Structural capital of Malawi: Year 2005-2014

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Abstract. Not being put as a central agenda when dealing with various forms of significant capitals of a nation, structures (and processes) that carry people, actions, resources, and systems to run are very important. This paper reports the face and development of structural capital of Malawi as a rapidly developing country in Africa. The results showed that, CPIA business regulatory environment (i.e., Business competition environment), Business extent of disclosure (as it reflects Government efficiency), CPIA property rights & rule-based governance rating (Intellectual property right protection), Computers in use per capita, and Ease of doing business(i.e., Convenience of establishing new firms) remained at similar level and with less rapid growth. Positively, the number of firms using banks to finance investment (i.e., capital availability) and the Mobile phone subscribers are two factors that feature this economy's structural/process capital strength. Theoretical and policy implications follow.

Keywords. Intellectual capital, National wealth, National capital, Intangible assets, Economic growth.

JEL. M10, M11, M14.

1. Introduction

Malawi is a landlocked country located in the southeastern regions of Africa. The country is among the world's least-developed countries, with economy heavily dependent on agriculture. The Malawian government depends greatly on outside aid with regards to development needs, education, health care, and environmental protection. An article written by CNN on December 3rd, says China plans to spend billions in Africa, by investing in mining, infrastructure and development aid. With attention from nations with economic power and dominance, this research can help those nations with a clear understanding of the particular attention needed to create national value from the perspective of national structural capital.

National intellectual capital is one critical factor that drives the development of a nation's economy (Lin, & Edvinsson, 2011). The importance of structural capital has just been extended from the micro (organizational) level to the macro (national or regional) levels; whereby there is still a gap in the creation of national intellectual models, which lacks accepted methodologies (Pomeda *et al.,* 2002). Currently, there has been little research, which focuses on Africa. As mentioned earlier, African countries needs assistance from other powerful nations in terms of infrastructure, education, trade etc., and with the aid of this research, it can improve a nations' competitiveness and economy.

Structural capital at national level is still quite new concept, and the process for data collection, especially for African countries is difficult to capture and measure due to the lack of information and database. Nevertheless, the challenge of identifying national level structural capital can enforce economic growth, future

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investments, and national wealth, which in turn can add value of serving as an extension of GDP that may predict future national wealth and global competition (Weziak, 2007).

Thus, this study reports analyses that demonstrate the situation and development of structural capital in Malawi, in order to generate academic and practical insights. We relied on secondary and public information from a variety of (often) government units of the country.

2. Design and Report

Past researchers have proposed several different models all in the attempt to use a system of variables to uncover and manage the 'invisible' wealth of a country, including structural capital. However, a concrete consensus has not yet emerged to the embryonic nature of this field of study (Lin & Edvinsson, 2011). Taking into account on past research, this study proposes a descriptive study in the model of measurement viagovernmental units, OECD, IMB databases, and other databases in order to measure the structural capital of Malawi. Due to missing data in certain indicators, proxy measures had to be conducted to ensure the same framework of the NICI40 measurement model (Lin & Edvinsson, 2011). Thus, the set of indicators consisted of NICI40 and proxy indicators.

Table 1. *Proxy Indicator for Process Capital*

Structural /process capital index	Definition
Business competition environment	
Government efficiency[#]	Whether competition legislation is efficient in preventing unfair competition
Intellectual property rights protection[#]	Whether government bureaucracy hinders business activity
Capital availability[#]	Whether intellectual property rights are adequately enforced
Computers in use per capita	Whether cost of capital encourages business development
Convenience of establishing new firms[#]	Number of computers per 1,000 people
Mobile phone subscribers	Whether creation of firms is supported by legislation

Note: Variables marked # are rated qualitatively using a scale of 1-10

The Structural / Process Capital is defined as the nonhuman powerhouses of knowledge in a country's infrastructure which facilitates the creation, accessibility and dissemination of current data, information and knowledge (Bontis, 2004). These include, business competition environment, government efficiency, intellectual property rights protection, capital availability, computers in use per capita, convenience of establishing new firms, and mobile phone subscribers. These indicators assist in the cooperation and flow of knowledge that require structural intellectual assets, such as information system, telecom services, cyber security, information technology skills, and agricultural productivity. Such structural intellectual assets support and increase the output of human capital.

