMPIRICAL OPERATIONALIZATION USING PARTIAL LEAST SQUARES MODELING

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Abstract

From the point of view of the capability approach, human development is defined as a process of expanding human capabilities. In other words, well-being must be assessed by the different things that a person can aspire to be or to do or what Amartya Sen calls functionings. The set of functionings vectors that are possible for the individual represents his capability. The latter is, therefore, a substantial freedom which indicates that an individual is free to lead the kind of life he values. Therefore, this paper aims to operationalize these concepts by modeling the capabilities as latent constructs and the functionings as manifest variables. The estimation of the hierarchical model built using the partial least squares approach made it possible to calculate dimensional composite indicators reflecting the level of five human capabilities retained as fundamental dimensions of human development; namely, health, education, shelter, employment and mobility and communication. An overall composite indicator reflecting the level of human development measured in terms of capabilities is also estimated at the level of the sixty sample countries. This paper explores the structural relationships between capabilities, classifies countries according to the level of capabilities and compares the index obtained with the human development index and the gross domestic product per capita.

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Introduction:-

“Human development is about enlarging freedoms so that all human beings can pursue choices that they value” (UNDP, 2016). This definition of the United Nations Development Programme places the freedom of people to fulfill their well-being at the heart of human development. Development is “empowering” when it expands the range of choices available to the individual so that he can lead the life project he values (Sen, 1999b). This range of choices constitutes its capability set (Sen, 1992). When the capability set is rich the individual is sufficiently equipped with the assets facilitating him to take full advantage of the opportunities available to him (Tovar, 2008). In short, it is a development process that improves the richness of human lives as well as the economic richness of the countries (UNDP, 2016).

It is in this sense that the capability approach offers both economists and public decision-makers a promising alternative framework for understanding human development. One of the reasons for this success is its recognition of plurality in various ways (Sen, 1992, 1999a, 1999b, 2009). Indeed, considering the life of a person as a set of

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valuable “beings and doings” the perspective of capabilities appropriates two fundamental heterogeneities: the diversity of human beings and the multiplicity of variables according to which one can carry out an evaluation of the level of well-being (Sen, 1992). The point of view of the capability approach is to widen the information base of well-being to contain other factors whose direct impact on the quality of life level is no less decisive than income.

Nevertheless, the ambition to integrate a wide range of constitutive domains of human life increases the abstraction of the concept of capability (Aguenane, 2019a, 2019b). Several methodological challenges arise from this high level of abstraction and the applicability of the approach becomes a complex task. Among the various difficulties hindering the operationalization of Sen's approach its “intrinsic complexity” (Chiappero-Martinetti, 2008). Indeed, for Chiappero-Martinetti and Roche (2009), the plurality of the capability approach is due to a diversity of the evaluation spaces, dimensions, units of measurement and contexts. A second difficulty stems from the “incompleteness” of the approach (Sen, 1992; Qizilbash, 2008). Sen, in opposition to Martha Nussbaum, intentionally dismissed the idea of a list of relevant capabilities or functionings. Even more, he did not provide an operational framework that would guide researchers in their evaluation exercises (Frediani, 2010). A third difficulty arises from the counterfactual character of the capability analysis. The question is when a person chooses specific freedoms instead of other available freedoms or when specific circumstances compel him to choose a particular lifestyle (Comim, 2001). A fourth difficulty relates to the dual nature of Sen's approach. According to Alkire (2008), the researcher must take into account the evaluative dimension of the approach but also its prospective vision. It is therefore necessary to go beyond a simple comparison of social states to an understanding of policies, activities and recommendations that at all times improve the level of well-being. The fifth and final difficulty that I will mention briefly here is related to the increased information requirement of the capability approach. For Amartya Sen to adopt areas of valuation such as wealth or income takes into consideration only means of well-being and not the extent of well-being. While the concentration on the space of the functionings makes it possible to have a real idea on all the ways of “beings and doings” of the individuals (Sen, 1992). But this requires statistical data that is rarely available.

Therefore, this paper seeks to reduce these methodological and technical constraints by connecting the concepts of functionings and capabilities in a network and fit this network of constructs to data through a hierarchical model. The objective is to measure the level of capabilities (considered as the main dimensions of human development) using the level of functionings (considered as the achievements in each dimension).

