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Assoc. Prof. Dr. Reis Mulita
Editor-in-Chief

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WELCOME MESSAGE FROM THE EDITOR-IN-CHIEF

On behalf of the Editorial Team, I would like to extend a very warm welcome to the authors, reviewers and readers of CIT Review Journal. We all wish you a successful and inspired year in your respective professional and social communities.

It is with great pleasure to present the November Issue 2019 and share the work of remarkable authors. I would like to express my gratitude and appreciation to those who have supported this upcoming issue and to those who are going to contribute with their valuable work in the future.

CRJ is committed to publish innovative scientific research, review articles, and editorials that significantly advance the field of Economics, Business, Information Technology, Engineering and Humanities. Our interest in promoting high quality research is clearly reflected in having an established peer-reviewing process and a high profile expert group of Associate Editors and Editorial Board Members.

I close this message by inviting everyone to submit their research to CRJ. We are now welcoming submissions for May Issue 2020 of the journal and see very bright prospects that CRJ will serve the science and an international community.

Sincerely,

Assoc. Prof. Dr. Reis Mulita, Editor-in-Chief
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Public services and markets – an unappetizing cocktail

John Tizard, B.Sc (Econ)

Over the last four decades governments in the UK and some other countries have sought to apply markets to public services. Driven by ideology and public management concepts such as New Public Management these governments have privatised services such as railways, water, energy and telecommunications; and they have contracted public services to businesses and to a lesser extent to charities and community groups. The latter is labelled outsourcing.

Privatisation usually means selling or transferring assets to the private sector and allowing the new private enterprises to operate as private businesses with the only control that government retains being through regulation or in some cases control of demand and payments. Outsourcing means that accountability and in theory ultimate control remains with the public sector, which continues to set standards and access criteria for service users. Staff transfer to the outsourcing body which receives revenue payments from the public sector for service outcomes. Outsourcing companies are held to account through contracts with the public sector.

The Private Finance Initiative (PFI) has been used up until recently to use private capital to build public infrastructure.

Whilst there is a difference between privatisation and outsourcing the underlying economic and political arguments made by their proponents are similar. These are based on the belief that markets will always optimise outcomes and costs; and that competition will foster innovation, productivity improvement, improve outputs and outcomes and lower costs.

The proponents of both outsourcing and privatisation are often though always driven by an ideological desire to reduce the size and reach of the state. This was not the case with the New Labour Government between 1997 and 2010 in the UK but it certainly was central to the Thatcher and Cameron Conservative governments' programmes

There were other political motivations for these policies including a desire to weaken the power of trade unions, which contemporarily tend to be stronger in the public sector than they do in the business sector. Other arguments made to support these policies have been that by outsourcing or privatising businesses can access invest capital into the services and provide additional capacity. The capital argument is somewhat flawed given that government can almost always borrow more cheaply than any business. A further argument often deployed is that these are service delivery models which will be able to address under-performance than can the public sector. In reality both sectors can do this with the right leadership, attitudes and access to money.

The current value of UK public service outsourcing is estimated to be between £120 bn and £150bn per annum. There is no confirmable figure to use for this other than estimates. Remarkably there is no central or consistent evidence on the value or the impact of the outsourcing policy.

Despite a lack of any comprehensive evidence-based analysis of the efficacy of outsourcing, the policy and practice gained momentum. It was extended to an ever-wider range of services.

There is much anecdotal and contract specific evidence to suggest that

- contractors are ubiquitous: in many instances they have become the public sector
- private sector involvement is greatest in IT, construction, waste management, building maintenance, social care and defence but also includes prison, probation, ambulances, diabetes care, blood testing, trimming shrubs in Royal Parks and applications for UK visas
- many schools and hospitals are locked into PFI deals, where catering and cleaning and IT have to be supplied by nominated companies
- servicing PFI deals costs £10bn a year, with a further £95bn yet to be paid across the UK public sector – these are usually 25 year contracts
- deficiencies and deformations around outsourcing are now clearer than ever
- some contractors are in commercial trouble and there have been some spectacular failures such as with Carillion Plc in 2018 (1, 2 and 3)

- contracting can be inefficient and constraining
- PFI is now recognised as the costliest form of contracting, and not just because of exorbitant finance charges but also the rigidity and expense of its long run services element.
- contract failures include NHS services and the 2012 Olympics, probation, housing for asylum seekers, court translation services and, notoriously, assessment for social benefits and employment
- overburden some procurement processes excluding small companies, new entrants and the social sector
- cost driven procurement and contracting leading to poor quality and supplier failure
- the public sector is now recognising the inflexibility of contracts
- the extra-contractual and client costs of outsourcing reduce its value for money
- the public sector too often lacks client capacity and capability
- paying contracted staff less than a living wage – in order to win a competitive bid – has dire social consequences and costs for government welfare services and local economies
- outsourcing has weakened employees' bargaining rights
- outsourcing has further fragmented services when serious complex issues require joined up responses.
- accountability is lacking: often taxpayers and service users are unaware of who is providing their services; where to complain; and whom to hold to account
- democratic oversight and control have been diminished (4)

The principles of markets do not actually apply when services are outsourced. The individual service user has no economic relationship with the supplier. Even when the public sector openly procures suppliers there is often a limited response from bidders with the result that UK National Audit Office has identified a serious risk to the government sector as it relies on a four major contractors – companies that are almost 'too big to be allowed to fail'. (6) Risk remains with the public sector as the Carilion collapses demonstrated.

When services such as utilities are privatised there may be an economic relation between consumers of the services and the privatised company. However, these companies are nearly always monopolies. Government has to be a very smart regulator and this in turn has cost implications for government and the privatised companies. The evidence of the success of such regulation in the UK shows very mixed results.

There are political pressures to bring outsourced services back into public management – with some local authorities of all political persuasions in the UK ending outsourcing - and for some privatised services such as rail, water and energy supply to be renationalised. (7)

There is an urgent need for systematic evidence-based research and review to consider the efficacy and impact of the application of market approaches to public services especially outsourcing. Such a review should have an international dimension and should consider what lessons other jurisdictions could draw from the UK experience before embarking on a course of repeating the same errors.

Public services have a wider public benefit than consumer services. There is a collective benefit from having a healthy society, policing, an educated society and good public infrastructure. The value of such services is much more than a market value. They are core to the democratic collective social 'contract' between citizens and between citizens and the state.

Markets have important roles to play in contemporary economies and societies. They require effective regulation and democratic oversight but their contribution to public services is very limited and there is a real risk that lazy public management and ideological politicians by seeking to impose markets into public services will create very unappetising cocktails.

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Model Driven Architecture: what is and where is it going

Prof. Dr. Petraq Papajorgji

Model-driven development (MDD) represents the approach in software engineering that pushes for the use of graphical models and pre-built application components so that users can visually construct complex applications in a short time. Although currently not being a standard in software development, Interest for this approach continues to increase as individuals experience the ease and speed with which technical and business users orchestrate and deploy business applications. The right model-driven development platform provides significant productivity advantages over traditional development methods and enables project delivery by smaller teams [2].

At the heart of this approach stand two important concepts: abstraction and automation. Abstraction is used to build models using graphic notations such as the Unified Modeling Language (UML). These models represent a high level of abstraction as they represent the concepts of the business domain and their connections to be used for the solution of the problem.

These models are transformed to working software applications using automated transformations to execute the model or interpret it. Several approaches following the MDD principles have resulted to nice and very good tools that help enormously during the process of design and implementation of the software.

Currently, there are no strict standards defining what the MDD should follow. Many companies provide their own version of their MDD tool but reading someone's model using another tool, is really a challenge.

The Object Management Group (OMG) provided the principles of Model Driven Architecture (MDA), its view of the Model Driven Development approach. Model Driven Architecture supports evolving standards in applications as diverse as enterprise resource planning, air traffic control and human genome research; standards that are tailored to the needs of these diverse organizations, yet need to survive changes in technology and the proliferation of different kinds of middleware [1]. MDA is built using OMG standards, including: Unified Modeling Language™ (UML®), the ubiquitous modeling notation used and supported by every major company in the software industry; XML Metadata Interchange™ (XMI®), the standard for storing and exchanging models using XML™; and CORBA®, the most popular open middleware standard [1].

In 2014, OMG adopted the revised "MDA Guide Revision 2.0" as a more detailed definition of the architecture. The primary feature of MDA is defining the structure, semantics, and notations of models using industry standards. MDA models can then be used for the production of documentation, acquisition specifications, system specifications, technology artifacts (e.g. "source code") and executable systems [1]

The MDA Guide, Revision 2.0, states that "The Meta Object Facility (MOF) provides a key foundation for OMG's Model-Driven Architecture, which unifies every step of development and integration from business modeling, through architectural and application modeling, to development, deployment, maintenance, and evolution. MOF uses 'meta-models' specified in UML® to describe modeling languages as inter-related objects [1].

Another important basis for the MDA approach is The Unified Modeling Language (UML). As for each solution to a problem are two levels of models: Platform-Independent Model (PIM), and one or more corresponding Platform-Specific Models (PSM). Usually, these models will be defined in UML, making OMG's standard modeling language a foundation of the MDA. (Use of UML, although common, is not a requirement; MOF is the mandatory modeling foundation for MDA) [6].

UML 2.0 is provided with the Object Constraint Language (OCL) in order to make models more precise [8-9]. The use of OCL facilitates enormously software development as makes modeling more abstract and safer.

Although UML is well established as the modeling language, its use in all areas of activity would be difficult as each area or domain has its own particularities. Thus UML is designed to have profiles; a profile is a set of notations for a particular field of activity. Profiles are official OMG specifications [1]. The current suite of profiles includes:

- The UML Profile for CORBA™, which defines the mapping from a PIM to a CORBA-specific PSM.
- The UML Profile for CCM™ (the CORBA Component Model), OMG's contribution to component-based programming. Enterprise JavaBeans (EJBs) are the Java mapping of CCM; an initial take on a profile for EJB appears as an appendix of the UML 2.0 Superstructure specification, linked above.
- The UML Profile for EDOC™ is used to build PIMs of enterprise applications. It defines representations for entities, events, process, relationships, patterns, and an Enterprise Collaboration Architecture. As a PIM profile, it needs mappings to platform-specific profiles. A mapping to Web Services is underway now; additional mappings will follow.
- The UML Profile for EAI™ defines a profile for loosely-coupled systems - that is, those that communicate using either asynchronous or messaging-based methods. These modes are typically used in Enterprise Application Integration, but are used elsewhere as well.
- The UML Profile for Quality of Service (QoS) and Fault Tolerance™ defines frameworks for Real-time and high-assurance environments.
- The UML Profile for Schedulability, Performance, and Time™ supports precise modeling of predictable - that is, real-time - systems, precisely enough to enable quantitative analysis of their schedulability, performance, and timeliness characteristics.
- The UML Testing Profile™ (UTP™) provides important support for automated testing in MDA-based development environments.

Another important part of the MDA definitions are XML METADATA INTERCHANGE (XMI). XMI defines an XML-based interchange format for UML and other MOF-based meta-models and models (since a meta-model is just a special case of a model), by standardizing XML document formats, DTDs, and schemas. In so doing, it also defines a mapping from UML to XML. Because one of OMG's XMI updates reflects the incorporation of XML Schemas, while MOF point updates were made periodically through OMG's established maintenance process, numbering of XMI and MOF versions diverged [1].

A number of companies in the software industry are using the MDA approach such as U.S. Government Intelligence (https://www.omg.org/mda/mda_files/popkinconquest.htm), Deutsche Bank Bauspar AG (https://www.omg.org/mda/mda_files/SuccessStory_DBB_4pages.pdf), Lockheed Martin (https://www.omg.org/mda/mda_files/LockheedMartin.pdf) etc.

Although the number of companies using the MDA approach is increasing, it is hard to say that the MDA approach has been accepted by the mainstream audience in the software industry. A number of scientific studies have been undertaken to understand the hesitation of the software industry vis-à-vis the MDA approach. Kos & Mernik [4-5] have pointed out that most of the MDA tools come without a debugging or refactoring capabilities. A tool that lacks debugging and refactoring abilities is hard to be used and certainly, will not be well accepted by the software industry. Inadequate support by Integrated Development Environments, and poor interoperability with mainstream languages, can be contributing factors for the resistances of MDDE within the software industry [6].

It is a fact that the MDA approach provides a lot of advantages for the software development. Then why this approach is not largely used? The answer to this question may stand in the universities hands as universities should provide more adequate courses to introduce the MDA to students. Another obstacle of the use of MDA is the inertia in companies that hesitate to embrace new technologies. It is known that the use of new technologies comes with a price and this often pushes companies to postpone the decision of accepting new technologies.

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Geometric progression as a solution to the extremum problem

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Abstract

The article is devoted to formulation and solving a problem of finding extremums of multivariable special functions. We will demonstrate that the solution of the problem is geometric progression.

Keywords: *multivariable function, extremum, geometric progression.*

1. Formulation of the problem

For any two positive integers a and b, which satisfy inequality a<b and for any natural number n we have to find numbers $x_1, x_2, \ldots, x_n$ satisfying inequalities:

$$a < x_1 < x_2 < \ldots < x_n < b$$

and such numbers that function of *n* variables

$$w = \left(1+\frac{x_1}{a}\right)\left(1+\frac{x_2}{x_1}\right)\cdots\left(1+\frac{b}{x_n}\right) \qquad (1)$$

takes the minimum value.

