New Landscape of Poverty Management through Land Information System

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ABSTRACT

Indication for spatial distribution of living quality and poor condition associated with land and house access as a basic human need has been imperative questions and predicaments while we should boost economic development and consolidate social maturity. Although modern IT and sophisticated GIS/LIS technologies are used to examine spatial analysis of population location-patterns, land uses and development and environmental degradation, etc, it still might remain immature step to figure out the causations and results of poverty in space and time. In this research, we will explicate new approach to poverty management by interpreting 6 factors as a major tool for assisting poverty monitoring concerning the poor who are very unpredictable in space and could be regarded as renegades in the Internet age. In addition, it expounds solution for poverty trap coming from the digital divide at the international & national, local and individual level when poverty reduction is closely concerned with goal of sustainable development of digital society.

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1. INTRODUCTION

A tremendous effort for poverty alleviation has increasingly been spotlighted at national and international societies while sustainable developments and livelihoods are playing a major role in contribution to poverty eradication focused on the poor who live in marginalized areas. The broad goal of poverty alleviation is to develop individual, family and community capacities to improve their livelihood systems (UNDP, 1997). However, there might be several question marks and stalemates when interpreting a poverty profile as to who and where poor people are, what poverty looks like and why they are poor. The information for developing poverty profile comes from census data, household survey, statistical analysis of income/consumption, and others. Additional factors associated with lifetime poverty and anti-measures as to when they are poor and how they can escape from vicious cycle of poverty must be necessary to be added to poverty profile when carrying out socio-economical and information (or Internet) poverty mapping in the context of actor-based interpretation.

Digital divide Today is considered to be socio-economic and technical gap between the rich and the poor (low-income classes, handicapped people, etc) causing individual and group future income's capacities that would lead to geographic concentration and convergence of the Internet's investment. The digital divide tends to extend to socio-economical divide showing geographical focus and disparity of local or regional wealth. Thus, actors who are inaccessible to ICT & the Internet or who are proficient in using and operating these tools are going to become steadily disadvantaged and could not enjoy a premium on higher skills and e-commerce enabling to accelerate income gap as a new poverty indicator. In this research, we emphasize the flows of interdisciplinary communications between land information and the Internet model towards digital welfare as to how we can survey and collect informations on poverty causality and what we can improve decision-making of poverty controls through the Hexad model. Three different aspects of poverty management will give us more dynamic interpretations for anti-poverty programs and actions through macro, meso and micro approach at the international & national, local and individual level. There are far too few studies that directly address this issue.

2. BOTTLENECKS IN INTERNATIONAL SOCIETIES

Many people in developing regions are still faced with civil or religious wars and environmental risks or natural disasters and continue to steadily increase in the poorest areas of the world where they need house, land, clean waters, sewerage, food and income. Poverty measures of human needs and future desires in developing countries might be based upon conditions of their holdings or access to foods and, affordable lands and shelters. While getting pleasure from surplus world food cultivations, malnutrition is still growing in Africa and Eastern parts of Asia because they have not sufficient agro-technologies to cope with

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more food demands and might be too poor to purchase what they need. In the process of economic growth and development, there are inevitably lucrative games of interests and technological hegemonies to maintain their geographical influences on commercial monopoly. It is manifest that this leads to local, regional and international disparities of extremely marketable dominations and technological intensities. The side-effects of these intensifications are frequently undermining social solidarities and unities as an evidence of massive capital concentrations, keeping urban slum and land degradation as well as housing shortages. These surroundings and phenomena would often lead to negative colors and tones of social integrations and inevitable disparity of living qualities.

