Research on Determining the Level of Knowledge and the Abilities Held by Students in Social Entrepreneurship as a Sustainable Development Source

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ABSTRACT
Although the use of the term social entrepreneur has experienced a rapid growth, the business of social entrepreneurship is lacking in rigour, and is still in its infancy, compared to that of classic entrepreneurship. Interest regard social entrepreneurs is a result of their role in resolving critical issues of social concern and the dedication they exhibit toward the good condition of the society. Audiences often placed the social entrepreneurs on a high level due to the multitude of social needs they satisfy, bringing benefits for affected communities. According to this study results, students of the Lucian Blaga University of Sibiu presents a significant interest towards this concept, being willing and even eager to develop the knowledge needed to succeed on this sector of the market. Improving the entrepreneurial education is also a decisive factor. There is a need to improve the quality of education, quickly by creating a strong links between academia and business. Schedule of studies should be adapted to the needs of the present, leading to the creation of new leaders with outstanding knowledge and ability, able to understand the Foundation of social entrepreneurship and to bring beneficial changes in society.

Keywords: social entrepreneurship, passion vs. business, skills and abilities, culture.

INTRODUCTION
The use of the term social entrepreneurship is gaining increasing popularity. This term is poorly defined and does not have a coherent theoretical framework. The absence of a consensus on a research topic usually results from the independent work of researchers and their failure to work on the basis of research by another individual, so it is not possible to accumulate new knowledge. There is a need to better define what is meant by the term social entrepreneur. What is the difference between social entrepreneurs and other entrepreneurs? What is or not a social entrepreneur? In the following it will be analyze the existent literature on the definition of entrepreneurship, and we will analyze the unique characteristics of a social entrepreneur.

Social entrepreneurship is different from the concept of entrepreneurship itself, but shares many similarities with the classical concept. Jean-Baptiste Say, a French economist, defines an entrepreneur as a person who "hires" an idea and changes the perspective in a way that emphasizes the effect that this idea has on society. (Martin and Osberg, 2007) However, the difference between "entrepreneurship" and "social entrepreneurship" stems from the purpose of economical creation. Unlike traditional corporate enterprises, social entrepreneurship focuses on maximizing earnings in social satisfaction rather than maximizing profits. In modern society, social entrepreneurship offers an altruistic form of entrepreneurship focused on the benefits that society can reap. Entrepreneurship becomes a social move when it transforms social capital in a way that positively affects society. It is seen as an advantageous concept, because the success of social entrepreneurship depends on many factors related to the social impact that traditional corporate enterprises do not have as a priority. Social entrepreneurs immediately recognize social issues but also seek to understand the wider context of a problem that crosses disciplines, areas, and theories. Better understanding of how a
problem reflects on society allows social entrepreneurs to develop innovative solutions and mobilize the resources available to have a major impact on global society. The mission of social entrepreneurship and the benefits they generate over communities are: Increasing the number of employed persons; Innovation and creation of new goods and services for social needs; Creating social capital for sustainable social and economic development; Promoting social equity by addressing the needs of disadvantaged people; Responsibility to the people they serve and the consequences of the actions taken.

Most economists and academics support the idea that entrepreneurship is becoming a crucial factor in the development and well-being of society. Regardless of whether entrepreneurial activities are being pursued in economies based on efficiency and innovation, the final results continue to show: lower unemployment rates, the tendency to adopt innovation, accelerating structural change in the economy. Entrepreneurship offers new competition and promotes improved productivity and healthy economic competitiveness. (UNCTAD, 2004)

Social entrepreneurship is the area in which entrepreneurs manage to create a direct link between their activities and the ultimate goal of creating social value. The social entrepreneur "combines the passion of a social mission with the image of a business discipline, innovation and determination, usually associated with high-tech pioneers in Silicon Valley." (Dees, J. G., 1998) Although the use of the term social entrepreneurship has grown rapidly, the field of social entrepreneurship is inadequate and is still in its infancy, compared to the classical entrepreneurship. The interest in social entrepreneurs derives from their role in solving critical social problems and their commitment to the well-being of society. The public often places social entrepreneurs on a high level due to the multitude of social needs they meet, bringing benefits to affected communities.

Table 1: Contrasting definitions and basic features of the term "social entrepreneur"

<table>
<thead>
<tr>
<th>Source</th>
<th>Definitions</th>
<th>Basic features</th>
</tr>
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<tbody>
<tr>
<td>Leadbeater, 1997</td>
<td>Social entrepreneurs are innovative, entrepreneurial, transforming individuals, who are also leaders, storytellers, managers, visionary opportunists, and alliance builders. They recognize a social problem, organize and manage a risk in making a social change.</td>
<td>Leader</td>
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<td></td>
<td></td>
<td>Manager</td>
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<tr>
<td>Bornstein, 1998</td>
<td>A social entrepreneur is a pioneer with a new, powerful idea that combines visionary creativity with real-world problem solving, has a strong ethical fiber, and is fully committed to his vision of change.</td>
<td>Mission leader</td>
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<td></td>
<td></td>
<td>Persistent</td>
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<tr>
<td>Dees, 1998</td>
<td>Social entrepreneurs play the role of change agents in the social sector through: creating a mission and supporting a social value; providing a strong sense of responsibility towards the beneficiaries of the case</td>
<td>Changing agent</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Extremely responsible</td>
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<tr>
<td></td>
<td></td>
<td>Dedicated</td>
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<tr>
<td>Thompson, Alvy, &amp; Lees,</td>
<td>Social entrepreneurs are people who recognize the existence of an opportunity to meet an unsatisfied need that the social protection system cannot solve gathering and using all the resources needed to &quot;make a difference.&quot;</td>
<td>Emotionally loaded</td>
</tr>
<tr>
<td>2000</td>
<td></td>
<td>Creator of social value</td>
</tr>
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</table>
Social entrepreneurship encompasses the activities and processes developed to discover, define and exploit opportunities in order to increase social wealth by creating new companies and by organizing the existing ones in an innovative way.

A social entrepreneur is someone who reasonably assumes a risk on behalf of the people in the organization they serve.

Social entrepreneurs are people with innovative solutions to the most urgent issues of society. They are both visionary and realistic convinced.

According to Global Entrepreneurship Monitor, 48% of the active population prefers to be on their own, unlike the European average of 37%. The reason for this result could be due to the low salary level, although almost half of Romanians say they do not have the financial resources needed to start a business, a double percentage compared to the European Union, where only 21% do not have such funds. (Amoros J.E. & Bosma N., 2014) Social entrepreneurship can help in the development of Romania, using community resources to resolve society's problems sustainably, due to the existence of funding sources (in particular the European Social Fund, as well as projects organized by international NGOs). Despite legal and terminological uncertainties, generally called non-profit organizations, social enterprises are active in Romania.

### Table 2: Unique and common features of classical and social entrepreneurs

<table>
<thead>
<tr>
<th>Unique characteristics of the classic entrepreneur</th>
<th>Common features</th>
<th>Unique characteristics of the social entrepreneur</th>
</tr>
</thead>
<tbody>
<tr>
<td>Organizer</td>
<td>Innovative</td>
<td>Mission leader</td>
</tr>
<tr>
<td>Strategic thinking</td>
<td>Dedicated</td>
<td>Emotionally loaded</td>
</tr>
<tr>
<td>Holistic</td>
<td>Take charge</td>
<td>Changing agent</td>
</tr>
<tr>
<td>Assuming risk</td>
<td>Leader</td>
<td>Leadership</td>
</tr>
<tr>
<td></td>
<td>Persistent</td>
<td>Creator of social value</td>
</tr>
<tr>
<td></td>
<td>Responsible</td>
<td>Visionary</td>
</tr>
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### RESEARCH METHODOLOGY

Designed research was focused on following main objectives: the level of knowledge about the concept of social entrepreneurship among the students from "Lucian Blaga" University of Sibiu (LBUS); the degree of interest in this concept; student’s inclination towards this type of business. We use two ways for collecting data, in the spirit to catch all the aspects we establish at the beginning of the study: primary data (information from questionnaire analysis) and secondary data (information...
obtained by online encyclopedia, newspaper articles, and other studies, etc.). The questionnaire contains closed questions, which are elaborated according to the research objectives and are formulated in a clear and concise way, so that the respondent understands the purpose of the question asked and the researcher obtains exactly the information he / she needs (Cernusca D., & Thistletwaite P., 2001).

The questionnaire was made using Google Docs, which, after completing the feedback, automatically generates statistics on their responses. The method chosen to distribute the questionnaire was through the social networks. Currently, almost all students have an account on this kind of networks and the time spent in the online environment becoming a trending element among them. The target market is represented by the students of Lucian Blaga University in Sibiu, the information was collected by the online survey method by an interviewer and the average duration of completing a questionnaire was 10 minutes. The questionnaire had a total of 220 respondents of different ages, represented by students from the 8 LBUS faculties - 40% women and 60% male (Figure 1).

Figure 1: Age groups

MAIN STUDY RESULTS

Current conditions to start a business in Romania

In 2017, Romania's economy grew by 7%, marking the highest level of post-crisis economic growth. GDP reached 856 billion Lei (187.5 billion Euros), making it the EU's 16th economy, with prospects to overtake the Czech Republic and Portugal in the coming years, to become the 14th EU28 economy. However, GDP / inhabitant remain the second lowest in the EU, with only Bulgaria registering a lower level (ccir.ro/2018/03/13/analiza-privind-evolutia-economiei-ro-2017). However, Romanians do not believe in this growth. A poll conducted by Eurobarometer at the end of 2017 shows that 71%
of Romanians have a bad opinion about the current economic situation, and 34% believe that the situation will be worse in the next year (http://ec.europa.eu).

The same tendencies are shown also by our survey done at the level of LUBS students, with 53% of them considering the current economic situation as unfavorable to starting a business. The major barriers for an entrepreneurship development identified among the students questioned are (Figure 2): Access to finance (finding the funds needed to start a business is the main barrier); Taxation system (the level of taxes and duties in Romania has reached a high level); Lack of necessary skills (the poor connection between the academic environment and the business environment may lead to a low level of development of the characteristics necessary to become an entrepreneur); Customer Relationship (information about customer needs and behaviors in order to develop strong relationships with them).

**Passion vs. business**

An idea, a real passion, the realization of a dream is the primary goal of starting a business, according to the respondents (54%). According to the study, one of the most important qualities associated with entrepreneurial success is passion. Usually, entrepreneurs are more concerned about what they are doing, the value of financial gain often occupying a secondary place in achieving goals (Ţuţurea M., 2002, Ṭuţutea M. & Miricescu D., 2011). Over half of the surveyed students consider the business as a way of putting into practice a dream. As can be seen in Figure 3, the most important factor in a business is the passion for a particular business area, combined with one gram of reason.

**Skills and abilities**

The whole community of entrepreneurs has some common skills and features, but there is also a wide range of specific elements among them. For this reason, some entrepreneurs receive formal training to develop skills and abilities, and others have a natural intuition that violates business environment rules, developing unusual approaches to success. These skills include: leadership, teamwork, stress resistance, risk-taking, accountability and independence. Respondents were asked to assess on a scale of 1 to 5 (1 - total disagreement, 5 - total agreement) the extent to which they agree with the assertions about the required skills. The results obtained are shown in Figure 4.
Figure 4: Skills and abilities

Assuming responsibility is a fundamental feature. Most of the respondents assume responsibility for their own work, but over 30%, not for community responsibilities. Around 80% of respondents have skills of creativity and innovation, always looking for new solutions to existing problems. All of these elements are not a weak point for the respondents, they are willing to work hard and always innovate to get what they want. People with the necessary skills and competences have far greater chances to become successful entrepreneurs (Brândașu D. & Cernușcă D., 2001)

In assessing the situation of Romanian entrepreneurial education, the interviewees were asked to specify what skills they needed to be developed to start a business. The summary of results shows first the need to develop a better knowledge of the field in which the business will develop, followed by an optimal management system and leadership.
The culture of social entrepreneurship

An entrepreneurial culture refers to a system of common values, beliefs and norms of members of a community. The idea of community can simply appear to support and interact positively with other people of common interest. Around 75% of LBUS students want to be part of such a community, also wanting to contribute to the strong development of that community.

Volunteering actually combines the accumulation of professional experience, personal development, and the ability to help or unconditionally support a cause. In Sibiu County, a multitude of NGOs are located in different fields of activity, an advantageous opportunity for LBUS students who participated in 81% of volunteer actions. Leadership, creativity, teamwork, flexibility, all these skills can easily be won through volunteering.

Key-players in social entrepreneurship

Now in Romania, the most important player in social entrepreneurship is the non-governmental organizations (NGO). The same thing was identified by the students, (Figure 6), they ranked NGOs on the first place as a potential player in social entrepreneurship, followed by authorized individuals, limited liability companies, and mutual help homes.

CONCLUSIONS

The concept of social entrepreneurship, increasingly used, could represent the opportunity that people in Romania expect. This type of entrepreneurship uses community resources to resolve society's problems sustainably, due to the existence of funding sources (in particular the European Social Fund, as well as projects organized by international NGOs. In modern society, social entrepreneurship offers an altruistic form of entrepreneurship focused on the benefits that society can reap.
entrepreneurship is increasingly positioned as a niche sector, becoming an attractive concept for both NGOs and the classical business environment. At the moment, the main player in this sector is represented by the NGO.

According to the data obtained the students at “Lucian Blaga” University of Sibiu show a significant interest in social entrepreneurship concept, being willing and even willing to develop the necessary knowledge to succeed in this market sector. The results of the study shows that to be successful in business, entrepreneurs need to share some common features. These skills include: leadership, teamwork, stress resistance, risk-taking, accountability and independence. We can conclude that improving access to sources of funding is the main priority for public policies. This is possible by improving access to information and providing startup advice. The legislative framework, the taxation system and the administrative barriers can be solved by implementing efficient charging regimes and by reducing bureaucracy.

Improving entrepreneurial education is also a decisive factor. It is necessary to rapidly improve the quality of education by creating a strong link between academia and business. The curricula should be tailored to current needs, leading to the creation of new leaders with special knowledge and skills able to understand the foundation of social entrepreneurship and bring beneficial changes to society. By implementing training sessions, by conducting competitions, by informing on funding sources and by underlining the importance of helping a social cause or some related to sustainable development, it is possible to obtain a significant development of social entrepreneurship in Romania, with a significant impact on the business environment and, of course, on the social one.

ACKNOWLEDGEMENT

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The R.A.I.S.E. Program of one Meralco Foundation: Social Innovation and Entrepreneurship Sustainability

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ABSTRACT

Corporate Social Responsibility (CSR) started as a philanthropic engagement anchored on the social philosophy of social justice and economic equity. In recent years however, this has been considered as a determinant of corporate governance structure which is divided into two conflicting theories: the legally based Agency Theory of the firm and the ethically-morally-based Stewardship Theory; and the classical Stockholder Theory and contemporary wider Stakeholder Value Model. In both approaches, good governance has become a corporate strategy and its impact in the form of cost-benefit or profitability remains a performance measure. Studies have been made to show the correlation of CSR and financial returns; between social innovation and entrepreneurial sustainability but on a perceptive-qualitative level only. The Relocatees and Informal Settlers Electrification (RAISE) Program is a CSR joint program of the One Meralco Foundation (OMF), Inc. and MERALCO to give assistance to informal settlers and communities who do not have access to electricity and have difficulty in availing the electricity services of MERALCO. In this paper, we aimed to evaluate and empirically test the sustainability of the program in terms of financial returns i.e Return of Investment, Net Present Value (NPV) of the investment and the satisfaction of the customers. The conceptual framework of the study was adopted from the RAISE Program design itself, constituting the interrelationships of various stakeholders-MERALCO, LGUS and the beneficiary-communities sampled in this study. The data gathering procedures were done through primary and secondary data taken from the stakeholders of the program: the OMF, MERALCO, LGU Partners and Beneficiaries. We were able to verify relevant information about the beneficiaries, proved the hypothesis that there is a significant positive relationship between the RAISE program and the kWh sales of MERALCO, and concluded that the Program is sustainable in terms of the set criteria-NPV, ROI and customer satisfaction. The result confirms the findings from various foreign and local studies, that “good corporate governance after all pays” and that “goals can be aligned” thus, reconciling its conflicting theoretical foundations. Recommendations were made on how to further improve and sustain the program, so that the stakeholders can be better served by MERALCO and OMF ensuring the sustainability of the RAISE program, thereby realizing one of its key corporate goals—good corporate governance. This includes among others additional related studies to be conducted considering the various assumptions and delimitations set in the operational framework.