Detailed Measurement and comparison between the NIC40 method and the ones adopted here (the PC-MW) were listed in the following table.

Table 2. *Proxy Indicator for Structural Capital*

	NICI40	PC-MW
1	Business competition environment #	CPIA business regulatory environment #
2	Government efficiency #	Business extent of disclosure #
3	Intellectual property right protection #	CPIA property rights & rule-based governance rating
4	Capital availability #	Firms using banks to finance investment
5	Computers in use per capita	Computers in use per capita
6	Convenience of establishing new firms #	Ease of doing business
7	Mobile phone subscribers	Mobile phone subscribers

CPIA business regulatory environment- Business regulatory environment assesses the extent to which the legal, regulatory, and policy environments help or

hinder private businesses in investing, creating jobs, and becoming more productive.

Business extent of disclosure- Disclosure index measures the extent to which investors are protected through disclosure of ownership and financial information.

CPIA property rights & rule-based governance rating - Property rights and rule-based governance assess the extent to which private economic activity is facilitated by an effective legal system and rule-based governance structure in which property and contract rights are reliably respected and enforced.

Firms using banks to finance investment- Firms using banks to finance investment are the percentage of firms using banks to finance investments.

Ease of doing business - is the regulatory environment of the country's business operation.

3. Process for Data Collection

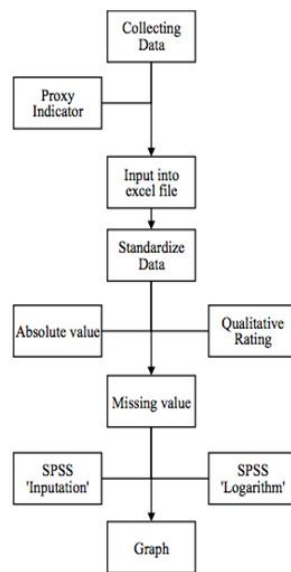Data collected had to go through the process shown in Figure 1.

Figure 1. *Data Process Chart*

The following section will present the findings, analysis, and interpretations that derived from the data collected and to produce a meaningful way to facilitate the discussion. Tables and figures have been used to facilitate a simplistic reader-friendly writing. In the table 3, the estimated missing values for structural capital based on our originally collected data were reported. To estimate missing data help sketch a more complete view of the face of structural capital of Malawi.

Table 3. *Estimated Missing Value for Process Capital*

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
X15	3.500	3.500	3.500	3.500	3.500	3.000	3.000	3.000	2.500	3.000
X16	4.000	4.000	4.000	4.000	4.000	4.000	4.000	4.000	4.000	4.000
X17	3.500	3.500	3.500	3.500	3.500	3.500	3.500	3.500	3.500	
X18					3.946	6.495	6.495	6.495	6.495	9.045
X19	4.023	3.742	3.320	5.164	5.310	5.504	4.274	3.806		
X20										7.619
X21	0.196	0252	0.389	0.570	0.816	0.989	1.032	1.008	1.063	1.037

Figure 1indicates the trends of process capital in Malawi with Firms using banks to finance investment having the highest score (9.045) and the lowest score from Mobile cellular subscriptions (0.196).
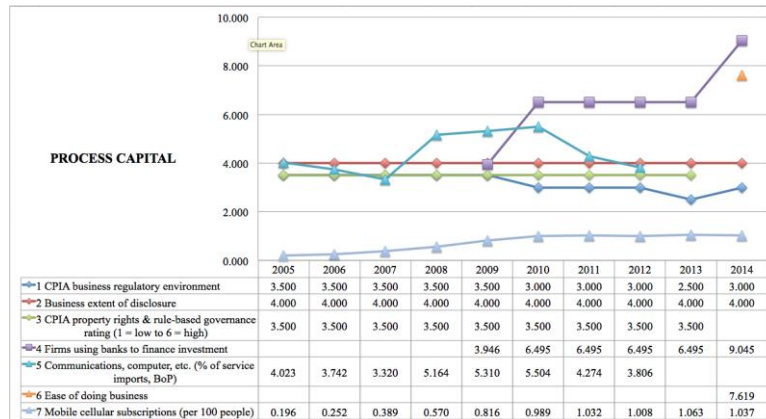
Figure 1. *Trends of Structural/Process Capital in Malawi*