Methods:-

Human capabilities as latent constructs and functionings as manifest variables:-

Our model retains five human capabilities as fundamental dimensions of human development (Sen, 1992; Robeyns, 2005; Alkire, 2007); namely, health, education, shelter, employment and mobility and communication. These capabilities are latent, because they cannot be observed and measured directly. However, functionings, which are the achievements in each dimension, are observable and directly measurable through statistical indicators. This empirical study uses a set of available indicators to measure the performance achieved in each dimension (Di Tommaso, 2007; Krishnakumar, 2007; Krishnakumar and Ballon, 2008):

1. Health capability: The level of achievement in the field of health is assessed by three indicators: healthy life expectancy at birth (Expectancy), survival to age 65 (Survival) and disability-adjusted life expectancy (Disability).
2. Education capability: In the field of education, three indicators are proposed: the gross enrolment ratio (Enrolment), the adult literacy rate (Literacy) and the average years of total schooling (Schooling).
3. Employment capability: Employment field is assessed by three indicators: the employment-to-population ratio (Employment), the labour force participation rate (Laborforce) and the female labour force (Femalabor).
4. Shelter capability: In the field of housing, two indicators are selected: access to electricity (Electricity) and access to an improved water source (Water).
5. Mobility and communication capability: Finally, in the field of mobility and communication, three indicators are chosen: the number of fixed telephone subscriptions (Telephone), the number of internet users (Internet) and the average pump price for gasoline (Gasoline).

It can be said, thus, that the latent constructs scores reflect the national level attained in each of the dimensions of human development. While the second-order construct (general capability: GC), formed by the five dimensions, gives a general view of the level of human development achieved by the sixty countries of the sample.

Estimation Method:-

The method used for the estimation of the structural equation model is the Partial Least Squares (PLS) approach. It is known for its statistical flexibility that does not require strict statistical conditions on model variables, its compatibility with small samples (Lacroux, 2009), and its adaptability with often imperfect and overly correlated data (Sosik et al., 2009). It is able to provide scores of latent variables (capabilities and general capability), to predict their levels in various countries and to shed light on the structural relationships between them. The structural equation model is composed of two sub-models. The first sub-model, called the measurement model or external model, links the latent variables (LV) to the manifest indicators (MV). While the second sub-model, called the structural or internal model, represents the set of relations between the latent variables (Henseler et al., 2016; Jakobowicz, 2007; Lacroux, 2009).

Hierarchical latent models or higher-order constructs are an explicit representation of multidimensional concepts with a high level of abstraction (Chin, 1998; Law et al., 1998, as quoted in Becker et al., 2012). However, the classical problem that arises for the estimation of hierarchical models is that the items necessary for the estimation of the constructs of higher levels no longer exist since they are already used to estimate first-order constructs. To overcome this limit, three solutions have been proposed, according to Becker et al (2012): (1) the repeated indicator approach, (2) the two-step approach and (3) the hybrid approach. Without giving in to a long comparison between these approaches, we cite two sufficient reasons to favor the approach of the repeated indicators in this empirical study. The first advantage comes from the fact that the upper-level latent variable is constructed from all the items of the lower-level constructs. Consequently, this approach simultaneously estimates the constructs of lower levels and those of higher levels; which allows all parts of the model to be taken into account and a better interpretation of the results (Wilson and Henseler, 2007). The second advantage is that this method makes it possible to evaluate the effect of the manifest variables not only on the latent variables of the first level but also on those of higher levels (Ciavolino and Nitti, 2010).

The relevance of a model requires the validation of three distinct but closely linked stages: (Hult et al., 2016): (1) examination of statistical variables, (2) evaluation of the measurement model and (3) evaluation of the structural model. The SmartPLS 3 software is used to estimate and interpret PLS path model parameters.

Data sources:-

This empirical study is a cross-section of 60 countries for the year 2010. The source of data is the World Bank Group (World Development Indicators).

Validation of Measurement Model:-

To build relevant measurement instruments, it is necessary to ensure the internal consistency reliability and the unidimensionality of the blocks of items. The Cronbach's alpha calculated for each block, exceeding 0.82, proves an internal consistency of the items. Whereas the principal components analysis suggests a single component restoring at least 74% of the total variances explained. The normality analysis of the data is done on the basis of two tests: the Kolmogorov-Smirnov test (K-S) and the Shapiro-Wilk test (S-W). According to these two tests, the distributions of the variables retained are significantly different from a normal distribution since both tests are significant.