Many research works have examined a wide variety of symptoms of poverty with regard to lacks of income and assets (UNDP, 2001a; World Bank, 2001), food insecurity, soil and land degradation (Ballayan, 2001), real estate of human well-being (Lee, 1997; Robin, 1997), ICT & Internet inequality and poverty (Panos, 1998; Heeks, 1999; Rodriguez and Wilson, 2000; Kenny et al., 2001) and digital divide and economy (Hoffman and Novak, 1999). Traditionally, poverty is a major cause of food insecurity (Narian et al., 2001) and lacks of agro-ecological technologies (Altieri, 1999) in developing nations. Since major issues and concerns of poverty definition vary from country to country and it is still hard to address structural causes of poverty and its effects. The concept of poverty is also changing and modifying because poverty is quite related with other concepts, particularly development and equity because socio-economic and technological developments enable a community and household to alleviate poverty and improve their empowerments within different dimensions of human well-beings. From the point of view of land management, the poor may have difficulties in access to land and house as well as public infrastructure services than middle and upper-income households (Komives et al., 2001). There are growing recognitions of the importance of land reform to make a direct impact on poverty (Drimie and Mbaya, 2001) through targeted resource transfers as a vital instrument for readdressing the inequalities in access to economic opportunities (Fig. 1) and other various external factors from social, environmental, political influences and settlement model.
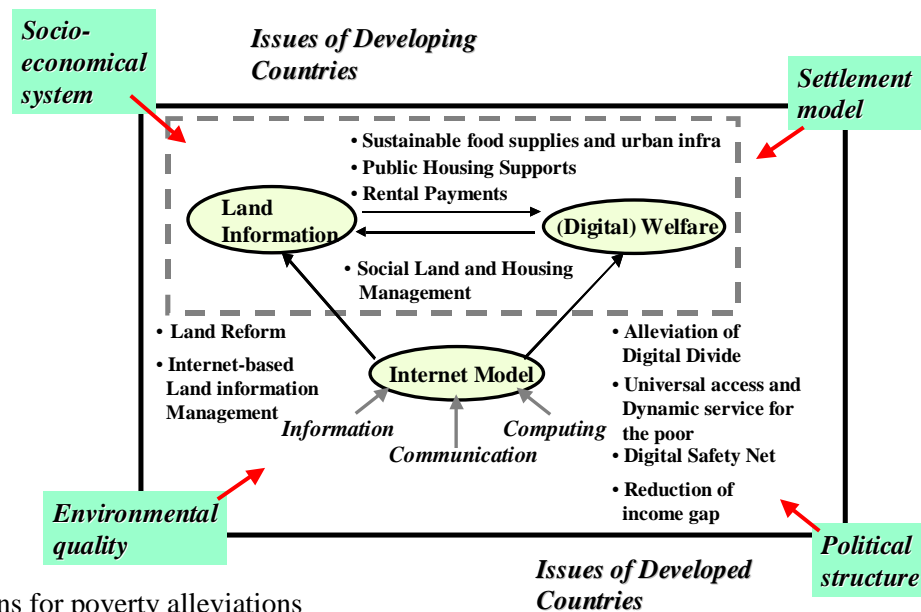

Fig. 1. Major concerns for poverty alleviations

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Most governments allow people to access to properties not only to make more productive use of their interests, but also to provide appropriate guideline of assets' transactions as well as to equalize the opportunity of information shares. However, poor people who do not have access to assets might be caught in poverty trap (Jalan and Ravallion, 1997) arising from traditional economic games and theories. They often fail to get out of poverty because they are uneducated and lack capital-skills being unable to purchase lands. Due to credit market imperfections (Deininger and Binswanger, 1998), they often do not get the opportunity to utilize their innate ability.

However, it is manifest that data on the distribution of lands would understate the degree of inequality because land is considered as homogeneous asset of uniform quality that is available to everyone. In other words, measures of land concentration are measures of inequality in surface area, but are not measure of inequality in the values of land as a productive asset (Griffin and Ickowitz, 1997). Deininger and Squire (1996) mention that possession of land can be a major determinant of an individual's productive capacity and their ability to invest in agrarian societies and highly dense population areas where land is a major asset. Given the fact that the degree of inequality for land redistribution leads to wealth gaps in some African societies (Sibanda, 2001; Selebalo, 2001), we may reconsider traditional aspects of land conflicts and dilemma how land information correlated with the improvement of sustainability for the poor. Land information management is not only to support land administration, associated with land ownership, valuation, and registration that are significantly important for individual properties, but also to boost collection and dissemination of information on land. The United Nations has long recognized the need for timely and relevant information as a fundamental element for human development (UNDP, 2001b), and has already called for universal access to ICT & Internet service as a basic development need. This management benefits from the Internet, at the same time, influences upon Internet application in real estate management. On the other hand, there are few clear evidences between land information and ICT & Internet as to how they could impact on poverty intensification. Obviously, information technology plays an important role in improving life for many people around the world, but there are also widening the gap between the rich and the poor.

