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ABSTRACT

This study compares ICT adoptions of four developing nations: Zimbabwe to Albania and Namibia to Venezuela. Each pair of countries has similar gross domestic product but different ICT adoption level. Using qualitative, non-conventional analysis of comparing a pair of countries based on country-specific factors, the findings reveal that the difference in ICT adoption of two similar such countries may be attributed to such factors as poor infrastructure, income inequality, and adult illiteracy. Cultural factors, governance and GDP growth rate are shown as possible reasons for the two African nations to perform differently than their counterparts in the adoption of PCs and Internet. This study further reveals that the impact of a given factor depends on the type of ICT in question in these nations. For example, in Zimbabwe, poor infrastructure may adversely affect the adoption of telephone but has no impact on Internet adoption.

Keywords

ICT, Technology Adoption, Developing Countries, Qualitative Analysis, Adoption Factors

INTRODUCTION

Much attention has recently been given to how information communications technology (ICT) can help poor and developing countries become more economically and socially viable in today's knowledge economy. While an Industrialized nation's early adoption of technology generally leads to productivity increases, thereby distancing them from developing countries, later adopters can benefit from a 'leapfrog' effect (Davison et al., 2004) by investing in older technologies at a fraction of the cost spent by the early adopters (Gerschenkron, 1962). Many researchers have considered how the digital divide can be reduced in order to advance developing countries socio-economically. In recent years, ICT adoptions in developing countries such as India and China have allowed them to compete favorably against developed nations. For example, ICT jobs have been transferred from the US to India because of the competitive advantages India has over the US. Similarly, China has gained manufacturing jobs, at the expense of the US, partly because of its creative manner in deploying ICT. These examples illustrate that effective ICT adoption and utilization can transform developing countries in ways that improve their competitive advantage and hence expand their national economies.

In the present study, we report a comparative case analysis of four nations. These are: Venezuela and Namibia, and Zimbabwe and Albania. We postulate that a set of economic, institutional (and governance including regulatory), cultural and religious, and political factors may play a role in the differences in ICT diffusions in these four developing nations.

ICT ADOPTION

Five different technologies were considered: telephone, telephone, cell phone, PC, and the Internet. These technologies represent products at different stages in the product life cycle. These technologies, singly or in combination, have been used as dependent variables in various adoption studies (see following discussion). In the present student, we use differences in adoption levels as the dependent variable.

Five groups of independent factors were considered: demographic factors, economic factors, cultural factors, institutional factors, and religious factors.

Demographic Factors

Five indicators are considered: population, land area, percentage of population living in rural areas, percentage of female population, and the percentage of individuals of working age (15 to 64).

Economic Factors

National wealth is typically measured as Gross Domestic Product (GDP). However, economic developmental growth theory states that industrial countries differ from developing countries by much more than their level of capital or even their human capital (Hoff and Stiglitz, 2000). Development is no longer seen primarily as a process of capital accumulation but rather as a process of organizational change, since industrialized and developing countries are believed to be organized in different ways. Development does not occur just by infusing more capital or by removing government imposed inefficiencies. National development occurs because of the role of institutions and the presence of income inequality, among other things. Stiglitz (2003) proposed that factors such as human capital development, innovation, infrastructure and level of strategic cooperation between academia, industry and government are important catalysts for developing countries to close the gap with more developed countries.

Investment in human capital involves both education and training. Illiteracy has been suggested as a significant factor hindering the adoption of ICT (Madon, 2000). Quibria et al. (2003) have identified education, among other factors, as a key ICT adoption determinant in Asia. Mbarika et al. (2003) cite the acute shortage of ICT technicians as one of the factors that inhibits ICT adoption in the Sub-Saharan African.

To obtain a precise Human Development profiles for countries, the United Nations Development Programme (UNDP) constructed the Human Development Index (HDI) in 1990 (UNDP, 2004). The HDI is based on three primary indicators, with each indicator given equal weight: longevity (as measured by life expectancy at birth), educational attainment (as measured by the combination of adult literacy and combined primary, secondary and tertiary enrollment ratios) and standard of living (as measured by real Gross Domestic Product).