Capabilities	Items (functionings)	Principal component analysis		Reliability analysis	Normality tests ^a	
		Component Matrix	Variance explained (%)	Cronbach's alpha	K-S (Sig) ^b	S- W (Sig)
Education	Schooling	0,900	74,091	0,825	,002	,00 2
	Literacy	0,843			,000	,00 0
	Enrolment	0,838			,010	,37 9
Health	Disability	0,965	83,437	0,900	,056	,00 0

	Expectancy	0,910			,023	,001
	Survival	0,863			,003	,000
Shelter	Electricity	0,96	92,227	0,916	,000	,000
	Water	0,96			,000	,000
Employment	Laborforce	0,966	78,330	0,856	,200*	,855
	Employment	0,925			,200*	,996
	Femalabor	0,749			,000	,000
Mobility/ Communication	Internet	0,923	77,299	0,852	,200*	,061
	Telephone	0,873			,032	,042
	Gasoline	0,840			,200*	,675
a. Lilliefors Significance Correction b. Significance *. This is a lower bound of the true significance.						

Table 1:- Homogeneity and unidimensionality of the measurement blocks.

Reliability of indicators and convergent validity of constructs

Table 2 evaluates the items by analyzing the relevance and the significance of their loadings. All correlations between the items and the latent variables to which they are attached exceeds significantly 0.7, which allows us to say that a large part of the variances is explained. We use the average variance extracted (AVE) to make sure that the block of manifest items represents a single latent variable (Fornell and Larcker, 1981). The recommended threshold of the AVE (= 0.5) is largely exceeded, which proves a convergent validity of the items (Picot-Coupey, 2009).

Latent variables		Reliability of indicators				Composite reliability (CR)	Average variance extracted (AVE)
		Items	Loading (λi)	Significance ^a (T) (P)			
FOC	Education	Schooling	0.903	35.611	0.000	0,895	0,741
		Literacy	0.837	10.825	0.000		
		Enrolment	0.841	26.349	0.000		
	Health	Disability	0.966	68.865	0.000	0,937	0,833
		Expectancy	0.923	42.047	0.000		
		Survival	0.845	15.501	0.000		
	Shelter	Electricity	0.953	11.369	0.000	0,959	0,922
		Water	0.967	23.323	0.000		
	Employment	Laborforce	0.905	7.610	0.000	0,904	0,759
		Employment	0.839	6.168	0.000		
		Femalabor	0.868	21.243	0.000		
	Communication and mobility	Internet	0.929	60.016	0.000	0,910	0,772
Telephone		0.882	32.687	0.000			
Gasoline		0.823	12.946	0.000			
SOC	General capability (GC)					0,936	0,521

T : T Statistics ; P : P Values ; FOC : First Order Construct ; SOC : Second Order Construct
^a Bootstrap procedure (N=5000).

Table 2:- Reliability of indicators and convergent validity of constructs.

Discriminant validity:

The discriminant validity is established when a latent variable shares more variance with its own items than with other latent variables. The Fornell and Larcker test shows that the average variance extracted of each latent variable is greater than the square of the correlation with the other latent variables (Table 5).

	Education	Employment	Health	Mobility-Communication	Schelter
Education	0.861				
Employment	0.569	0.871			
Health	0.592	0.367	0.913		
Mobility-Communication	0.674	0.498	0.790	0.879	
Schelter	0.706	0.322	0.650	0.511	0.960

Note: The diagonal represents the square root of the average variance extracted

Table 3:- The Forell-Larcker criterion for discriminant validity.

To ensure the discriminant validity at the indicators level, the cross loadings approach is used as shown in table 4. This test compares the factorial contributions of the items with their cross-loadings. The discriminant validity of the indicators is thus established since the loading weight of each item is higher than its cross-loadings (Chin, 1998; Götz et al., 2009 as quoted in Henseler et al., 2009).