After the year 2009, the trend Firms using banks to finance investment demonstrates a good potential for structural/process capital, as the scores from 2009 to 2014 are the highest of all the indicators. While the indicator Mobile cellular subscriptions have the lowest score for all the indicators. This is the result of inadequate ICT (Information and Communications Technology) infrastructure especially in the rural areas. Policies or educational programs can be introduced to educate people to be more adaptable to technological changes and there must be effective mechanisms to provide quality and equity to the people of Malawi.

If we compare Malawi's score for Mobile cellular subscriptions to Mongolia's, we will find that Mongolia's trend increases drastically. This may be the result of the Government of Mongolia (GoM) identifying areas that they are very strong at. Not only should governments strengthening the comparative advantage, but to also allow other departments or industries to rise above others.

Firms using banks to finance investment demonstrates a positive trend (from 3.946 to 9.045). According to the Malawi PER report, the government introduced the macro-fiscal framework which aims to achieve fiscal sustainability by improving revenue mobilization, restraining growth in expenditure and making small repayments to the banking system. Main features of the framework consisted small annual repayments to the banking system, strong revenue growth so tax and non-tax revenue increases, and projected reduction in grants of nearly 5% of GDP.

CPIA business regulatory environment illustrates a negative trend in decline (from 3.500 to 2.500). Meanwhile, for Business extent of disclosure and CPIA property rights & rule-based governance; their scores show a constant trend throughout the span of the research period.

The trend for Communication, computer, etc. increased in 2007 possibly because in 2008, according to the Ministry of Education, Science and Technology, a National Education Sector Plan (NESP) was introduced in assisting with the role of education, social economic, political and industrial growth and development in Malawi. However, the consequence of poor funding has resulted in institutions having obsolete and inadequate equipment, low funding allocation, outdated curriculum and non-available teacher training. Which resulted to the decrease by 2010.

The above analysis revealed an interesting phenomenon, for instance, for Internet users in human capital, there was a drastic increase, especially after 2012. Yet, for Mobile cellular subscriptions, there wasn't a drastic increase. One reason for the increase was due to the 2,112 kilometers of fiber optic cable in the country, which was mainly concentrated in the urban areas.

4. Conclusion and Suggestions

The previous section dealt with the analysis and interpretations of the data obtain from World Bank of Malawi. This section will provide the research

summary of the study in relation to the findings and present the limitations encountered, and finally suggest possible directions for future studies.

The goal of this study was to shed light and awareness to any potential foreign or domestic investors, business men/women, and policy-makers of Malawi in the structural capital of Malawi. The findings illustrated the trends of each dimensions of structural/process capital. Based on the findings, we can conclude which indicators for each capital requires improvement and which indicators are a good potential to improve on, whether by implementing new reforms by policy-makers, further expenditure to increase competition in a micro or macro level, or by potential business opportunities.

The data presented in the earlier section allows policy makers to reflect on which areas of structural capital the prospective of improvement, if desiring to compete internationally with other countries. It is evident that political resources and support is less sufficient and that could be the key factors of slowing the country's intangible assets.

This descriptive study was designed to reveal Malawi's structural capital and to allow the government to achieve a more effective management of the intangible resources that increasingly determine the success of their economies (Bontis, 2004). The study also provides a platform to assist any country to examine its strengths and weaknesses and in identifying the focalization areas needed to achieve success.

The suggestion for future research include the following: 1. Contact experts in the field or the country's policy-makers on their perceptions in deciding which indicator holds more value that can increase intellectual capital; 2. Data can be grouped into two or more time periods to have them compared to identify important similarities and differences; 3. Examine relationships between the different types of capital or indicators from different capital to provide further insights.