2. The solution.

Let us introduce the following notation:

$a=x_o$, $b=x_{n+1}$,

and then formula (1) will have the following view:

$$w = \left(1+\frac{x_1}{x_0}\right)\left(1+\frac{x_2}{x_1}\right)\cdots\left(1+\frac{x_{n+1}}{x_n}\right) = \prod_{i=0}^{i=n}\left(1+\frac{x_{i+1}}{x_i}\right),$$

In this formula, we denote a product of factors with the equal structure by the symbol:

$$\prod_{i=0}^{i=n}\left(1+\frac{x_{i+1}}{x_i}\right)$$

Now we will find the critical points [1] of function *w* so that to find the minimum of the function. For this purpose, we set to zero the first partial differentiations of function *w* when

k=0,1,... ,n+1:

$$\frac{\partial w}{\partial x_k} = \frac{\partial}{\partial x_k}\left[\left(1+\frac{x_k}{x_{k-1}}\right)\left(1+\frac{x_{k+1}}{x_k}\right)\right]\prod_{i=0,\ i\neq k-1,\ i\neq k}^{i=n}\left(1+\frac{x_{i+1}}{x_i}\right) = 0 \leftrightarrow$$

$$\leftrightarrow \frac{\partial}{\partial x_k}\left[\left(1+\frac{x_k}{x_{k-1}}\right)\left(1+\frac{x_{k+1}}{x_k}\right)\right] = \frac{1}{x_{k-1}}\left(1+\frac{x_{k+1}}{x_k}\right)+\left(1+\frac{x_k}{x_{k-1}}\right)\left(-\frac{x_{k+1}}{x_k^2}\right) = 0 \leftrightarrow$$

$$\leftrightarrow \frac{1}{x_{k-1}}\left(1+\frac{x_{k+1}}{x_k}\right) = \left(1+\frac{x_k}{x_{k-1}}\right)\frac{x_{k+1}}{x_k^2} \leftrightarrow$$

$$\leftrightarrow \frac{1}{x_{k-1}} + \frac{x_{k+1}}{x_{k-1}x_k} = \frac{x_{k+1}}{x_k^2} + \frac{x_{k+1}}{x_{k-1}x_k} \leftrightarrow$$

$$\leftrightarrow \frac{1}{x_{k-1}} = \frac{x_{k+1}}{x_k^2} \leftrightarrow$$

$$\leftrightarrow x_k^2 = x_{k-1}\, x_{k+1} \qquad (2)$$

Formula (2) is called a characteristic property of geometric progression [2]. It follows from the formula (2) that the numbers

$x_o, x_1, x_2, \ldots, x_n, x_{n+1}$ (3)

generate geometric progression if they are put in that order.

Let us denote the ratio of geometric progression (3) by the letter *q*: the formula of general term of geometric progression is the following

$$x_k = x_o q^k,\quad k=0,1,2,\ldots,n+1.$$

To receive the formula of the ratio of geometric progression, note that

b=aq^(n+1),

therefore

$$q = \left(\frac{b}{a}\right)^{\frac{1}{n+1}}$$

So we have proved that geometric progression (3) is the critical point of function (1). Now we will prove that the minimum of function w is really implemented in geometric progression (3). For this purpose suppose there are numbers

$y_o, y_1, y_2, \ldots, y_n, y_{n+1}$, (4)

- which not generate geometric progression if

they are put in that order
- and they satisfying inequalities
$y_o<y_1<y_2< \ldots < y_n< y_{n+1}$,

- and satisfying equalities
$a=y_o$, $b=y_{n+1}$

- and this numbers also implement the minimum of function w:

$$w = \left(1 + \frac{y_1}{y_0}\right)\left(1 + \frac{y_2}{y_1}\right)\cdots\left(1 + \frac{y_{n+1}}{y_n}\right) = min$$

Since the numbers under consideration (4) do not generate geometric progression, therefore there is such a number i which makes the following formula true:

$$\frac{y_i}{y_{i-1}} \neq \frac{y_{i+1}}{y_i}$$

Let us prove that if the both numbers

$$\frac{y_i}{y_{i-1}} \quad and \quad \frac{y_{i+1}}{y_i}$$

were replaced with the following

$$\sqrt{\frac{y_i}{y_{i-1}} \bullet \frac{y_{i+1}}{y_i}} = \sqrt{\frac{y_{i+1}}{y_{i-1}}},$$

then the value of function w would decrease. Actually, it follows from inequality about arithmetic middling and geometric middling [3]: the following formula is true

$$\left(1 + \sqrt{\frac{y_{i+1}}{y_{i-1}}}\right)^2 = 1 + 2\cdot\sqrt{\frac{y_{i+1}}{y_{i-1}}} + \frac{y_{i+1}}{y_{i-1}} \leq$$
$$\leq 1 + \frac{y_i}{y_{i-1}} + \frac{y_{i+1}}{y_i} + \frac{y_i}{y_{i-1}} \bullet \frac{y_{i+1}}{y_i} =$$
$$= \left(1 + \frac{y_i}{y_{i-1}}\right)\left(1 + \frac{y_{i+1}}{y_i}\right),$$

only when

$$\frac{y_i}{y_{i-1}} = \frac{y_{i+1}}{y_i}$$

This conflict shows that it does not exist the set of numbers
$y_o, y_1, y_2, \ldots, y_n, y_{n+1}$,
different from geometric progression
$x_o, x_1, x_2, \ldots, x_n, x_{n+1}$
which implements the minimum of function w.
The solution to the extremum problem is completed.

3. The answer.

The numbers
a,x1,x2, …, xn, b
generate geometric progression if they are put in that order.
The ratio of geometric progression can be find by the formula

$$q = \left(\frac{b}{a}\right)^{\frac{1}{n+1}}$$

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Performance Study of an Improved Version of Li-Fi and Wi-Fi Networks

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Habib Hamam, Member, IEEE

Abstract

With the increasing demand and need for telecommunication technologies, wireless communication has become a heavily useful and widely popular utility. Capacity, availability, efficiency, and security are issues generally linked to wireless communications, more specifically Wi-Fi systems. Yet we can exploit billions of light bulbs, which we use anywhere and everywhere on a daily basis and of which the infrastructure is already part of our ordinary life. This study focuses on Li-Fi theory and practices. The purpose of this paper is to demonstrate how these light sources can be used as a transmitter or, to be more precise, as an access point. This idea was proposed for the first time by Prof. Harald Hass in Global TED (2011). During the last two years, Li-Fi technology has been enhanced and improved by many professional and international studies. As new wireless communication technology develops to use LED, the efficiency, availability, security, and safety of light fidelity transform today's telecommunication into tomorrow's visible light communication.

Keywords: *BER, FDMA, Li-Fi, NOMA, OOK modulation, Visible Light Communications (VLC), and Wi-Fi.*

I. Introduction

As technology consumes more and more of our activities, numerous researchers and engineers work to develop old technologies especially in the field of telecommunication. Nowadays, Light Fidelity has become the main and the most popular topic when it comes to the newest telecom technologies. Li-Fi is a new application of VLC, with advanced techniques used to guarantee the highest speed and optimum coverage in several fields. Internet, smart cities, vehicles, hospitals, transportation and many other domains will be linked to this technology in the future. With this study we aim to present, via illustrated simulation results, an improved version of Li-Fi and increase its performance. The remainder of this paper is structured as follows: in the next section, an overview of Li-Fi and VLC is presented; a formulation and some equations used in Li-Fi technology are provided in Section Three; Section Four introduces a series of simulation results and discussions; Section Five is dedicated to the analysis of said results; and finally, we conclude this paper (in Section Six) with a general conclusion and an overview of our future works.

II. Literature Review

In 2011, professor Harald Hass from the University of Edinburgh, UK, suggested an idea called "Data through illumination". He used fiber optics to send data through Light Emitting Diodes (LEDs) light bulbs. Over the past three years, some research papers have been published on this proposed technique of Li-Fi, as shown in [1-7].
The increasing number of multi-media mobile devices and the extensive use of data-demanding mobile applications mean that current mobile networks have reached their maximum capacity due to the limited availability of the Radio Frequency (RF) spectrum [1]. Light Fidelity (Li-Fi) is the term some have used to label this fast and cheap wireless-communication system, which is the optical version of Wireless Fidelity (Wi-Fi). Haas first used the term in this context in his TED Global talk on Visible Light Communication (VLC) [2]. Figure 1 illustrates the history of Li-Fi.

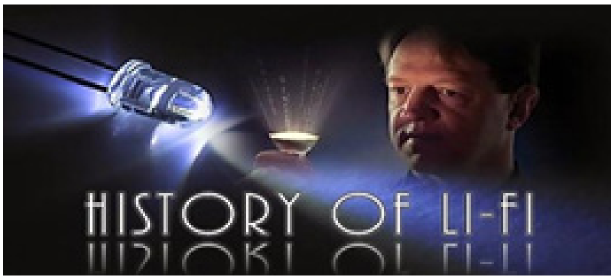


Fig. 1. History of Li-Fi.

New generation of electronics components as high emitting diodes are considered the core of Li-Wi technology. Put simply, when the LED is on, you transmit a digital 1, when it is off, you transmit a digital 0. Accordingly, they can be switched on and off very quickly which gives nice opportunities for transmitted data. By changing the rate at which the LEDs flicker (on and off), we can encode data in the light, resulting in different strings of 1s and 0s. The LED intensity is modulated so rapidly that the human eye cannot notice it, so the output appears uninterrupted. In October 2011, a number of companies and industry groups founded the Li-Fi consortium to promote high-speed optical wireless systems and to overcome the limited amount of radio-based wireless spectrum available by exploiting a completely different part of the electromagnetic spectrum as demonstrated in Fig 2. The consortium believes that it is theoretically possible to achieve more than 10 Gbps, allowing a high -definition film to be downloaded in 30 seconds [2].

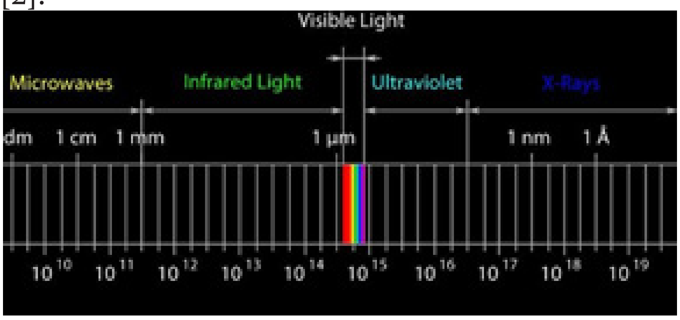


Fig. 2. Part of the electromagnetic spectrum indicated a visible light.

VLC is a short-range communication technology for which the visible spectrum is modulated to transmit data along the propagation distance of LEDs. VLC technology has been around for a while. Its story takes off in 1880, when Alexander Graham Bell invented the photo-phone. This instrument was used to transmit speech by modulating sunlight. Light amplification by stimulated emission of radiation (LASER) and LEDs were invented in the 1960s and marked the first step towards optical communication. Later, in 2003, some work began on VLC technology. Natagawa Laboratory, in Keio University, in Japan, used LEDs to transmit data. In 2006, the center for Information Communication Technology Research (CICTR) in Penn State, USA, proposed the first combination of Power Line Communications (PLC) and white LED to provide broadband access for indoor applications. Since then, there have been numerous research activities on VLC [3]. The dual functionality provided by VLC lighting and data communication from the same high-brightness LEDs has created a whole range of interesting applications, including, but not limited to, home networking, high-speed data communication via lighting infrastructures in offices, car-to-car communication, in-trains data communication, and traffic lights management. Recent research in VLC has successfully demonstrated data transmission at over 500 Mbps over short links in office and home environments. Further research and developments will open up new possibilities to partly resolve some of the issues associated with the present-day infra-red and radio/microwave communication systems and lighting technologies [4].

VLC uses LEDs to transmit data wirelessly by using Intensity Modulation (IM). At the receiver, the signal is detected by a photodiode (PD) and by using the principle of Direct Detection (DD). VLC has been conceived as a point-to-point data communication technique; essentially, it acts as a cable replacement. This has led to early VLC standardization activities. This standard, however, is currently being revised to include Li-Fi. Li-Fi, in contrast, describes a complete wire-less networking system. This includes bi-directional multiuser communication, i.e. point-to-multipoint and multipoint-to-point communication. Li-Fi also involves multiple access points that form a wireless network of very small optical attocells with seamless handover. This means that Li-Fi enables full user mobility, and therefore forms a new layer within the existing heterogeneous wireless networks [5].

In the paper published by M. S ISLIM et al., as cited in [6], VLC is proven to be a promising solution to the increasing demands for wireless connectivity. Gallium nitride micro-sized light emitting diodes (micro-LEDs) are strong candidates for VLC, due to their high bandwidths. Segmented violet micro-LEDs are reported in this work with electrical-to-optical bandwidths up to 655 MHz An orthogonal frequency division multiplexing-based VLC system with adaptive bit and energy loading is demonstrated, and a data transmission rate of 11.95 GB/s is achieved with a violet micro-LED, when the nonlinear distortion of the micro-LED is the dominant noise source of the VLC system. A record 7.91 GB/s data transmission rate is reported below the forward error correction threshold using a single pixel of the segmented array when all the noise sources of the VLC system are present.

Free Space Optical (FSO) communication is a line-of-sight technology that uses lasers to provide optical bandwidth connections. In other words, FSO is an optical communication technique that propagates light in free space (air, outer space, vacuum, or something similar) to wirelessly transmit data for telecommunication and computer networking. There are three FSO components associated to three stages: a transmitter to send laser or light radiation through the atmosphere, all while obeying Beer-Lambert's law, a free space transmission channel where turbulent eddies (cloud, rain, smoke, gases, temperature variations, fog and aerosol) exist and a receiver to process the received signal. Typical links are between 300 m and 5 km, although longer distances can be deployed in particular cases, such as 8 – 11 km [7].

III. Formulation

In this section, mathematical formulations of digital modulation techniques generally used for LiFi are described briefly, and some channel modeling formulas are discussed.

3.1 Modulation techniques

Power Distribution

The average transmitted optical power in terms of IM signal x(t) can be described as [4]:

$$Pt = Po(1+x(t)) = Po(1 + m\cos wm\ t) \qquad (1)$$

where Po is the DC power; m is the modulation index
m = (ip/Ib– ith); ip is the peak laser diode current, and ith is the threshold current. Concerning Free Space Optical (FSO) links, when the receiver has an aperture diameter of D, the received optical power is defined as:

$$Pr = ((\pi D^2)/8)\ I(0,L) \qquad (2)$$

Conventional modulation techniques applied in RF channels cannot be freely executed in optical channels. Nonetheless, OOK remains the most reported modulation technique for IM/DD in optical communication [4]. The block diagram of an OOK system is illustrated in Fig. 3 below:

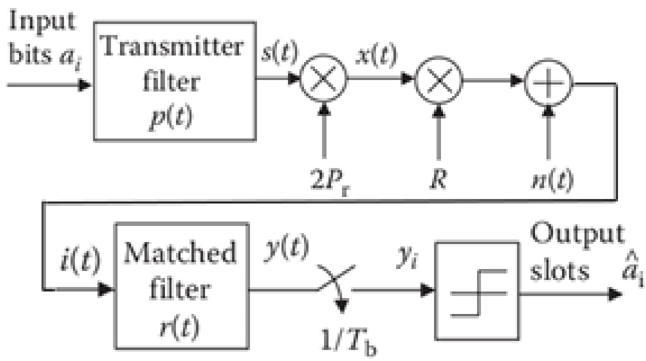


Fig. 3. Block diagram of an OOK system.