Keywords: Corporate Governance, Corporate Social Responsibility, Financial Sustainability, Social Innovation and Entrepreneurship

“Corporate governance is concerned with holding the balance between economic and social goals and between individual and communal goals. The governance framework is there to encourage the efficient use of resources and equally to require accountability for the stewardship of those resources. The aim is to align as nearly as possible the interests of individuals, corporations and society”

--Sir Adrian Cadbury, UK Commission Report: Corporate Governance 1992
INTRODUCTION
This study was initially conceived during the course in business research and was continued as a formal thesis paper for graduate program degree by the co-authors as student-advisor. We were motivated to convert this study into a journal paper aligned with the theme on Corporate Governance, Social Innovation and Entrepreneurship.

For decades, the maximization of shareholder wealth has been the dominant objective of capitalists and corporations worldwide (Lazonick & O’Sullivan, 2000). This objective has been an inextricable component of our laws in modern society, the management practices that govern businesses, and even forms the basis of rational economic theory (Saint & Tripathi, 2006). More recently, this view has been challenged with the growing popularity of stakeholder theory.

The Cadbury Corporate Governance Report (1992) which we quoted early in this paper, defined corporate governance as “the system by which companies are directed and controlled.” Numerous theories have been proposed on corporate governance best practice, but none more popular than the shareholder and stakeholder theories.

In the Philippine setting, these two theories have not been highly debatable and in much conflict, since it evolved gradually from Community Relations (Comrel) to Corporate Social responsibility (CSR) and eventually into Corporate Governance.

Luz (1993) citing Gabino Mendoza former President and Dean of the Asian Institute of Management (AIM) opined that “life was simpler in the fifties. The business then of business in the Philippines was to produce goods and services that satisfied society’s needs and, in the process, to make profit. Beyond these, the responsibility of a corporation to society was to engage in philanthropy, to contribute some of its surplus for civic and social causes.”

The activist sixties and seventies saw society beginning to expect more from business than just “business as usual”. Increasingly, Philippine society has demanded, particularly from big business, which was perceived as hoarding within itself a lion’s share of the available managerial and technical talent, help in solving seemingly intractable problems which in the past had been considered the exclusive concerns of government.

For over three decades (1960-80) sectors of Philippine Business have been engaged in social development through such organization as the Philippine Business for Social Progress (PBSP). But it was only in 1985, at the height of the socio-political and economic crisis of Martial Law under the Marcos Administration that precipitated a change in government, that individual businesses began to get directly involved with communities on a broader scale (Luz, 1993). In the same work, Luz documented how nine progressive, and socially responsible companies have related to, and responded to Philippine society’s heightened demands. It tells the stories of why and how these companies have engaged in community relations (comrel) projects on their own initiatives separate from the constitutionally mandated social justice provisions in both the Freedom Constitution (1986) and the 1987 Philippine Constitution.

Following the three succeeding administrations after the Cory Aquino Government (19986-1992); the Ramos Administration (1992-1998); Estrada (1998-2000); Macapagal-Arroyo (2000-2012), governance and corruption have once again taken center stage in today’s media. The war against corruption by the current administration has expanded into the corporate realm when the elected President recently named a business tycoon of a publicly listed corporation as being an “oligarch” with “questionable dealings. While every layman has an intuition on the subject, few have a deep understanding and grasp of the concept of governance and its ramifications in the strategic
management of firms. Corporate governance is generally referred to as to set of regulatory mechanisms and systems in the proper and effective direction and control of corporations (Gacag, 2016).

The contemporary work of Echanis (2006), former Dean of the UP College of Business Administration on corporate governance has formally described its application and practice in the Philippine Financial Sector. She describes corporate governance as referring to both the structure and process by which the public corporations control agency problems. Some of the issues addressed by Corporate Governance are: 1) how suppliers of finance assure themselves of getting a return on their investment (Shleifer and Vishny, 1997); 2) how to determine the uses of organizational resources and how to resolve conflicts among participants in organizations (Daily and Cannella, Jr., 2003); and 3) what mechanisms can be instituted through which outside investors protect themselves against expropriations by the insiders (La Porta, 2000).

Cagac (2016) further opined that “the principles of corporate governance have been derived from the classic agency theory propounded by Berle and Means (1932) who predicted that management (termed “agent”) would act in its best self-interests in the conduct of its duties and tasks in managing a corporation. This is often to the detriment of the share owners (termed “principals”) which have put up the capital in the firm. In effect, the theory predicts corporate “corruption” (also called the agency problem) by insiders who exercise control over the firm and its assets and resources”.

Hence, numerous scholars and researchers have put forward the concept of instituting mechanisms for the proper and ethical management of corporations. Government regulators assent to the need for a coherent framework, whether rules-based or guidelines-based, which should be put in place to reduce expropriation of corporate resources for private gain and entrenchment by insiders that eventually weaken firms over the long-term.

We were guided by the UK Commission Report on corporate governance quoting Cadbury (1992) that “corporate governance is concerned with holding the balance between economic and social goals and between individual and communal goals. The governance framework is there to encourage the efficient use of resources and equally to require accountability for the stewardship of those resources”. This is the area in corporate governance that we intend to address—a quantitative study that would empirically test the impact of good governance, specifically CSR program on the financial returns of the sponsor-firm and assure the stockholders of the sustainability of the program as well as the over-all value of the firm.

Thus, this study intends to fill the gap for a study at the empirical level of a Comrel project since the time of the PBSP-commissioned documentary work of Luz (1993) involving nine Philippine companies and up to present.

Realizing the social challenges in our society, MERALCO continues to answer the call to achieve more and make an impact on the lives of marginalized communities in our country. The company, in partnership with One Meralco Foundation, Inc. (OMF), established a program in 2007 named Relocatees And Informal Settlers Energization (RAISE) program to give assistance to the need of these communities for legalized electric service of MERALCO. This is consistent with the thrust of OMF and MERALCO programs for rural and missionary electrification on bringing light to the marginalized sector of the community. More than 9,000 households have already benefitted from this program since it started in 2007.

The RAISE Program of one Merakco Foundation: Social Innovation and Entrepreneurship Sustainability, Sevilleja, Pastrana
Since inception, there has never been an assessment on how the program has benefitted the company considering its contribution to the kWh sales and how effective this has been as some of the services that were given to the beneficiaries were terminated already due to non-settlement of regular bills.

**Statement of the Problem and Objectives**

In this study, we aimed to assess the sustainability of R.A.I.S.E as a social innovation and entrepreneurship program of MERALCO. Specifically, the following specific research questions are formulated: a) What relevant information can be derived from the profile of the beneficiaries?; and b) What is the relationship between the RAISE program and the kWh sales of MERALCO.

Based on these two main research questions, we set the following objectives. First, we want to determine how effective has MERALCO’s R.A.I.S.E. Program been in implementing its CSR objective to pursue program sustainability. Then, we intend to evaluate the impact of MERALCO’s R.A.I.S.E. Program to its CSR goals and target beneficiaries for the period 2007-2014; and finally, we want to evaluate the financial sustainability of the RAISE program.

**Scope and Limitations of the Study**

In this paper, we evaluated the existing RAISE project of the foundation. Analysis is derived from data of kWh Sales, count and profile of beneficiaries, the project costs given by MERALCO and the revenue or cash inflow that is derived from the program. These are recognized in order to derive recommendations for the improvement of the project.

The paper is limited to the study of the profile of the beneficiaries of the foundation. Data were from the Executive Information System (EIS) and Customer Management System (CMS) and the Marketing Data Support System (MDSS) of MERALCO. The 2014 Customer Satisfaction Index of MERALCO for Residential customers was used as the basis of the computation of the number of respondent customers for the questionnaire.

**REVIEW OF LITERATURE, THEORETICAL UNDERPINNINGS AND HYPOTHESES DEVELOPMENT**

In our critical review of the literature, we traced the origins of corporate governance by looking into the various theories of the firm, the transformation from agency theory to stewardship theory and the conflicting stockholder theory versus the shareholder value theory and the underpinnings of the determinants of corporate governance structure. But we focused on defining the corporate social responsibility as an avenue for a private company to make an impact to the community. Sustainability development is defined to be one of the goals of the foundation to further serve the country and community.

Thus, we also reviewed literature on the impact of corporate governance on firm profitability both foreign and local Philippine studies. With the merging environments and communities involved where CSR activities are being implemented, it is the intention of the literature to also describe through data of MERALCO, the profile of the informal settlers in Metro Manila. The demographics, employment status, source of income, cost of living and other significant details that will describe the target market of the RAISE program are considered.

**The Theory of the Firm**

Pei (2004 of the Monetary Authority of Singapore, a contemporary model of a state successfully implementing good governance, made an extensive review of the literature and empirical research
addressing corporate governance and corporate performance, and the roles and effectiveness of various governance institutions and mechanisms, in particular the board of directors. Traditional economists view a firm as a production function (Coase 1937). This view lends itself to theorizing that leads to the structure of corporations we see today, i.e. capital and managerial effort are merely factors of production, without reference to property rights. Thus, managers allocate resources as they see fit without proper accountability for their decisions. This classical production function does not include the influence of public policy, family dynamics, and network exigencies common in some emerging economies such as Asian corporations. Simply put, this view says little about the contractual relationship between stakeholders, boards, and managers.

Neo-classical economists see a firm as a nexus of contracts (Alchian & Demsetz 1972; Jensen & Meckling 1976; Fama 1980). Through the firm, the various resource owners increase productivity through cooperative specialization. The relationship between the owner of the firm (i.e. residual claimant) and team members such as employees and suppliers is simply a “quid pro quo” contract. They stress that property rights are shaping economic behaviors.

For example, the rights attached to securities give investors the power to extract from managers the returns on their investment. Shareholders can vote out the directors if they do not take care of shareholders’ interest. Bondholders can bankrupt the firm if they are not paid interest and principal. Without these rights, firms would find it harder to raise external finance and hence no investment or production activities can be carried out (La Porta & Lopez-De-Silanes 1998). Whoever owns the assets and therefore bears the risks and retains the right to the residual rewards from production is important because it is this person(s) that fundamentally determines the allocation of scarce resources. The issue of property rights brings into relief the theoretical underpinnings for future research in corporate governance (Aghion & Tirole 1997).

The Institution of Corporate Governance

Rue (2003) in a Harvard-supported study, outlined the institutions of corporate governance decision-making in the large public firm in most wealthy countries in the west. He termed corporate governance, to mean the relationships at the top of the firm—the board of directors, the senior managers, and the stockholders. By institutions, he meant those repeated mechanisms that allocate authority among the three and that affect, modulate, and control the decisions made at the top of the firm.

Core corporate governance institutions respond to two distinct problems, one of vertical governance (between distant shareholders and managers) and another of horizontal governance (between a close, controlling shareholder and distant shareholders). Some institutions deal well with vertical corporate governance but do less well with horizontal governance. The institutions interact as complements and substitutes, and many can be seen as developing out of a “primitive” of contract law.

The Agency Theory versus Stewardship Theories: Governance Structure of the Firm

The Agency Theory

Pei (2004) was able to trace the historical theoretical underpinnings for the extant research in corporate governance; one coming from the classic thesis, “The Modern Corporation and Private Property” by Berle & Means (1932). The thesis describes a fundamental agency problem in modern
firms where there is a separation of ownership and control. Such separation has been clearly
expressed by the authors’ own statements: -

“It has often been said that the owner of a horse is responsible. If the horse lives he must
feed it. If the horse dies he must bury it. No such responsibility attaches to a share of stock.
The owner is practically powerless through his own efforts to affect the underlying
property. The spiritual values that formerly went with ownership have been separated from
it...the responsibility and the substance which have been an integral part of ownership in
the past are being transferred to a separate group in whose hands lies control.”

The other one is from Adam Smith (Smith ,1937) who made a caustic remark about the agency
problem: -

“The directors of such companies, however, being the managers of other people’s money
than their own, it cannot well be expected, that they should watch over it with the same
anxious vigilance with which the partners in a private co-partnership frequently watch over
them...Negligence and profusion, therefore, must always prevail more or less, in the
management of the affairs of such a company.”

Jensen & Meckling (1976) further define agency relationship and identify agency costs. Agency
relationship is a contract under which “one or more persons (principal) engage another person
(agent) to perform some service on their behalf, which involves delegating some decision-making
authority to the agent”. Conflict of interests between managers or controlling shareholder, and
outside or minority shareholders refer to the tendency that the former may extract “perquisites” (or
perks) out of a firm’s resources and less interested to pursue new profitable ventures.

Agency costs include monitoring expenditures by the principal such as auditing, budgeting, control
and compensation systems, bonding expenditures by the agent and residual loss due to divergence
of interests between the principal and the agent. The share price that shareholders (principal) pay
reflects such agency costs. To increase firm value, one must therefore reduce agency costs. This is
one way to view the linkage between corporate governance and corporate performance. Fama
(1980) aptly comments that separation of ownership and control can be explained as a result of
“efficient form of economic organization”.

Summarizing his findings, Pei (2004) opined that “with its root in industrial and organizational
economics, Agency Theory assumes that human behavior is opportunistic and self-serving.
Therefore, the theory prescribes strong director and shareholder control. It advocates fundamental
function of the board of directors is to control managerial behavior and ensure that managers act in
the interests of shareholders”.

The Stewardship Theory

Although Agency Theory is the dominant perspective in corporate governance studies, it has been
criticized in recent years (Hoskisson et al. 2000; Blair 1995; Perrow 1986) because of its limited
ability to explain sociological and psychological mechanisms inherent of the principal-agent
interactions (Davis & Thompson 1994; Davis et al. 1997). For example, outside directors as
emphasized by Agency Theory, with only legal power, may not possess sufficient expertise and
seldom have close social ties with top managers. Stewardship theory is proposed as an alternative
perspective to Agency Theory. Stewardship theorists assume that managers are good stewards of
the firms. They are trustworthy and work diligently to attain high corporate profit and shareholders’

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returns (Donaldson & Davis 1994). These stewards can cooperate and work closely with the principal to achieve a “goal alignment” (Davis et al. 1997).

In an empirical study by Tian and Lau (2001) among Chinese shareholding companies to contrast Agency and Stewardship Theories, they find that the stewardship hypothesis received stronger support. At the methodological level, Tian and Lau (2001) use two different board composition measures, i.e. independent directors and affiliated directors, to highlight their differences in motivation, firm-specific knowledge, information advantage, interpersonal relationship and mutual trust with the managers, along which dimensions that agency and stewardship theories diverge from each other. CEO duality (i.e. the roles of Chairman of the board and CEO is held by one person) is also seen as a supporting attribute to the stewardship theory and used in the test by Tian and Lau (2001). Phan (2001) suggests that whether the assumptions of Agency Theory can be generalized to emerging markets, with their different sociological, economic, and developmental fundamentals, remains an important research question.