3. NEW APPROACH TO POVERTY MANAGEMENT

3.1 The Role of Land Information for the Poor

Although poverty is not a new problem, we can rarely eradicate shadows of economic justices resulting from huge income gaps and information poverty among people. Even though many efforts and resources are discussing the way of poverty alleviation, the problem is getting worse and become social and political obstacles in some countries. Poverty erdication ranges from social welfare to economic development and land-related strategies. Low income is likely to be both a cause and an effect of serious land degradations in agricultural areas. Basic way for poverty eradication may depend on characteristics of the individual, the household, the community and the consumption as well as affordability for payment of their housing rents. The poor generally have access only to areas that have higher risk for health and environmental safety and they continuously look around for appropriate

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locations and living conditions corresponding to their household incomes' affordability. These are not only associated with definition of human well-being, guideline of poverty indicators, political recognition of the poor, and financial performance of government budget, but also surveying techniques and the data collection methods.

Governments pay attentions to serious disharmonies and inequalities of individual or group incomes and unbalances of social benefits, and undesirable focus of land ownerships, etc. It is hard to estimate exactly what it is a good guideline of social equilibrium and sustainable land management (UN-FIG, 1999; Grant et al., 1999) for anti-poverty measurement as to who they are the poor, and where they do live now, and how we can investigate poor conditions over time. Because poverty measurements tend to be subjective and are often pertinent to living quality of housing status and land ownerships associated with social and cultural circumstances and economic policies and developments. Improvement in land titling and registration system within the framework of LIS can benefit tenure security of the poor in Asian and Africa countries (Adam, 2001), who have difficulty in establishing legal ownership of the land and are located in marginal land increasing natural resource degradation (Anderson, 1999). In terms of poverty and inequalities, many economists have relied heavily on household incomes or expenditures normalized for differences in household-specific prices and demographics. Economic supports for the poor are very traditional and current discussions between developing and developed countries. Moreover, immeasurable influences of Internet's income that the poor can hardly get opportunity are seriously growing controversies of social and political groups in advanced nations. We do not delve into economic and social perspective of the poor. We make a point of the causes and impacts of poor conditions by interpreting geographical analysis of locations of the poor who have not benefits of local and governmental supports of land information and Internet services. Surely, it takes enormous efforts and times to identify the level of poor conditions and classify the poor when government intends to eradicate absolute poverty in slum and rural areas, and makes efforts on reducing relative poverty among working classes.

3.2 Cadastral Hexad Surveying for the Poor

Many researches and empirical experiments of international organizations have long tackled poverty-related issues and establish counter-measurements for anti-poverty policies, strategies, and practices. They perceive the relationships between real estate management and human welfare concerned with understandings of the reasons and results of vicious cycle of poverty. However, two different research concerns and little concentration on dynamic poverty mapping (Henninger, 1998; Sehlin and Bodin, 1996) might be rooms to be desired for analytical interpretation and debate of spatial distribution of poverty pattern, and individual symptoms of poor status quo since many geo-referenced survey data are designed to be used to understand living standards (Grosh and Munoz, 1996) and the effects of government policy-making as a national level of census and population survey or others. Most current poverty maps often make use of census data and sampling clusters techniques because it allows quick glances at rough ranges of socio-economical inequality and demographical issues of human welfare. However, this approach would lead to ineffective analysis of the urban and rural poor that often concentrate in a relatively small number of

villages. There might be little efforts for clear indication of spatial reasons and causes of poverty why and when they move in and out of poor conditions.