The envelop for OOK-NRZ can be described as:

$$P(t) = f(x)=\{2Pr, \text{for } t \in [0,T)\ x, \text{eleswhere} \qquad (3)$$

B. Bit Error Rate

The probability of an error is given as:

$$Pe = Q(\frac{ith}{\sigma}) \qquad (4)$$

where Q( ) is Marcum's Q-function, which is the area under the Gaussian curve, given by:

$$Q(x) = \frac{1}{\sqrt{2\pi}} \int_{x}^{\infty} e^{-\frac{\sigma^2}{2}} d\alpha \quad (5)$$

3.2 Channel modeling

A. LOS channel model

The optical wireless channel has been shown to be a linear, time-invariant, memory-less system with an impulse response of a finite duration [4]. In short-distance LOS links, a multipath dispersion is seldom a problem and LOS links channels are often modeled as a linear attenuation and delay. The optical channel gain in indoor scenarios consists of the line of sight (LoS) component and the multipath reflections. The LoS channel gain is expressed as [8]:

$$Hlos(0) = \{\frac{A(m1+1)}{2\pi d^2}(\varphi)Ts(\gamma)g(\gamma)\cos\cos\gamma \;,\; 0 \le \gamma \le \gamma c \;\; 0,\; eleswhere \quad (6)$$

B. Shannon Capacity

Shannon capacity is used for calculating the achievable data rate between user μ and Li-Fi AP α. Since only half of the bandwidth can be used for data transmission in a DCO-OFDM system, the achievable data rate is expressed as [1]:

$$R(n)\mu = B\log\log 2\,(1+SINR(n)\mu) \quad (7)$$

In multiusers access case, the Shannon limit on spectral efficiency for each user, denoted by τk , can be found as [5]:

$$\tau k = \{\log\log 2(1 + \frac{(hkak)^2}{\sum_{i=k+1}^{k}(hkai)^2 + \frac{1}{\rho}} \;,\; k \ne k \;\; \log\log 2\;(1 + \rho(hkak)^2),\; k = k \quad (8)$$

IV. SIMULATION RESULTS AND DISCUSSION

4.1 Bit Error Ratio

Bit Error Ratio (BER) refers to the number of bit errors divided by the total number of transferred bits. Widely used modulation techniques in Li-Fi technology include on-off keying (OOK), Pulse Position Modulation (PPM), and Pulse Amplitude Modulation (PAM) as stated in [5]. When compared to OOK, PPM is more power-efficient, but has a lower spectral efficiency. There are other digital modulation techniques that can be used for any visible light communication system.
For the sake of this example, the modulation scheme used is OOK-NRZ, which is the common and easiest modulation to be demodulated. In this analysis, path loss factor and no multipath dispersion are not taken into consideration. The noise is assumed as a white Gaussian, an assumption we have made to focus on the probability curve of OOK in order to compare simulations and theoretical results. However, the major effect on the BER curve is a block diagram, as presented in Fig. 3.

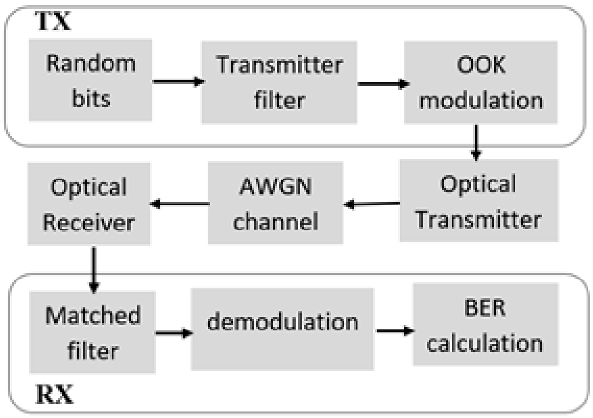


Fig. 4. Block diagram for BER calculation.

Table 1
Parameters in OOK modulation.

Parameters	Value
Charge of Electron	q=1.6e-19
Background Noise Current + interference	Ib=202e-6
Noise Spectral Density	N0=2*q*Ib
Bit rate	Rb=1e6
Bit duration	Tb=1/Rb
Number of bits	sig_length=1e5
Samples per symbols	nsamp=10

Table 1 introduces the main parameters used in this simulation, which are standard values for most VLC systems.

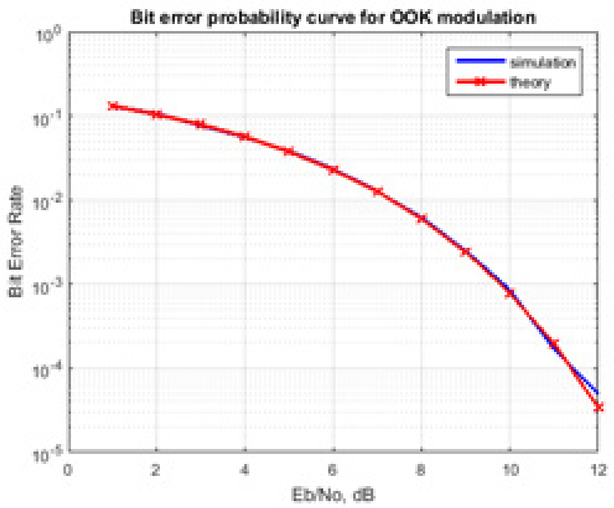


Fig. 5. Bit error curve for OKK modulation.

To illustrate the impact of our proposed approach, we plotted the response of BER, as explored in Fig. 5. For Additive White Gaussian Noise (AWGN), ambient light with double sided power spectral density No/2, zero mean and variant of σ2.An analysis of the BER as a function of SNR (the ratio Eb/No is usually referred to as the SNR per bit) with theoretical and simulation results is shown in Fig.5. All parameters used for this simulation are mentioned in Table 1. In this case, we used a filter for the transmitted signal and a matched filter on the receiver's end. Due to these principles, a transmitted signal, which was generated randomly, is matched to the receiver. Moreover, a rectangular pulse shaping is added to the signal in both sides in order to make a convolution for the received pulses. At the end, a digital symbol '1' is assumed to have been received if the received signal is above the threshold level, and '0' if otherwise.

4.2 Multiuser Access in Li-Fi

Being a wireless broadband technology, Li-Fi provides multiple users with simultaneous network access. In this part, we have done four simulations on this topic using four techniques: FDMA, TDMA, NOMA, and SDMA:

A. Multiuser Access in a LiFi Attocell:

The basic principle of downlink NOMA is shown in Fig. 6, where the LED broadcasts a super positioned version of the messages intended for a group of users of interest. Based on power domain multiplexing, the super positioned signal is given as a summation of signals, with each multiplied by a weighing factor [5].

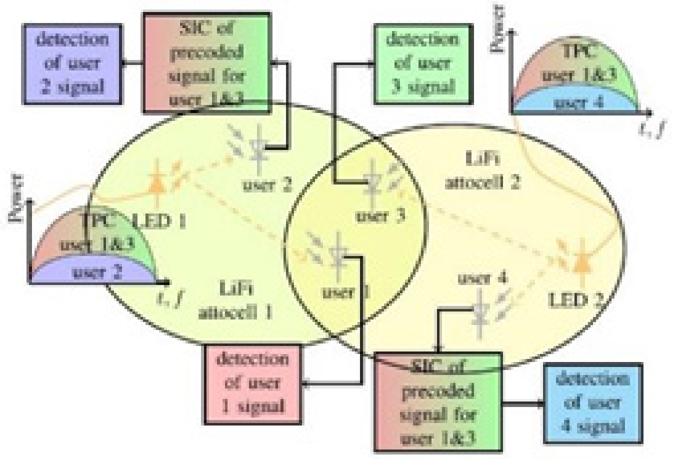


Fig. 6. Illustration of NOMA principle (two users example).

Figure 6 shows the Successive Interference Cancellations (SIC) used at the receiver's end to cancel the inter-user interference.

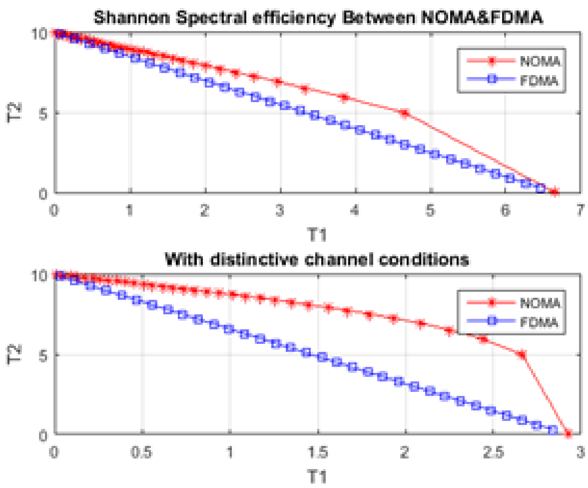


Fig 7. Shannon spectral effciency for NOMA & FDMA,

a) Same channel conditions; b) Distinctive channel conditions.

Figure 7 shows a comparison between FDMA and NOMA in a Li-Fi attocell (two users example). Based on Shannon spectral efficiency and the results presented in Fig. 7, the performance of NOMA is much better when compared to the sum of throughput inside a Li-Fi cell.

The difference between the published results in [5] and our obtained results is that the former simulation and evaluation was between TDMA and NOMA, whereas ours concerned FDMA. However, both present the same results as TDMA

and FDMA use appropriate user-scheduling techniques to ensure that fairness in the allocation of resources (subcarriers) is maintained.
The advantage of the proposed results in this paper is the production of a maximum Li-Fi throughput even if there are multiple users, and this can be done using NOMA rather than FDMA or TDMA techniques.

B. Multiuser Access in LiFi Attocell Networks:
In this part, the application of TDMA, NOMA, and SDMA in a LiFi network will be discussed due to the overlapping coverage area of adjacent LiFi Access Points (Aps) as introduced in Fig. 8. According to [5], directly using NOMA in a LiFi network cannot efficiently mitigate interference transmitted from adjacent attocells. One promising and effective solution to enhance the performance of cell edge users in a LiFi network is the combination of NOMA and SDMA.

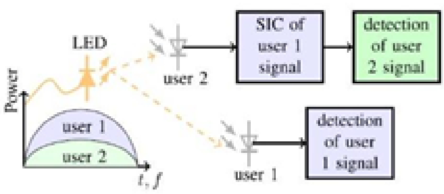


Fig. 8. Illustration of the combined use of NOMA and SDMA in a two-cell Li-Fi network.

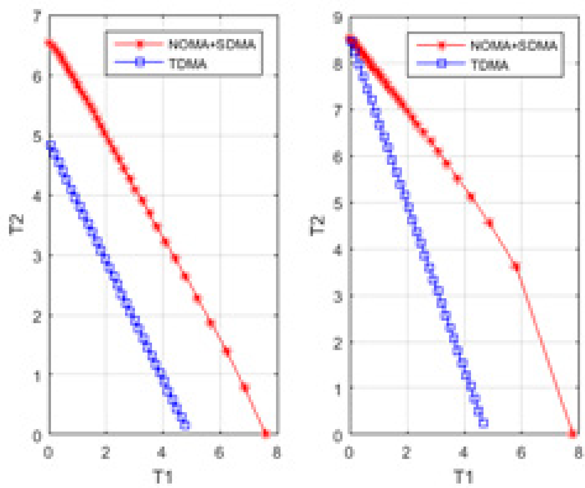
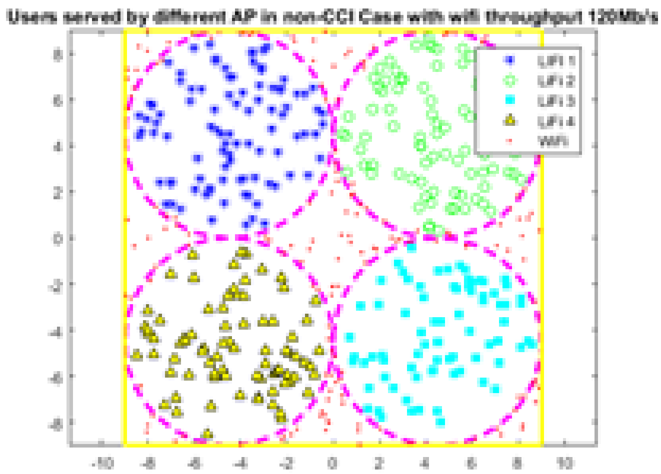


Fig. 9. Shannon spectral efficiency comparison between hybrid NOMA/SDMA and TDMA in a LiFi network. A) user 1 and user 2 are both near the cell edge; B) user 1 is near the cell edge while user 2 is near the cell center.

The results obtained in Fig. 9a and 9b demonstrate a comparison between TDMA and hybrid SDMA/NOMA in a Li-Fi network with two users, of which one is in the intersection area. As a result, we found that, based on Shannon spectral efficiency, NOMA/SDMA can enhance and increase total Li-Fi throughput in an interference area better than TDMA or FDMA.

4.3 Hybrid Li-Fi & Wi-Fi system

Due to the increasing demand for wireless data communication, and the decreasing availability of the spectrum, we expect, in the coming four years, a rise in the use of this hybrid system that may launch the start of the Li-Fi future.



1- Hybrid Li-Fi and Wi-Fi System with One Li-Fi Cell

This simulation focuses on SNR inside a Li-Fi cell as well as its distribution. It is important to note that the size of blue circles changes with SNR inside a Li-Fi cell.