**Stockholder Theory Versus Stakeholder Model: Conflicting Theories of Corporate Governance**

**The Stockholder Theory**

The shareholder theory was originally proposed by Milton Friedman and it states that the sole responsibility of business is to increase profits. It is based on the premise that management are hired as the agent of the shareholders to run the company for their benefit, and therefore they are legally and morally obligated to serve their interests. The only qualification on the rule to make as much money as possible is “conformity to the basic rules of the society, both those embodied in law and those in ethical custom.”

The shareholder theory is now seen as the historic way of doing business with companies realising that there are disadvantages to concentrating solely on the interests of shareholders. A focus on short-term strategy and the demise of corporations such as Enron and World.com where continuous pressure on managers to increase returns to shareholders led them to manipulate the company accounts. (Cadbury Commission Report, 1992).

**Shareholder Value Model**

Much ‘soul searching’ has been conducted in international business circles (academic, media and industry) as to the causes of the current/past financial crisis and the ‘lessons that must be learnt’. In some media institutes unprecedented questions are being asked as to the fundamental nature and future of the capitalist system and the financial crisis has spurred some to question the very purpose of business schools (Starkey and Tempest, 2009).

In this context, there has been a chorus of criticism from a number of academics concerned with what they regard as the current zeitgeist in business schools with its emphasis on ‘cold’ and ‘amoral’ management prescriptions (Starkey and Tempest, 2009). However, despite calls for the infusion of more a moral and humanist ideology into business teaching (see Ghoshal, 2005; Gintis and Khurana, 2006; Starkey and Tiratsoo, 2007; Hay 2008; Starkey and Tempest, 2009), relatively little examination of the fundamental structure of the corporate governance model in the ‘Anglo-Saxon’ countries has been undertaken. However, any critique of corporate values that overlooks corporate governance is limited given that the board of directors is responsible for setting the organizational priorities and values through their decisions regarding strategy, incentives and
internal control systems (Ayuso and Argandoña, 2007).

In this context, it is contended that the validity of the Anglo-American corporate governance model, with its embedded paradigm of shareholder primacy, is a questionable basis for the long-term sustainability of organizations and indeed the global economic system.

Stakeholder theory, states that a company owes a responsibility to a wider group of stakeholders, other than just shareholders. A stakeholder is defined as any person/group which can affect/be affected by the actions of a business. It includes employees, customers, suppliers and even the wider community and competitors.

Edward Freeman, the original proponent of the stakeholder theory, recognizes it as an important element of Corporate Social Responsibility (CSR), a concept which recognizes the responsibilities of corporations in the world today, whether they be economic, legal, ethical or even philanthropic. Nowadays, some of the world’s largest corporations claim to have CSR at the center of their corporate strategy. While there are many genuine cases of companies with a “conscience”, many others exploit CSR as a good means of PR to improve image and reputation but ultimately fail to put their words into action.(Cadbury Commission Report, 1992).

Corporate Social Responsibility (CSR)

An overview on CSR and its implementation in MERALCO is briefly discussed with the literature. It is in the context that the focus of our study is the attainment of sustainability of the RAISE program. With the impact of the Corporate Social Responsibility (CSR) programs of the company in the communities, discussions on reviving the growth and meeting the needs of the beneficiaries were considered. Management of the risks involved in the implementation of a CSR activity is thoroughly discussed to give guide for the creation of metrics of sustainability.

D’Amato (2009) opined that corporations of the world are now taking new roles of making an impact to the lives of people in deprived societies and the natural environment. This is in consideration that they also need to take into account the needs of their company. Marrewijk (2003) explains that compliance to sustainability principles is also necessary with the way these companies conduct business and their activities that demonstrate the inclusion of social and environmental concerns in its operations and interactions with stakeholders.

Kreutzer (2005) further says that in his company, Storebrand, they are committed in creating economic value but still continue to do business as usual activities. According to him, businesses become progressive companies when they respond to societal signals as they gain competitive advantage. Companies prosper by helping society to prosper.

When a company experiences economic prosperity, it is not good enough when it keep itself from the driving force that impacted its actions. With the existing trend of big companies that take initiatives to make an impact to other communities, it is encouraged that a company should increase its bottom line and be a good citizen (Marrewijk, 2003).

With the corporate social responsibility programs (CSR) of companies, they are able to understand their mission and vision and their stakeholders. This can be considered as a competitive advantage as they are able to transform their communities and have a sustainable program that can play a major role in the society at the economic and social levels that can result to a different responsibility beyond the traditional role of the company.

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Porter (2005) postulates that “the goal is to leverage your company’s unique capabilities in supporting social causes, and improve your competitive context at the same time. The job of today’s leaders is to stop being defensive and start thinking systematically about corporate responsibility.”

**Sustainable Development of CSR Programs**

According to the World Bank, sustainable development should meet the present without compromising the ability of future generations to meet their own needs. Exploring the social, economic and environmental challenges that take part in the CSR programs, it is important the companies need to balance their decisions on their programs.

Crowther (2008) says that the effect of a social responsibility program of a company can lead to the enrichment of a local community and transform it. Referring to the Brudtland report which is considered to be extremely important in addressing the issue of sustainability, it describes seven strategic imperatives for sustainable development: a) Reviving growth, b) Changing the quality of growth; c) Meeting the essential needs for jobs, food, energy, water and sanitation and; d) Ensuring a sustainable level of population;

**Theoretical Framework**

MERALCO as a company aims that its activities with One Meralco Foundation and the people in the communities be sustainable with how the things are being done and the way these people do the preparations and implementation of the program.

The implementation of the RAISE Program of the One Meralco Foundation, Inc. (OMF), is recognized by the management of MERALCO for the costs which the company incurs as it is related to the perceived risk associated with the support the company is willing to give for the beneficiaries. According to Crowther (2010), there is a direct correlation between the risk involved in an investment and the rewards which are expected to accrue from the investment.

**The RAISE Program of MERALCO**

The RAISE program was launched in order to provide the necessary assistance for the communities in availing electricity to MERALCO. The program is in collaborative efforts by the beneficiaries, MERALCO and its employee volunteers, Local Government Units (LGU), and One Meralco Foundation.

The program aims to support beneficiaries by giving them financial and other support in establishing linkages with other stakeholders of the program. With RAISE, people in the depressed communities are able to have electricity that is directly billed to MERALCO and further realize reduction of their electricity bills such that the sub-metered bills and illegal connections are removed with their legalized electric service. The RAISE stakeholder interrelationships is presented in Figure 1 below:

**Conceptual Framework**

Adopting the Stakeholder Value Theory of Corporate Governance, the factors related to the components of the RAISE program and the collaboration of the stake holders: LGU, beneficiaries, MERALCO, Employee Volunteers, and One Meralco
Foundation in achieving the goal of providing electricity to the beneficiaries comprise the structural model of the Program as shown in Figure 1.

The RAISE Model in Figure 2 below gives a solid conceptual framework on how tangible things come into reality in providing electricity to communities.

**Figure 1. RAISE Stakeholders Structural Framework**

**Figure 2: RAISE Model**

**Operational Framework**

From the above given conceptual model, the operational framework of this study is presented below, showing the RAISE Program as the independent variable and its content as determinants, the revenue generation as dependent variable, being the immediate and direct output of the Program, and the Impact of the Program measured in terms of financial return – viability to Meralco as the Program proponent and customer satisfaction of the intended beneficiaries.

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The RAISE Program and the beneficiaries are initially deemed to have a correlation with the energy sales of MERALCO. These factors affect the increase of the energy sales of MERALCO and the sustainability of the program as a CSR activity.

In the framework, the RAISE program, with the defined profile of beneficiaries directly affect the energy sales of MERALCO in terms of kWh influencing its revenue as a distribution company. The intangible results of the program such as credibility or reputation and customer satisfaction are not included in the framework to be subjects of the study.

The environment, political and legal effects of the program and to the stakeholders are deemed to be constant.

**Statement of Hypotheses**

We intend to identify the relevant information that can be derived from the profile of the beneficiaries and determine the significant relationship between the RAISE program and the kWh sales of MERALCO. From the study, evaluation of the program is to be confirmed using the metrics of the return on investment and customer satisfaction. Thus the following hypotheses are posited:

H1: There is a significant relationship between the RAISE program and the kWh sales of MERALCO.

H2: RAISE beneficiaries that became customers of MERALCO are very satisfied customers: $\mu > 4$.

H3: The RAISE Program can achieve sustainability.

**3. RESEARCH METHOD**

We have presented in Table 1 below a summary of the research methodologies used in this study, combining descriptive and causal design, and primary and secondary data sources that best fit the specific research question.

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Table 1
Summary of Sampling Plan, Research Design and Data Gathering Procedure

<table>
<thead>
<tr>
<th>Research Question</th>
<th>Sampling Plan</th>
<th>Research Design</th>
<th>Data Gathering</th>
</tr>
</thead>
<tbody>
<tr>
<td>Profile of Beneficiaries</td>
<td>All the beneficiaries were considered, n = 1337</td>
<td>Descriptive</td>
<td>Secondary Data</td>
</tr>
<tr>
<td>Relationship of Sales and the RAISE Program</td>
<td>All the beneficiaries were considered, n = 1337</td>
<td>Causal and Correlation</td>
<td>Secondary Data</td>
</tr>
<tr>
<td>Customer Satisfaction</td>
<td>n = 42</td>
<td>Descriptive</td>
<td>Secondary and Primary Data</td>
</tr>
<tr>
<td>Sustainability of the RAISE Program</td>
<td>All the beneficiaries were considered n = 1337</td>
<td>Descriptive</td>
<td>Secondary and Primary Data</td>
</tr>
</tbody>
</table>

4. DATA ANALYSIS AND RESULTS

Through the primary and secondary data using statistical tools such as Pearson’s Coefficient, the Regression principle and the test of proportions, following are the results:

On Research Question 1: On the profile of respondents, it was established that there are a greater number of beneficiaries in the Class A segment of MERALCO’s business centers, of which 1.97% of the customers under RAISE program are active (i.e no unpaid bills) and only 3% are terminated. This is above the acceptable threshold of OMF (90%) of active services of the project. Drilling down the profile of the active customers, 88.17% formed the group of customers with no unpaid bills. 8.42% were active but the pending field orders for disconnection, 3.16% were active but disconnected and 0.02% were pending for termination.

Considering the locational distribution of the R.A.I.S.E beneficiaries viewed per city, Pasig City and Angono have the most (100%) active customers while Manila area had the most number of terminated customers, having 9% of the total beneficiaries in the area.

In terms of electricity consumption, this study showed a significant decrease (by 26%) among the lifeline customers at the second year of their contract. This is significant for MERALCO as these customers are not already subsidized. There was a 12% increase in their average monthly consumption. This is a good signal for MERALCO because this can contribute to its Rate Asset Base (RAB).

On Research Question 2, regarding the relationship of the RAISE program and the kWh Sales of...
On Research Question No. 3- the financial sustainability of the RAISE Program, this study used the ROI, NPV of OMF. Most of the respondent cities attained positive ROI except for Angono and Mauban. The positive ROI is very significant to both MERALCO and OMF as this resulted to faster return of investment in these areas and enables the stakeholders to continue fostering the implementation of the RAISE program ROI. This is also backed up by the results of the Net Present Value (NPV) computation as it exhibited positive results after five years. For the areas with negative ROI and NPV, this is explained with the low occupancy rate or electric consumption in the areas and these are in the provinces. According the Head of HMB Central Business Area, the customers in these do not have much appliances compared to customers living in the cities.

5. CONCLUSIONS AND RECOMMENDATIONS

On the basis of the above findings, we accept our hypothesis which states that “there is a relationship between the RAISE program and the kWh Sales of MERALCO”. With a rating-scale of 9.0 for customer satisfaction, we conclude that the beneficiaries of the RAISE program are very satisfied with the products and services of MERALCO.

Most of the projects in the mentioned cities under this study had ROI exceeding the cost of capital (14%) and the Net Present Values (NPV) after 5 years netted positive peso values, at a discounted at hurdle rate of 14% prescribed by MERALCO, and that the customer satisfaction is 9.0 or very satisfied from the designed scale, we therefore conclude that based on these criteria, the RAISE Program is sustainable.

Implications to Theory.

The findings in our study confirm previous studies that there is a correlation between corporate social responsibility and financial return; and that good governance thus brings positive effect on the bottom line of companies.

In the study of Aggarwal (2013) he formulated the research question – “Are Corporate Governance and Corporate Profitability Related?” in short term, particularly in an Indian context. He endeavored to determine the direction of causality between them using an initial sample of 50 Indian companies listed on S&P CNX Nifty 50 Index. He also used two sets of secondary data (governance ratings and corporate profitability variables) over a period of three years from FY 2010-11 to FY 2012-13, while controlling for size of firm. He also controlled for sustainability performance of firm, i.e. Environmental, Employee and Community-related performance.

The governance and sustainability ratings data has been obtained from ‘CSRHub database’, while the financial data has been taken from companies’ websites, annual reports, financial statements and ‘moneycontrol.com’. Applying a series of statistical tools like descriptive statistics, multiple regression, correlation and tests of significance (t-test and F-test), he found that governance rating has a positive but insignificant impact on corporate profitability of firm. Further, he found that corporate profitability also has an insignificant positive impact on governance rating of firm.

The findings in the paper of Iqbal (2008) likewise supports this findings. In this study, the
relationship between corporate governance and profitability of the national and multinational pharmaceutical firms in Pakistan was examined by measuring corporate governance dimensions in terms of board size, independent director, board committees, board remuneration, and firm size; whereas, profitability of the pharmaceutical firms were measured in terms of return on assets, return on equity and return on sales. The result of this study exhibits that board size, independent director, board committees, board remuneration and firm size are positively associated with corporate performance. By and large corporate governance has a strong impact on the corporate performance. Thus, the study has concluded that corporate governance has a strong significant impact on the profitability of the pharmaceutical firms in Pakistan.

However, another study in Iran in 2006 has mixed results. This study used data from companies listed in the Tehran Stock Exchange (TSE) for the years 2005-2006 to investigate the role of corporate governance indices on firm performance using board size, board independence, board leadership and institutional investors on the board as corporate governance indices, EPS, ROA and ROE as firm surrogates. The regression analysis showed that the board size is negatively associated with firm performance. Moreover, the outside directors strengthens the firm’s performance; and found no relationship between leadership structure and firm performance. (Bazaz,2008).

In the Philippine setting, the study of Mohammadpoor & Teehankee (2014) examined the impact of corporate governance on firm performance and stock price among publicly listed companies in the Philippines during 2009 to 2011. This study used multiple regression analysis to test the hypothesis in a sample of 52 firms. The researchers utilized Full model and Stepwise Model to come up with set of independent variables that were significant to ROE, ROA and Stock Price. The variables are transformed to make it comparable and were able to meet assumptions such as Linearity, Multicollinearity, Normality and Heteroscedasticity.