Nonetheless, GDP does not necessarily reflect an individual's well-being, since national wealth does not reflect income distribution patterns. Various economic growth studies have pointed out that income inequality is one of the factors that can affect the economic growth of a nation (Banerjee and Newman, 1998; Piva, 2003). Disparities in wealth can be measured using the Gini Index (Deininger and Squire, 1997), which measures the extent to which income among individuals or households within a country deviates from a perfectly equal distribution. A '0' rating implies perfect equality while a '1' value represents perfect inequality.

Cultural Factors

According to Hofstede (2001), culture is "the collective programming of the mind that distinguishes the members of one group or category of people from another" (pg. 9). He classified countries along four basic dimensions: *Power distance, uncertainty avoidance, Gender egalitarianism individualism /collectivism*, and *masculinity/femininity*.

Hofstede's dimensions have been modified and extended (to nine dimensions) by the GLOBE study, which collected data from 62 nations to test their assumptions. The postulated dimensions are:

- ***Power Distance***: the degree to which members of an organization or society expect and agree that power should be unequally shared.
- ***Assertiveness***: the degree to which individuals in organizations or societies are assertive, confrontational, and aggressive in social relationships.
- ***Societal Collectivism***: the extent to which societal institutions provide incentives for and otherwise encourage collective action. A collectively oriented society will be more inclined to tax the wealthy so as to increase the perceived collective good. Societal institutions provide incentives for and otherwise encourage collective action. A collectively oriented society will be more inclined to tax the wealthy so as to increase the perceived collective good.
- ***In-Group Collectivism***: the extent to which individuals feel connected to their families and organizations. A high degree of In-group Collectivism will foster an attitude of placing a high value on what is best for the family or other societal subgroup.
- ***Future Orientation***: the degree to which individuals in organizations or societies engage in future-oriented behaviors such as planning
- ***Gender Egalitarianism***: the extent to which an organization or society minimizes gender role differences and gender discrimination.

- ***Humane Orientation***: the degree to which in the tendency to value achievement and individual effort. Those individuals not performing at high levels would not expect to share in the rewards of those who are relatively high achievers. Such sharing would be deemed to provide less of an incentive to perform, thus reducing the overall performance of the society.
- ***Performance Orientation***: the extent to which an organization or society encourages and rewards group members for performance improvement and excellence. This dimension includes the future oriented component of the dimension called Confucian Dynamism by Hofstede and Bond (1988).
- ***Uncertainty Avoidance***: the extent to which members of an organization or society strive to avoid uncertainty by reliance on social norms, rituals, and bureaucratic practices to alleviate the unpredictability of future events.

Institutional Factors

Kaufmann et al. (2003) pointed out that factors such as government intervention, rule of law, regulation, restrictive trade policy, black market can all act as barriers in economic growth and so also in the Internet growth. Corruption in government and bureaucratic efficiency are other important institutional factors that have been shown to negatively influence economic growth. As less developed institutional structures can adversely affect the government functioning, it is expected that many of these factors will act as barriers in the ICT diffusion in developing nations.

Efficient institutional practices (such as an efficient judicial system for fair and efficient disposal of disputes, better rule of law, less corruption etc) play a positive role in increased ICT growth. The Index of Economic Freedom from the Heritage Foundation (2005) which captures institutional efficiency needs some elaboration. It includes a broad array of institutional factors determining economic freedom: To name a few: corruption in the judiciary, customs service, and government bureaucracy, non-tariff barriers to trade, such as import bans and quotas as well as strict labeling and licensing requirements, the fiscal burden of government which encompasses income tax rates, corporate tax rates, and trends in government expenditures as a percent of output; the rule of law, efficiency within the judiciary, and the ability to enforce contracts, regulatory burdens on business, including health, safety, and environmental regulation; informal market activities, including corruption, smuggling, piracy of intellectual property rights, and the underground provision of labor and other services.

Freedom House's political rights and civil liberty indices (Freedom House, 2005) average for the period 1991-2000 may be used as a measure of institutional framework as has been done in earlier works (Milner, 2003; Scully, 1988). Both the ICT rate and level may show significant relations with political rights and civil liberty indices.