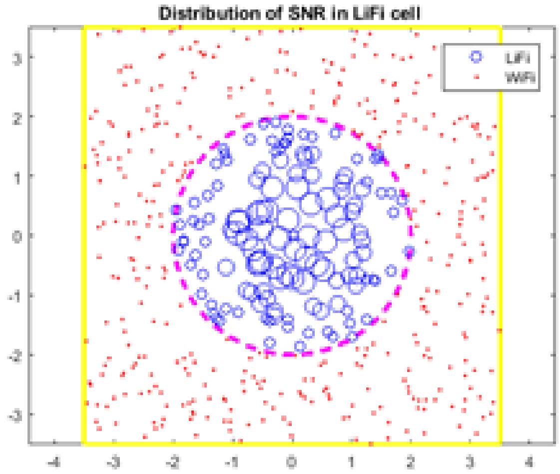


Fig. 10. SNR distribtion in a Li-Fi cell.

Figure 10 shows the distribution of SNR inside a Li-Fi cell, a concept that will be discussed in greater details in the coming section. Following the Shannon capacity law concerning the effect of the distance between each user and the Li-Fi AP, we can detect that in small r, near the center, high SNR is obtained. As r is increased, the SNR decreases until it reaches SNR=0dB outside the cell. At this point, users will have to use Wi-Fi.

2-Hybrid Li-Fi and Wi-Fi System with Four Li-Fi Cells in non-CCI Case

For the sake of this example, we shall consider 4 Li-Fi cells in a non-co-channel interference or non-CCI case (no intersect cells) to study the effect of Wi-Fi throughput in each Li-Fi cell.
In Fig. 11, Wi-Fi throughput is set to 120Mbps, whereas in Fig. 12 Wi-Fi throughput becomes 1Gbps (the effect of each value in non-CCI case is illustrated in this approach).

Fig. 11. Users' dstribution in non-CCi case with Wi-Fi throughput 120Mbps.

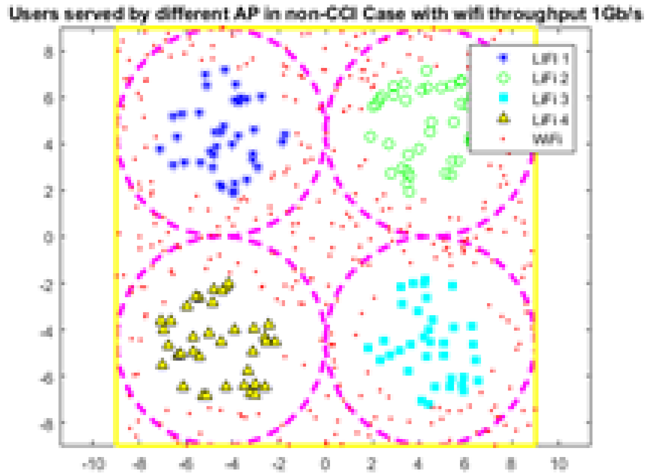


Fig. 12. Users' dstribution in non-CCi case with Wi-Fi throughput 120Mbps.

As aforementioned, these results reveal the effect of Wi-Fi throughput in a non-CCI case with 4 Li-Fi AP. The result obtained in Figs. 11 and 12 correspond with what we predicted based on the SNR distribution results in Fig. 9. Since SNR for each cell is zero at their edges, we have observed some users served by a Wi-Fi signal. Moreover, as we increase the Wi-Fi throughput, more users located at the circle's edge will receive Wi-Fi until it reaches the same Li-Fi throughput. Increasing Wi-Fi throughput, as is the case in Fig. 12, leads to more Wi-Fi users being served in the Li-Fi cell edge, because Li-Fi SNR in the edge will be lower than the Wi-Fi signal, which has a maximum throughput equal to 1 Gbps.

3- Hybrid Li-Fi and Wi-Fi System with Two Li-Fi Cells in CCI Case

Here, we demonstrate what will happen in a CCI-channel case (two intersect cells), when taking into consideration:

1- the distribution of SNR in Li-Fi cells (discussed above);
2- the WiFi throughput effect (explored above);
3- the signal to interference noise ratio.

These three parameters will determine the number of users served by each Li-Fi AP.
First, we will analyze the effects of having an intersecting area between the two cells in case of a CCI-channel with a new major variable called "Signal to Interference Noise Ratio" (SINR).

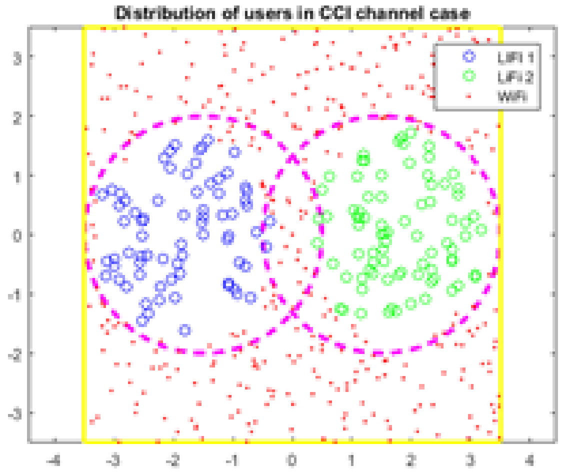


Fig. 13. Users' distribution in CCI-case.

Figure 13 illustrates the distribution of users inside and outside the two cells and the effect of the intersection on the distribution. The results found have shown that users inside the intersecting area will receive Wi-Fi because it has higher SNR and throughput.

4-Hybrid Li-Fi and Wi-Fi System with Four Li-Fi Cells in CCI-channel Case

We will summarize all the situations and main points mentioned in the previous sections to create a real Li-Fi scenario involving SNR, SINR, and Wi-Fi throughput in CCI-channel.

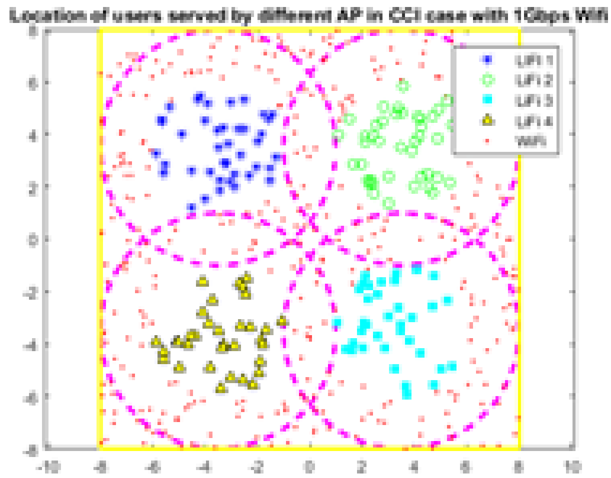


Fig. 14. Users' distribution in CCI-case with Wi-Fi throughput 1Gbps.

Wi-Fi and Li-Fi throughput is set to be 1 Gbps, and the effect of SNR & SINR is demonstrated in Fig. 14. The results obtained are as follows:

1- Users in the intersecting area will receive Wi-Fi.

2- Li-Fi users are located where there is no intersection effect because of SINR.

3- Increasing Wi-Fi throughput decreases the number of Li-Fi users because of the SNR effect.

5-Frequency Reuse Techniques in Hybrid Li-Fi and Wi-Fi system

In previous simulations regarding a hybrid Li-Fi/Wi-Fi network, we considered a Wi-Fi standard, which can almost guarantee a maximum throughput within 12 m to simplify the simulation steps. Now we consider a more practical situation where there is a poor Wi-Fi signal with four Li-Fi cells in the CCI-channel. In this scenario we want to increase the number of users that will use Li-Fi inside the cells, thus, we applied frequency plane techniques and avoided any interference between the cells.

Fig. 15. Users' distribution with frequency reuse plan.

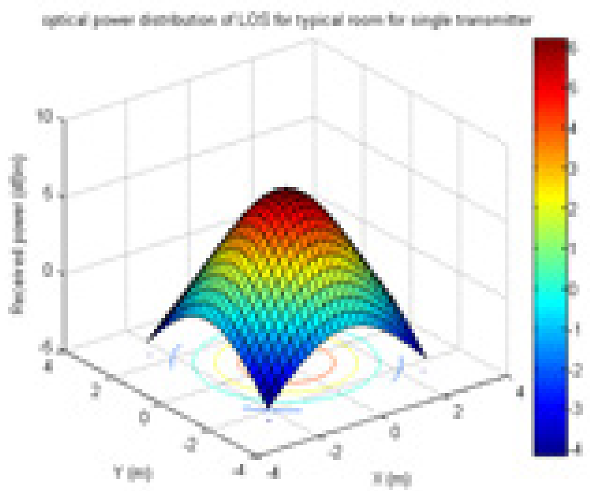
Figure 15 illustrates the application of frequency reuse techniques in a Li-Fi system. The bandwidth for a white LED is 20 MHz and the bandwidth will be divided into two since we have four intersecting cells as shown in Fig 14. The results state that the number of Li-Fi users has increased comparatively to the number in Fig. 13. However, Li-Fi throughput will decrease with the decreasing of its bandwidth, but since we are using square cells, we can ensure that there is no Wi-Fi user inside the Li-Fi coverage and that no interference occurred.

4.4 Power Distribution

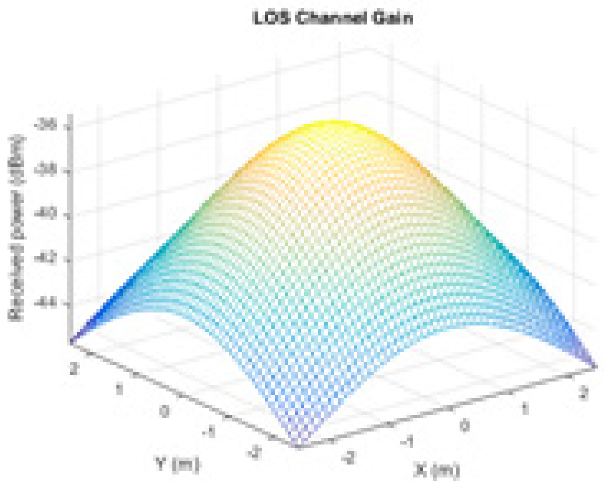
In a LOS path (ignoring the reflection of walls), the optical power distribution for a receiver plane

is demonstrated in Fig. 16a for one transmitter and Fig. 16b for the optical channel gain. Figures 16c and 16d present four transmitters, each with a unique sensitive half angle.
Figure 16 shows the total optical power distribution in a room with dimensions of 5x5m, as seen below.

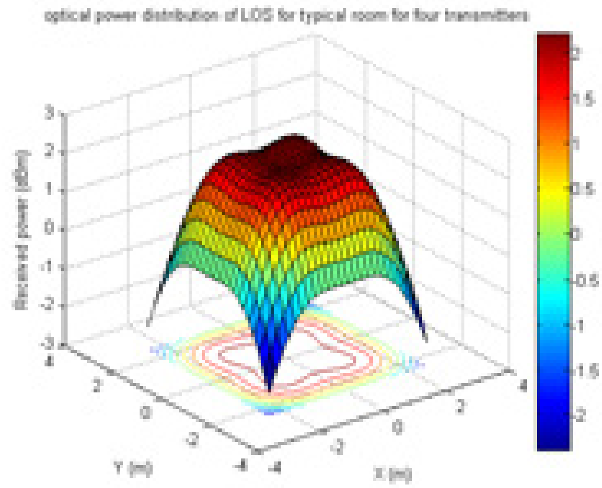
Results obtained in this section are shown in Fig. 16 and we found that the optical power received is distributed throughout the room with four transmitters in a more efficient manner than by only using one transmitter, as illustrated in Figs. 16a and 16c. However, when the sensitive half angle is 12.5 degrees, as is the case in Fig. 16d, users receive greater power comparatively to 70 degrees, as shown in Fig. 16c.



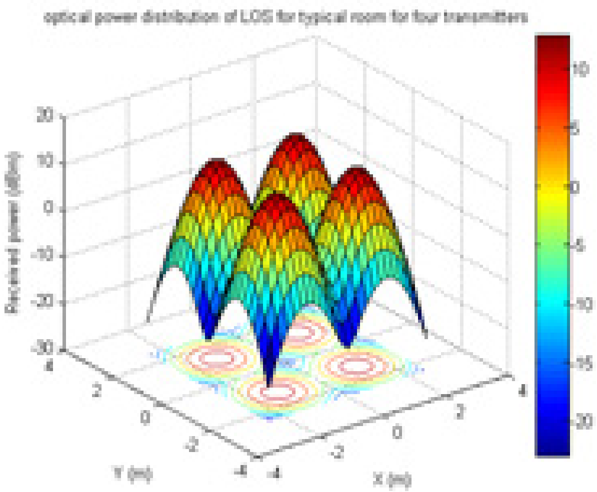
(a)



(b)

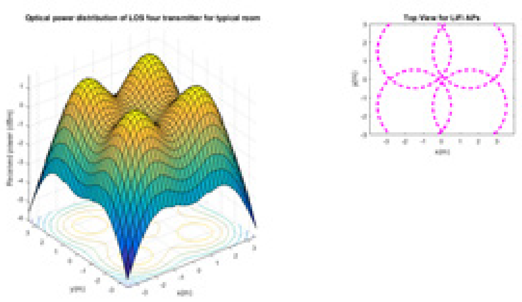


(c)



(d) Figs. 16. Optical power distribution in a typical room (5x5m): a) power distribution for one transmitter; b) LOS channel gain for one transmitter; c) power distribution for four transmitters with a sensitive angle of 70 ; d) power distribution for four transmitters with a sensitive angle of 12.5.

As a result, the advantage of these simulations is to build a good coverage plane for Li-Fi APs in typical areas. Therefore, we have applied these results and techniques in a real office, with dimensions of 7x7m using the standard Li-Fi AP specifications mentioned in [4]. Figure 17 shows a coverage plane in an office with dimensions (7x7m).



(a) (b)

Fig. 17. Li-Fi coverage plane for an office (7x7m), a) Optical Power Distribution, in 3D view; b) Top view for Li-Fi Aps

V. ANALYZING

In this paper, we study the four main aspects relating to Li-Fi technology that are still being enhanced. Firstly, there is BER theoretical and simulation calculations designed for OOK-NRZ modulations. The results are almost identical to those presented in [4]. In addition to the BER curve in reference [5], they used OFDMA techniques with OOK and it differs from our curve.