	Education	Health	Shelter	Employment	Mobility-Communication
Schooling	0.912	0.548	0.581	0.508	0.686
Literacy	0.820	0.435	0.751	0.515	0.401
Enrolment	0.846	0.539	0.504	0.424	0.636
Disability	0.565	0.966	0.638	0.271	0.758
Expectancy	0.655	0.923	0.623	0.473	0.784
Survival	0.372	0.846	0.509	0.223	0.598
Electricity	0.606	0.596	0.951	0.236	0.393
Water	0.722	0.649	0.969	0.360	0.572
Laborforce	0.268	0.192	0.091	0.911	0.242
Employment	0.252	0.287	0.211	0.846	0.266
Femalabor	0.746	0.402	0.420	0.861	0.629
Internet	0.676	0.773	0.525	0.495	0.932
Telephone	0.624	0.722	0.476	0.432	0.874
Gasoline	0.481	0.567	0.331	0.356	0.828

Table 4:- Corrs loadings analysis.

Results and Discussion:-

To ensure the relevance of the hierarchical structural model, it was necessary to check:

1. The level of multi-collinearity of the model using the variance inflation factor (VIF) (Diamantopoulos et al., 2008; Henseler et al., 2009; Hair et al., 2013). The largest calculated VIF is 3.625 which confirms the nonexistence of a critical collinearity level for model estimation.
2. The levels of the coefficient of determination (R^2) knowing that one of the properties of the repeated indicator approach is that it reuses the same items of lower level constructs to estimate higher level constructs (Guinot et al., 2001; Becker et al., 2012). An R^2 equal (or almost equal) to 1 means that the global composite construct is fully explained by its sub-dimensions.
3. The predictive relevance of the model or its total quality using the blindfolding procedure to generate the Stone-Geisser Q^2 which is a commonly accepted indicator of the predictive relevance of models (Diamantopoulos et al., 2008; Henseler et al., 2009; Hair et al., 2013; Hult et al., 2016). The cross-validation test of Stone-Geisser Q^2 calculated for the hierarchical model is much greater than 0. This result proves that the model has significant predictive relevance.

The relevance and significance of the structural model path coefficients:-

The relevance of the hierarchical relationships is proved since all the path coefficients are significant at the 1% level.

STDEV, T-Values, P-Values ^a					
Structural paths	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics ^b ((O/STDEV))	P Values
Education -> GC	0.265***	0.256	0.018	14.605	0.000
Employment -> GC	0.183***	0.178	0.035	5.195	0.000
Health -> GC	0.295***	0.298	0.023	13.075	0.000
Mobility-Communication -> GC	0.279***	0.282	0.027	10.425	0.000
Schelter -> GC	0.195***	0.187	0.020	9.826	0.000

^a Standard deviation, T value and P value are generated by the bootstrapping procedure (n = 5000)
^b T > 1.58: significance at the 10% level (*); T > 1.96: significance at the 5% level (**); T > 2.58: significance at the 1% level (***)

Table 5:- Significance testing results of the structural path model coefficients.

Structure of the general human capability:-

The correlations between the human general capability as a global score with capabilities as partial scores were quite satisfactory (Table 6). All the structural relationships linking the five human capabilities (first order latent variables) to the general capability (second order variable) are important according to the standards of the PLS approach. Indeed, at a significance level of 1%, we note the strong contribution of health to capabilistic well-being (0.295; t = 13.075; P = 0.000). This expected result confirms that widening the scope of health freedom is at the top of the priorities once the improvement of the structure of human capabilities is in question. Our choice to use statistical indicators such as the healthy life expectancy at birth, survival to age 65 and disability-adjusted life expectancy is to show that freedom of health does not just depend on health infrastructures. But it must be appreciated, much more, by the degree of accomplishment in functionings like "living as long as possible in good health", "be able to avoid an unnecessary suffering" or "to be able to avoid a premature death" (Sen, 1992). The estimation of the model reveals the importance of the capacities relating to communication and mobility (0.279; t = 10.425; p = 0.000) which even precede the education capability (0.265; t = 14.605; p = 0.000). We understand, therefore, that the structure of capabilities is evolving since functionings such as "communicating with others" and "being mobile" become strong determinants of the level of well-being. This is confirmed by the bottom ranks of material capabilities such as housing (0.195; t = 9.826; p = 0.000) and employment (0.183; t = 5.195; p = 0.000).