Although De Janvry and Sadoulet (1996) investigate causal relationships of poverty and inequality through spells of growth and recession over time, this economical analysis at macro level might have rooms to examine feasible model for human well-being's status quo at a specific community and household given in periods (or time). In addition, a poverty profile (Lok Dessallien, 1996) for poverty-related information might not be sufficient for expounding a wide variety of poor causalities of the poor household. The poor tend to live with poor people in a specific and concentrated area even in urban district and frequently look for affordable shelters over time. This spatial concentration could often give rise to land degradation and hard infra-structural setting for public communications and Internet due to the high cost of networks. Here, we propose the Hexad model (Liou, 2001) to make it possible to explain poverty circumstance dealing with actor (who) and then apply to individual timeline of poverty when and why he (or she) enters and how they can move out of poverty. The idea of Hexad model based on actor-based (or agent) framework is to interpret reasons and results of behaviors and actions of actors in GIS environment and institutions (Nolan et al., 2000). Cadastral Hexad surveying for spatial conditions of poverty begins with geo-locations of poor households (Fig. 2) as to where the poor live, why and when they move in poor situations and what kinds of poverty they are faced with and how local and national authority can establish anti-poverty programs and measurements.
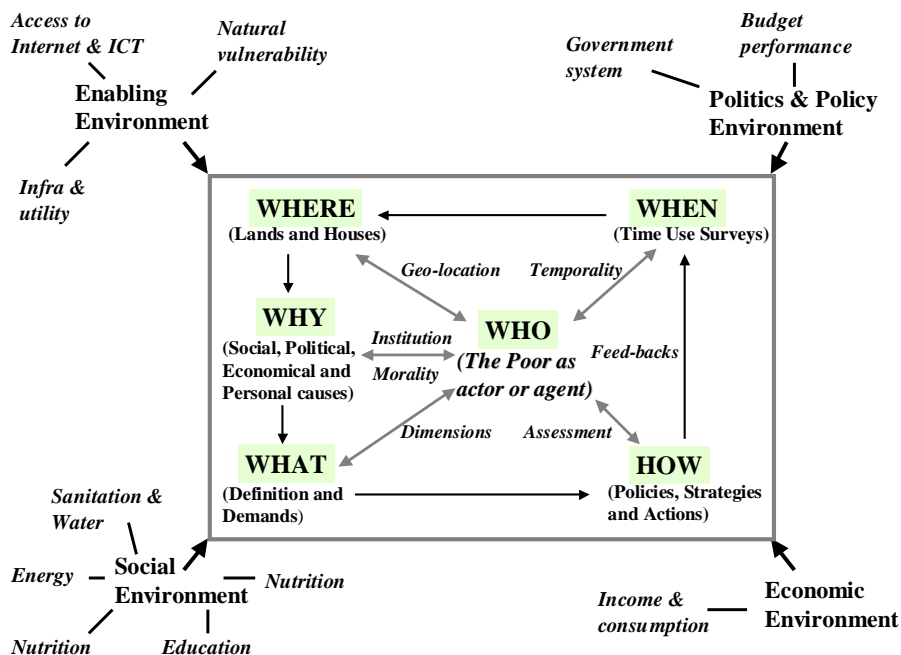
Fig.2 Hexad Model for Poverty Interpretation

Obviously, these six parameters often connect with external environments such as socio-economic, political and enabling factors. Cadastral Hexad surveying provides household survey with more details of built environment, natural biophysics, education, health, and nutrition maximizing its potential when connecting with the concept of multipurpose land

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information system. It requires significant amount of data collections and timing between data sources and access to household unit level (Davis and Siano, 2001), but can illustrate dynamic simulation of human behaviors in spatio-temporal domains when time use surveys are involved with individual men and women who make their decisions on how to divide or spend their time between remunerated and unremunerated work (UNSD, 1998) in the context of actual environments of economy.

4. BRIDGING DIGITAL DIVIDE WITH LAND INFORMATION

During the Internet revolution era, it forces us to not only change governmental organizations, non-public enterprise's business systems and individual life, but also accelerate the Internet economy. In the course of the Internet transaction between business and business, there are incredible information (or Internet) poverty among companies and people. In other words, the use of Internet and its application is a major key role to give birth to huge income gaps that are rarely interpreted by traditional economic theories because people using the Internet are increasingly computer maniac, venture groups and young generations. It is very shocking that they make immense fortunes within short periods considering conventional characteristics of businesses and trades.