Secondly, we evaluated the newest multiplexing techniques, NOMA, which have been used recently in 5G. The obtained results show that NOMA is more optimal than FDMA techniques when we compare total user throughput. In [5], they have comparatively evaluated TDMA and NOMA and found that Li-Fi throughput can be efficiently enhanced with the application of NOMA. We also made the same comparison between hybrid NOMA/SDMA and TDMA in a case of interfering channels. Our results were identical to those found in [5]: hybrid SDMA and NOMA can enhance and increase Li-Fi throughput in the network when interference is occurring. SIC in NOMA techniques is used to illuminate the interference using a TCP vector and SDMA.

Hybrid Li-Fi/Wi-Fi network is demonstrated in the third section as follows:

We start by studying SNR with only one cell, and then we add the Wi-Fi throughput effect in a non-CCI channel. We then proceed to study SINR with two cells. Finally, we applied these scenarios in four CCI-channels. Our final results correspond exactly with those stated in [1] & [5]. After achieving the results relating to the load balancing algorithm, we aimed to apply frequency reuse techniques and document the differences. Thus, we created a new simulation with square Li-Fi cells in a hybrid Li-Fi/Wi-Fi system. The results proved that the number of users served by Li-Fi can increase using frequency reuse factors and this can be useful when we cannot guarantee maximum Wi-Fi throughput.

Our last simulation focuses on how we can create a good plan for Li-Fi APs in a typical room. The results obtained are almost identical to those presented in [9] with the exception of the last one, as we used our previous results and applied them in an office with specific dimensions.

Finally, we achieved good results and enhanced certain areas in the previous sections. Considering the positive results obtained, we optimistically aim to continue this study on the proposed topics in this chapter as we believe that this concerns the future of Li-Fi, which is essentially the future of the Internet of Things (IOT).

VI. CONCLUSION AND FUTURE WORKS

In this paper, a Li-Fi technology with several techniques and scenarios is discussed. All information about Li-Fi technology and its formulations are presented with brief explanations. Moreover, this paper also presents and discusses the key research areas that are required to manage Li-Fi attocells. BER and the multiusers access scheme are presented with our simulation results. Hybrid Li-Fi/Wi-Fi networks with load balancing techniques are proposed to mitigate the handover effects before and after the frequency reuse factor.

Throughout our study, we explored many improvements needed to guarantee an optimal Li-Fi future, especially in the field of simulations. This work marks the conclusion of our bachelor's degree project and the beginning of a master's project aiming for greater improvements in simulation results. Hybrid Wi-Fi or RF with Li-Fi systems and multiplexing techniques used in Li-Fi or uplink scenarios will be in our scope in the coming work. On the other side, many projects and studies can be done based on our results. Although we have improved our simulation results, there is still more room for improvement. Firstly, in hybrid Li-Fi/Wi-Fi network simulations, we increased users' throughput via a load-balancing algorithm and we incorporated a frequency reuse plan in order to increase the user's access to Li-Fi APs. Future improvements must focus on hybrid Li-Fi/Wi-Fi systems and how they can increase Li-Fi throughput inside a Li-Fi cell using a frequency reuse plan. Secondly, since our multi-users' access results concerned four types of multiplexing techniques, future works can be done to increase Li-Fi throughput by using new multiplexing techniques considering new scenarios.

Lastly, we must continue to explore Li-Fi/RF systems using the same principles we followed in hybrid Li-Fi/Wi-Fi networks. This topic remains relatively new, having been introduced only in 2016. We achieved all our desired objectives and enhanced this new technology for future use.

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Impact of Culture on Organizational Behavior and Different Managerial Indicators: Case of SMEs in Albania

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Abstract

Culture is one of the most important elements of an organization's success. Some scholars consider culture to be an important part of the environment of the organization; some parallel it with the environment, while other scholars regard it as a separate part and as an important variable beside of other environmental factors. In all cases, culture is considered to have an impact on different technical-financial indicators but also on other organization's indicators. The purpose of this paper is to highlight the role of culture, the impact it has on different parts of the organization and its impact in macro and micro managerial indicators. Continuous improvement of culture can significantly increase the effectiveness and results of work. On the basis of the main goal, hypotheses have been raised about the relationship between types of culture and the impact on different indicators, socialization and level of cultures on indicators such as productivity, performance, satisfaction, turnovers, shortages, motivation, etc.
Using a Likert method and a logical factorial model, a summary table has been compiled that links qualitative and quantitative indicators. Qualitative indicators are classified into two sections on the types of culture and socialization. The second section divides culture into three levels according to Shein's study. Questionnaire data has been processed in all cases, and with five degrees of evaluation achieved in different quantitative evaluation indicators, which give meaning to qualitative indicators. In cases where the indicators are larger than the average or more than four, the link to the influence of culture is considered strong.
At the end of this paper, conclusions and suggestions are given for the importance that should be attached to culture in general and to all cultures with a positive impact on organizational behavior and managerial indicators. If forms of negative culture "thrive" in organizations, better management is recommended.

Keywords: *Organizational Behavior; Managerial Indicators; SMEs; Culture*

1. The importance of studying culture

The notion of organizational culture has begun to be addressed with interest over the past few decades. Many organizations after these years, realizing the importance and impact of culture and communication on the organization, have spent many and varied resources to study these important managerial and behavioral indicators.
Organizational culture is considered a traditional way of thinking, trusting and acting. It is said that the ideas are the same for almost all members of the group. They even mention ways that new members of the group should adopt these ideas. (Johnsen, 2001). New employees starting work in the organization are very curious to know about the working environment. They can actually answer to many related questions through studying culture. This is because stories, legends, socialization, symbols, the hero etc. are elements of culture (Deal & Kennedy 1982).
At the same time studies have been focused on

the visible and invisible effects that these two important indicators have on job performance or on different managerial indicators such as performance, productivity, attitude towards work, expression of values, motivation at work, tendency to lack turnover, creativity, innovation, quality of products and services, quality of work, awareness of work, etc. (Ittner & Larcker, 1998)

There are various models that have focused on the study of levels of organizational culture. One of these is Edgar Shein's model whereby he suggests 3 levels: The first level includes what he calls "artifacts" which are the organization's visible structures and processes. Here the used language can also be inserted. Over the life of the organization, stories rituals of the ceremonies as well as the environment of the organization, including the architecture of the buildings and the utilization of the spaces. These include business plans, annual reports, company mission statements, manuals, regulations, contracts, etc. At the third level: He also calls them "underlying assumptions implied." These are also considered as accepted beliefs which are the real source of values and actions, within the organization, that can be accepted with or unconsciously. One important thing under this model is that there are significant differences between what the organization says and what she really does. (Edgar Shein 2009)

2. Theoretical framework

Many authors have studied organizational culture. Hofstede is considered in the science of management as the father or the founder of organizational culture.

According to Johnson & Scholes, culture covers almost everything that happens within an organization. According to Philip Clampitt, there are four consequences to culture:

- Culture has a significant impact on the low levels of the organization;
- Culture will influence how the organization will analyze and solve problems;
- Culture influences how the company responds to potential changes;
- Culture has a profound impact on employee motivation.

Studies have shown that the lower levels have felt more of the influence of culture by influencing both the negative and the positive aspects. Research studies in the field have shown that, according to the level of culture, organizations have done various analyzes, some have done them very quickly and inaccurately, while others have done them more slowly and with a more detailed analysis (Kotter, 2012).

Often the rhythm of analysis and the degree of depth of a problem can lead to different decisions. Different attitudes or behaviors in the organization may also come from the decision making process. In this way people can be better oriented or disoriented thus affecting communication (Hartnell & Kinicki, 2011).

Potential changes can also be significantly affected by the level of culture. Conservative cultures make a great deal of resistance to change, significantly disrupting communications between levels and structures of the organization. Risk-taking cultures have a different orientation to change, have a more effective communication, and a greater sense of cooperation. Depending on their nature they may present more support, cooperation and tolerance as values that are largely generated by culture (Hofstede, Geert H. 2001).

Culture has often shown a significant impact on employee motivation. In open and friendly cultures, individuals have felt more at ease in expressing and demanding transparency in their work performance or in seeking or complaining more. While in closed cultures the opposite is true, transparency is low, slow, delayed, or in some cases impossible.

1.1. Organizational culture and managerial indicators

Organizational culture has the ability to increase job satisfaction and problem-solving awareness and organizational performance (Kotter, 2012). If the organizational culture becomes incompatible with the dynamic expectations of internal and/or external stakeholders, the success of the organization will decrease as it has with some organizations (Ernst, 2001). Organization and organizational culture are clearly related (Kopelman, Brief, & Guzzo, 1990), although confirmation about the perfect nature of this relationship is different.

Research shows that the link between many cultural qualities and high performance are not continuous over time (Dension & Sorenson, 1990, 2002). We can say that the impact of organizational culture on employee behavior and performance is based on several important ideas (Bulach, Lunenburg, & Potter, 2012).

The performance measurement system helps to increase the organization's reach to achieve goals and objectives successfully (Ittner & Larcker, 1998). Quality, performance, and customer-related services have financial characteristics. The financial and non-financial rewards management system is possible through the measurement and evaluation of the performance measurement system (Kaplan & Norton, 2001).

According to (Chavan, 2009); (Johnsen, 2001) organizational culture has an emphasis on the attitudes toward work expressed with a high degree of satisfaction and awareness. In line with this orientation, people working in these cultures tend to deliver quality products and services, to be more productive, and to exhibit positive behavior through smaller turnover and lower absenteeism. (Ravasi, D. Schultz, M. 2006).

Organizational culture is a difficult indicator to identify accurately. (Chhokar, J. et al. 2001). Its nature is complex and cannot be clearly defined. (Handy, C. 1993). Hampden-Turner, C. (1990). Importantly, it can appear in different forms and has properties that can vary from one unit to another within the same organization. (Reviewed, 2006). The more the organization expands, the more we find cultural variations. In corporations the tendency for cultural diversity is higher. Hofstede, G. (2003). Socialization is seen as another element that represents a high level of culture. According to Hofstedes, a high level of socialization has had a significant impact on employee productivity and their better integration into the workplace, especially if their work starts again. (Schein, E. H. 1986).

Culture has been expressed in various forms since the domination of role, support, achievement and power. The first two forms by their very nature imply more positive culture towards the last two forms. (Koxhaj.A 2016) Tabularly some cultural forms expressed through objectives may influence different managerial indicators presented in the following tabular model. (Schrodt, P 2002).

Under this model, performance objectives that are also strongly influenced by culture can have a positive impact on their performance as well as on different managerial indicators or related to the company's final products and services. Successfully meeting the goals and objectives of the organization can significantly enhance the behaviors and attitudes of various employees or stakeholders within and outside the organization (company). Their improvement derives from goodwill and a high tendency to generate revenue, enabling it to expand or expand better in markets. Culture significantly improves managerial and then technical-financial indicators. (Aldhuwaihi, A., Shee, H. K., & Stanton, P. 2011)

Table 1 – Tabular Model

Performance objectives		Meaning and content of the objective
Finance Perspectives	□	I understand the financial vision of the company
	□	I like the way the objectives are set and their clarity
	□	Objectives also take into account the needs of individuals and are not biased
	□	Etc.
Consumer perspective	□	Our company has better relationships with our customers than our competitors
	□	The clients of our company are satisfied with our products and service
	□	Understand the importance of an integrated system, open multi-vendor systems, service and maintenance
	□	etc.
Internal business prospects	□	In general my colleagues are pleased and proud to work for our company
	□	I believe my company services and the contributions I have given are valuable.
	□	Compared to companies, other affiliate organizations, my company has the lowest turnover.
	□	I'm happy with the pay
	□	I am happy with the reward programs
	□	The people I work with have the right leadership skills to contribute to the success of the firm.
	□	Compared to other companies, my company is a job that gives you pleasure
	□	In general I am pleased with the financial and non-financial rewards of the company
	□	etc.
Learning perspectives	□	Innovation (methods, techniques, programs, etc.)
	□	Technology

Cultural changes can bring about significant changes in managerial and consequently financial indicators. Changes in financial indicators can also affect the technical ones making the organization more productive, qualitative and competent. Then these cycles, in the event of increased sustainability, can bring about different positive effects at different times for the organization. (Cameron & Quinn, 2011).

3. Study in practice: The case of SMEs in Albania

The first stage is the gathering of information to carry out the design of the theoretical part. In-depth study of literature, selection of various sources in primary and secondary, hard & electronic books, economic journals, materials, reports, etc., on the basis of the study object (evaluation of the role of culture in the organization and various indicators), it is possible to raise hypotheses. The fieldwork has focused on over 100 SMEs in Albania (in various branches of the economy) to study the impact of their work on the impact of culture. To structure the practical part of the study and its results, based on the set objectives, questionnaires were sent to the most important managers, who are well aware of the problems and have more complete information. Great help in the study is the network available with SME managers. The information collected was processed with appropriate software to generate the final results based on additional objectives set as: Identifying indicators that best reflect organizational culture; studying the relation of culture to different managerial indicators, their impact on technical and financial indicators, etc. The lack of availability of some managers is considered as one of the limitations of the study and a reason for the reduced number of questionnaires. The study is constructed on the basis of the Likert method and a logical factorial model.
Identifying the traders of your crops, you can use for some of the listed indicators and you look at the managerial and technical-financial aspects made as one of the difficulties of this paper. Due to its complex nature and indisputable impact on theory and one of the object of study in practice, you are asking a question about qualitative and quantitative trade. In qualitative indicators and more, we ask from the study of theoretical parts of certain types of cultures some important constituent parts for levels and cultures for discussions by important authors of cultures as well as its nature and properties. It is very difficult to identify accurately the commercial cultivation of crops, but it is more important to evaluate the devouring and to draw some conclusions about its impact. In terms of quantitative indicators, they are expressed in numerical form and, where appropriate, have a rating of 1-9 etc but for the time effects in the questionnaire the Likert scale was used in a 5-point scale. The following table presents the links between qualitative crop and managerial indicators in numerical values from 1-5. (From very low 1- to very high-5)

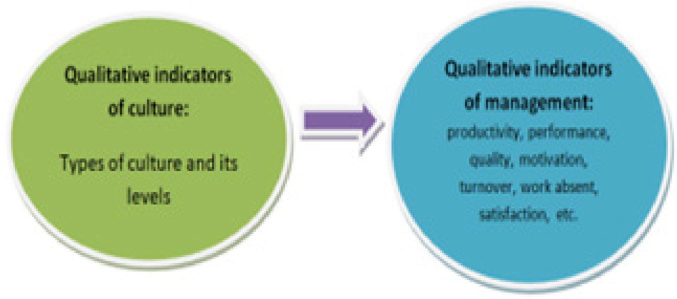
Table 2 – Calculated quantitative results of culture on management by types and levels