	General Capability (GC)
Education	0.869
Employment	0.643
Health	0.866
Mobility-Communication	0.881
Shelter	0.775

Table 6:- Correlation between partial scores and global score

Composite index of well-being measured in terms of capabilities:

Let us now turn to the question of the calculation of the composite index of well-being based on capabilities or what it can be called the "general capability index" Index (GCI). A composite index, according to Saisana and Tarantola (2002), is a mathematical aggregation of a set of indicators that must reflect a compromise between scientific accuracy and data availability. Indeed, one of the reasons why the latent variable structural equation models are chosen and more precisely the PLS estimation method is that this approach allows to build a composite indicator system (Trincherla et al., 2008). In other words, once the measurement and the structural models are well specified, the PLS approach estimates scores for the latent variables of the global model. This allows to have dimensional (or partial) composite indicators reflecting capabilities and an overall composite indicator reflecting the general capability at the level of each country in the sample.

However, as with all composite index calculations, the problem of normalization arises. This is the method of normalization which must be mobilized to calculate dimensional indices and the global index of well-being. In the

case of this study the scores obtained using the PLS approach are normalized to the [0;1] scale. Thus, the normalized scores will constitute the GCI values as shown in Table 7.

Countries	General Capability Index (GCI)			Capability ranking					Country rankings		Rank differences	
	Scores (PLS)	GC Index	Rank according to GCI	Educati	Employ	Health	Mobilit	Shelter	Rank according to HDI	Rank according to GDP	HDI- GCI	GDP- GCI
Germany	1,230	1,000	1	2	22	16	1	1	7	10	6	9
Sweden	1,163	0,987	2	16	9	6	5	5	6	8	4	6
Netherlands	1,102	0,975	3	25	6	9	3	3	4	4	1	1
Norway	1,097	0,975	4	18	3	14	8	8	1	2	-3	-2
Israel	1,033	0,962	5	8	24	3	13	12	10	20	5	15
Denmark	1,025	0,961	6	20	7	21	6	6	13	7	7	1
United Kingdom	1,018	0,959	7	21	13	18	4	4	19	14	12	7
Canada	0,983	0,953	8	24	5	7	14	22	5	9	-3	1
Japan	0,975	0,951	9	28	25	1	10	10	8	17	-1	8
Finland	0,937	0,944	10	5	16	17	17	14	11	12	1	2
France	0,918	0,940	11	36	28	13	2	2	9	13	-2	2
Slovenia	0,893	0,936	12	3	23	22	16	25	21	21	9	9
Ireland	0,834	0,924	13	15	27	12	12	39	3	5	-10	-8
Spain	0,800	0,918	14	17	36	5	19	16	14	18	0	4
Greece	0,775	0,913	15	9	42	15	15	13	15	19	0	4
Cyprus	0,761	0,910	16	31	11	2	29	21	25	16	9	0
Autriche	0,755	0,909	17	37	15	10	18	15	18	6	1	-11
Luxembourg	0,672	0,893	18	44	31	11	7	7	17	1	-1	-17
Austria	0,616	0,883	19	32	44	19	11	11	12	11	-7	-8
Malta	0,608	0,881	20	40	45	8	9	9	23	24	3	4
USA	0,582	0,876	21	1	10	31	28	42	2	3	-19	-18
Italy	0,564	0,873	22	33	48	4	22	17	16	15	-6	-7
Portugal	0,542	0,869	23	42	12	20	20	23	27	23	4	0
Czech republic	0,533	0,867	24	12	29	24	27	20	20	22	-4	-2
Estonia	0,510	0,862	25	4	17	44	21	26	24	27	-1	2
Croatia	0,403	0,842	26	22	40	25	23	28	35	30	9	4
Slovakia	0,370	0,836	27	19	30	33	26	19	22	25	-5	-2
Poland	0,292	0,821	28	10	35	32	32	37	28	28	0	0
Hungary	0,229	0,809	29	11	41	42	25	18	26	26	-3	-3
Latvia	0,164	0,796	30	14	21	51	30	31	32	32	2	2
Lithuania	0,149	0,793	31	7	20	49	31	48	29	29	-2	-2
chile	0,108	0,786	32	30	34	23	38	51	30	31	-2	-1
Bulgaria	0,089	0,782	33	23	39	41	33	27	37	37	4	4
Argentina	-0,019	0,761	34	26	32	30	41	47	31	43	-3	9
Romania	-0,063	0,753	35	27	33	43	39	40	34	33	-1	-2
Montenegro	-0,088	0,748	36	34	49	34	34	30	33	40	-3	4
Bosnia	-0,099	0,746	37	35	50	27	35	29	41	50	4	13
belarus	-0,106	0,745	38	13	26	55	36	24	38	36	0	-2
China	-0,149	0,737	39	52	2	28	43	34	51	49	12	10
Georgia	-0,180	0,731	40	39	14	38	44	41	45	55	5	15
Ukraine	-0,200	0,727	41	6	19	53	47	50	42	53	1	12
Brazil	-0,219	0,723	42	46	4	50	37	44	44	39	2	-3
Albania	-0,247	0,718	43	38	43	35	40	45	40	48	-3	5
Armenia	-0,326	0,703	44	29	37	46	48	35	46	56	2	12
peru	-0,335	0,701	45	45	1	45	46	57	39	47	-6	2