Religious Factors

Several religious beliefs may dominate a human being's actions: some of the important such beliefs are: belief in God, belief in after life and belief in heaven or hell. Barro and McCleary (2002) empirically observed that belief in god or in an afterlife do not help in economic growth. However, they also observed that in nations where the belief in hell is strong, growth of gross domestic product gets about 0.5 percent higher than the average value. We postulate that religious beliefs and practices (such as going to church) are responsible for ICT developments in developing nations.

The World Value Survey (WVS) (Inglehart et al., 1998) provides religious data on 66 countries. In particular, the WVS allows for analyzing change in religious attitudes. The survey has several standard religion questions (denomination, attendance) along with some variables as mentioned in figure 1, measuring religious beliefs and practices. The WVS survey data included more than 1000 people in a nation.

Infrastructure

A nation's infrastructure includes such components as transportation networks, utilities, commodities distribution networks, and communications networks, and determines how it functions and how flexible it is to meet future requirements. Davis et al. (1989), Toussea-Oulai and Ura (1991), and Mwesige (2003), have all emphasized that poor basic infrastructures are a barrier to ICT adoption in DCs. To properly adopt and use ICTs, the basic infrastructural requirements of electricity, trained technical workers, and communication networks, as well as commitment from the government and other policy makers, should be put in place.

Unfortunately, there is no fixed measure of a countries infrastructure. However, it is not uncommon to infer a country's level of infrastructure by using a single ICT technology as a level of infrastructure as applied by previous research (Cronin et al., 1993; Hardy, 1990; Saunders et al., 1994).

In the present study we use television sets per 1,000 residents since the technology requires both electricity and broadcasting capabilities.

RESEARCH METHODOLOGY

Several methods can be used to evaluate the factors responsible for the adoption of ICTs in developing countries. A macro-level regression using many nations could be applied to expose a set of relevant factors for those nations (Meso, et al, 2005; Mbarika, et al, 2003; Bagchi, et al, 2004). However, this technique may fail to reveal the role of specific factors for specific nations. An alternative approach would be to start with a set of specific nations and determine a set of factors that could be relevant for a specific nation or for a few nations. Nation-specific factors may yield useful insights on a case-by-case basis. This approach is used in this study and has also been used in previous studies (Ein-Dor et al., 1997; Ein-Dor et al., 2004). The GLOBE research group actually encourages this kind of 2-3 nation studies (House et al., 2004).

Originally, we intended to find matched national pairings for each of the sub-Saharan nations. However, of the five nations, sufficient data was found for only two nations. These nations were 'matched' with nations from other regions based on average Gross Domestic Product Purchasing Power Parity (GDP-PPP; henceforth GDP). GDP is used as basis for comparison because of the numerous findings suggesting that GDP is an important indicator of IT adoption and diffusion (Ahan and Lee, 1999; Dekimpe et al. 1994; Ros, 1999). The nation pairings were Zimbabwe with Albania and Namibia with Venezuela (see Table 1).

Nation Pairings	Locale	GDP	Difference in GDP (%)
Zimbabwe Albania	Sub-Saharan Africa Eastern Europe	2.501 2.555	0.02
Namibia Venezuela	Sub-Saharan Africa Latin America	5.251 5.608	0.08

Table 1. Average GDP Values (1990 – 1999: In Billions US Dollars)

DATA SOURCES

The data source for each of the variables is given in Table 2. We calculate the % differences in values as reported in various tables below as follows: % Difference is 1- (the smaller value divided by the larger value) * 100.

FINDINGS

We first examine our primary objective, namely to see if nations with similar GDPs have different ICT adoptions. As shown in Table 3, technology adoption numbers vary widely regardless of technology. Considerable differences are noted, with only telephone adoptions differing by less than 50% (barely) between paired nations. Of note is that African nations show greater adoption rates for PCs and the internet (the newer technologies), but lower rates of adoption for Telephone and Cell Phones (the older technologies).