N0.	Quality Indicators of Management	Productivity and performance	Quality of product & 7 services, Consumer's	Happiness and motivation	No agreement turnover and absent-mindedness at	Communication and job attitude	Conscienciousness values, flexibility etc.	Indicator medium
	Quality Indicators of Culture (scale)	*(1)-1-5*	*(2-)-1-5*	*(3-)-1-5*	*(4-)-1-5*	*(5)-1-5*	*(6)-1-5*	**Total value of each rows / 6 (1-5)**
I	**Culture:**							
1	*Culture of role*	4	3.9	4.8	3.7	2.9	3.1	3.75
2	*Culture of support*	3.5	3	4.9	3.4	4.8	4.2	3.95
3	*Culture of achievement*	1	1	2.9	2.2	3.1	2.1	2.05
4	*Culture of power*	2	1	1.5	2	1.8	1.9	1.7
5	*Socialization*	3	2	3.9	3.5	4.2	3.4	3.3
II	**By the level of culture**							
a	*Firs level*[1]	3.2	3.5	4.8	2	4.3	3.6	3.6
b	*Second level*[2]	4.0	4.0	4.5	1.8	3.8	3.8	3.7
c	*Third level*[3]	2	2	2.2	2.4	3.7	4.2	2.8
	Average Indicator	2.84	2.6	3.7	2.6	3.6	3.3	3.09

The study of the table we can draw some conclusions as well as a logical cycle of the problem expressed through this scheme:

Chart 1 - The relation between two indicators

The table shows that positive crops (row I.1 and 2) significantly affect all six quality management indicators and their average level (3.75 and 3.95 respectively) is above the average rating level (in our case above level 3). On the other hand, in non-positive cultures (lines I. 3 and 4) and less amicable the same indicator in the final mean calculations have lower scores of 2 and 1.7 respectively in our case below the average rating level calculated by the scale of 3 according to the method. than the Likert. At the same time socialization (in section 5 section I) has positive effects although it has a general average indicator of 3.3 points located above the median area of classification from 1 to 5. Most interesting is the study on the impact of Shein levels on the six summarized managerial qualitative indicators that receive values of first level 3.6 second level 3.7 and third level 2.8. From the study they come to the conclusion that the first two levels are more influential than the third level. The second level is considered more influential in terms of the nature and means used in organizations.



The third level, though below the average level, has a significant indicator for managerial indicators. Compare a closer link between nature and first-level content (section II. a) has a higher impact on satisfaction and motivation as well as communication and attitude at work (4.8 and 4.3, respectively) compared to indicators other. For analogy in logical reasoning Compare a closer connection between nature and second-level content (section II. b) has a higher impact on the indicator of satisfaction and motivation as well as productivity, performance and quality. (4.5 and 4.0, respectively) compared to other indicators. The third level (section II. c) has a higher impact on the awareness of work consciousness and value expression as well as communication and attitude at work (4.2 and 3.7, respectively) compared to other indicators. At the same time when studying average indicators such as the last row of the table and its last column, their values are either close to or above average. On the basis of these indicators, it is established that culture has a significant impact on managerial behavioral indicators such as productivity, performance, quality, motivation, communication, satisfaction, attitude towards work, sharing of values, etc. Studies show that the significant improvement of managerial behavioral indicators affects the overall financial and technical results (chart 2). This approach is carried out in accordance with a more favorable culture that enables increased levels of revenue and profits and consequently significant improvements in technology or methods that the business uses in its processes according to its mission. The degree of improvement in technical indicators (technology and innovation) is strongly influenced by the propensity of the business to capitalize a significant portion of the budget on net profits. At the same time, this tendency has also been linked to the culture through the years. Studies show that changes in technology and innovation have a significant positive impact on the culture of the organization.

Chart 2 - Impact of managerial indicators on technical & finance results

4. Results and recommendations

Identifying the traders of your crops, you can use for some of the listed indicators and you look at the managerial and technical-financial aspects made as one of the difficulties of this paper. The elaboration of the questionnaires (with various open-ended, open-ended, closed-ended questions, clarification, etc.) resulted in a range of opinions that SME managers offered regarding the culture and its impact. Over 76% of them think that culture has a significant impact on the organizational environment and it is also considered as an important factor for the organizational "climate" and may also influence different managerial behavioral indicators and other indicators.

The majority of them, about 64%, think that organizations should and can commit to improving the organizational culture to subsequently improve other indicators that depend on it. While a handful are optimistic that the organization can really do it. They think that a very small part of the budget is made available to improve organizational culture.

Most managers (about 82%) think that changing the culture is a long and difficult process. They consider this a complex process involving many elements, problems, dimensions, etc. However, they think the organization is worth taking action against culture even though the benefits may be medium or long-term. In their perception 55% of managers think that powerful organizations, with experience in the market with good reputation, credibility etc. are keen to appreciate changes and developments in culture.

When asked which organizations are most likely to engage in products, services, or both, managers are unclear about the exact answer. About 15% think favored by manufacturing organizations, 10% by services and 7% by organizations that engage in both forms. The remainder is considered as not knowing (or not clear to express). Another answer of interest to the study was the question whether the culture could change from one unit to another or from one department to another? The majority of respondents thought positively about 90% of the question elaborated by the questionnaires. They were convinced that some units could have better results according to a more favorable culture that was created there. While the reasons for this culture differed from others, although often units have common objectives, they responded with various questions:

• the role and behavior of the leader;
• the age of the leader;
• work experience of the unit leader;
• staff composition;
• staff training;
• the values and personality of the unit members;
• time worked together etc.

At the end of this study, taking into account the role of theory and the treatments that important management and culture authors have expressed in relation to this element, there is the opportunity to make some suggestions and recommendations regarding this important managerial and behavioral element.

First, culture is considered a value, it is an element that accompanies any object, subject, individual, group, etc. within and outside the organization. It is for this reason that improving working conditions is a key factor for cultural improvement.

Using a more effective behavioral style by associating with an effective style of power that allows for reflection, persuasion, integrity, legality, qualification, consultation, inspirational appeal to employees, etc.

The use of a qualitative and diversified remuneration system to take into account various forms of remuneration such as knowledge, merit, performance, work experience, etc. Employee appreciation of rewards significantly enhances organizational culture.

Another way to improve culture is to appreciate the positive values that different employees of the unit or organization have. Patience, perseverance, tolerance, flexibility, readiness, awareness at work, commitment, etc. are values that must be valued in various forms of reinforcement from recognition to the highest forms according to the principles of reinforcement. Evaluation and consideration of individual and organizational values constitute another opportunity for the development of the culture.

The organization itself has many values, traditions, persons, histories, heroes, pioneers, ceremonies, celebrations, slogans, successes and achievements. An organization that continually enhances and maintains these standards can develop a successful and productive culture.

One way for cultural improvements would be to consider verbal and nonverbal communication with all its constituents. People should appreciate the rules of the organization should use more tangible visual parts, respect work through appropriate attire or work ethic. The availability of the rights and obligations of the parties is considered a verbal and ethical communication code. This form, also designated as a manual, provides written and implicit standards of conduct for all persons within or outside the organization. Their implementation implies an appreciation of culture.

The development and improvement in technology or innovation, the improvement of methods is the cause of an almost positive change in the culture. But at the same time the more employees are trained, or increase their skills, the more they tend to change their culture, become collaborators, etc.

It cannot be claimed that some of the ways or recommendations for the improvement and development of culture may be unique. They depend on the size of the organization, its readiness for change, its organizational values, its reach in the market, its mission, vision, nature of work, objectives, leaders, etc.

Culture can turn into a competitive advantage for entities or organizations. Successful cultures are and serve as role models for individuals, entities, organizations and entities.

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The impact of Human Resource policies and practices on employee outcomes: A Case of Kosovo

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Abstract
Considering the need of Kosovo for Human Resources field, especially the need for conducting a research in large companies, encouraged this research to be started. The three participant companies in this research were Telecom of Kosovo, Kosovo Energy Corporation and Bank for business. Is expressed much need to explore some of the most important policies and practices across companies, such as recruitment and selection, training and development, compensation and benefits as well as perceived organizational support. And on the other hand, observing the impact they have on employees, ranging from job satisfaction, organizational commitment and turnover. Many researches that have been accomplished leave behind a large number of gaps waiting to be met by others and the gaps that have been identified from the previous studies related to this topic are filled by this research. In this research the most fitted methodology approach seemed to be triangulation, where are distributed 50 questionnaires to the employees of the respondent companies and 20 interviews have been held with the HR Managers. So, based on the analyses that have been done, the objectives of this paper have been achieved and the questions have been answered. In many parts of findings are witnessed some strong and significant correlations between the outcomes of the employees and the implementation of HR policies. In addition, the answers of employees differ from the answers of HR policies, since the latter have responded positively about the execution of the practices in question.

The academic contribution of this study is witnessed related to the gaps derived by the previous studies which this research has filled and the practitioner contribution of it is linked with the help that this research gives to the participant companies in terms of the crafting policies and executing practices in their business environment. The most important recommendation is that the HR managers should improve their executing process of these policies and practices. However, based on the limitations of this research are flown the need for further studies to be filled by next researches, such as the need to conduct this issue in manufacturing and service firms and to compare the findings between the two sectors.

Keywords: HR policies and practices, recruitment and selection, training and development, compensations and benefits, organizational support, employees' outcomes, job satisfaction, commitment, turnover.

1. Introduction

Kosovo is the newest state in Balkan. This country has too many concerns that have influenced both economic and political life. These vicissitudes are related to the wars which caused this country to suffer major injuries in terms of the economic and political situation. This occurrence has also happened during the last war with Serbia in the late 1990s. The period when Kosovo began to resuscitate was a very difficult time. It has faced many challenges of rebuilding everything from the very first point. When it comes to companies in Kosovo, from their current state, it is seen that these have begun to "take the wings" after the war, which means that their business development is increased recently.

As far as this country is concerned, even though micro enterprises prevail, a relatively substantial number of SMEs and large enterprises are revealed. According to (Kosovo Business Registration Agency, 2011), in the end of the year 2011, 104,000 enterprises were registered, from which 58 were big companies and the rest of them were micro and SMEs. Large enterprises are adjusted with an extended organogram and are more specialized in organizational structure. Human Resource Management department in the companies in Kosovo, is a new, unfamiliar, and unstudied field. Therefore, the majority of the companies do not consider this department very important compared to the financial department, marketing, operations, etc. (Kutllovci and Berisha-Qehaja, 2015). This department is being more adjusted in the large enterprises, and the shortage of the studies in these companies regarding the field of Human Resource Management, lead to a need for a research in this term. In order to help Human Resource policy makers, improving overall performance of their companies are analyzed some HR policies and practices of the three large enterprises in Kosovo and the impact that these policies and practices have on employee outcomes. PTK (Post and Telecom of Kosovo), KEK (Kosovo Energy Corporation) and BPB (Bank for business) are the large companies that have been chosen as the main protagonists of this research. PTK and KEK are public institutions while BPB is private bank.

This research has its own objectives and questions that are expected to be filled by analyzing the answers of the employees and the answer of the HR Managers.

1.1 Research objectives and questions

The reason why large companies are chosen is that there is no other investigation done in this area so far and all the researches about this topic, are done only in SMEs. The HR policies and practices that have been probed here are: Recruitment and selection, training and development, compensations and benefits and Perceived Organizational Support. On the other hand, the outcomes of the employees that are scrutinized are: Job satisfaction, organizational commitment, and turnover. Moreover, the objectives that are expected to be achieved by this research are:

To assess the impact of a variety of HR policies and practices on large companies in Kosovo.
To measure the effect of Perceived Organizational Support policy on Employee Outcomes. (e.g., Turnover, job satisfaction, commitment).
To evaluate the relationship between job training and employee job satisfaction and turnover.
The influence of compensation policy on organizational commitment and job satisfaction on large companies in Kosovo.

While the research objectives are more oriented to be filled by the employees, on the other hand, the research questions are expected to be answered by the HR Managers.

However, based on the objectives that are introduced above, this research seeks to find answers of these questions:

How are HR Practices and Policies developed on the three large companies in Kosovo (respondents of this research)?
How can these practices and policies impact on employee outcomes?
What steps should these companies take in order to improve their HR policies and practices?
Literature Review
In the text below, the Human Resource policies and practices and also their impact on employee outcomes will be developed. The first part intents to show the meaning of Human Resource policies such as: recruitment and selection, training and development, compensation and benefits, perceived organizational support, while the second part to investigate the outcomes of the employees such as: turnover, commitment and job satisfaction, which are derived from the impact of Human Resource policies and practices. The rest of literature review was run from the recent conducted studies.
Recruitment and selection
One noteworthy finding from (Ofori and Aryeetey, 2011) was that some SMEs viewed themselves as unsuccessful on account of poor specialized limit, human resource issues and performance. These SMEs trust that the ownership of specific aptitudes and capabilities are required for achievement in the territorial and global markets. Firstly, to be part of one of the companies, the procedure starts from recruitment and selection (Kessy and Temu, 2010). Thus, the practices of recruitment and selection include two interrelated proce-

dures. Recruitment is the way toward creating a pool of able individuals able to apply for work to the company whiles selection is the procedure by which particular instruments are utilized to look over a pool of candidates' that are the most appropriate for the activity thinking about, company's objectives and legitimate prerequisites.

(Spencer, 2004) said that compelling recruitment and selection are deliberately imperative to any firm. Recruiting and selecting the wrong candidates can have broad negative cost suggestions, while viable procedures can add to a diminishment in turnover and thusly increment in efficiency. Even from a pessimistic standpoint, the organization could neglect to accomplish its targets accordingly losing its aggressive edge and its offer of the market (Armstrong and Stassen, 2008). (Abor and Adjasi, 2007) recommend that the general point of the processes of recruitment and selection ought to be to get at least cost the number and nature of workers required to fulfill the human resource needs of the company.