Turkey	-0,339	0,700	46	47	53	40	24	32	49	34	3	-12
paraguay	-0,420	0,685	47	51	8	37	54	38	53	54	6	7
Lebanon	-0,468	0,676	48	41	57	26	42	36	43	35	-5	-13
Mexico	-0,502	0,669	49	50	38	29	50	49	36	38	-13	-11
Jordan	-0,987	0,576	50	43	59	39	55	43	48	44	-2	-6
Tunisia	-1,008	0,572	51	54	55	36	49	46	47	45	-4	-6
Indonesia	-1,332	0,511	52	53	18	56	56	58	55	51	3	-1
South Africa	-1,365	0,504	53	48	46	58	51	52	56	42	3	-11
Egypt	-1,498	0,479	54	56	56	54	58	33	54	46	0	-8
Srilanka	-1,510	0,477	55	49	47	59	53	55	52	52	-3	-3
Syria	-1,568	0,465	56	55	60	52	52	53	57	57	1	1
Morocco	-1,608	0,458	57	59	52	48	45	56	58	58	1	1
Algeria	-1,919	0,398	58	57	58	47	60	54	50	41	-8	-17
India	-2,172	0,350	59	58	51	57	57	59	59	59	0	0
Mauritania	-4,004	0,000	60	60	54	60	59	60	60	60	0	0

Table 7:- Country rankings according to CWBI, HDI and GDP.

The human capability index versus the HDI and per capita GDP:-

Theoretically the index based on functionings and capabilities complements the GDP and enriches the HDI. These indicators, even though they are intelligently designed, leave areas of shadow in the evaluation of human development that need to be illuminated by broader information-based indicators such as the GCI. This should in principle be translated statistically into strong correlations between these indicators. Table 8 shows the presence of a strong positive and significant correlation between GCI and HDI (0.950) and in the same proportions, but somewhat lower between GCI and GDP (0.902). Furthermore, if the link between HDI and GDP (0.936) is introduced in this correlation analysis, it can be concluded that the GCI composite index is closer to HDI than to GDP. These results empirically agree Amartya Sen's multidimensional conception of functionings and capabilities.

Correlations				
		GCI	HDI	GDP
GCI	Pearson Correlation	1	,950**	,902**
	Sig. (2-tailed)		0,000	0,000
	N	60	60	60
HDI	Pearson Correlation	,950**	1	,936**
	Sig. (2-tailed)	0,000		0,000
	N	60	60	60
GDP	Pearson Correlation	,902**	,936**	1
	Sig. (2-tailed)	0,000	0,000	
	N	60	60	60

** . Correlation is significant at the 0.01 level (2-tailed).

Table 8:- Correlation between CWBI, HDI and GDP.

However, behind the strong correlation between the HDI and GCI, there are considerable differences for some countries. For example, the United Kingdom, Slovenia, Cyprus, Croatia and China gain more than 9 places in the capability ranking compared to that using the HDI. While the situation is reversed for other countries like Ireland (-10), Mexico (-13) and the United States (-19). Comparing the capability index to GDP rankings also reveals particular differences. For instance, Israel, Bosnia, Georgia, Ukraine and Armenia are better ranked in terms of the capability index than that using the GDP. While other countries with high GDP per capita are not doing well with the capability index. The most striking cases are those of the United States of America (-18) and Luxembourg (-17). This is explained by the low scores recorded by these countries at the level of several human capabilities (Table 7).