The results of this study lends some support to the theory that corporate governance has a positive impact on firm performance. Firm size was found to be directly related to ROE and Stock Price while inversely related on ROA. Interaction of Firm Size and Silver directly related to ROE and Stock Price while inversely related on ROA. The Interaction of Firm Size and Gold directly related to ROA while inversely related on ROE. Interaction of Firm Size and Platinum inversely related to Stock Price. Interaction of Firm Age and Silver directly related to ROA while inversely related on ROE. The Interaction of Firm Age and Gold directly related to ROE while inversely related on ROA and Stock Price. Interaction of Firm age and Platinum and Interaction of Firm age and Platinum Plus directly related to Stock Price.

**Implications to Policy and Practice.**

The experiences of newly-industrialized countries (NICs) in the Asia-Pacific, in particular China and South Korea support these findings. The work of Cheung & Jiang (2008) assessed the quality of corporate governance practices of Chinese listed companies in 2004. They developed a corporate governance index (CGI) to measure the overall quality of corporate governance and disclosure practices of the 100 largest Chinese listed firms. The results show that some Chinese companies have been making progress in corporate governance reform. Specifically, there is a significant difference in the CGI of the top versus the bottom performing companies.

In South Korea, a study by Sung (2003) on corporate governance and firm profitability before the economic crisis examined ownership structure and conflicts of interest among shareholders under a poor corporate governance system affected firm performance before the crisis. Using 5,829 Korean firms subject to external audit, the study found that firms with low ownership concentration show
low firm profitability.

The findings in our study and supported by various studies abroad and in the local context in various industries suggest that corporate citizenship does pay. It brings financial returns to the sponsoring organization and adds customer value to the firm through improved customer satisfaction and financial returns. Thus, companies should sustain their CSR Programs.

Notwithstanding the results of this study, we recommend the following measures as improvements to the Program:

1. For the sustainability of the RAISE Program, there is a need for further studies on the effect of the RAISE program on the environment and its Political and Legal implications and verify the causal relationship of the satisfaction of the customers to the sales of MERALCO.

These external factors affect the independent and dependent variables however, they are assumed to be constant for the reason that they will have separate programs and study for deeper analysis is needed. The scope of the paper is just to evaluate the relationship of the independent and dependent variables thus, the following are held constant:

**Environment** - the type of community where these informal settlers reside. Consistency and community involvement is really very important in doing social and environmental care especially in the area of CSR wherein MERALCO continues to engage the communities and share its resources for the improvement of the lives of its beneficiaries. It is also the goal of OMF to continue build a sense of community-living and approach in terms of really imparting the foundation’s vision for a holistic community to MERALCO employees.

**Political and Governance** – the influence of regulatory issues in the community and the cooperation of the government to support the RAISE Program. There is a need to identify the legal implications of this support as these facilities are being installed in public and private lands.

**Political and Legal.** Considering that the LGU is a major stakeholder of the company, only one impact is seen on MERALCO, OMF and the LGU. Partnership is strengthened as the relationship is improved thru the implementation of the program. With RAISE, there is an increase of awareness on the limitations of the government to effectively implement its programs for the informal settlers and giving also an avenue for private foundations like OMF to take part. The political impact of the RAISE program was assumed to be constant by the researchers in this study.

To One Meralco Foundation: Validate and measure the sustainability of the RAISE program and identify the effective average support of the OMF per RAISE beneficiary

To MERALCO: Determine improvements on the process and procedures of MERALCO on how to expedite applications under the RAISE program, increase marketing support for the program in order for beneficiaries to increase availments of other innovation programs, spell out regeneration model and develop a class of micro-entrepreneurs and agripreneurs by allowing and giving them the power to control their consumptions through Pre-paid electricity.

We further recommend that there should be automatic meter reading, disconnection and reconnection for services in these areas, validate existing policies of MERALCO for the waiving of project costs. Considering the changes in these informal settlements areas, MERALCO should

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identify other possible changes or additional guidelines to serve possible RAISE beneficiaries and encourage raising equity from the communities and NGOs that are willing to partner with the RAISE program.

With the foregoing recommendations, we hope that the stakeholders can be better served by MERALCO and OMF ensuring the sustainability of the RAISE program, thereby realizing one of its key corporate goals—Corporate Social Responsibility.

Recommendations for further research include a quantitative explanatory-causal study on the effect of corporate governance practices e.g CSR on the financial returns of the firm across industries and a bigger scale.

6. ACKNOWLEDGMENTS
We would like to acknowledge the support of the heads of MERALCO AND OMF including their technical and administrative staff on this study. Credit is due also to the Panel members who reviewed this paper which contributed to the improvement of the study.

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Development of social capital of young people: comparative analysis among students from Poland, Lithuania and Slovakia.

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ABSTRACT
Social capital is perceived as an important factor of economic growth as it expresses human willingness to cooperate in a network of trust-based relationships. Social capital gives young people the opportunity to achieve their goals in a more effective way. Therefore, it is important to study social capital problems notably among young people, who will undoubtedly play an important role in the future society. This study aims to explore the changes in social capital among young people while studying. The survey was carried out on students of three Universities in three countries: in Poland, in Lithuania and Slovakia.

The article consists of several parts. The first part presents the selected aspects of social capital and education. This part is followed by the research methodology, the main findings and recommendations. In the data analysis, measures of descriptive statistics, measures of dynamics and U-Mann Whitney’s test and difference between two population proportions test were used.

The research results indicate that during the three years of study, in the vast majority of cases, there were no statistically significant changes in the social capital of young people in its two dimensions: trust and social activity.

Keywords: social capita, education, networks, trust, values.

INTRODUCTION
Analyses of the quality of democracy, and economic development have recently focused on resources developed from the society, namely social capital. While the concept of social capital is far from new, over the last decades it has provoked new research and debates. Scholars are increasingly concerned with this key social resource that significantly influences the market economy and democratic politics. Especially Putnam’s, Bourdieu’s, Coleman’s, and Fukuyama's notion of social capital have gained a lot of attention (Breuskin, 2012). The strength of Putnam’s approach lies in the way in which it seeks to combine different aspects of the ‘social capital’ concept (Newton, 1999). Putnam treats social capital as a mixture of social norms (particularly trust, as emphasised by Coleman, 1990, and by Fukuyama, 1995); objective features of society (primarily social networks, as highlighted by Bourdieu, 1985 and, more recently, by Foley and Edwards, 1999); and outcomes (Coleman, 1990). The research indicates that building broad relationships based on trust and social norms should bring benefits to both the individual and the whole society (Schuller, Baron & Field, 2000; Lin, 1999). The issues discussed in the article concern the relationship between education and social capital. According to the authors, this is an important issue, because building human capital during studies should also be connected with creating social capital among young people, which will provide opportunities for its effective create a professional career. The aim of the article is to assess the change in the social capital of students in two dimensions: in the area of trust and their social activity.
The authors conducted the research based on the survey on students of three Universities: Faculty of Economics and Management, University of Szczecin (Poland), Faculty of Politics and Management Mykolo Romeris University in Vilnius (Lithuania) and Faculty of Economics, Matej Bel University Banska Bystrica (Slovakia). The comparison between these countries seems interesting from historical and political point of view – the long-term functioning in the communism system and the changes started in the last decade of the twentieth century due to the accession to the EU (2004).

In the study, the method of purpose selection was applied, which was dictated by the adopted purpose of the study. In order to assess the change in social capital of young people, we took into account the criterion of trust and social activity. As far as the trust is concerned, the classification of Sztompka was used (personal and public trust). As regards the changes in social activity, the research on activities for the benefit of society was conducted.

The obtained results of the study were statistically processed, using structure indexes, dynamics indicators, and in order to verify the presented research hypothesis the U-Mann Whitney's test and the difference between two population proportions test were used.

THE CONCEPTS OF SOCIAL CAPITAL

The concept of social capital is highly discussed in academic literature. Its theories originated from the ideas by Bourdieus and Coleman, emphasizing the importance of social ties and shared norms to societal wellbeing and economic efficiency (Rogosic & Baranovic, 2016). The early sociological research associated with the work of Coleman (1988) considers social capital to be a valuable resource of individuals, while another perspective popularized by Putnam (1993) treats it as a feature of a community or a nation. Putnam stresses the importance to distinguish between the social capital “bonding” (family, friends) and “bridging”(colleagues, neighbors and other surroundings), whilst Fukuyama indicates that social capital is "embodied social norms that lead to the cooperation of two or more individuals" (Fukuyama, 1999). In the definitions and types of social capital presented above, trust is shown as one of its key components (or dimensions). Sztompka defines trust as “the most precious type of social capital” (Sztompka, 2007), paying attention, among other things, to the need to distinguish private and public trust. Trust, as key component, can influence the social capital and can increase the efficiency of the society, strengthen the existing bonds and encourage the development of new ones. High level of trust in a society may also translate into economic benefits through decreased transaction costs (Stańczyk, 2007).

Despite the disagreement on definition of social capital, many scholars agree that it is created by the interaction with social trust: trust itself ‘lubricates’ cooperation and cooperation, in turn, promotes trust (Torcal & Montero, 1998). Research shows that more trust within a family leads to less trust beyond family circles and vice versa (Fukuyama, 2003). Coleman emphasizes the significance of trust in creating social capital as it improves the efficiency of human actions and facilitates the process of building communities (Coleman, 1990).

Based on Sztompka’s classification, the paper presents results of the research on personal and public trust. The first one is addressed to specific people we are in close relationships with, mainly family, as well as friends, neighbors and colleagues. Public trust refers to public institutions and organisations we have actions and interactions with, e.g. schools, the government, the parliament). (Sztompka, 2007).

Regardless of how we define social capital and indicate its key attributes, it can be stated that it is inseparably connected with social activity. It covers all activities of individuals with a formal or informal character, related to a specific role that they perform in a given environment (Mularska-Kucharek, Świątek, 2011).

Bearing in mind the multithreading of social activity, it was assumed that two dimensions thereof were necessary: individual activity for the benefit of society, which is expressed by helping others, and formal activity, manifested by participation in groups or formal organizations, or public meetings (Adams, 2011).
The research indicates that building broad relationships based on trust and social norms should bring benefits to both the individual and the whole society (Schuller, Baron & Field, 2000; Lin, 1999). They are usually considered in the context of Bourdieu and Coleman's social capital theory (Bourdieu, 1985; Coleman, 1988; Ho, 2003; Pishghadam and Zabihi, 2011). The social capital, among others, encourages individuals to be mobile, giving them the possibility of wider access to resources, including education (Speer, Jackson, Peterson, 2001). Research on social capital indicate that it also gives the opportunity to build formal and informal groups supporting the education process and then the professional development. In addition, education makes young people aware of the possibility of social participation and co-deciding about the future of the university or community in a much wider dimension (Balatti, Falk, 2002). The role of people who are directly involved in the education process is also extremely important. By supporting and motivating young people to develop their interests, they build their human capital, but also social capital (Worthy, Patterson, Salas, Prater, Turner, 2002).

**METHODOLOGY**

Taking into account the presented approaches to the social capital concept, research was conducted with the focus on two dimensions: the assessment of student trust and their social activity. The first dimension presents the results of the personal and public whilst the changes concerning student social activity were evaluated based on individual activity for the benefit of society and formal activity\(^1\). Statistical research was carried out by using a paper questionnaire survey among students of the 1st and 3rd year of the bachelor’s degree studies of three Universities: the Faculty of Economics and Management University of Szczecin (1st year: n=267, 58.0%, 3rd year: n=229 81.7%), the Faculty of Politics and Management Mykolo Romeris University in Vilnius (1st year: n=113, 51.4%, 3rd year: n=73, 51.0%) and the Faculty of Economics, Matej Bel University Banska Bystrica (1st year: n=158, 52.7% 3rd year: n=153, 51.0%).

The questions about social capital were developed according to a model proposed by the World Bank (Grootaert et al., 2004). The whole questionnaire consisted of 36 closed- and open-ended questions regarding social capital (Milczarek et al., 2015). For the purpose of the analysis, the authors selected seven questions concerning the students' trust and social activity.

To make a statistical verification of the hypothesis resulting from this research \(U\) Mann-Whitney test and the difference between two population proportions test were used:
- null hypothesis \(H_0\): there is no statistically significant difference between students of first and of third year of study,
- alternative hypothesis \(H_1\): there is a statistically significant difference between students of first and of third year of study, there are differences between students of 1st and of 3rd year of study, at the level of \(p = 0.05\).

The Statistica program was used to verify \(H_0\) hypothesis. The conclusions from the conducted research concern the studied groups of students.

**FINDINGS AND DATA ANALYSIS**

In accordance with the indicated objective of the article, the change in the personal and public trust of Polish, Lithuanian and Slovak students will be assessed. Figure 1 presents the data on general trust of students in Poland, Lithuania and Slovakia to other people.

\[^1\] The survey was conducted by employees of the Department of Macroeconomics of the Institute of Economics at the Faculty of Economics and Management University of Szczecin within statutory research funded by the Ministry of Science and Higher Education.
Fig. 1. General trust of Polish, Slovak and Lithuanian students in their environments (answer "yes").

The results clearly show that all students strongly declare their low confidence in people. The percentage of students in Poland who trust others is less than 10% and does not differ much between the first and third year of studies (decrease by 15.3%, -1.5 percentage points, pp.). As for the students from Lithuania, it is possible to indicate an increase in their general trust in other people (an increase by 107.4%, +5.7 pp.). However, the level of trust is still very low. The highest level of trust in other people show students in Slovakia: in the first year of study 12.8%, and in the third year of study 17.7% (an increase by 38.3%, +4.9 pp.). There is less dynamics of growth compared to the students in Lithuania, but the level of trust is nearly 7 pp higher.

Regardless of nationality, the students express a firm view that the majority of people in their closest environment (binding social capital) are trustworthy (Figure 2). During the 3 year of studies the students from Poland and Slovakia slightly increased their confidence to the closest, by 10.4%, (+7.1 pp.) and 4.5% (+3.3 pp.), respectively. Only in the case of the students from Lithuania, it is possible to notice a drop in confidence in the closest ones between 1 and 3 years of studies by 10.6% (-7.3 pp.).

The comparison of the data presented in Figure 1 with the data presented in Figure 2 gives grounds for stating that students differentiate the level of trust in their environment, i.e. the low level of general trust in other people refers to people from the further environment of students (bridging social capital).
Fig. 2 Trust in the closest people expressed by the students from Poland, Lithuania and Slovakia (answers "rather yes" and "definitely yes").

Another characteristic is the development of social capital and public trust (Figure 3).

Fig. 3. Polish, Slovak and Lithuanian students’ trust in the local and central government (answer "I trust strongly and very strongly").

The attention should be paid to the very low percentage of students who express their strong trust in authorities, both at the central and local government level. However, in the case of two countries, the students of 3rd years increased trust in the central government: in Poland from 1.1% to 2.2% (an increase by 100%, +1 pp), and in Lithuania from 3.6% to 6.8% (an increase by 88.9%, +3.2 pp). The students from Slovakia decreased their trust in the central government from 4.6% to 2.5% (a decrease of 45.7%, -2.1 pp). Similar conclusions can be drawn from the analysis of the level of trust in the local governments. Polish students’ trust increased by 337.5% (+2.7 pp) and Lithuanian students’ by...
103.7% (+ 2.8 pp). As for Slovakian students, after 3 years of studies, their trust in the local authority slightly decreased: from 4.0% to 3.8% (a decrease by 5.0%, -0.2 pp). The second dimension of social capital assessed is the social activity of students. The students mostly engaged themselves in activities for the benefit of society through helping others. A manifestation of such assistance is the students’ participation in charity actions (Fig. 4).

Fig. 4. Students’ participation in the dominant number of charity actions during the year.

