

# Key Performance Indicators for social development

**Danica Radovanovic, PhD**

Digital equality advisor and Ambassador at  
Basic Internet Foundation

**prof. Josef Noll**

Co-Founder and Evangelist at  
Basic Internet Foundation

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## Introduction

The internet technologies play a key role in providing insights into people's activities, opinions and everyday lives. These detailed user-generated information-online streams offer a unique opportunity for individuals to engage, communicate, socialize, and create sustainable infrastructures that lead to social development. However, there are almost 4 billion people on this planet without the internet access, basic information and skills to education or health. The situation is problematic with regards to the notion of a digital divide being primarily focused on the technological affordability: computers and access. As many scholars have noted, the digital divide is also a divide of literacy and skills (van Dijk 2005; Hargittai and Hinnant (2008); Radovanovic et al., 2015). Though, access is still seen as a necessary condition (Warschauer, 2002), in the case of education and business, many people could more practically engage the technology if they had the basic skills. Thus, digital literacies present the relevant factor in bridging this digital divide by providing the social development. With regards to **the social development and sustainable infrastructure**, we are entering a critical period where **emerging technologies and societal disruptive changes** are happening around us.

The focus of many studies on inequalities in the context of social development are mainly on differences in socio-economic backgrounds and in available resources, such as money or skills, or focused on developing inequalities such as access to basic human resources including equipment, knowledge, or education. It has been stated that digital divides influence digital literacy, engagement in social and educational life, and therefore overall participation and collaboration in an online public sphere (Van Deursen and Van Dijk, 2011, Radovanovic, 2013) and social development. For example, digital literacy skills are not material and the control of the material used to enact these skills is a hurdle in some poorer regions. Like other forms of human capital, digital literacy skills can be considered resources that are unequally valued and distributed.

**There is a need not only for identifying and establishing the KPI (Key Performance Indicator) for identifying relevant social development criteria (such as literacies) and implementing them into the sustainable infrastructures.** Digital literacy is becoming a central empowering agent in education, business and everyday life, as work and personal lives become increasingly technologized. Computers in education are not the only way to gain access to digital content and the digital world, as GEM Report (2016) [1]indicates. We should think of terms of **basic information to the internet, mobile devices, and digital literacy programs, in order to accomplish SDGs**, especially goal 4 related to quality of education and sustainable infrastructures. Information and

communication technologies (ICTs) are raising the bar on the competencies needed to succeed in the 21st century.

The Global Education Monitoring Report indicates that in the European Union, in 2014, 65% of adults could send an email with an attachment and 44% could use basic arithmetic formulas in spreadsheets. While, in 2004–2011, only 6% of adults in 29 poorer countries had ever participated in a literacy program. These are just examples that digital illiteracy is present also in developed countries, and while **SDGs especially Goal 4 is about to ensure inclusive and equitable quality education and promote lifelong learning opportunities for all, our project is aligned with these goal.**

## Key Performance Indicators

A performance measurement system plays an important role in managing projects as it provides the information necessary for decision-making and actions. Not that long ago, Kaplan (1990) stated “No measures, no improvement,” indicating that performance measures and metrics are not just measuring the performance. They are also embedded with emotions, communication, and several other behavioral issues. Good performance indicators will enable and foster more open and transparent communication between people leading to improved collaboration and organizational performance. It is essential to measure the dynamics in social development environments so that timely action can be taken.

A key performance indicator (KPI) represents a set of criteria and measures focusing on the aspects of institutional, individual or project performance that are critical for the success of the organization or a project. A KPI criteria shows a clear framework for each project or an individual in the organization what is important and what they need to do.

KPI approach can be used to assess almost any aspect of work, project or organizational performance, financial or non-financial, depending on individual organization’s design. In a KPI measurement system, organizational vision and mission are defined through the key performance targets for each organizational or project, official expertise and capabilities required for each position in the unit are defined according to unit goals and objectives. KPI has special meaning to a project management by considering organizational strategy, structure, and systems, and it bridges the gap between an organization’s mission and vision with and its employees’ targets. This way, KPI is a facilitator in making organizational goals accomplishable and helping employees set up rational learning objectives based on their knowledge gap and literacy skills.

Performance measurement is crucial for project or organization development, thus it represents a main drive for employees’ learning activities. KPI is a flexible and popular

approach for conducting performance measurement in project management and organizations, and could be integrated it with social development. KPIs help an organization or a project to define and measure progress toward its goals. KPIs are typically tied to an organization's or project's strategy. According to Day and Bobeva (2006), in education, KPIs are used in order to meet the objectives and strategic plans of high education institution. KPI approach have also been used to set up frameworks for assessment of impact of knowledge management (KM) on organizational performance in education (Rodrigues and Pai 2005; Taylor 2001), business (Carrillo et al. 2003), and other settings. Such frameworks provide a basis for developing KM strategies that are consistent with the overall objectives of an organization or a project.