Conclusion:-

This paper highlights several points. Firstly, we understand that more and more we are integrating indicators that touch the domains of human life, more and more we are shedding light on the shadows that characterize the current assessment of the well-being in particular and human development in general. Secondly, the high scores recorded by

capabilities such as mobility and communication suggest that they should be considered by researchers and policy-makers as priority like health and education. It also shows that the structure of human capabilities is changing. Thirdly, the study demonstrated the great contribution that latent variable structural models can make to the operationalization of the capability approach. Especially because the estimation under the partial least squares approach using the latest techniques of path modeling offers the possibility of understanding the latent and simultaneous nature of the capabilities.

References:-

1. AGUENANE, N. E. 2019a. "Economic growth, inequality and poverty: a review in the light of the capability approach". *Journal d'Economie, de Management, d'Environnement et de Droit, JEMED* 2 (2): 72-85.
2. AGUENANE, N. E. 2019b. " Bien-être et croissance économique : le tandem inconciliable ? ". *La Revue Marocaine de la Pensée Contemporaine, RMPC* (3) : 1-17.
3. Alkire, S. 2007. "Choosing Dimensions: The Capability Approach and Multidimensional Poverty." In *The Many Dimensions of Poverty*, edited by N. Kakwani and J. Silber, 89-119. London: Palgrave Macmillan.
4. Alkire, S. 2008. "Using the Capability Approach: Prospective and Evaluative Analyses". In *The Capability Approach: Concepts, Applications and Measurement*, edited by F. Comim, M. Qizilbash and S. Alkire, 26-50. Cambridge: Cambridge University Press.
5. Becker, J. M., K. Klein, and M. Wetzels. 2012. "Hierarchical Latent Variable Models in PLS-SEM: Guidelines for Using Reflective-Formative Type Models." *Long Range Planning* 45 (5): 359-394.
6. Chiappero-Martinetti, E. 2008. "Complexity and Vagueness in the Capability Approach: Strengths or Weaknesses". In *The Capability Approach: Concepts, Applications and Measurement*, edited by F. Comim, M. Qizilbash and S. Alkire, 368-309. Cambridge: Cambridge University Press.
7. Chiappero-Martinetti, E., and Roche, J. M. 2009. "Operationalization of the Capability Approach. From Theory to Practice: A Review of Techniques and Empirical Applications." In *Debating Global Society. Reach and Limits of the Capability Approach*, edited by E. Chiappero-Martinetti, 157-201. Milano: Fondazione Giangiacomo Feltrinelli.
8. Ciavolino, E., and M. Nitti. 2010. "High-order Constructs for the Structural Equation Model." Paper presented at the V Meeting on Dynamics of Social and Economic Systems, Benevento, September 20-25.
9. Comim, F. 2001. "Operationalizing Sen's Capability Approach." Paper presented at the Conference on Justice and Poverty: Examining Sen's Capability Approach, Cambridge, June 5-7.
10. Diamantopoulos, A., P. Riefler, and K. P. Roth. 2008. "Advancing Formative Measurement Models." *Journal of Business Research* 61(12): 1203-1218.
11. Di Tommaso, M. L. 2007. "Children Capabilities: A Structural Equation Model for India." *The Journal of Socio-Economics* 36 (3): 436-450.
12. Fornell, C., and D. F. Larcker. 1981. "Evaluating Structural Equation Models with Unobservable Variables and Measurement Error." *Journal of Marketing Research* 18 (1): 39-50.
13. Frediani, A. A. 2010. "Sen's Capability Approach as a Framework to the Practice of Development." *Development in Practice* 20 (2): 173-187.
14. Guinot, C., J. Latreille, and M. Tenenhaus. 2001. "PLS Path Modelling and Multiple Table Analysis. Application to the Cosmetic Habits of Women in Ile-de-France." *Chemometrics and Intelligent Laboratory Systems* 58(2): 247-259.
15. Hair, J. F., C. M. Ringle, and M. Sarstedt. 2013. "Editorial-partial least squares structural equation modeling: Rigorous applications, better results and higher acceptance." *Long Range Planning* 46(1-2): 1-12.
16. Henseler, J., C. M., Ringle, and R. R. Sinkovics. 2009. "The Use of Partial Least Squares Path Modeling in International Marketing." In *Advances in International Marketing*, edited by R. R. Rudolf and P. N. Ghauri, 277-319. Bingley: Emerald.
17. Henseler, J., C. M. Ringle, and M. Sarstedt. 2015. "A New Criterion for Assessing Discriminant Validity in Variance-based Structural Equation Modeling." *Journal of the Academy of Marketing Science* 43(1): 115-135.
18. Henseler, J., G. Hubona, and P. A. Ray. 2016. "Using PLS Path Modeling in New Technology Research: Updated Guidelines." *Industrial Management & Data Systems* 116(1): 2-20.
19. Hult, G., M. Sarstedt, M. C. Ringle, and J. Hair. 2016. *A Primer on Partial Least Squares Structural Equation Modeling (PLS-SEM)*. Thousand Oaks : SAGE Publications.
20. Jakobowicz, E. 2007. "Contributions aux Modèles d'Équations Structurelles à Variables Latentes." PhD diss., Conservatoire National des Arts et Métiers-CNAM.
21. Krishnakumar, J. 2007. "Going Beyond Functionings to Capabilities: An Econometric Model to Explain and Estimate Capabilities". *Journal of Human Development and Capabilities* 8 (1) : 39-63.