Regardless of nationality, the students very rarely participate in charity activities during the year. In Poland the percentage dropped between the 1st and 3rd years of study from 59.9% to 56.3% (a decrease by 6.0%, -3.6 pp.). In the case of the students from Lithuania and Slovakia, this percentage slightly increased, from 50.4% to 56.2% (an increase by 11.5%, 5.8 pp.) and from 44.1% to 50.6% (an increase by 14.7%, +6.5 pp.), respectively. The last dimension of social activity subjected to evaluation concerns the issues related to the creation of a civic state. Fig. 5 presents the data on the tendency of students to participate in non-governmental organizations.
Fig. 5. Participation of students in non-governmental organizations (answer "yes").

The lowest social activity in the non-governmental organization is declared by the students from Slovakia. Moreover, the research results indicate that between the 1st and the 3rd year of studies, this activity in the creation of a civic state decreased from 11.3% to 10.1% (a decrease by 10.6%, -1.2 pp.). The social activity of the students from Poland seems relatively better. During the 3 years of studies, the share of students declaring their participation in a non-governmental organization increased from 18.7% to 20.1% (an increase by 7.5%, +1.4 pp.). The students from Slovakia stand out clearly against their peers in Poland and Lithuania. Their social activity between the 1st and 3rd year of studies increased from 47.8% to 60.3% (an increase by 26.1%, +14.5 pp.).

In the last part of the analysis on social capital of students in Poland, Lithuania and Slovakia, H0 was verified regarding the significance of differences in the selected dimensions of social capital between 1st and 3rd years of studies. The results of the tests carried out are shown in Table 1.

Table 1 Differences between students from Poland, Lithuania and Slovakia regarding selected dimensions of social capital

<table>
<thead>
<tr>
<th>Source: own study.</th>
</tr>
</thead>
<tbody>
<tr>
<td>List</td>
</tr>
<tr>
<td>People can be trusted</td>
</tr>
<tr>
<td>Most of the people in my close environment are trustworthy</td>
</tr>
<tr>
<td>Trust in central government</td>
</tr>
<tr>
<td>Trust in local government</td>
</tr>
<tr>
<td>The dominant share of student households in charity (1-2 per year)</td>
</tr>
<tr>
<td>Participation of students in non-governmental organizations</td>
</tr>
</tbody>
</table>

The results presented in Table 1 indicate that the grounds for rejecting H0 occur in 3 out of 18 possible cases (16.7%). This means that in these cases the attitudes or behaviors of students changed over 3 years.
years of study. This applies mostly to the students from Poland and refers to the change of their trust in in local authorities and charitable activities. In the case of the students from Lithuania, only in one two case the changes in social capital allow to reject the H0: activities in a non-governmental organization. The data on the students from Slovakia no allowed to reject H0 in any dimensions of social capital.

**CONCLUSION**

In recent decades we have been able to observe an increase of the importance of social capital in explaining political and economic processes. The authors of this paper sought to find the answer to the question of whether the years of studies change social capital in its two dimensions: trust and social activity. The obtained results give the basis for drawing two conclusions. First of all, the level of both personal and public trust of the students from Poland, Lithuania and Slovakia is at a very low level. The only exception is trust in loved ones. The second application concerns the change of students’ trust during the course of study, which in most cases increased. Attention should be paid to the increase of trust in people and state authorities among the students from Poland and Lithuania. However, it should be emphasized that only in 1 out of 12 cases these changes are statistically significant and concern only the students from Poland.

The second dimension of social capital subjected to analysis concerned the social activity of students. The results also show that students, regardless of their nationality, usually rarely participate in charitable activities (1-2 times a year). Among the students from Slovakia and Lithuania, this percentage increased over the course of 3 years of studies, and this change proved to be statistically insignificant. As for the students from Poland, there was a statistically significant drop in the percentage of students meeting. The students from Lithuania definitely stand out as their social activity was the greatest and the period of 3 years of studies brought even further growth. This change proved to be statistically significant.

The lack of significant changes, in most cases, in the social capital of students in its two dimensions poses a challenge not only to the authorities and employees of universities directly involved in the development of the young generation, but also, to a larger extent, to the state. It is necessary to build awareness among young people on co-deciding, engaging in society. It may make the university a place for building social capital, which seems to be a huge problem of recent times - for example, the lack of young people's activity and a low level of confidence to other people outside immediate circle. The low level of social capital of students in its two dimensions can also be a barrier to the effective use of human capital in a professional career.

**REFERENCES**


Impact of Formal Education on the Social Competences of Young People – An Analysis of the Results of Surveys on Social Capital of Students

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ABSTRACT
Formal education conducted at different levels of education should contribute to the emergence of learning outcomes, among which social competences play an important role. Social competences acquired in the education process in the existing system of studies, which are understood as skills that contribute to the effective interaction of the individual with the environment, are important from the microeconomic (individuals and entrepreneurs) and macroeconomic (society and social activities) point of view. The paper is an international comparative analysis of social competences held by people starting and completing economic education at the academic level of the first degree of study at selected universities from Poland, Lithuania and Slovakia. The research will allow verification of the hypothesis about the positive impact of formal education at the academic level (first degree of study) on the social competences of students.

Keywords: social competence, social capital, formal education, empirical studies.

INTRODUCTION
The contemporary world, which is a very complex socio-economic and political structure, requires individuals to have social competences recognized as one of the key skills, desired both in the context of personal, professional and social life. These social competencies can be defined as the interpersonal relations with others and the ability to adapt to the social environment or ability to communicate and cooperate with each other in the community; personal characteristics (Gedvilienė, 2012, p. 20). They enable proper social interactions and facilitate intra- and inter-group cooperation, thanks to social networks, trust and shared norms and values that are the elements of social capital (Lifelong Learning Program EU, 2009). According to Karl-Heinz; Lindner-Müller (2012) these competences develop in multiple contexts, in both formal and informal education. The broadly understood education process favors the acquisition of knowledge, shaping skills, competences, the system of values and attitudes necessary in professional life and social relations of a young person, and the level of education of the population has generally a positive impact on social relations, initiative and openness of the given groups (Tracz 2013).

According to Gedvilienė (2012, p. 36-37) social competence in educational settings is influenced by the learning environment which highlights the ability to communicate and cooperate with each other. Besides this, the development of social competence has become one of the main objectives of contemporary education systems and institutions. Leganés-Lavall and Pérez-Aldeguer (2016) indicate that the development of social competence from school to university years has an outstanding importance for allowing personal growth, self-esteem, and the respect for socially established human rights. It should be remembered that in addition to other learning outcomes
adaptation to constant changes in an increasingly connected world (Otten 2016). Social competences are listed as one of the key competencies necessary in a knowledge-based society, providing greater flexibility of work resources and enabling faster adaptation to constant changes in an increasingly connected world (Otten & Ohana, 2009, p. 20).

Social competences contribute to the increase of students' social competencies. The main purpose of the paper is to examine whether knowledge acquired during economic studies determines changes in the level of social competence among the surveyed groups of Polish, Lithuanian and Slovak students. This objective will be achieved by comparing the level of selected social competences available to students in two stages of their higher education – during the commencement of the first degree of economic studies and during their termination. The analysis carried out in this paper refers only to the selected results of the student social capital survey carried out twice.

**SOCIAL COMPETENCES – LITERATURE REVIEW**

The issue of social competences is the subject of considerations of many scientific disciplines, the tangible effect of which is the multiplicity of the proposed definitions of this concept. The citation of selected definitions of the concept of social competences, formulated in the twenty-first century, will illustrate the contemporary understanding of their essence. According to various authors, social competences are:

- “complex skills conditioning the effectiveness of handling certain types of social situations” (Matczak 2007);
- the ability to efficiently create and maintain positive social results and mutual relations through organizing one’s own personal and environmental resources (Holopainen, Lappalainen, Juntila & Savolainen 2012);
- interpersonal and intercultural skills in a broad sense, which are important as a constructive communication in different environments, having tolerance to different approaches, understanding others, trust in yourself and others (Gedvilienë, 2012, p. 17);
- a person’s ability to apply social skills effectively in order to reach his/her goals in social interactions (Magelinskaitė, Kepalaitė & Legkauskas, 2014);
- the processes encompassing: perception/understanding of a social situation, manner of behavior and the accompanying feelings, sympathies or antipathies (Szoltysek, Jeż & Twaróg, 2015);
- the cognitive skills and abilities available to individuals or learnable through them in order to solve problems in social situations as well as the related motivational, emotional and volitional willingness to successfully and responsibly use the problem solutions in standardized and value-oriented situations (Kühn, 2017).

The importance of social competences can be considered from the individual point of view (micro perspective) or from the social point of view (macro perspective). In the context of the individual, social competences are reflected in human functioning through the cognitive, emotional-motivational and social aspects (Szoltysek, Jeż & Twaróg, 2015). Due to high social competences, individuals have the ability to create and maintain high quality relationships that are mutually satisfying and to avoid negative treatment or victimization by others (Welsh & Biermann, 2001), they better find their feet and function more effectively in many different social situations (Markowska 2012, p. 19), they have the ability to acquire the right profession, activity in the labour market, purposefully develop their careers and feel happy (Gedvilienë, 2012, p. 20). Social competences are important to personal development and influences success in vocational professions (Kühn, 2017), they have a significant impact on personal well-being (OECD, 2015).

Social competences are listed as one of the eight groups of key competencies necessary in a knowledge-based society, providing greater flexibility of work resources and enabling faster adaptation to constant changes in an increasingly connected world (Otten & Ohana, 2009, p. 20).
Constituting the repertoire of skills, including knowledge of social behavior standards and solving social problems (McCabe & Meller 2004), they are also important from a social point of view. From the macro perspective they have interpersonal and intercultural meaning, they prepare individuals to participate (in an effective and constructive way) in social life, also when it is necessary to resolve conflicts. Their sub-group include civic competences preparing for full participation in civic life based on knowledge of socio-political concepts and structures as well as active and democratic participation (EC, 2007). Therefore, social competences create the potential to act in a socially competent manner (Kühn, 2017).

**METHODOLOGY**

The research results quoted in the source literature confirm a positive relationship between social capital and social competences (Lux 2005) and a causal relationship between education and the growth of socially appropriate attitudes and social engagement (Campbell 2006). It suggests that also the surveyed students, when graduating, should be better equipped with social competences than at the beginning of their studies.

**Table 1: Description of the research sample**

<table>
<thead>
<tr>
<th>Itemization</th>
<th>Poland</th>
<th>Lithuania</th>
<th>Slovakia</th>
</tr>
</thead>
<tbody>
<tr>
<td>Year of study</td>
<td>I</td>
<td>III</td>
<td>I</td>
</tr>
<tr>
<td>Sample size</td>
<td>267</td>
<td>229</td>
<td>113</td>
</tr>
<tr>
<td>The percentage of the respondents in the total number of students at the given academic year</td>
<td>58.0</td>
<td>88.1</td>
<td>51.4</td>
</tr>
<tr>
<td>Age (average - years)</td>
<td>19.9</td>
<td>22.3</td>
<td>19.3</td>
</tr>
<tr>
<td>Standard age deviation (years)</td>
<td>1.3</td>
<td>1.0</td>
<td>1.7</td>
</tr>
<tr>
<td>Involvement of women (%)</td>
<td>67.3</td>
<td>75.1</td>
<td>76.1</td>
</tr>
<tr>
<td>Involvement of men (%)</td>
<td>32.7</td>
<td>24.9</td>
<td>23.9</td>
</tr>
<tr>
<td>Respondent involvement depending on the place of permanent residence (%)</td>
<td>69.6 West Pomeranian Voivodeship</td>
<td>77.7 West Pomeranian Voivodeship</td>
<td>60.2 Vilnius County</td>
</tr>
</tbody>
</table>

Survey research on social capital\(^1\), the selected results of which were used to analyze social competences, were carried out among students of economic studies at three universities, respectively in Poland, Lithuania and Slovakia. The research was carried out twice at each of the three universities. Students of the Faculty of Economic Sciences and Management at the University of Szczecin (Poland) took part in research at the turn of October and November 2013 and in May 2016. Among the students of the Faculty of Politics and Management at Mykolo Romerio University in Vilnius (Lithuania), the research was carried out in November 2014 and in May 2017. Students of the Faculty of Economics at Matej Bel University in Banská Bystrica (Slovakia) were surveyed in November 2015 and in March 2018. In all three cases, the first research was carried out in the first months of the academic year, and the respondents were first-year students beginning their academic education. The second research was conducted when the students were in the last semester of their degree of study. The survey used in both studies was presented in their native languages and consisted of two parts. The first one contained 13 questions about the sociodemographic data of the respondents. The second part consisted of 36 closed and open questions, including questions about social capital.

\(^1\) The research was conducted as part of the Statutory Research of the Chair of Macroeconomics of the University of Szczecin, financed from the funds of the Ministry of Science and Higher Education, by a team composed of: dr hab. prof. US D. Miłaszewicz, Dr. R. Nagaj, Dr. P. Szkudlarek, A. Milczarek MA, M. Zakrzewska MA.

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without division into its types (Milczarek et al. 2015). By creating a survey used in the research, the logical diagram proposed by the World Bank (Grootaert & van Bastelaer, 2001) was adopted. The characteristics of occasional research samples are presented in Table 1. The occasional sample of Polish, Lithuanian and Slovak respondents was over half of all first year students at these faculties, and in the third year constituted respectively 88.1%, 63.5% and 52.7% of the total number of students studying at this year. All groups of respondents are people approx. 19-22 years old and mostly of female gender. Most of the respondents came from regions in which there are universities in which they study. These two characteristics of the research sample may affect the obtained results. The analysis conducted in the next part of the article was based on answers given by the surveyed students for only 4 selected survey questions, which characterize well the selected social competences of the respondents. In the paper we assumed that there are differences in social competences among studied groups of students on varying levels of academic knowledge. Statistical verification of the hypothesis resulting from this research was obtained with the help of U Mann-Whitney test, with null hypothesis that there are no differences between students of first and of third year of study, and alternative hypothesis that there are differences between students of first and of third year of study from each countries. The statistical verification was made at the level of p = 0.05.