Next, we examine the relationship between ICT adoptions and national demographics (Table 4). Considerable differences are noted in terms of population (Zimbabwe has more than three times the population and Venezuela has nearly 14 times the population of Namibia), land area between Zimbabwe and Albania (Zimbabwe is slightly more than 14 times larger than Albania) and percent rural population (Namibia has approximately five time the number of people living in rural area as does Venezuela). All of the remaining demographic statistics are generally similar, the greatest difference being 12% (the difference in rural population between Zimbabwe and Albania) with essentially no difference in percent of female population for either of the paired nations.

Variable	Meaning	Source
ICT Adoption	Adoptions per 1,000 residents	World Bank, ITU
Demographic Data	Selected national statistics	World Bank, ITU
Economic Data • HDI • Income Disparity	Human Development Index Gini Index	United Nations World Bank
Cultural Data	Globe Dimensions	GLOBE Study
Institutional Data • Effectiveness • Governance • Political Rights	Factors determining: • economic freedom • governance • political rights and civil liberties	• Heritage Index of Institutional Efficiency • World Bank, ITU • Freedom House
Religious Data *Religion is Important* *Attend Church Regularly* *Believe in God* *Believe in Heaven* *Believe in Hell* *How important is God*	Measures of various religious beliefs and practices	World Value Survey

Table 2. Data Sources

ICT Adoptions	Nation Pairings			
	Zimbabwe	**Albania**	**Namibia**	**Venezuela**
Average Telephone	17.83	33.61	53.12	102.44
% Difference	47		48	
Average Cell Phone	8.01	69.53	22.89	89.55
% Difference	88		74	
Average PC	16.38	8.26	99.32	33.33
% Difference	50		66	
Average Internet	14.63	2.27	14.81	7.21
% Difference	84		51	

Note. Number of adoptions per 1,000 residents. Values are the average over the years 1990 – 2002.

Table 3. ICT Adoptions and % Differences

Demographic Factors	**Nation Pairings**			
	Zimbabwe	**Albania**	**Namibia**	**Venezuela**
Population (1997)	11,928680	3,115,550	1,731,320	22,959,000
% Difference	72		52	
Land Area (Square km)	386,850	27,400	823,290	882,050
% Difference	93		07	
% Rural population	67.35	59.53	70.28	13.77
% Difference	12		80	
% Female population	50.11	48.83	50.80	49.6
% Difference	03		02	
% Aged 15 - 64	55.2	62.61	54.37	60.66
% Difference	12		10	

Table 4. Demographic Comparisons

Land area does not appear to be a consideration for similar reasons. The relative similarities in percent of female population and population of working age would seem to rule-out these factors as impacting on adoptions. The only demographic which may impact ICT adoptions is the percent of the population living in rural areas. This could help to explain why older technology adoptions, which rely on electricity and an established ICT infrastructure, are less pronounced in the African sub-Saharan countries. It may also help to explain why, since newer technologies are not as reliant on traditional land-line, electricity lines or Mobile Telephone Switching Offices but rather can be utilized using more readily attainable technologies such as wi-fi. This lends some support to previous ICT adoption research which suggests a positive relationship between urban centers and the tendency to innovate (Gatignon et al., 1989) and the findings that regions with dense concentrations of firms engaged in the same production process are likely to be information-rich (Marshall, 1920).

Contrasts in economic factors are provided in Table 5 (The value ranges of indicators are as follows: HDI: 0 to 1, Income disparity: 1-100). The differences between paired nations are relatively moderate with respect to average human development and average annual GDP growth, in both cases essentially the same. Income disparity is considerably more pronounced (note that wage disparity ratings are inversely reported). Notable is the finding that sub-Saharan Africans have greater wage disparity, even though they may have higher HDI and greater GDP growth. This would seem to point to the impact of other factors.

Economic Factors	**Nation Pairings**			
	Zimbabwe	**Albania**	**Namibia**	**Venezuela**
Average HDI (1990 – 1998)	0.70	0.58	0.65	0.76
% Difference	17		15	
Ave. GDP Growth (1990 – 1998)	2.78	1.25	3.76	3.33
% Difference	17		14	
Ave. Income Disparity (1990 – 2002)	50.10	28.17	74.33	49.10
% Difference	44		34	

Each nation is rated 'Medium' with respect to HDI rating

Table 5. Economic Comparisons

Table 6 summaries the differences between paired nations for the cultural factors used (The value range of indicators is 1 to 7, with a high value on a dimension denoting a society to be high tendency on that cultural dimension). Only two cultural dimensions differed by more than 15% between paired nations: In-group Collectivism (Namibia and Venezuela) and Power Distance (Zimbabwe and Albania).