The purpose of measuring project and organizational performance is to identify success of the project, to help the organization to understand its processes and to confirm what they know or reveal what they do not know; to examine if the stakeholders needs are being met, to identify where problems exist and where improvements are necessary; to show if improvements planned actually happened (Gunasekaran & Kobu, 2007; Parker 2000). Traditional business performance measures have been mostly related to the area of management and financial measuring. Toor and Ogulana (2010) compare the performance indicators and the success factors of the project in the terms of effectiveness, efficiency and quality of work-man relation and product. In the earlier research, Munns and Bjeirmi (1996), indicate that a project can be considered successful when it is able to achieve some specific objectives, and is completed within a specified time period according to a set specification. Even earlier, Freeman and Beale (1992) state the most frequently used criteria to measure project success, including technical performance, efficiency of execution, managerial and organizational implications, personal growth and manufacturer's ability and business performance.

In addition to the conventional measures of cost, time, quality, resource management, and scope, some studies examine the qualitative factors and criteria of a project or organization. Cox et al. (2003) differentiates between quantitative and qualitative measures of success. Their qualitative performance indicators include safety, turn-over, absenteeism, and motivation. Sohail and Baldwin (2004) did a study in developing countries, and they offer 67 performance indicators for monitoring of micro-contract, including indicators related to socio-economic issues (such as enterprise development, poverty alleviation, and empowerment).

Despite the extensive research in other areas, there is no general agreement on a set of KPIs for social development projects to-date. Therefore, there is need for identifying a set of common indicators to be used by social and sustainable development stakeholders.

Regardless of these limitations, it is important to identify, clarify and frame the

perception of KPIs on different types of projects carried out in different contexts. Such Research and Development projects are useful in sharing the best practices on different projects and to expand the existing frameworks of KPIs for future projects.

Literature review shows that the performance measurement of managerial and social related projects are slowly moving away from the traditional measures (such as cost, time, and quality) towards a rather mix of quantitative and qualitative measures.

Some articles indicate on qualitative-based performance measurement systems, McAdam and McCormack (2001) who developed a conceptual model of integrated business process by means of a qualitative study of the integration of supply chain management. Measuring intangibles were highlighted by Van Hoek (1998), Bechtel and Jayaram (1997), Basu (2001). Qualitative indicators are crucial in today's information society, as the significance of innovative strategies and other nonfinancial measures (Scapens, 1998) such as teamwork and lead times on project management and organizational performance.

Ugwu, and Haupt (2007), identify KPI for infrastructure delivery and the computational methods required to achieve sustainability objectives in developing countries like South Africa. They use "weighted sum model" technique in multi-criteria decision analysis (MCDA) and the 'additive utility model' in analytical hierarchical process (AHP) for multi-criteria decision-making, to develop the model for computing the sustainability index.

Therefore, more future research is needed that may focus on establishing a comprehensive system to measure performance on large development projects in the society. Future research could focus on implementing the traditional KPIs (time, cost, and quality), into life-cycle issues (such as maintainability, energy consumption, and satisfaction of the users etc.), strategic issues (such as inter-organizational co-operation, organizational learning etc.), and socio-economic issues (such as social and human development in the area).

The mechanism of this qualitative-quantitative approach will be explored and elaborated with conceptual frameworks and implementation technologies in the Digi project.

In our current study, we will attempt to capture the perception of social development mix of different quantitative and qualitative KPIs for large-scale public sector development projects. The challenge is particularly acute on Global South where there is a need for a massive infrastructure development projects to stimulate economic and social growth that sustain harmony and co-existence.

## KPI for social development

Review of literature on sustainability research and social development indicate that even at such national, sub-regional and continental levels, most of the current initiatives focus on macro-level definitions and setting broad-based sustainability goals. Given the international focus on sustainability in the recent years, **there is an urgent need for methods and techniques** that would facilitate sustainable appraisal and decision-making at the various project level interfaces. **sustainability is a global problem which requires a global solution.** Also, **there is an underlying need for developing countries to be able to assess the sustainability of their infrastructure projects** using international metrics (economy, society and environment—the triple bottom line). This needs to be carried out while incorporating specific indicators for sustainable harmonious existence that are suitable for their development needs and priorities (Ugwu and Haupt, 2007). These authors, in their study indicate that in African society, societal indicators were very lowly ranked. **The concept of Ubuntu is important in their society as it focuses on community, community spirit such as sharing and cooperation, and general community wellbeing.** Rwelamila et al. (1999) have also stressed the significance of Ubuntu for successful project management from African socio-cultural perspectives in harmonious communal co-existence. Further on, the implication is the need for people-oriented infrastructure planning and development that is underpinned with economic, socio-cultural, and environmental considerations.