References

Bontis, N. (2004). National intellectual capital index: The benchmarking of Arab countries. *Journal of Intellectual Capital,* 5(1), 13–39. doi. 10.1016/B978-0-7506-7773-8.50011-X

Carr, N.G. (2003). IT doesn't matter, *Harvard Business Review*, pp.41–49. [Retrieved from].

Collins, J. (2001). Level 5 leadership: The triumph of humility and fierce resolve, *Harvard Business Review*, 79(1), 67–76. [Retrieved from].

Edvinsson, L., & Malone, M.S. (1997). *Intellectual Capital: Realizing Your Company's True Value by Defining its Hidden Brainpower.* New York: Harper Business.

Garcia-Ayuso, M. (2003). Intangibles: Lessons from the past and a look into the future. *Journal of Intellectual Capital,* 4(4), 597–604. doi. 10.1108/14691930310504590

Jarehov, M., & Stenfelt, C. (1998). *IC on National level*, Stockholm University, Market Academy, Master Thesis.

Klein, P.A. (2000). National statistics, portrait of the value floor. *Journal of Economy Issues,* 34(2), 445–452. doi. 10.1080/00213624.2000.11506283

Lin, C., & Edvinsson, L. (2011). *National Intellectual Capital A Comparison of 40 Countries*, Springer.

Malhotra, Y. (2000). Knowledge assets in the global economy: Assessment of national intellectual capital. *Journal of Global Information Management,* 8(3), 5–15. doi. 10.4018/jgim.2000070101

Malhotra, Y. (2003). Managing and measuring knowledge assets in the public sector. *Working Paper*, Syracuse University. [Retrieved from].

Nolan, A. (2011). New Sources of Growth: Intangible assets, Updated September. [Retrieved from].

OECD. (2001). *The well-being of Nations: The Role of Human and Social Capital.* Center for educational research and innovation research paper. Paris: OECD. [Retrieved from].

Pasher, E. (1999). *The Intellectual Capital of the State of Israel*, Herzlia Pituach: Kal Press.

Pasher, E., & Shachar, S. (2007). *The intellectual capital of the state of Israel: 60 years of achievement.* [Retrieved from].

Pomeda, J.R., Moreno, C.M., Rivera, C.M., & Martil, L.V. (2002). Towards an intellectual capital report of Madrid: New insights and developments, presented at "The transparent enterprise. The value of intangibles", Madrid, Spain, 25–26 November.

Saruaorg. (2016). *Saruaorg.* Retrieved 27 May. [Retrieved from].

Spring Project, (2002). [Retrieved from].

Steward, T.A. (1997). *Intellectual capital: The new wealth of organizations.* New York: Nicholas Brealey.

Unescoorg. (2016). *Unescoorg.* Retrieved 27 May. [Retrieved from].

United National Development Programme (UNDP). (2000). Survey of economic and social development in the ESCWA region 1999–2000. United National Development Programme Research Paper. New York, NY. [Retrieved from].

United Nations Economic Commission for Europe, (2003). Status of and Trends in the Development of E-Government, New York, NY. [Retrieved from].

Weziak, D. (2007). Measurement of national intellectual capital application to EU countries. [Retrieved from].

World Bank, (1998). *World Development Report: Knowledge for Development*, Oxford University Press.

World Bank, (2001). *World Development Indicators.* Washington, DC: World Bank.

World Bank, (2002). 'The knowledge assessment', Methodology and Scoreboards, [Retrieved from].

World Bank, (2013). *Malawi - Public expenditure review.* Public Expenditure Review (PER). Washington DC: World Bank Group. [Retrieved from].

Worldbankorg. (2016). *Worldbankorg.* Retrieved 26 May. [Retrieved from].

Worldbankorg. (2016). *Worldbankorg.* Retrieved 27 May. [Retrieved from].

Yan. S. (2015). China is spending billions in Africa', CNN Money, First published December 3. [Retrieved from].