Cultural	**Nation Pairings**			
	Zimbabwe	Albania	Namibia	Venezuela
Assertiveness	4.04	4.57	3.81	4.26
% Difference	12		11	
Societal Collectivism	4.08	4.28	4.02	3.96
% Difference	05		01	
In-Group Collectivism	5.53	5.51	4.39	5.41
% Difference	00		19	
Future Orientation	3.76	3.69	3.32	3.43
% Difference	02		03	
Gender Egalitarianism	3.09	3.48	3.69	3.60
% Difference	11		02	
Human Orientation	4.38	4.40	3.83	4.19
% Difference	00		09	
Performance Orientation	4.20	4.57	3.52	3.41
% Difference	08		03	
Power Distance	5.54	4.44	5.29	5.22
% Difference	20		01	
Uncertainty Avoidance	4.12	4.45	4.09	3.55
% Difference	07		13	

Table 6. Cultural Comparisons

We would have liked to compare these four nations along the Hofstede's cultural dimensions also, but lack of data made such comparisons infeasible. As far as Inglehart's survival-self-expression and traditional-secular/rational dimensions are concerned (Inglehart et al., 2000), we observed that African nations such as Zimbabwe as well as Latin American nation such as Venezuela fall in the lower half of each of survival-self-expression and traditional-secular/rational dimensions but Albania belongs to the lower half of survival-self-expression and upper half of traditional-secular/rational dimensions. Therefore, there is some difference between Zimbabwe and Albania with respect to Inglehart's dimensions.

Table 7 shows Religious Beliefs and Practices values along several dimensions of these nations (Inglehart et al., 1998) (The value range of indicators is 0 to 100). Unfortunately, these values were not available for Namibia, and therefore we only provide the contrast in values between Zimbabwe and Albania. However, most African nations show strong values and Namibia is also not expected to be an exception. As we can see, there are significant differences between paired nations as far as religious values are concerned (except for belief in god dimension). Non-African nations typically score lower in this area. This tends to support the hypothesis that growth is not positively related to religious values or practices.

Table 8 shows the Heritage Index of Institutional Efficiency values which compare the pairings over time (The value range of indicators is 1 to 5, with a lesser value indicating better efficiency). Since this index captures a number of institutional dimensions such as Trade, Fiscal Burden, Government Intervention Monetary Policy, Foreign Investment, Banking, Wages and Prices, Property Rights Regulation and Black Market, it follows that institutional parameters are essentially identical in matched pair of nations (maximum differences in averages do not vary only by 0.45 out of 5 between the paired nations) and so may not be effective in analyzing ICT adoption differences in matched pairs.

National Governance indicators (Kaufmann et al., 2003) are given in Table 9. The value range of indicators is -2.5 to + 2.5, with higher values indicating better governance outcomes. Namibia and Venezuela differ significantly in average political stability, average governance efficiency, average rule of law and average corruption. Table 10 summarizes political rights and civil liberty differences (The value range of indicators is 1 to 7, with higher values indicating that nations are less free). Albania and Zimbabwe show differences in these indicators whereas Namibia and Venezuela have identical rights.

Finally, Table 11 shows the contrast in basic infrastructures (such as availability of electricity, which has been replaced by a surrogate measure TV per 1000) between the nation pairings. Not surprisingly, the African sub-Saharan countries greatly lag behind the comparable nations.