One of the key advances managed by technological development in recruitment is customization (Dineen and Allen, 2014). The paper by (Vanderstukken, et al, 2016) in this matter brings up the issue of how companies may choose what pictures to present to draw in various sorts of people. The paper on informal exchange by (Van et al, 2016) additionally touched upon what data matters to whom. What R&S praxis has advanced toward is a procedure known as mass customization, or giving a high level of personalization while achieving economies of scale at the creation end (Uggerslev et al, 2012).

For a long time, the two scientists and professionals have concentrated on approaches to decrease unfriendly effect in enlisting forms. In particular, the (Jacksch and Klehe, 2016) paper grandstands in the case of taking care of generalization danger consequences for a few applicants may lead to settle on various decisions about how selection is drawn closer. Further, one test in endeavoring to address any generalization danger in an appraisal situation is that intercessions must happen inside the setting of institutionalization and consistency crosswise over people.

Training and development

"Training" alludes to a deliberate way to deal with learning and advancement to enhance individual, group, and authoritative effectiveness (Chiaburu and Marinova, 2005). On the other hand, development alludes to exercises prompting the procurement of new learning or aptitudes for motivations behind self-awareness. Less than 5% of all programs of training are evaluated regarding their money related advantages to the organization (Swanson, 2008).

The Kirkpatrick four-levels way to deal with training assessment keeps on being the most broadly utilized training assessment display among experts (Sugrue and Rivera, 2005), in spite of the fact that the approach keeps on being censured by scientists (Holton, 2005). (Aguinis and Kraiger, 2009) proposed a choice-based assessment demonstrate. The model edges choices about how to gauge training sway around the proposed reason for assessment—motivations behind basic leadership, promoting, and giving criticism to members, educators, or instructional fashioners.

(Boudreau and Ramstad, 2005) contended that to keep up a competitive advantage, companies must prevail in three areas: fund, items or markets, and their workforce. More essential, in the present worldwide economy, all organizations can pitch to similar markets (e.g., through the Web), and item improvement cycles are to such an extent that distinctions in item development are substantially littler than in years past (as clear in likenesses in cell phones crosswise over bearers). Along these lines, it is the third space—fabricating and keeping up a more proficient and better prepared workforce—that may offer the most feasible favorable position accessible to most companies (Huselid and Becker, 2011). Training plainly matters at various levels of our general public. According to (Salas et al, 2012) The initial phase in any training improvement exertion should be a training needs investigation directing a legitimate finding of what should be trained, for whom, and inside what sort of hierarchical framework. The results of this progression are (a) normal learning results, (b) direction for training outline and conveyance, (c) thoughts for training assessment, and (d) data about the authoritative variables that will probably encourage or thwart training adequacy.

Compensation and benefits

Managers of public sector routinely battle for a constrained pool of human capital. The opposition ordinarily happens inside and over the between administrative range, yet for a few positions, people in general part should likewise battle with the private area and maybe even non-benefit associations. Albeit public administration inspiration may shape work competitors' business decisions (Bright, 2013), pay rates and incidental advantages stay key apparatuses for drawing in and holding employees, particularly those without inborn inspiration (Van Der Wal and Oosterbaan, 2013). Indeed, even under financial anxiety, state and nearby governments incline toward workforce diminishments to pay cuts (Reilly and Reed, 2011). Moreover, nationals express low levels of help for abridging open worker pay (Elling et al, 2014).

Despite wage contrasts, different segments of workers compensation are basic to accomplishing basic human resource targets of procuring, maintenance, and execution rewards. For instance, incidental advantages raise employee fulfillment and decrease turnover (Coggbum, 2012). The security managed by characterized advantage benefits may likewise lessen turnover; then again, characterized commitment records may likewise boost life span. Generally, considerable episodic proof buttressed with a substantial group of researcher dispatch propose that the estimation of incidental advantages is in charge of shutting the general population private part wage hole where it is accepted to exist.

A research conducted in the Pakistan with a case study the educational sector concluding that the compensation policy has had positive impact on employee commitment and satisfaction (Nawab and Bhatti, 2011). However, this is opposed by (Carlson et al, 2006), who said that there is no link between compensation and employee commitment, but it impacts on performance in the other ways.

Perceived Organizational Support

As indicated by organizational support hypothesis, the improvement of POS is urged by workers' propensity to relegate the firm humanlike attributes (Eisenberger et al, 1999). (Levinson, 2007) noticed that moves made by specialists of the company are frequently seen as signs of the association's expectation instead of credited exclusively to the operators' close to home thought processes.

Community exchanges researchers struggle that assets got from others are even more expressively regarded in case they rely upon discretionary choice instead of conditions past the provider's control. Such conscious guide is welcomed as a sign that the provider truly characteristics and respects the recipient (Cotterell et al, 1992). Subsequently, various leveled prizes and great job conditions, such as: pay, headways, work improvement, and effect over legitimate techniques contribute more to Perceived Organizational Support if the workers believes that they result from the organization's purposeful exercises, as opposed to external impediments, for instance, association exchanges or administrative well-being and prosperity headings (Eisenberger et al, 1997). Since managers go about as organizational specialists, the worker's receipt of ideal treatment from a boss should add to POS. The quality of this relationship relies upon how much employees distinguish the manager with the company, instead of survey the administrator's activities as eccentric.

POS theory additionally addresses the mental procedures fundamental outcomes of POS. In the first place, according to (Rhoades and Eisenberger, 2002) on the premise of the reciprocity standard, POS should deliver a felt commitment to think about the organization's welfare and to enable the association to achieve its targets. An engaging component of OST (organizational support theory) is that it gives clear, promptly testable expectations in regards to predecessors and results of POS alongside specificity of accepted procedures and simplicity of testing these procedures exactly. Is inspected ponders that consider POS's estimated forerunners and outcomes and more expounded investigations of the systems ventured to underlie these connections.

Job satisfaction

There are too many definitions through the years, regarding the job satisfaction, but in the middle of debate takes place the question of whether the job satisfaction is stipulated by the peculiarities of the work itself within the mind of the workers or through the intercommunion between the workers and their jobs (Locke, 1969). Through tending to such inquiries, Locke characterizes job satisfaction as the pleasurable enthusiastic state coming about because of the evaluation of one's activity as accomplishing or encouraging the accomplishment of one's activity esteems.

The need for further explorations of the potential implications of the job satisfaction is very important and these can be achieved by identifying the concepts of this. In a study conducted in Macedonia (FYROM) by (Aziri, 2011) is claimed that the level of motivation has a serious impact on business productivity and employee performance. However, in this region job satisfaction still does not have the needed attention.

Job satisfaction is the key fixing that prompts acknowledgment, wage, advancement, and the accomplishment of different objectives that prompt a sentiment satisfaction. Whereas another definition of job satisfaction according to (Armstrong, 2006) alludes to the demeanor and sentiments people have about their work. Positive and great states of mind towards the activity demonstrate job satisfaction. Negative and ominous states of mind towards the activity show work dissatisfaction. Debates, agreements, disagreements in terms of the incentives that increase the employees' job satisfaction.

Organizational Commitment

Organizational commitment is the person's mental connection to the organization. Higher is the rate of commitment, more is the connection towards the organization. Commitment speaks to something past insignificant uninvolved devotion to an organization. It includes a dynamic intercourse with the organization, to such an extent that people will give something of them keeping in mind the end goal to add to the organization's prosperity.

It can be portrayed by no less than three factors: (a) a solid confidence in and acknowledgment of the company's objectives and qualities; b) an eagerness to apply impressive exertion for the benefit of the organization; and (c) a powerful urge to keep up enrollment in the corporate (Joarder et al, 2011). Also, (Luthans, 2002) supports this and also continues by saying that the commitment is a kind of link or connection between the company and employee. The attitude of organizational commitment is characterized by different circumstances or different factors regarding the personal characteristics (such as: age, the retention in the company, the attributions of the external and internal controls) and regarding the organizational characteristics (such as: the leadership styles of an overseer and the job design).

Turnover

"Worker turnover" as a term is broadly utilized as a part of business circles. Albeit a few examinations have been directed on this subject, the majority of the scientists concentrate on the reasons for worker turnover yet little has been done on the looking at the wellsprings of employee turnover, impacts and prompting different techniques which can be utilized by managers in different companies to guarantee that there is worker congruity in their organizations to improve organizational intensity (Conteno and Novo, 2012).

Employees are the foundation of any business achievement and hence, they should be roused and kept up in organization at all cost to help the company to be all inclusive aggressive as far as giving quality items and administrations to the general public (Ongori, 2007). What's more, over the long haul the profits on ventures on the workers would be accomplished. Managers ought to energize work update undertaking independence, errand noteworthiness and assignment personality, open book management, strengthening of employees, enrollment and determination must be done deductively with the goal of holding workers.

2. Methodology

Methodology is considered to be a very important approach, which helps the searcher to find out the answer of research questions as well as to achieve research objectives (Ferrer-i-Carbonell and Frijters, 2004).

Regarding the population and the sample of this research 58 are large companies in Kosovo, as is mentioned above, by (Kosovo Business Registration Agency, 2011). However, the impossibility of not interviewing all of them, the sample is a must. Hence, the sample has been 3 large companies in Kosovo – Vala (PTK), KEK and BPB, where are distributed 50 questionnaires and 20 interviews were held with HR managers.

Primary data can be qualitative and quantita-

tive. In this research are used both qualitative and quantitative data. Qualitative data refers to the data that are non-numerical, hard to measure but they are open that the respondents can expand their opinions for certain questions. In the other hand quantitative data are easier to measure, more accurate, give numerical conclusions and the questions are closed (Gale et al, 2013).
In most cases the blending of these two approaches into a single study has resulted in extremely accurate results. In the same way as mentioned in the study by (Bekhet and Zauszniewski, 2012) in their article with the name "Methodological triangulation: an approach to understanding data" triangulation is a very good data collection approach due to many cases of experiments that they have done. This method makes the research more valid because of the larger number of respondents that being used. Also, the results of one method can support or can be relied on the results of another method. Hence, each method can result supportive for the former method, if the research is done based on triangulation method. (Venkatesh, Brown and Bala, 2013). These are the supporting arguments why the triangulation methodology is used for this study.

Likewise, (Leech et al, 2007) in their article, with the name "An Array of Qualitative Data Analysis Tools: A Call for Data Analysis Triangulation" have brought different arguments to test the importance of triangulation method of
doing the research. As is introduced in the figure below, they have mentioned two, the most important elements of triangulation method: presentation and legitimation.

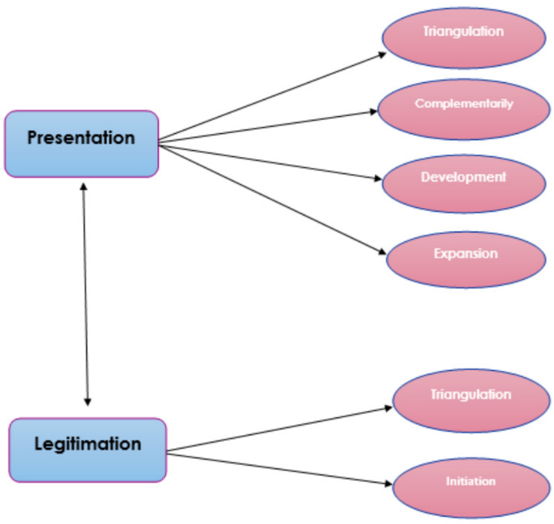

Figure SEQ Figure * ARABIC 1.Triangulation method – elements
Source: (Leech at al., 2007)

According to this figure above, the triangulation method contains both the presentation and the legitimation. This means that the method of triangulation can represent the results better than using single method, and in addition the legitimation represents also the validity of the results. Taking into consideration these arguments given by the fields most trusted authors, this investigation has analyzed the concerns by using the triangulation method.
Questionnaire development and interviews' aim
Questionnaires that are being used have 5 sections. In the first section of the questionnaires, the respondents are asked about demographic questions, including age, gender, years of work experience, in which department they are working and education level as well. Then, continuing with the second section, when the respondents are asked about the HR Practices and Policies that the organizations are using to them, which are included recruitment and selection, training and development, compensation and benefits. These part of questions in this research are borrowed by (Mulolli et al, 2015), a research that have happened in Kosovo having approximately the same topic. Another subsection of the section two of questionnaire will include the questions about the Perceived Organizational Support theory, which are borrowed by (Eisenberger, R. et al, 2015), who have discussed in their article about the theory of Perceived Organizational Support and how it can impact on employee performance, innovation and some other outcomes. One part of the job satisfaction section is borrowed by (Mulolli et al, 2015) and the other part is borrowed by (Olusegun, 2013) in the research of whom is introduced the impact of job satisfaction on turnover. From the same research are also borrowed the questions regarding the turnover of employee, which will be another section of the questionnaire. Regarding to the organizational commitment as another section, the questions of this section are borrowed by (Jehanzeb et al, 2013), in which study are analyzed commitment and turnover of employees. In particular is analyzed the impact that the job training has on employee, in private sector of the Saudi Arabia.

The research aims are related with the questionnaires, thus the objective one is related with the section two of the questionnaire, the objective two is linked with the relationship between a subsection D (Perceived Organizational Support) of the section 2 (HR policies and practices) with the section 3 (job satisfaction), 4 (turnover) and 5 (organizational commitment). The relationship between the questions of the subsection B (Job training) of the section 2 with the questions of the sections 3 (job satisfaction) and 4 (turnover) is expected to achieve the third aim of this study. Moreover, the fourth goal of this investigation is expected to be reached by analyzing the relationship between the questions of the subsection C (compensation and benefits) of the section 2 with the quires of the section 3 (job satisfaction) and the section 5 (commitment). All the questionnaire data are analyzed through SPSS.

In this research, the HR managers have been the sample of the interviews due to their experience of crafting policies and executing practices in the organizations. They have been asked about the policies and practices how they implement them in the practice, how do they know if these policies and practices are efficiently used and how can these policies and practices impact on their employees.
Accordingly, every research question is linked with the questions of the interviews. The research question 1 is linked with the questions 7, 8 and 9 of the interviews. The research question 2 is linked with the questions 10, 11, 12 and 13, and as well in the end, the third question of the research is expected to be answered by the 14th and 15th questions of the interviews.