Also, there is a limited number of articles and studies that deal with performance measures and metrics in a social development. However, KPI Management has been widely practiced by numerous organizations and companies in recent years and therefore; there is a need for more representative performance measures and metrics to reflect the performance of new environments.

There are no universal KPI or tools for social development measurement. However, there are several issues here, such as *(i) how social development is defined for the certain project, and (ii) whether one is measuring the level of social development, or the consequent impact of the social development on aspects of society.*

One of the objectives of the Digi project: identifying and establishing the KPI indicators and tools for digital literacy and communications through the analysis of internet use with the focus on villages in African countries – Tanzania and Congo.

The long-term objective is identifying KPI indicators and methodology for digital literacy that will be related to projects in SubSaharan regions.

Focus of the Digi project is on African development, especially on the measurable means for uptake (KPIs), and certainly when it comes to communications and the IoT (Internet of Things), are not addressed and known. In Digi project we will define the measurement framework and a set of KPIs to measure and evaluate the performance and impact of internet use on social development.

## The relevance of the Digi project

The **vision of the project Digi** is to provide free and affordable Internet access to basic information for everyone on the globe, by creating and promoting the *Internet light*. The Internet light is “*just information, nothing else*”, or in technology terms, the focus on (compressed) text and pictures. It is well established that access to good education and good healthcare are essential to solving many societal issues of employment, good governance, and social justice. Building physical infrastructure and scaling is simply not possible due to inherent costs involved and lack of available talent. Fortunately, rapid deployment of wireless infrastructure and availability of the vast amount of digital content has democratized and flattened the world with equal access to everyone as long as access to Internet is available and affordable.

In this project, we unlock the value of the Internet, availability of the free digital content on the web, declining prices of the smart devices, crowd sourcing to create local content in local languages, and flexibility in developing the business models to bring affordable Internet to those at the bottom of the pyramid (BoP), who account for nearly 4 billion people around the globe either not having access to Internet or do not use Internet for various reasons.

However, there is nothing “free” that is sustainable, thus the main challenge is to establish the financial eco-system for free access to the *Internet Light*. Facebook has shown that their service *Free Basics* achieves commercial break-even for mobile operators already after three months of operation (Facebook, 2016), though neglecting European laws. Mobile operators typically concentrate on revenue, and, therefore, prefer to roll-out their services in markets with sufficient revenue. Given a large number of people with little income, even

a revenue of 2 US\$/month for information services is a significant challenge for the service providers. DigI suggests a hybrid business model, with free access to the *Internet Light*, and paid access to full Internet services. The business assumption is that less than 2.5% of the total network traffic will be *Internet Light* traffic, and that these costs can be calculated as corporate social responsibility (CSR) and/or easily supported by the revenue generated from the full Internet services and through commercials or through other support. Furthermore, from the market development perspective, those first users of the free internet access are the future potential consumers of the fully paid internet service data plans.

The **main objective** is to establish pilots for the *Internet Light* access in two countries in Sub-Saharan Africa. R&I work related to the pilots will prove business profitability for commercial establishment of the *Internet Light* as an independent and self-sustainable ICT and communication infrastructure for digital inclusion. Internet access is a universal issue and of major concern to many policy makers and governments. Free access to basic information presents the basis for a scalable solution of digital access for everyone in the society. Opening up the access and its deployment in everyday work and education is crucial for producing the results and fostering the competences of citizens, businesses, scholars, and knowledge workers.

Thus, digital access to basic information is the entry point for digital skills, to be addressed in the sub-objectives related to digital health, education for youth and women, as driver for digital education.

A multi-tenant deployment plan will be executed both in areas with and without existing infrastructure, typically around schools, health facilities, public meeting spots and village centres. With a regional platform, independent or connected, the users will become a part of the collaborative partnership model. When combined with a paid mechanism for access to non-basic (premium information) through vouchers or pre-paid credit (similar to the present-day voice top-up model), this business model will become commercially sustainable and foster an adaptive, user-driven ecosystem with local and global connectivity for training, education, healthcare and culture - propelling the social, digital and financial inclusion.