22. Krishnakumar, J., and P. Ballon. 2008. "Estimating basic capabilities: A structural equation model applied to Bolivia." *World Development* 36 (6) : 992-1010.
23. Lacroux, A. 2009. "L'analyse des Modèles de Relations Structurelles par la Méthode PLS : Une Approche Émergente dans la Recherche Quantitative en GRH.". Paper presented at the XXème Congrès de l'AGR, Toulouse, September 9-11.
24. Picot-Coupey, K. 2009. "Déterminants du Choix d'un Mode d'Expansion Internationale par un Distributeur : Modèle Conceptuel et Validation Empirique." *Recherche et Applications en Marketing* 24 (4): 23-55.
25. Qizilbash, M. 2008. "Amartya Sen's Capability View Insightful Sketch or Distorted Picture?" In *The Capability Approach: Concepts, Applications and Measurement*, edited by F. Comim, M. Qizilbash and S. Alkire, 275–291. Cambridge : Cambridge University Press.
26. Ringle, C. M., S. Wende, and J.-M. Becker. 2015. "SmartPLS 3." Boenningstedt: SmartPLS GmbH, <http://www.smartpls.com>.
27. Robeyns, I. 2005. "Selecting Capabilities for Quality of Life Measurement." *Social Indicators Research* 74 (1): 191-215.
28. Saisana, M., and S. Tarantola. 2002. *State-of-the-art Report on Current Methodologies and Practices for Composite Indicator Development*. Ispra: European Commission.
29. Sen, A. K. 1992. *Inequality Re-examined*. Oxford: Clarendon Press.
30. Sen, A. K. 1999a. *Commodities and Capabilities*. Oxford: Oxford University Press.
31. Sen, A. K. 1999b. *Development as Freedom*. Oxford: Oxford University Press.
32. Sen, A. K. 2009. *The Idea of Justice*. Londres: Penguin Books.
33. Sosik, J. J., S. S. Kahai, and M. J. Piovosio. 2009. "Silver Bullet or Voodoo Statistics? A Primer for Using the Partial Least Squares Data Analytic Technique in Group and Organization Research." *Group & Organization Management* 34(1) : 5-36.
34. The World Bank. 2010. *World Development Indicators*. Washington, D.C.: The World Bank
35. Tovar, E. 2008. *La Ségrégation Urbaine : Représentation Économique et Évaluation Éthique, avec une Application à l'Île-de-France des Années 1990*. PhD diss., École des Hautes Études en Sciences Sociales.
36. Trinchera, L., G. Russolillo, and N. C. Lauro. 2008. "Using Categorical Variables in PLS Path Modeling to Build System of Composite Indicators." *Statistica Applicata* 20 (3-4): 309-330.
37. United Nations Development Programme. 2016. *Human Development Report 2016: Human Development for Everyone*. New York: UNDP.
38. Wilson, B., and J. Henseler. 2007. "Modeling Reflective Higher-order Constructs Using Three Approaches with PLS Path Modeling: A Monte Carlo Comparison." In *Conference Proceedings ANZMAC 2007*, edited by M. Thyne, and K. R. Deans, 791–800. Dunedin: ANZMAC.