RESULTS
The analysis of social capital of students from the point of view of their social competences and the impact of the knowledge they acquired on these competencies was based on selected questions, the answers to which were given in Table 2. They characterize the participation of respondents in formal networks, their level of general and institutional trust as well as their norms and values. Participation in formal social networks such as third sector organizations (NGOs) are an important indicator of social capital and may be the proof of such competences as the responsible action in the interest of a larger community or work to achieve a common goal. They are elements of social solidarity motivated by a sense of community and shared responsibility. This solidarity oriented towards the common good or the improvement of the situation of disadvantaged groups and individuals allows helping those who would not be able to cope individually (horizontal solidarity) and those in need (vertical solidarity) (Rymsz 2008). Table 2 shows that only Lithuanian respondents indicated broad participation in NGOs. It significantly increased among third year students (by 12.5 pp compared with first year students). In the case of respondents from Poland and Slovakia, only a small percentage participate in the activities of NGOs, respectively 2.5 – 3 times and over 4 – 6 times less in comparison to Lithuanian respondents. The share of engaging people increased slightly (by only 1.4 pp) along with the acquired academic knowledge in the case of respondents from Poland, while in the case of Slovak respondents it decreased by 1.3 pp.
Trust is a basic resource to competence and social capital (Fandiño, de Souza, 2013). In the literature, trust is perceived as an element, manifestation or attribute of social capital, and at the same time the basis for its creation and accumulation. As a link connecting people to a cohesive community, it is also an important determinant of social competences because it allows to have the desired impact on others in social situations. In the context of social solidarity and participation in NGOs, among the three types of trust distinguished in the literature, namely personal, generalized (generalized) and institutional – the last two are the most important, as they are elements of social trust. It is the generalized trust that is associated with experiences such as volunteering, activities for charities, dedication, and the key to understanding people's social involvement. Institutional trust affects the general sense of security and the tendency to civic attitudes. An effective interaction of the individual with the environment thus depends on the experience of social trust – both in relation to other people and to authorities or public institutions.
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Table 2: Results of the social competence analysis of the surveyed students (the answers of the respondents)

<table>
<thead>
<tr>
<th>Itemization</th>
<th>Poland</th>
<th>Lithuania</th>
<th>Slovakia</th>
</tr>
</thead>
<tbody>
<tr>
<td>Year of study</td>
<td>I</td>
<td>III</td>
<td>I</td>
</tr>
<tr>
<td>The answers characterizing participation in formal networks (answer yes)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Participation in NGOs (% of responses) (NGO)</td>
<td>18.7</td>
<td>20.1</td>
<td>47.8</td>
</tr>
<tr>
<td>The answers characterizing generalized trust (answer yes)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>You can trust people (% of responses) (GT)</td>
<td>9.8</td>
<td>8.3</td>
<td>5.3</td>
</tr>
<tr>
<td>The answers characterizing institutional trust (answer yes)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>In local government (% of responses) (TLG)</td>
<td>0.8</td>
<td>2.2</td>
<td>2.7</td>
</tr>
<tr>
<td>In central government (% of responses) (TCG)</td>
<td>1.1</td>
<td>2.2</td>
<td>3.6</td>
</tr>
<tr>
<td>In politicians (% of responses) (TP)</td>
<td>1.4</td>
<td>1.4</td>
<td>4.4</td>
</tr>
<tr>
<td>In officials (% of responses) (TO)</td>
<td>28.3</td>
<td>26.0</td>
<td>8.4</td>
</tr>
<tr>
<td>The answers characterizing social norms and values (answer yes)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>My actions and decisions affect other people and the environment (% of responses) (VM)</td>
<td>64.8</td>
<td>55.0</td>
<td>67.3</td>
</tr>
<tr>
<td>My actions and decisions affect other people and the environment (% of responses) (AD)</td>
<td>43.0</td>
<td>49.3</td>
<td>69.0</td>
</tr>
<tr>
<td>My actions and decisions affect other people and the environment (% of responses) (PLA)</td>
<td>83.3</td>
<td>84.7</td>
<td>84.1</td>
</tr>
<tr>
<td>It is our duty to help others, the poor, the sick or the vulnerable (% of responses) (DG)</td>
<td>60.8</td>
<td>55.5</td>
<td>69.9</td>
</tr>
<tr>
<td>Democracy has an advantage over all other forms of governance (% of responses) (DG)</td>
<td>34.7</td>
<td>34.5</td>
<td>46.9</td>
</tr>
</tbody>
</table>

* The level of trust towards the authorities and chosen public institutions was measured on the basis of the five-level Likert scale: very strong do not trust, strong do not trust, difficult to tell, strong trust, very strong trust.

** The level of social norms was measured on the basis of the five-level Likert scale: definitely no, rather no, difficult to tell, rather yes, definitely yes.

Respondents’ opinions about generalized trust indicate that only few surveyed students give it to others. Among the respondents in the first year of studies, only 12.8% of Slovaks, 9.8% of Poles and only 5.3% of Lithuanians trust people. Changes in the level of generalized confidence of respondents along with the knowledge they have acquired are multi-directional. Among the Polish respondents in the third year of study, the share of respondents who trusted others dropped by 1.5 pp, while in the case of Slovakia it increased by 4.5 pp and in Lithuania doubled. The confidence deficit among respondents is also visible in the case of institutional trust. It is particularly large in relation to politicians in all surveyed groups of students and deepens with the acquired knowledge. None of the Slovak respondents from the third year of studies gives confidence to politicians (a drop by 3.3 pp), and only 1.3% of Poles (a drop by 0.6 pp) and 1.4% of Lithuanians (3 pp drop) trust their politicians. The respondents declare the highest level of institutional trust towards officials, especially in Poland where this trust is approx. 3 times larger than in Lithuania and Slovakia. However, along with the acquired knowledge, the share of Polish respondents trusting officials decreases by 2.3 pp, and increases in the case of respondents from Lithuania (by 3.8 pp) and Slovakia (by 1.7 pp). The respondents also have little trust in the central and local authorities, however the share of respondents from Poland and Lithuania declaring trust towards these authorities increases along with acquiring academic knowledge, and in the case of Slovak students, it is declining. The lack of trust in the authorities and elected institutions may result in the reluctance of the younger generation to cooperate with public institutions or even in social conflicts. This is also not conducive to building social competences of the surveyed students and may lead to discouragement in undertaking activities for the development of local communities.

Social competences are manifested in the norms adopted by the individual, the values shared and socially appropriate behaviors. The results obtained in the research on 5 selected shared norms and
values indicate that in each of them, the largest part of Lithuanian respondents definitely shares them. The smallest part of respondents of every nationality thinks that democracy has an advantage over other forms of government, and their percentage decreases with acquired knowledge among Lithuanian (from 46.9% to 42.5%) and Polish (from 34.7% to 34.5%) respondents, and increases among Slovak students (from 38.8% to 45.6%). At the same time, however, more than half of the respondents from each group believe that their vote matters, and the percentage of such declarations increases with knowledge gained among Slovak (from 59.2% to 60.9%) and Lithuanian (from 63.7% to 69.9%) of respondents, and falls in the case of Polish students (from 64.8% to 55.0%). The percentage of surveyed declaring that their decisions and actions affects other people and local communities increases along with the accumulated knowledge in each of the analyzed national groups. And in the case of Polish and Slovak students, the share of those who claim that helping others is possible through participation in social actions also increases. On the other hand, this group among the Lithuanian respondents is decreasing (by 11.5 pp). In each of the surveyed national groups, the percentage of students who believe that it is their duty to help other people who are in a bad life situation decreases along with the academic education.

The Mann-Whitney U test was applied to verify the hypothesis that the studied groups of students differ in social competences depending on their different level of knowledge (in the first and third year of studies). The statistics obtained from this test are given in Table 3. Analysis using the Mann-Whitney U test indicate that in most of the considered social competences there are no statistically significant differences in the surveyed nationality groups between students of the first and third year of study. Only in case of three of the competences considered, these differences are statistically significant (cells of Table 3 are marked gray), two for Polish and one for Slovak respondents. Among them, only in the case of the trust of Polish respondents to local authorities, a statistically significant positive change was confirmed when the knowledge acquired during economic studies increased. It should be remembered, however, that social competences develop during social training (Matczak 2007), which takes place not only during formal education and lasts throughout the life of the individual.

<table>
<thead>
<tr>
<th>Specification</th>
<th>Poland</th>
<th>Lithuania</th>
<th>Slovakia</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test statistics</td>
<td>U</td>
<td>Z</td>
<td>p value</td>
</tr>
<tr>
<td>NGO</td>
<td>30506.5</td>
<td>0.0405</td>
<td>0.9677</td>
</tr>
<tr>
<td>GT</td>
<td>28565.5</td>
<td>0.8431</td>
<td>0.3992</td>
</tr>
<tr>
<td>TCGt</td>
<td>25954.0</td>
<td>-2.7734</td>
<td>0.0055</td>
</tr>
<tr>
<td>TP</td>
<td>28526.5</td>
<td>-1.1475</td>
<td>0.2512</td>
</tr>
<tr>
<td>TO</td>
<td>29361.0</td>
<td>-0.6200</td>
<td>0.5352</td>
</tr>
<tr>
<td>VM</td>
<td>29477.5</td>
<td>0.5464</td>
<td>0.5848</td>
</tr>
<tr>
<td>AD</td>
<td>26992.5</td>
<td>2.0506</td>
<td>0.0403</td>
</tr>
<tr>
<td>PLA</td>
<td>28379.5</td>
<td>-1.2404</td>
<td>0.2148</td>
</tr>
<tr>
<td>DH</td>
<td>29816.5</td>
<td>-0.2605</td>
<td>0.7945</td>
</tr>
<tr>
<td>DG</td>
<td>28756.5</td>
<td>1.0021</td>
<td>0.3163</td>
</tr>
</tbody>
</table>

* grouping variable: year of academic education

**CONCLUSIONS**

The analysis carried out in the paper and concerning selected social competences of students and the impact of education at the academic level, and thus the acquired knowledge, on these competences demonstrated:

– significant competence deficits of respondents, especially large in the case of generalized and institutional trust;
a general lack of positive impact of the academic knowledge acquired by the first degree studies on the analyzed social competences of the respondents.

In the face of the obtained results, it should be emphasized that the literature indicates that formal education is a kind of social practice that must correspond to both local and national as well as global needs. It should also seek to create opportunities for shaping attitudes of social trust, responsibility for decisions and solutions made by the individual or group (Tracz 2013). However, under the conditions of economic liberalism, in the present world oriented solely on the economic outcome, it does not fulfill its essential functions and does not fulfill its purpose, which should also be, regardless of the type of study, shaping citizenship, moral virtues, social justice and caring for the common good (Nowak-Dziemianowicz 2012).

Obtained results of the analysis may lead to the conclusion about improper formation of curricula at universities, where respondents study, ineffectiveness of the teaching process itself or even lack of competences of academic teachers working there. From this point of view it would be interesting to analyze the number and type of social competences included in the syllabuses of subjects constituting curricula at these universities. It should be remembered, however, that the social competences of students are affected not only by formal education and knowledge acquired during studies. Any knowledge that stimulates social competences of young people should be recognized as valuable. They acquire it through informal and incidental education at the same time as studying at the university. Thus, informal contacts with other individuals and groups, examples from personal, family, political and social life could have a big impact on the results obtained. The authors of the article postulate that academic curricula in the studied countries should place greater emphasis on building social competences.

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Impact of Formal Education on the Social Competences of Young People – An Analysis of the Results of Surveys on Social Capital of Students.

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Social Capital in Local Development

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ABSTRACT
This work is an attempt to present the current status of the so-called Local Action Group in the West Pomeranian Voivodeship, as well as to organize the concepts and dependencies associated with the concept of social capital. Classical approach and negative consequences of the social capital has been also presented. The biggest attention was given to the social capital in the local approach. The article may be the basis for further consideration of the essence of social capital in the local development as well in shaping policies aimed at the development of entrepreneurship and therefore knowledge-based economies.

Keywords: local development, social capital, local social capital, local action group

SOCIAL CAPITAL
Social capital is based on the idea of mutual relations and social norms that allow access to valuable resources, while supporting the well-being of families, individuals, nations, communities, communities or regions. In literature, social capital, due to the complexity of the concept and a large amount of interpretation, is determined by many authors in Polish and foreign literature in a variety of ways, because it can be considered on the macro (national), micro (unit) and meso (community) levels. The macro level includes general-social goods related to international and interregional comparisons, while the micro level, also known as the individual perspective, indicates how individuals differ in their achievements, and the meso level treats social capital as a group good, a group good, which is the prospect of local communities and shows the causes of class and tie inequalities (Bartkowski, 2007, p. 75). A more comprehensive overview of the definitions is presented in Table 1.

Table 1: Definitions of social capital

<table>
<thead>
<tr>
<th>DEFINITION</th>
<th>AUTHOR</th>
</tr>
</thead>
<tbody>
<tr>
<td>&quot;... the sum of real and potential resources that are associated with having a permanent network, more or less institutionalized relationships based on mutual recognition or familiarity ...&quot;</td>
<td>P. Bourdieu: The Forms of Capital, in: Handbook of Theory and Research for the Sociology of Education, ed. J.G. Richardson, Greenwood Press, New York 1968 , p. 248.</td>
</tr>
<tr>
<td>&quot;... defined by its function. It refers to a series of not one but different beings that have two common features, namely: social capital is characterized by productivity, which affects the achievement of certain goals that would be</td>
<td>J. Coleman: Foundations of Social Theory, Belknap Press of Harvard University Press, Cambridge 1990, p. 302.</td>
</tr>
</tbody>
</table>

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inaccessible in its absence in relation to other forms of capital and consists of many aspects of the structure social, which greatly facilitates the activities of individuals inside these structures..."

"... it is an informal, objectified norm aimed at promoting cooperation between two or more individuals... it is very important for the effective functioning of modern economy and is a condition sine qua non of a stable liberal democracy..."


"... refers to such features of society as, for example, connections or mutual trust, which will contribute to the positive aspect of increasing the efficiency of society, facilitating coordinated actions..."


Referring to the above definitions of social capital, it can be stated that it has both a positive and a negative aspect. Referring to the first feature, it contributes to cooperation between individuals, because the more links will appear within their communities, the better they will function socially, economically or emotionally (Zakrzewska, 2016, p. 322). On the other hand, the negative aspect is the mere fact of linking a whole to maintaining a community in which members are connected not only mentally but also financially, physically or culturally, in addition not of their own will. Putman, examining the negative consequences that social capital can cause, divided it into two groups (Klimczak, 2005, p. 18):

- binding capital (binding or contractual),
- bridging capital.

Binding capital refers to creating strong bonds between people who know each other well, that is friends or family. However, he has two sides, on the one hand it brings positive values to groups and individuals, while giving them a sense of belonging while providing support and facilitating the functioning and coping with problems. On the other hand, it may contribute to extorting loyalty against the will of other people and to be a source of practices harmful to society, such as the mafia, nepotism (Kaźmierczak, 2004, p. 57). Bridging capital, in turn, is based on connections among people who do not know each other, which is related to differences between them. It can create horizontal ties that will affect the combination of people occupying a similar place in the social structure, as well as vertical ties referring to the connection of people who occupy a different position. Kaźmierczak T. believes that " unlike binding capital, which acts rather as defensive, bridging capital allows us to move forward, expanding the possibilities of access to the exchange of resources circulating on the networks" (Kaźmierczak, 2004, p. 57). Among these resources, you can distinguish symbols, such as information, values, ideas, emotions, which include approval, respect or sympathy and material resources, which are financial resources in the form of money or things. Social capital can be accepted as a form of physical or human capital, or take another form of social capital, which will testify to the fact that it is capital in the sense of economics, whose economic effects are permanent. Social capital perpetuates as (Brol, 2008, p. 319):

- physical capital, when the local community is able to organize and build, for example, a school, a playground, with joint forces, or
- human capital, in the situation when the effects of social activities will affect the skills and knowledge potential, which in turn will be actively used even when the relations that led to its recognition cease to exist.

Social capital, however, is not a variable, which can be shaped using methods that assume short-term actions, because it requires planning activities aimed at the long-term nature of the enterprise. Summing up, social capital in the general approach is understood as "the potential for cooperation in interpersonal relationships and social norms that can bring benefits to individuals, groups and
Societies" (Theiss, 2007, p. 13). More broadly, it can be analyzed as a phenomenon occurring at various levels: macro, micro and meso, which were presented above. Increasingly, however, the concept of social capital is considered in the local context, where the locality itself, by various researchers, is understood in a different way, referring to the nearest neighborhood or the city, district or village.