Religious Factors	**Nation Pairings**	
	Zimbabwe	**Albania**
Religion is important	78	20
% Difference	74	
Attend Church	81	64
% Difference	64	
Believe in God	99	92
% Difference	07	
Believe in Heaven	93	48
% Difference	48	
Believe in Hell	79	41
% Difference	48	
Importance of God in your life	95	70
% Difference	26	

Table 7. Religious Belief Comparisons

Paired Nations	**1997**	**1998**	**1999**	**2000**	**Average (1997 – 2000)**	**Global Rank (1997)**
Zimbabwe	3.75	4.00	3.90	3.90	3.89	136
Albania	3.60	3.70	3.60	3.70	3.65	122
Namibia	2.90	2.90	2.85	2.90	2.89	61
Venezuela	3.40	3.40	3.30	3.30	3.35	94

Table 8. Heritage Index of Institutional Efficiency

Governance Factors	**Nation Pairings**			
	Zimbabwe	Albania	Namibia	Venezuela
Ave. Voice Accountability	-0.51	-0.31	0.47	0.11
Absolute Difference	0.20		0.36	
Ave. Political Stability	-0.24	-0.20	0.67	-0.49
Absolute Difference	0.04		**1.16**	
Ave. Government Effectiveness	-0.66	-0.42	0.30	-0.80
Absolute Difference	0.24		**1.10**	
Ave. Regulatory Quality	-0.61	-0.21	0.33	0.02
Absolute Difference	0.40		0.31	
Ave. Rule of Law	-0.12	-0.65	0.75	-0.65
Absolute Difference	0.43		**1.40**	
Ave. Control of Corruption	-0.77	-0.43	0.50	-0.74
Absolute Difference	0.34		**1.20**	

Table 9. Governance Comparisons

Political System Factors	**Nation Pairings**			
	Zimbabwe	Albania	Namibia	Venezuela
Political Rights	5	7	2	3
% Difference	0.71		0.67	
Civil Liberties	5	7	3	2
% Difference	0.71		1.67	
Country Status	Partly Free	Not Free	Free	Free

Table 10. Political System Comparisons

Basic Infrastructure	**Nation Pairings**			
	Zimbabwe	Albania	Namibia	Venezuela
Infrastructure	44.25	132.11	50.29	173.06
% Difference	**66**		**71**	

Number of television adoptions per 1,000 residents.
Values are the average over the years 1990 – 2002

Table 11. Basic Infrastructure Differences

DISCUSSION AND CONCLUSIONS

In this preliminary case study, we have compared the state of ICT adoption in two pairs of similar countries: Albania versus Zimbabwe and Venezuela versus Namibia. The premise of the qualitative analysis in this study is the fact that the difference in the level of ICT adoption has to be explained by those factors for which these countries differ and not by the factors for which they are similar. The paired nation-level analysis used in this study is more suitable and more relevant than a macro-level regression analysis because it is capable of revealing the role of specific factors in a given nation whereas macro-level regression can only reveal the impacts of a set of factors on a group of nations. With the nation-level qualitative analysis, it is possible to explore such factors as culture, which is extremely hard to capture and explain in macro-level regression analysis.

The results reveal that the impacts of the investigated factors depend on the type of ICT in question. In other words, a given factor has difference impact depending on the type of ICT such as telephone, Internet, and PC. For example, the analysis reveals that in Zimbabwe, the low adoption rate of telephones and cell phones may be attributed to low infrastructure, high income inequality, high rate of adult illiteracy, and high power distance and religiosity. On the other hand, in the same country, these factors have no major impacts on PC and Internet adoption. PC and Internet have better adoption rate in Zimbabwe which can be explained by better political rights and independence and by better GDP growth rate (compared to Albania). On comparing Namibia to Venezuela, the low telephone and cell phone adoption rates in Namibia may be attributed to poor infrastructure (infrastructure is indicated by availability of electricity, which in turn is reflected by the number of television sets used), high adult illiteracy rate, and high religiosity. Also, the relatively better adoption of PCs and Internet in Namibia, compared to Venezuela, may be due to higher individualism (or low in-group collectivism) and better governance in Namibia.

In both cases, cultural factors (power distance in Zimbabwe and in-group collectivism in Namibia) seem to play a significant role in Internet and PC adoption. This is an important finding given how difficult it is for past studies to capture and explain the impact of culture on technology adoption. This finding implies that any ICT adoption study is incomplete if it fails to accurately capture and includes the impact of culture in the analysis. The impact of culture becomes even more important in those societies with strong and distinct cultures such as African nations.