The digital inequality between the rich and the poor is increasingly widening and lead to political debates and social divide. In particular, those who excel in the Internet tend to acquire stock options and can monopolize social capitals and information markets that already shows serious income unbalances between IT workers and all others. An inequality access to the Internet gap between the rich and the poor can be considered as a poverty indicator resulting in the potentials of technological poverty trap of catching-up productivity and incomes. Many country's governments, however, try to boost digital economy and e-commerce in support of the infrastructure of information highway. There are common senses that those who do not keep up with the Internet evolutions and digital economy might be regarded as social renegades. Naturally, side-effects of digital economy may be sensitive matters of governments and often make us depressed when considering breakthrough success of Internet business to IT workers. Someone believes that differences in income arise primarily from individual choices, preferences, abilities, educational status, real estate's investments, and productivities, etc. Other people consider that income differences reflect the unequal distribution of economic opportunity in our present society, and that the opportunity to succeed is elusive for those who do not belong to digital (or Internet) expert groups. Meanwhile, it might not be easy to measure the impact of the Internet since it has been already penetrated into all spheres of industries, educations, and businesses, etc and the use of Internet causes serious income gap and social divide between the information haves and have-nots. Thus, it requires investigations of negative aspects of the Internet that digital divide (NTIA, 1999, 2000; OECD, 2001) can directly give rise to poverty seriousness. Naturally, the Internet is a part of tool for ICT that several models scrutinize the impacts of information technology such as Meta-level framework (Lanfranco, 1997), Engagement Model (Norris, 2001) etc. In addition, there are also more details of the Internet's impact on poverty in developing countries (NRC, 1998; Dyke, 1999).

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There might be, however, little works in terms of the relationship between the Internet and land information towards digital welfare as to how the Internet have a powerful impact on pathways of shadows of poverty at the international & national, local and individual level. This is a real question mark to further investigate dark islands of CyberSpace that the poor is not able to access to basic human needs. We need to push further and ask: access to <u>what</u>, for <u>what</u>, why, <u>where</u>, for <u>whom,</u> <u>how</u>, and <u>when</u> ?

Considering the advent of the Web-based GIS/LIS, we can presume potentials of cyberspace enabling low-income classes to access to civic information on real estate's ownerships and values, land use, housing rents, local economic situations and job news, and concerned issues of land related activities with free and low charges of service through the Internet. It might be significant to support the poor who are willing to consider land and house as the future assets to move out of poor environments. Thus, the Web-based land information might be one of attractive strategies for the poor to use the Internet and let them think of other application programs. Figure 3 illustrates the conceptual framework for interdisciplinary approach to anti-poverty's solution based on full supports of the Internet model that leads to presumable counter-measurements of four elliptical mappings. Obviously, each mapping closely pertains to pilot projects and feasible practices tested by concerned organizations and authorities at the international & national, local and individual level.
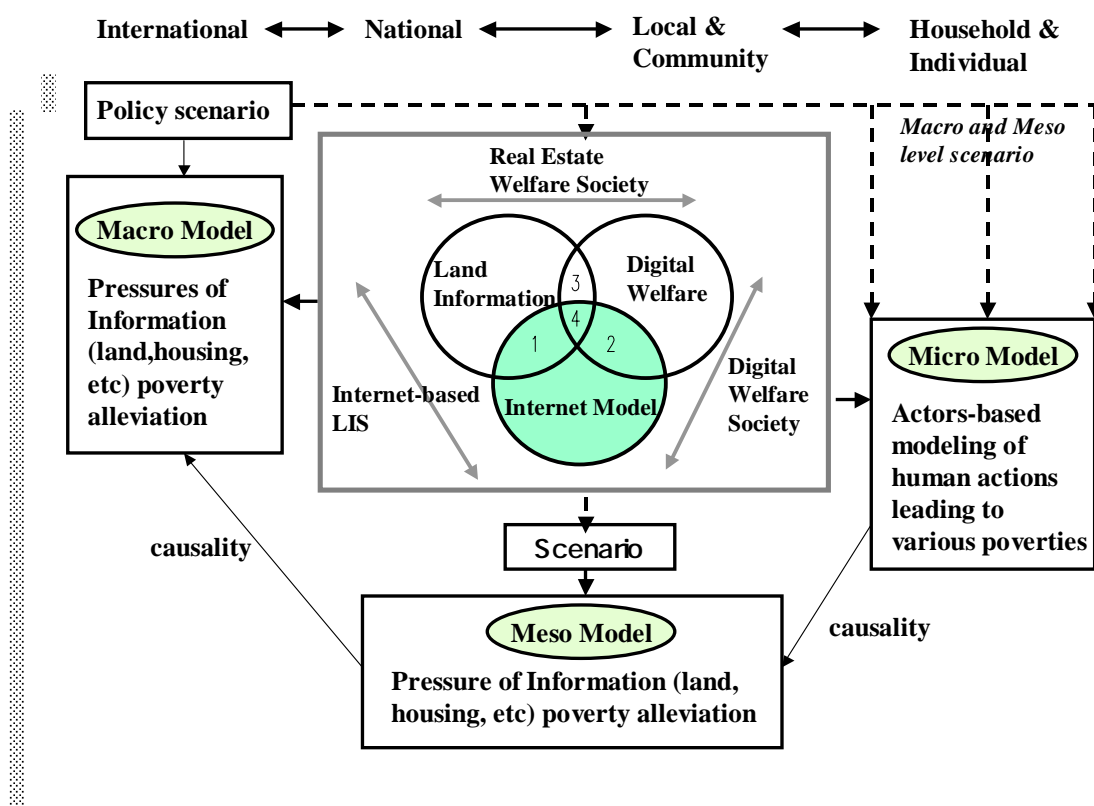