Findings and discussions – Quantitative analysis
As is mentioned above the first section of the questionnaire consists of demographic questions. Regarding the demographic results the majority of participants belong to HR sector, based on SPSS analysis, their mean score for years of experience is 9.26, they've been working in their current position with the mean score 7.31, 27 participants were male while 23 were female. In terms of the frequencies of the employees' education level, 2 employees out of 50 hold PhD, 13 employees have Master Degree, 22 of them hold Bachelor Degree and 13 out of 50 graduated high school. Meanwhile, 26% of participants are above 45 years old, 40% are 35-45 years old, 32% are 26-34 years old and only 2% are under 26 years old.

Given that the questionnaires are designed to achieve research objectives, here are discussed the findings derived by the quantitative analysis.
The variety of HR policies and practices and their impact on companies
Many studies conducted in this field have discussed about the variety of HR policies and their impact on companies.

The results of descriptive statistics related to recruitment and selection implementation indicate a very low overall mean score in terms this policy (2.38). The low mean scores are as well as related to the recruitment and retaining high quality people with noteworthy innovative skills and placing the right people in the right jobs. This means, that this policy is not properly implemented in these organizations since the majority of the questions are answered with strongly disagree or disagree.

(Bratton and Gold, 2007) have mentioned that the recruitment and selection the right candidates is a very crucial thing in the organization. They also continued by describing the procedures of recruitment and selection and they mentioned that placing the right people in the right jobs will impact the further stages of organizations. In addition to this, another author (Spencer, 2004) has discussed about this topic and claimed that compelling recruitment and selection are deliberately imperative to any firm. Recruiting and selecting the wrong candidates can have broad negative cost suggestions, while viable procedures can add to a diminishment in turnover and thusly increment in efficiency.

Two of the three companies that have been part of this research are public companies, controlled by government. Kosovo Telecom and Energy Corporation of Kosovo are more likely to have lower mean scores when it comes to the recruitment and selection the candidates with high innovative skills. The process of recruitment and selection are not common practices that happen to these organizations because the employees are willing to work for too long in these companies due to some benefits that might have compared to the private companies in this country.

Concerning the policy of training and development, is not less important than the previous one. However, the data which indicate the descriptive statistics about the training and development highlight that the overall mean score is 2.35 which is exceedingly low. All the questions provided to this section have low mean scores. So, training needs are not assessed on the basis of performance appraisal, the employees are not encouraged to participate in the seminars or workshops, the trainings do not content the topics to develop the employees' skills or knowledge. Authors discussed about training policy, therefore according to (Swanson, 2008) in his article has mentioned the importance that the job training has to the improvement of the employees' knowledge and the improvement of the overall performance in the company. Training should be implemented in regards to the job needs as well as to encourage the employees to participate on the training. This was also supported by (Chiaburu and Marinova, 2005).

While, compensation and benefits have different impact in the company such as: in the job satisfaction, turnover, and commitment or in the overall business performance. However, the three respondent companies of this study, Kosovo Telecom, Kosovo Energy of Corporation and Bank for Business in Kosovo employees' compensations are better than the other companies in that sector, nevertheless the data reveals an overall low mean score in regards to this policy.

The Perceived Organizational Support is a policy that is directly linked with the well-being of the employees. Sometimes, not always the compensation or job trainings play crucial roles in the organizational performance, but it is important how the employees are supported by their supervisors or their colleagues. However, results show that the overall mean score about Perceived Organizational Support was 2.08, which was under the satisfactory level. Employees of these organizations stated that they are not supported by their supervisors, the organizations do not take too much into consideration the complaints of employees and the overall opinions of them, they do not participate in the important decisions that are happening in the company as well as the organizations do not support their employees when they are facing any challenge or problem.

Employee outcomes (turnover, job satisfaction) effected by Perceived Organizational Support

Regarding the correlation analysis where is presented a strong correlation between Perceived Organizational Support with job satisfaction of employees. Based on the information of the correlation analyses of these two sections is witnessed that job satisfaction is strongly affected by the Organizational support since the data have two stars (**) in this case and p value is under .05 ($P<0.05$). In other cases where data have only one star (*) means that they have moderate correlation in between. In relation to the descriptive data of both sections is seen an extremely low overall mean score. This might happen due to the rules that the organizations have to not give the employees the freedom to take actions by theirselves, they are not allowed to finish their job independently, only by taking the permission by their supervisors, they are not supported when it comes to the facing of any challenge of problem and all of these reasons have caused job dissatisfaction of employees. Eisenberger has done too many studies in regards to the Perceived Organizational Support and always has concluded and supported that paying attention to this theory will cause the positive effects on job satisfaction of the employees.

Although, concerning the correlation between these two topics (organizational support and turnover), the correlation table between these two concepts, it is not seen any moderate or strong correlation between them. (Eisenberger et al, 1990) has argued about this and has concluded that the perceiving high organizational support, the employees are more likely to retain in the organization and they do not seek for another employer. Similarly (Wayne et al, 1997) have supported this by saying that the employees who receive low organizational support are more likely to leave the organization by searching for better opportunities. However, (Rhoades et al, 2001) do not support this and have continued by saying that the Perceived Organizational Support does not have direct link to the employee turnover, but it impacts the organizational commitment and it plays the mediates role between POS and turnover.

The relationship between job training and job satisfaction and turnover

The data flown by the correlation analysis that is done in terms of job training and work satisfaction, a strong and significant correlation between job training and the job satisfaction of employees is indicated.

The linkage between job training and job satisfaction highlighted in the study by (Huselid and Becker, 2011), is concluded that the well establishment of training impact on high job satisfaction of employees. But, on the other hand, (Swanson, 2012) have argued about this and claimed that the job training does not have direct impact on employees' job satisfaction. Training and development might impact directly the overall organizational performance but not job satisfaction of employees. This is also supported by (Chepkosgey et al, 2017), who have determined that the job training is a practice that can help the employees to develop their skills or to enhance their knowledge and in this way the employees are more committed in the work they do, but it does not have any direct link to their job satisfaction.

No strong or moderate correlation between job training and turnover. Similarly, (Jehanzeb et al, 2013) in their study conducted in Saudi Arabia support the unlink between job training and turnover by highlighting that the job training impacts the organizational commitment and then organizational commitment impacts the employees' turnover. Thus, this was supported by (Benson et al, 2002) in their article where is discussed the importance of training in the development of employees' knowledge as well as its impact on overall organizational performance.

The significant and strong correlation is revealed between compensation of employees with their overall job satisfaction. This occurrence is supported by the literature, where (Terera and Ngirande, 2014) concluded that the compensation and benefits are related with the job satisfaction of employees. The outcomes from this investigation demonstrate that compensations and job satisfaction are entering factors in holding workers and it impacts the employee job satisfaction in a numerous way. Subsequently, it is critical for management to build up a maintenance methodology that tends to employees' pay and job satisfaction as central point. This implies that management ought to have the capacity to make an aggregate reward structure that incorporates something other than pay. Compensation and benefits bundle of workers ought to be lucrative so it pulls in the esteemed representatives to stay in the association. This maintenance methodology should make a company an awesome ordeal. At whatever point the employees' leaves, explanations behind leaving the organization are known. These post-employment surveys are another method for forming an organization's maintenance technique. Consequently, this research concludes that inequity distribution of compensation and benefits among employees has caused the job dissatisfaction of them.

Findings and discussions – Qualitative analysis

The qualitative analysis as is mentioned above aim to answer the research questions.

The development of HR policies and practices on the large companies in Kosovo

Given that the interviews that are held with the HR managers were 20, they are specialized in different areas of HR. In the three large companies in Kosovo, Telecom of Kosovo, Energy Corporation of Kosovo and Bank for Business, the HR policies and practices that are implemented in these companies are: recruitment and selection, training and development, compensation and benefits and diversity.

Starting by the recruitment and selection as the first stage to get hired in the company, the HR managers have mentioned that firstly are identified the job needs and then announced the vacancies in different local online portals which are known in the whole country. They also have mentioned that managers are included in recruiting and selecting new staff and the information about the company's operations have been provided to the candidates since the first day of work. Here was a gap between the answers of the employees and the answers of the managers. Since the managers are answered positively to this question, the employees are answered differently from them, especially in regards to the placing the right people in the right position, the participation of the managers in the selection of the new staff as well as the recruitment and retaining the innovative and creative people. In all of these questions the employees are answered negative.

Relying on this information, is exposed that managers are more likely to provide positive answers in regards to these concerns than employees, because they are the crafter of the policies and do not pay too much attention in the feedback of employees. (Uzair et al, 2017) confirmed the importance that recruitment and selection practices have on the organization. In their study conducted in the Pakistan, where the bank sector was the main protagonist of their research, they have argued that the process of recruitment and selection is seen to have direct impact on effectiveness of the organization.

Then, when the job requires skills improvement they will be trained. Based on the answers by the HR managers especially in two public companies the employees do not hold training too often and the employees as is obvious are not content with this fact.

Compensation and benefits, based on the managers' answers have been correctly implemented in the workplace and are distributed based on the positions of employees and sometimes high performed employees are rewarded. Relying on these data is revealed that there are gaps between the answers of the employees and HR managers' answers. Since the managers have argued that there is accurate implementation of compensation and benefits, on the other hand employees are answered differently from the managers by concluding that there is no properly implementation of this policy.

HR policies and practices have very crucial roles in the business environment, so the managers should pay more attention when it comes to the crafting of these policies (Alfes et al, 2013). Moreover, from the answers of the questionnaire is seen that the managers do not ask the employees for the feedback in a regularly basis.

The impact of HR policies and practices on employee outcomes

Starting from the training and development that is implemented in the workplace, is seen that the employees are not trained in a regularly basis. In the public companies which are Kosovo Telecom and Kosovo Energy Corporation they do not pay too much attention regarding this policy. It is also mentioned that the employees are regularly trained in regards to the job security and fire protection. While, Bank for Business as a private company enables its employees to participate in training in their training center, which is in the American University of Kosovo. The employees had negative answers when it comes to the training implementation in the companies, although there were some positive answers of the Bank for Business employees in regards to the training.

Regarding to the measurement of the HR policies and practices that might have on employee outcomes, the HR Managers are answered that the impact of these policies and practices on employee outcomes are measured based on their performance such as personal development plan, individual performance appraisal, etc. However, the employee turnover rate is increased this year in comparison to the previous years. This might have caused due to the job dissatisfaction of employees. As well, taking into consideration the job dissatisfaction of employees and the low commitment of them, the turnover rate of these companies is expected to increase in the next years.

Steps that these companies should take in order to improve their HR policies and practices

Based on the HR managers' answers how their specialization is linked to performance, they are answered that HR policies that they craft have a strong impact on business performance, which is supported by (Alfes et al, 2013). Based on the answers by HR managers have concluded that the monitoring process of the implementation of HR policies and practices is done based on individual performance appraisal according to the assessment criteria such as: delegation, group work, communication, flexibility planning, the participation on changes, targets achievements, problem solving, commitment, other developments, and overall performance in the workplace which are assessed by the grades from (0-10) which means: (0-2) – bad, (3-6) satisfied and (7-10) excellent. Based on these, the steps that should be taken to improve those will be mentioned below.

Firstly, HR managers should pay more attention to the point of crafting and executing the HR policies and practices. The employees should be included when it comes to the crafting of those policies, so they will be more satisfied and committed to the organization. For the magnitude of these policies and practices and the generally HRM and its impact on the employee performance and in general the organizational performance, is discussed in the article by (Batt and Colvin, 2011), concluding that HR managers should pay more attention in terms of crafting the policies and implementing the practices of HR.

HR managers should be more correct when they distribute compensation and benefits among employees in order to increase employees' job satisfaction and to reduce their turnover. The fact that job satisfaction, turnover and working commitment is affected by compensation and benefits policy is claimed in the article by (Saxena and Rai, 2016) and is supported by (Sani e, 2016), where is concluded that incorrectly distribution of compensation and benefits cause the job dissatisfaction of employees and the low work commitment of them.

Conclusions, limitations and areas for further research

Many studies throughout the years conducted in this area, have highlighted or pointed out some significant information in order to make people or the managers be aware of the importance of HR field. The overall organizational performance is depended on employers or the managers, their support, knowledge, correctively, which make the employees be more satisfied and more committed in their works.

The important of this research is because it has filled the gaps by the other authors or previous studies and here is highlighted the academic contribution. One of the most important gaps filled by this research is related to the need for conducting such research in the large companies in Kosovo, investigating and analyzing the impact that HR policies and practices have on employees' outcomes and analyzing the impact that have any of the HR practices on any of the employee outcomes.

This research will help the companies to improve their HR policies and practices by being aware that is revealed an extremely job dissatisfaction of employees, high turnover, and low organizational commitment. First of all, the companies should pay more attention when it comes to the recruitment and selection the right candidates. Then, training the employees more often, the managers ought to be more correct of distributing compensation and benefits and as well to be willing to give their supports when is needed. They should continuously take into consideration these facts if they want to improve their overall business performance.

A limitation is identified based on that the data were distributed in-person and in the hard copy, it was difficult to distribute questionnaires in different departments, so the majority of the employees were from HR department.

This research is focused in only three large companies out of 58 and the data cannot be generalized. In addition to this the HR policies and practices are focused in development in four of them and out of the research is the health and safety in the workplace, work-life balance, diversity issued, which have serious impact on employees' outcomes.

The three companies, participants of the research belong to two different sectors public and private sector. They are analyzed as a sample of large companies and the data from questionnaires and interviews are analyzed in common analysis without separating. As a limitation here, is revealed the unavailability to analyze the data separately, due to not leading the research towards another context. The data can differ from public to private sector.

Areas for further research

Further studies are needed to conduct in the manufacturing and service sector or in the public and private sectors and to make the comparison between the sectors in terms of the HR policies and practices and their impact on employee outcomes. Deriving from the limitations of the study, further research is needed in more large companies in Kosovo, which are overall 58 companies based on KAS.

In this research are investigated only some of the HR policies like recruitment and selection, training and development, compensation and benefits and perceived organizational support. There are also some other policies and practices that can impact on overall organizational performance, for example work-life balance, gender diversity, health and safety in the workplace, etc., that are expected to be part of further researches.

The organizational outcomes, which are affected by HR policies and practices, are only three: turnover, work commitment and job satisfaction of employees. There are some other outcomes that can be impacted by these policies and practices, like absenteeism, productivity, innovations, etc.

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