LOCAL DEVELOPMENT

Since 1999, the three-tier territorial and administrative division of the country has been in force in Poland, which distinguishes municipalities, poviats and voivodships. In the local government practice it was accepted that the notion of the region refers only to voivodships, while local units are poviats. However, it is recognized that the state pursues a regional policy in relation to all regions - voivodships (so-called interregional policy), in turn each voivodship in relation to its territory (so-called intraregional policy), however, self-government authorities of communes and poviats conduct local policy on subordinate areas, and therefore also local development policy (Paczóski, 2015, p. 233). In the literature on the subject, local development is very often interpreted as a unique process that concerns changes that take place in the commune, poviat, generally the local socio-territorial system called the microregion. This distinct system is characterized by atypical elements of culture, economy and space. Unusual because it is completely different from the environment and it can be a hierarchy of needs and values. Therefore, local development is a very complex phenomenon both in terms of issues and in a conceptual context. Complexity consists primarily of various strategic goals, which development is to serve and is also characterized by the diversity of activities that ultimately shape it. A very important achievement of local development is the process of creating at the municipal level more and more new values, which include newly established enterprises, which is associated with the creation of more jobs, new goods and services, and meeting local and non-local demand. Attractive locations that offer a good quality natural environment as well as real estate are also of great importance. You can also distinguish intangible assets, which include knowledge, skills of the local community or qualifications.

Social capital in the local dimension includes the potential and current local social resources that make up (Brol, 2008, p. 317):

• permanent social order (order), which should be understood as a set of values, attitudes and standards shaping local social activities,
• permanent institutionalized network of relations, mutual trust and recognition as well as acquaintances - it is created by economic and local self-government institutions as well as by various kinds of associations, organizations, local associations in civil society,
• local interactions, social relations that develop between the local community, residents of the local territorial system and self-government or non-governmental institutions, also within those organizations and institutions that can be a source of new value.

Unfortunately, it is not possible to generalize the term local social capital, because in various local communities this capital has a different content, which is dictated by local circumstances (Brol, 2009, p. 58). According to Matysiak, local social capital, reducing the occurrence of uncertainty, limits or replaces material expenses for:

• reduction of the so-called the costs of signaling, which can include the promotion of own features that stimulate the confidence of the environment,
• protection of resources and assets of local economy entities,
• transaction costs that are associated with the recognition of the local business environment, the collection of information on potential partners, social public services or the local labor market.

Local social capital, which is a free good available to local economy entities, contributes to stimulating economic activity in the commune thanks to reducing operating costs, as well as creating an atmosphere of partnership and trust. By implementing such a function, it is possible to dedicate the aforementioned smaller expenses to achieving other goals that will serve local development (Brol, 2008, p. 319). Among the proposals that relate to the identification and level of
measurement of local social capital, which are proposed by institutions such as the World Bank or the OECD and in the literature of the subject, it can be mentioned (Kaźmierczak, 2007, p. 60):
• active participation in the media, local authorities, actions for the benefit of the local community, as well as soliciting the position of the local leader,
• affiliation to all organizations, non-governmental associations, religious groups or trade unions,
• affiliation to political parties, which is associated with meetings with politicians or the work itself for politicians and political parties, collecting signatures that show support, for example, candidacy or financial resources in election campaigns or even attendance.
The main intention of social capital in the local dimension is primarily to reduce the uncertainty that occurs in social and economic life. Much more can be achieved by people who create a group on mutual trust than a comparable team in which, unfortunately, there is no mutual confidence.

FUNCTIONING OF LOCAL ACTION GROUPS (LAGs) 2014-2020 IN THE SELECTED AREA
As a new entity, Local Action Groups (LAGs) in the Polish social reality appeared in 2004. In legal terms, they operate in accordance with art. 15 of the Act on supporting rural development with the participation of the European Agricultural Fund for Rural Development of 07 March 2007. (Journal of Laws of 2007, No. 64, item 427). Most of the Local Action Groups took the form of associations with legal personality. Voivodship marshals exercise direct supervision over their functioning, which results from the assumption that the programs implemented by these groups are co-financed from the European Union funds. The key action of the LAG is to manage the implementation of the local development strategy, thanks to which projects that combine natural, human, historical, cultural resources and necessary knowledge flowing not only from theory but also experience and skills of representatives of the three sectors: social, public and economic (Czapiewska, 2010, p. 263). In the years 2014-2020, the National Rural Network supports the implementation of the Rural Development Program for 2014-2020 (RDP 2014-2020) at various stages of its implementation. The main goals set out in RDP 2014-2020 and in art. 54 (2) of Regulation 1305/2013, are as follows (access 30/01/2018):
• increasing the share of people (parties) interested in implementing rural development programs,
• improving the quality of RDP implementation,
• informing the community and potential beneficiaries about the rural development policy as well as about the possibilities of obtaining funds,
• supporting and improving innovation in agriculture, food production, forestry and in rural areas,
• activation of rural residents to take action, including creating jobs in rural areas.
The surveyed area includes 11 Local Action Groups located in the West Pomeranian Voivodeship, operating, operating and implementing the program and objectives for 2014-2020.
<table>
<thead>
<tr>
<th>No.</th>
<th>Name</th>
<th>HEADQUARTERS</th>
<th>ESTABLISHING YEAR</th>
<th>NUMBER OF PARTICIPATING COMMUNITIES</th>
<th>AREA OF ACTIVITY OF LOCAL ACTIVITY GROUP</th>
<th>NO. OF INHABITS LIVING IN THE AREA OF THE LAG</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Stowarzyszenie Szanse Bezdroży Gmin Powiatu Goleniowskiego</td>
<td>Goleniów</td>
<td>2006</td>
<td>6</td>
<td>1 604</td>
<td>59 494</td>
</tr>
<tr>
<td>2.</td>
<td>Stowarzyszenie „Lider Pojezierza”</td>
<td>Barlinek</td>
<td>2006</td>
<td>13</td>
<td>2 616</td>
<td>129 463</td>
</tr>
<tr>
<td>3.</td>
<td>Stowarzyszenie Środkowopomorska Grupa Działania</td>
<td>Koszalin</td>
<td>2006</td>
<td>11</td>
<td>3 046</td>
<td>130 853</td>
</tr>
<tr>
<td>4.</td>
<td>Stowarzyszenie Lokalnej Grupy Działania „Siła w Grupie”</td>
<td>Gościno</td>
<td>2008</td>
<td>8</td>
<td>1 168</td>
<td>92 005</td>
</tr>
<tr>
<td>5.</td>
<td>LGD „Powiatu Świdwińskiego”</td>
<td>Świdwin</td>
<td>2008</td>
<td>6</td>
<td>1 093</td>
<td>48 582</td>
</tr>
<tr>
<td>6.</td>
<td>Centrum Inicjatyw Wiejskich</td>
<td>Łobez</td>
<td>2008</td>
<td>5</td>
<td>1 065</td>
<td>37 966</td>
</tr>
<tr>
<td>7.</td>
<td>Dolnoodrzańska Inicjatywa Rozwoju Obszarów wiejskich</td>
<td>Gryfino</td>
<td>2008</td>
<td>7</td>
<td>1 537</td>
<td>49 887</td>
</tr>
<tr>
<td>8.</td>
<td>LGD „GRYFLANDIA”</td>
<td>Gryfice</td>
<td>2008</td>
<td>6</td>
<td>1 017</td>
<td>40 858</td>
</tr>
<tr>
<td>9.</td>
<td>Stowarzyszenie „WIR”- Wiejska Inicjatywa Rozwoju</td>
<td>Stargard Szczeciński</td>
<td>2007</td>
<td>14</td>
<td>2 094</td>
<td>84 361</td>
</tr>
<tr>
<td>10.</td>
<td>LGD „Partnerstwo w Rozwoju”</td>
<td>Wolin</td>
<td>2008</td>
<td>6</td>
<td>1 003</td>
<td>47 947</td>
</tr>
<tr>
<td>11.</td>
<td>Stowarzyszenie Środkowopomorska Grupa Działania</td>
<td>Koszalin</td>
<td>2006</td>
<td>11</td>
<td>3 046</td>
<td>130 853</td>
</tr>
</tbody>
</table>

Local Action Groups in the surveyed population usually cover several (from 5 to 8), sometimes a dozen (from 11 to 14) municipalities. The range of the LAG in the West Pomeranian Voivodeship...
covers a total area of 19,289 km², inhabited by 852,269 thousand people and includes 93 rural and urban-rural communes. The greater is the territorial scope of the implemented strategy by the group, thus the budget is increased for its implementation. A larger number of people who have been covered by the local development strategy also contribute to an increase in the number of interesting initiatives related to projects implemented under individual strategies and competitions.

CONCLUSIONS
Local authorities, entrepreneurs and residents who shape LAGs know best how to use the advantages of their area for economic and social recovery, and the area of the West Pomeranian LAG offers a lot of attractions and is interesting. A condition that is able to stimulate the activity of the local community in the development of the area and the effective use of its resources is just building social capital in rural areas. Due to the low level of involvement of rural residents in local structures and all kinds of reluctance and lack of time to cooperate, activities that are carried out by LAGs are very important for the development of rural areas. The implementations of the village vision, which will ultimately be the right place to operate, thanks to high environmental values or through newly created workplaces creating employment opportunities, require not only external support, but also the complete use of its internal resources.

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Using a Higher Certificate to Broaden Access into STEM Programmes in South Africa

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ABSTRACT

Students from Technical and Vocational Education and Training (TVET) Colleges in South Africa often face challenges articulating into Higher Education Institutions (HEIs). A position paper recently authored by the South African Department of Higher Education and Training (DHET) proposes a Higher Certificate (HC) to be developed and offered in partnership between TVETs and HEIs. It is envisaged that this type of HC will allow access to an appropriate Bachelor’s degree. This paper will outline how a collaborative approach to the curriculum development of a HC, in Mathematics and Physical Sciences, by the Durban University of Technology (DUT) and partners will not only broaden access to science and engineering programmes, for students from both schools and TVETs, but additionally contribute to the amelioration of epistemic injustice present in the sector.

Keywords: Articulation, TVET, epistemic injustice, higher education
INTRODUCTION
The Durban University of Technology (DUT), along with most other Universities of Technology (UOTs) in South Africa, has recently replaced, or re-curriculated, a large number of programmes to align with the newly introduced Higher Education Qualifications Sub-Framework (Department of Higher Education and Training, 2013). In the case of the Faculty of Engineering and the Built Environment (FEBE), bachelor’s degree programmes, often with more stringent mathematics and science entrance requirements, have replaced the majority of the diploma programmes offered. Considering the various spheres of the education sector, and some on the inherent problems, we need to determine how DHET’s proposal for a Foundational Higher Certificate (HCF) may best be utilised for access and articulation imperatives.

BACKGROUND
There is no doubt that higher education in general, and engineering education in particular, is currently facing many challenges in South Africa. Primary and secondary education underprepares students for both the workplace and for higher education. This is especially apparent in Science, Technology, Engineering and Mathematics (STEM) programmes, leading to high dropout rates and low throughput rates for undergraduate programmes (Case, 2006; Fisher, 2011; Nickell & Bell, 1995). Dysfunctionality within the schooling system, particularly with regards to numeracy and literacy skills (Spaull, 2013) has led to a limited pool of applicants that qualify for entrance into STEM programmes (Case, 2006). The limited number of students entering STEM programmes, coupled with low throughput rates, has resulted in insufficient number of STEM graduates entering the job market. (Cosser, 2010; Taylor, 2008). In this context, the TVETs should play a significant bridging role in the provision of post school programmes leading to HEI access (Oosthuizen, Garrod, & Macfarlane, 2009). Unfortunately, for a number of reasons outlined below, articulation from TVET programmes to HEI programmes is difficult and thus this bridging role is not being exploited. If TVETs were to offer programmes providing a strong foundation in the mathematics and sciences this could positively influence throughput rates in the HEI programmes students follow thereafter.

South Africa’s National Qualification Framework’s (NQF) articulation pathways, as shown in figure 1, should allow students to access higher education easily. The articulation pathways for applicants who complete the National Senior Certificate (NSC), through the mainstream schooling system, are well established. Access is limited solely by entrance requirements and/or programme space. Unfortunately, for students from TVET colleges, articulation is often difficult, if not impossible, due to curriculum disjuncture between TVET and HEI curricula in cognate programmes (Branson, Hofmeyr, Papier, & Needham, 2015; Malale & Gomba, 2016; Powell & McGrath, 2013).
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Figure 1: NQF Articulation Pathways

A National Articulation Baseline Survey (NABS) was undertaken in 2016, that involved all 26 public HEIs and all 50 public TVET colleges in South Africa, and preliminary results confirms the above misalignments as well as raising other concerns. Other issues identified include poor communication of HEI programme specific entrance requirements to TVET students, articulation imperatives being viewed as low priority by HEI staff, and a prevalence of epistemic injustice in the relationships between HEIs and TVETs in systemic, institutional and individual terms (Lortan, Maistry, Bolton, & Surtee, 2017). The presence of epistemic injustice in the sector is recognised by the authors and, one of the proposed methods of amelioration, is the development of closer, epistemically just relationships, between TVETs and HEIs (Graham, Lortan, Maistry, & Walker, 2017).

Engineering diploma programmes were amongst the exceptions, where established articulation pathways for TVET students, often with the possibility of credit transfer, existed (Graham, Lortan, Maistry, & Walker, 2018). These pathways often catered for both students that left school at grade 9 to pursue the National ‘N’ Diploma, as well as those who completed a NSC and subsequently used TVET courses as a ‘top up’ to gain access to higher education. The introduction of the HEQSF aligned degrees, as a replacement for the old National Diplomas, in science and engineering programmes at DUT, has effectively closed this articulation pathway from TVETs.

With the NQF’s (RSA2008) imperative of increasing access to higher education, coupled with the need to meet the growing demand for STEM graduates, we should be looking at ways to broaden access into the bachelor’s programmes at DUT. At the same time we should be cognisant of the need to open pathways for students from TVETs, and for the opportunity to forge closer ties with local TVETs. The development of a HC, in conjunction with TVET partners, specifically to broaden access, could play an important role, not just by opening articulation pathways and increasing the pool of applicants, but also in contributing the amelioration of epistemic injustice in the sector.
THE HIGHER CERTIFICATE AS A MEANS TO BROADEN ACESS

The NQF level 5 Higher Certificate (HC) was primarily envisaged as a vocational, industry focused qualification, but by its nature could also lead to articulation into further vocational, occupational or higher education programmes (RSA, 2013). By way of example, a HC in mechanical engineering may as per figure 1, articulate into an aligned mechanical engineering Advanced Certificate, Diploma or Bachelor’s Degree. For example, it was unclear as to the possibility of curriculating a HC in, mathematics and physical sciences for the express purpose of articulation into a STEM diploma or Bachelor’s programmes. The lack of clarity comes because articulation would have been the primary purpose of the certificate as opposed to the intended vocational nature.

The position paper National Plan to Implement NQF 5 qualifications at South African Universities and Colleges (DHET 2017), as published by the Department of Higher Education and Training, acknowledges the need for the NQF, its sub-frameworks and the programmers located within to ‘allow learners and students to follow different pathways and education and training trajectories offered by various post-school institutions’. It goes on further to acknowledge a number of challenges facing the post-school education and training system, most importantly the lack of coherence in articulation linkages, especially those between academic and vocational qualifications. As a result, this paper proposes that the HC may now be used as a ‘strategic mechanism for access and articulation’ in addition to vocational learning. Due to the location of the HC on the NQF, it is seen as a pivotal qualification to be used for access into higher or college education, thus unblocking linkages between different institutions.