Fig.3 Interdisciplinary solutions for poverty alleviation

Simultaneously, it not only envisages a concrete model to eradicate vicious cycle of poverty and accelerate economic development and social consolidation, but also boosts the use of the

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Internet in accordance with policy, strategy and action at the different level of scenario. The characteristics of each model differ from countries to communities because many efforts and troubles are entangled in the process of socio-economical, cultural, political and technical development and continuously interact with each other giving rise to unpredictable circumstances from digital and social divide to digital opportunity. Furthermore, it is required to examine the weak and strong points of each model or program at the three different levels towards increases of the Internet's access and application for low-income classes, and assuagement of information poverty. Meanwhile, poverty researchers using an individualistic model try to identify causes of poverty at the individual level (Henninger, 1998) and the poor are highly mobile and migrate to or remain in poor area because of specific wage and their income power for rents. In terms of geographical model, poverty is due to the geographical causality pertaining to local & community factors such as climate, soil type, infrastructure, environmental risk and natural disasters, and access to social services, etc. This is why actor-based GIS modelings are very essential in clarifying trace of actor's (or agent) location, and spatial distribution of computer and land ownership, and mapping of the Internet access with an appropriate surveying method and internet-based technologies.

5. CONCLUSION AND RECOMMENDATION

There are many efforts for poverty reduction coming from socio-economic, environmental, and financial, and technological aspects within umbrella of poverty management. The economical gains would lead to serious land ownerships by elites and greater impoverishment (Meinzen-Dick, 2001) when land administration and registration system within sustainable land information system could not guarantee economic problem of the poor, women, and other marginalized groups who are inaccessible to land and high burdens of urban utilities. From the perspectives of land management, there might be lacks of serious attention to the causes of poverty, and analysis of structural factors such as differential access to the means of production and to political influence (Quan, 2001). Many researches have focused on the question of access to land (De Janvry and Sadoulet, 2000) and consider land access as a major welfare role of the poverty reduction. However, they rarely discuss the risks of economic exclusion presented by a lack of ICT and the Internet enabling the poor to look after better place of shelter and good information on job opportunity.

However, there might be rooms to be desired in dealing with three perspectives without different environments of poor actors who continuously move here to there so as to find appropriate their living quality and escape information poverty. Urban and rural poverty management is more larger than land information management when considering not only living standard survey for poverty in developing countries, but also growing issues of the digital divide and economical potential of digital economy in advanced nations. Few would argue that lack of access to information and communication technologies is an indicator of poverty. In addition, fewer studies and strategies have examined the effects of network-oriented communication on decision-making between land information and digital welfare because there are many different aspects of government strategies and objectives to attain sustainable goal of societies. As skill requirements have risen, so have wages paid to IT workers. The wage gap between IT workers and other workers continues to widen. This relative poverty is, today, significant signs of social divide and intimidating the birth of

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digital economy stemming from labor market imbalance. The analysis of the Internet usage and impacts on the poor and the rich resulting in serious relative poverty should be further reconsidered within the framework of policy scenario of micro, meso and micro model in our present international societies.

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