The positive impact of better GDP growth rate on PC and Internet adoption in Zimbabwe is another key finding and makes common sense. This finding confirms the finding of previous studies which is: the stronger the economic growth rate of a nation, the more investment the nations makes on its ICT. Good governance also shows a positive impact on PC and Internet adoption as is the case in Namibia compared to Venezuela. A government is more likely to compare itself to other progressive governments and hence benchmarks on key policies such as investment on ICT.

It is interesting to note that religiosity factor may inhibit some nations from adoption of certain ICTs such as telephone and cell phone. This study reveals that in countries studied where religion has a major impact in the behavior of the citizens, adoption of telephones and cell phones is much less than in similar countries but with less religious influence.

Zimbabwe and Namibia rank lower in some ICT adoptions compared to Albania and Venezuela respectively because both African countries have lower adult literacy rate, poorer infrastructure, and higher income inequality.

Based on the findings, we propose a model of ICT adoption for developing nations, as shown in figure 1. The model needs to be statistical tested with data from a large sample of nation before drawing any conclusions.

Thus our findings are only exploratory and should be interpreted with caution. The conclusion would be stronger if more countries were compared instead of the two pairs of countries used in this study. In the future, the authors expect to obtain data from many more countries to be used for similar analysis. Despite the limitations of this exploratory study, the authors believe that the study has contributed to explaining the factors that affect ICT adoption in the four developing countries considered.

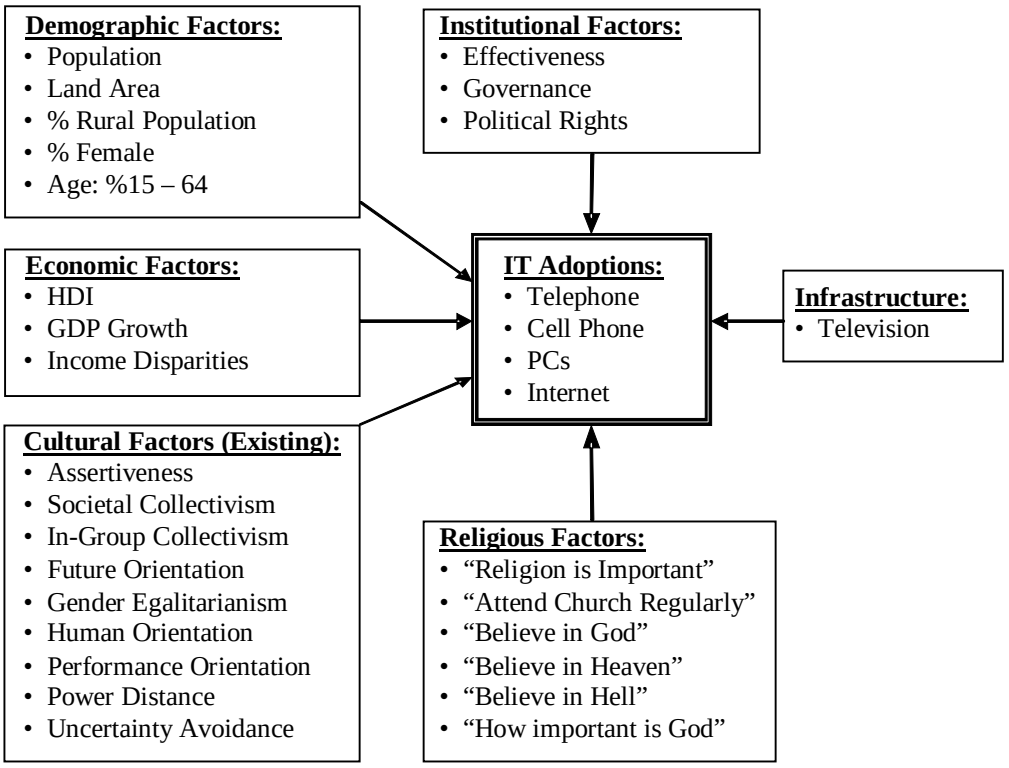

Figure 1. The Conceptual Model

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