The **main objectives** are supported through deployments and validation in Tanzania and DRC (Congo), focussing on the following sub-objectives:

- Bridging the digital divide by providing the internet infrastructure and digital access.
- Provision of customised content for education and health purposes, thus creating the basis for jobs, as well as financial and social inclusion



- A cost-effective, open and scalable Wifi extension of the mobile network for the low-income group, enabling (mobile) operators to provide digital services
- Education, health and entrepreneurship for women and youth empowerment as representatives of the vulnerable society groups

Strategies and means to commercially launch the service through local ISPs and service providers. The **specific objectives** entail the following:

In **Tanzania** the focus is on establishing the *Internet light* to provide healthcare services through mobile applications. GSMA has an infrastructure sharing pilot operation in Tanzania, thus an extension towards Information-Internet provision will allow for cost-effective provision of health services. The focal areas are enhancements of the epidemic registration, reporting and response through mobile apps, digital literacy programs, and entrepreneurial opportunities for indication-based diagnosis. The primary health centres will act as focal points for health education, to be extended with other education.

In **DRC (Congo)** the focus will be on novel services and entrepreneurial opportunities through Internet services provided in an off-grid location. We will demonstrate the ability to establish a profitable business as mobile operator and internet provider in rural areas, reaching out to people with income below 3\$US per day by including them into the digital society. We have identified the villages of Kano and Palu as pilots for entrepreneurial services and information through the extension of the satellite-based mobile service provision with an Internet extension. Examples of the envisaged services are voucher-sales for digital services, electrical lights, as well as programs and mentoring for education and health.

In summary, this project aims to develop the overall concept (technical and business) of free access to information (*Internet Light*), develop local connections to address local challenges and requirements, work with the collaboration partners to deploy pilot networks in the field, offer life-changing services to a set of users, gain feedback, prove the efficacy of the actual solution offering, and finally hand it over to local ISPs or operators for large-scale commercial deployments.

**The DigI proposal is targeted towards the development of digital infrastructures (technological and social) for job creation and lifelong learning. This also includes youth and women acquiring job relevant skills, with an emphasis on digital skills and entrepreneurship.**

Based on the experience of 5 years of deployment of Internet in Africa, we have identified the following technical, business and and societal R&D challenges:

(i) The business model related R&D challenges are related to the “freemium” model for access, and the conversion of measurable KPI for digital access into jobs for citizens. Facebook has proven “Free Basic” as a viable business to operators, though at the costs of

neglecting data protection principles. The acceptance and take-up of Internet light business in a multi-stakeholder environment with IT-companies, mobile operators, the Internet society and Content providers has yet to be proven. As an example, access to local content reduces the capabilities of content providers to see how their content is used.

Societal research challenges are related to the consumption of information, the reach of those being left-out in a revenue-oriented market, and new job-opportunities, such as translators, app developers, mediators, or content teachers that are created.

(ii) There are challenges related to establishing KPI indicators/measuring tools and methods for digital literacy program assessment. There is no one size fits all digital skills assessment tool for measuring the success of the implemented programs. In the recent years the following organisations and academic institutions have developed a variety of concepts and methodological procedures for measuring digital skills (UNESCO, London School of Economics (LSE), Oxford Internet Institute (OII), University of Twente, etc.). Through R&D process, we will create a Framework and recommendations for developing a general measure of digital skills that can later on be deployed into developed societies as well. It will include the guidelines in the form of the methodological design protocol for research and assessment.

Our research on digital inclusion using the *Internet light* builds the knowledge for people entering the digital society and will act as an important source for providing guidelines and business models for digital inclusion and foster development of emerging economies.

There is a need not only for identifying and establishing the KPIs for identifying relevant social development criteria (such as literacies) and implementing them into the sustainable infrastructures. Regarding the KPIs, there are several issues, such as (i) how social development is defined for the certain project, and (ii) whether one is measuring the level of social development, or the consequent impact of the social development on aspects of society.. Also, there are challenges related to establishing KPIs and methods for digital literacy program assessment. There is no one size fits all digital skills assessment tool for measuring the success of the implemented programs. In the recent years the following organisations and academic institutions have developed a variety of concepts and methodological procedures for measuring digital skills (UNESCO, London School of Economics (LSE), Oxford Internet Institute (OII), University of Twente, etc.). In our project we will create a framework and recommendations for developing KPIs of digital skills that can later on be deployed into developed societies as well. It will include guidelines in form of the methodological design protocol for research and assessment. The KPIs achieved from the DigI pilots include to what extent digital inclusion fosters the uptake of digital

society services, where digital inclusion is most successful and which content is most suitable to address the issue of digital inclusion.

Accordingly, KPI is used in this project for integrating organizational, social, and individual perspective for social development.

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