The paper describes two distinct HCs, namely the Higher Certificate Vocational (HCV) and the Higher Certificate Foundational (HCF). The HCV is, in essence, the original HC, remaining vocational in nature, and only allowing access in a specific vocational or technical field, in the form of an Advanced Certificate, a cognate diploma or an appropriate Bachelor’s Degree. The HCF however, will be specially aimed at school leavers who have completed a NSC or NCV, but cannot gain access to their chosen university programmes due to poor results in mathematics and/or science. The HCF should therefore have a strong grounding in mathematics and science, and should be curriculated, either through a national process, or in conjunction between universities and TVETs.

THE HIGHER CERTIFICATE FOUNDATIONAL AT DUT

As mentioned previously, the majority of engineering programmes at UOTs have replaced, or are in the process of replacing, their National Diploma’s with Bachelor’s degrees. The Faculty of Engineering and the Built Environment (FEBE) at Durban University of Technology, on the Steve Biko campus is no different. Ten out of the eleven diploma programmes previously offered, have been replaced with degree programmes, either Bachelors of Engineering Technology (BET) or Bachelors of the Built Environment (BBE). These were introduced in either 2017 or 2018, dependent upon when statutory approval was obtained. The broadening of the purpose of HC, as mentioned above, such that it may be used for purpose of increasing access, has led to the DUT beginning the process of curriculating a HCF programme. The HCF will be developed by the Department of Mathematics, in conjunction with TVET partners, specifically for the purpose of access into programmes offered by FEBE. Once the full curriculum development process is complete, and all regulatory approvals have been obtained, the HCF will, as per the white paper, be offered at the partner TVET colleges, whilst the DUT fulfils a quality assurance role. If the HCF proves successful, the programme may be extended to allow access in other STEM programmes in the Faculty of Health, and the Faculty of Applied Sciences. The HCF must be designed such that it will broaden access for both NSC and TVET applicants. Each case, and the necessary considerations are described below.
NSC applicants
The majority of students in the faculty gain access to their programme of choice via the NSC. NSC applicants needed to fulfil two criteria to be considered for entry into the diploma programmes, namely the statutory minimum requirements for entry into a diploma programme, as well as departmental specific requirements. These applicants must have a ‘diploma’ endorsement on their NSC, to meet statutory requirements, and in addition at least 50% for Mathematics and Physical Sciences, in engineering programmes. Similarly, applicants to the new bachelors’ programmes require a ‘degree’ endorsements on their NSC and departmental specific requirements, which, in most cases are more stringent than the diploma requirements. In the case of engineering programmes, the new requirements are a minimum of 120 for the combination of Mathematics and Physics, subject to a subminimum of 50% for each. For both the diploma and degree programmes, Mathematical literacy may not be used in place of Mathematics, meaning applicants that took this subject at school are precluded from entering these programmes.

When the faculty first embarked on the curriculums of HEQSF aligned programmes, a cohort study was undertaken, which determined the majority of students enrolled in the diploma programmes already had degree endorsements on their NSC. In a more detailed investigation into entrance requirements, limited to Mechanical Engineering students, it was found that approximately 70% the diploma students would, in addition also meet the more stringent mathematics and physical science requirement (Graham & Walker, 2015). This information, coupled with a planned reduction in enrolments into the new programmes, meant the faculty was confident that they would meet enrolment targets. Largely this has been the case, with the majority of programmes meeting their targets for these new programmes. In the programmes where enrolment targets have not been met, the introduction of the HCFs may provide a much-needed supply of potential applicants. For programmes where enrolment targets were met, the HCF may mitigate against the shrinking pool of applicants, caused by the recent decrease in the number of students passing NSC Mathematics and Physical Science with greater than 50 or 60 percent (NACI, 2016).

TVET applicants
Typically, TVET applicants to programmes within the faculty can be divided into three distinct cohorts, namely those completing the National Certificate Vocational (NCV), those completing the Nated ‘N’ certificates or NSC students using the Nated courses as a ‘top-up’. The first two cohorts see students leave the academic schooling system after grade nine to complete a further three years at a TVET. The other describes students who complete their NSC, in the academic schooling sector, but elect to spend a trimester at a TVET where their ‘N’ course results are used, in lieu of their weaker NSC results, when applying for access. Access to programmes, via the NCV, has also changed with the introduction of the new degree programmes. Once again, an applicant is required to meet the statutory requirements, as well as any department specific requirements. For engineering programmes, a minimum of 70% for Mathematics and Physical Science is required in order to meet the statutory and departmental requirements. As mentioned earlier articulation from the NCV into UOTs is be highly problematic and the articulation pathway described here is no different. Students completing an engineering NCV course are not admitted to the cognate degree courses due to the lack of physics content within the NCV. It is possible that students may do an extra ‘N course’, and use that as an equivalent for NCV Physics, in order to gain access, but this extremely rare if not non-existent (Graham et al., 2018). Whilst it is acknowledged that not all students completing a TVET qualification should, or even want to, enter bachelor’s programmes, if a HCF is designed, together with TVET partners, with their students in mind, we can open a articulation pathway previously closed to these potential applicants.
HCF Design Considerations

As per the HEQSF, the HCF will be a 120 credit NQF level 5 qualification, with the possibility of the recognition and transfer of credits, up to a maximum of 50%. It is proposed to develop two higher certificates, both with the intention of broadening access, but each with a slightly different purpose. These two certificates are still in a conceptualisation stage, and shall be referred to, in this paper, as HCA and HCB. Discussions around the programme purpose and curriculum, as described below, have only taken place between stakeholders at the DUT, namely representatives of the Mathematics, Physics and Engineering departments. Once the broad curriculum structure has been outlined, it is planned to present this to TVET partners for input and amendment. Extensive consultation with the TVET partners, will be required during the development of individual modules, because the TVETs will be responsible for teaching these modules, but more importantly we will need to eliminate the curriculum disjunctions described earlier. It is through this participatory curriculum development process that we hope to ameliorate some of the epistemic justice in the sector.

When designing these programmes it was decided, where possible, to take advantage of the possibility of credit transfer. Credit transfer should help the student’s transition into the degree programme by allowing a reduced workload, in the first year, with a maximum of 60 credits being transferable. The remaining modules, where credit transfer will not be utilised, must strengthen the underpinning knowledge required for the bachelors’ programmes. These modules should either be discipline specific modules, or if generalised, modules that reinforce literacy, numeracy and critical thinking.

The first semester should include a module acquainting students with aspects of all the disciplines represented in the faculty. Exposing students to the type of work done by practitioners in the various disciplines will allow them to make informed decisions as to which degree programme they should apply for. The discipline specific modules, mentioned earlier, should be offered in the second semester of the programme, when the students have decided which path they wish to follow. The second semester could also include subjects are not necessarily discipline specific, but that may be common to either the built environment or the engineering streams. By following these principles, we believe the HCs will provide a strong base for students when they enroll in their chosen degree programme.

The HCA will, primarily be designed for students who have completed a NSC with Mathematics and Physics, but do not meet the statutory and/or departmental specific requirements for entry to their chosen programme. There will be a subminimum, possibly of 45%, for Mathematics and Physics, in order to access this programme. It would also be possible for NCV, students who have completed an extra physics course, but still do not meet the entry requirements to enroll in this certificate programme. In short, the HCA is for students that just miss entry to their chosen programme. The HCA will include a 12-credit mathematics and physics module in each semester. The 24 credits, obtained from the two mathematics modules in the HCA, will be used to exempt the students from the 1st semester 12-credit mathematics module in the degree. The same would apply to the physics modules.

The HCB will be designed for students who have matriculated with NSC/NCV Mathematical Literacy or without NSC/NCV Physics, or students who have fallen short of the subminimum mentioned above. In short, the HCB is for students that have substantially missed the entry requirements into their chosen programme. The HCB’s mathematics and physics modules will need to be foundational in nature, and of larger credit values than those of the HBA. These modules would not lead to credits being granted in the associated degree programmes. Due to increased credit allocation, towards mathematics and physics, there will be less space for discipline specific modules, and hence less likelihood of credit transfer.
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Integrating International Experience in Business Education

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ABSTRACT

Much has been said about tendencies shaping contemporary society and their impact on higher education. In the increasingly competitive global education market, attracting prospective candidates and retaining students is a complex task. Institutional policies have switched the focus onto strategic approaches to internationalization, developing new curricula and organizing study and research networks.

International experience is an important component of the 21st century education and a valuable element of workforce development. In the case of young graduates, it fosters personal growth and builds professional awareness. Employers value international experience because companies are becoming more international.

In this paper, we have examined the role of international experience for business education students. We conducted two focus groups, one with the students before having the experience in studying abroad and another with a group after the mobility period. Then, we conducted an interview with an HR senior recruitment specialist. Findings indicate that international experience is beneficial and relevant in personal and professional development. Study abroad broadens the worldview, enhances intercultural competence and understanding, and stimulates flexibility and adaptability, all these applicable at professional level. It is important to continue investing in developing the international component in business studies, both abroad and in-house.

Keywords: business education, international experience, study abroad, integration, HR

INTRODUCTION

The young-old balance is shifting throughout the world having an impact on the potential of higher education development. For instance, in the EU between 1994 and 2014 the share of males aged 10-14 as a percent of total population decreased from 3.4 to 2.6 and aged 15-19 decreased from 3.5 to 2.75. The same timespan for females aged 10-14 indicates a decrease from 3.2 to 2.5 and 3.4 to 2.6 for those aged 15-19 (Eurostat, 2015). Demographic trends have been accompanied in last years by socio-economic tendencies that affect expenditure patterns and dimensions at individual and macro levels. A report of the European University Association (EUA) comprising 451 higher education intuitions from 46 countries suggests that in Southern and Eastern Europe and in France and Ireland the experience of economic crisis has been the most severe. On the other hand, institutions in Sweden and Norway have found economic crisis as of low importance (Sursock, 2015).

The European Tertiary Education Register indicates 2465 higher education institutions in Europe (European Commission, access 27 March 2018) with 19.5 million tertiary education students registered in 2015. This includes four levels of tertiary education, short-cycle tertiary courses (7.2%), bachelor’s degrees (61.2%), master’s degrees (27.8%) and doctoral programs (3.7%), although short-cycle courses are not formal part of the education system or not common in a number of member states (Eurostat, 2017). The low birth rate in Europe coincides with a growing
demand for higher education. The tendency is increasing but the panorama has changed. A steadily declining proportion of young people has been accompanied by an improved access and participation in education. The number of those who hold a university degree has been continuously increasing over last decades. Recent English data indicate that 49% of persons would enter some kind of advanced studies by the age of 30 and suggest a rise of the participation rate by 1.4 percentage points last year (Adams, 2017). Not without importance is an emerging need of lifelong learning because of an increasing life expectancy at birth and a changing economic and social reality. Numbers in higher education can also partially be fruit of the persistent efforts towards promotion of education.

These factors substantially mark institutional policies switching the focus onto creating new study programs, organizing and structuring study and research networks, and developing strategic approaches to internationalization. Institutions are expanding. Kahle-Piasecki & Doles (2015) argue that higher education in the 21st century is a “global enterprise” (p. 75). In the increasingly competitive global education market, attracting prospective candidates is a multidimensional challenge that requires combining educational backgrounds and grading systems, candidate profiles and finally, culture and traditions. According to the OECD estimates, there were 3.3 million students travelling across the OECD area for study purposes (OECD, 2017), and some of them are moving independently in order to matriculate at the university abroad. There may be several motivations for studying abroad but at the end that it could become a valuable factor enhancing a professional portfolio. International experience has become a well-established scheme incorporated within university programs. For students who, for several reasons, do not decide to go abroad, higher education institutions have started bringing the international experience home.

With this study, we aimed to examine the importance of integrating the international experience, both abroad and in-house, in university education. Firstly, we conducted two focus groups with students enrolled in undergraduate and graduate business program. One was done before and another after the mobility with the objective to collect students’ perceptions of international education in the curricula. With this part, we wanted to understand what role and meaning study abroad has to students and the extent to which it can be translated into personal and professional growth valuable for future employers. Secondly, we conducted an interview with a senior HR recruitment specialist that aimed to provide us insights into the research from the business perspective.

**METHODOLOGY**

This was a three-step qualitative study. We conducted two focus groups, first (FC1) with a group of the students nominated for the next academic year (before the mobility period), and the other (FC2) with the students who had concluded their international experience (after the mobility period). Due to time restrictions, we could not select the same elements to the groups. The first focus group was conducted in April 2018 and the second in July 2018, when the last student returned from the mobility. Students were invited to the focus group individually. Participation in the study was voluntary.

We combined the students’ perceptions with the perceptions of the HR recruitment specialist (AB). Our objective was to enrich the results with the insights from the business perspective, providing views and opinions about the importance of international experience and professional career. AB has several years of experience in both, agency and in-house recruitment, and currently works as a Senior Talent Acquisition Advisor for a global IT company in the UK covering different types of roles (sales, non-sales, and technical), from junior to senior management level. During one of the degrees she took, she went abroad to study. She is multilingual.
Content analysis was used to analyze the results of the focus groups and the interview.

RESULTS
Six students participated in the first focus group and five in the second. The students of both groups considered the international experience abroad vital for professional and personal growth. More specifically, the members of FC1 considered it mostly as an opportunity to improve language skills and to travel. On the other hand, the members of FC2, who already did have an experience to study in another country, said it was important in exploring the comfort gap, learning new things and by new means, and overall an enriching intercultural experience.

When seeking the country for the international experience, the students relied strongly on the opinions of colleagues of the same and other universities. Student application considered language proficiency, distance (short or long, the preferences varied), academic performance (as it is one of the elements of the candidate nomination) and economic factors (FC1, FC2). Before the mobility, all candidates had the draft of the study program abroad and the guarantee of the recognition of the successfully accomplished units. During the mobility, the students found it challenging to adapt to the new environment, especially in what the institutional structure concerns (FC2). Moreover, in some cases there were considerable cultural differences. The support of the receiving institution, the student network, and the buddy system were found to be a relevant element in the process of integration, especially in the initial phase (FC2). While the participants of FC1 considered the lectures provided in English at the host institution as important, those of FC2 were more flexible in accepting courses in other languages. More experience at host university was associated with receptivity to study in other languages, especially when a change in the study program was necessary. Importantly, in a few cases of Spain or France, several courses are usually taught in the language of the country, therefore students do not have much choice to study in English. All members of FC1 and FC2 spoke English at least at B1 level (auto-evaluation), and were more proficient (at least B2 level) in the main or the second language of instruction of the selected institution.

Moving to another country exposes people’s preconceptions and habits. If they just stayed in the country they are originally from, they might not realize how many ideas they hold about other nations and cultures, and how many of them are wrong (FC2). The experience abroad can be a way to build self-awareness, grow as a person and translate this growth in the workplace (FC2).

Some of university students might never have a chance to get an international experience. On the other hand, there is usually a group of those hesitating and wondering whether studying abroad is a good idea. Mindful of its growing importance, universities have been seeking ways to bring its essence to home institution. In-house international experience is beneficial to those who for some reason cannot go abroad (FC1, FC2). It is an opportunity to receive at home lecturers from other countries teaching in English and verify language competencies with much less stress (FC1). The participants of FC2 pointed out the international environment such classes bring and a chance to experience other teaching methods.

The students considered that key qualities employers may look for and appreciate are skills, talent, time management capacity (FC1), passion, enthusiasm, motivation, and commitment (FC2), and teamwork (FC1, FC2). One of the members of FC2 added that what complements the blend of skills and contributes to the success of the company is the work ethic (FC2). Both groups, FC1 and FC2, found the international experience an important contribution to the development of soft skills. More specifically, they found it would turn a person more assertive, more patient, and that it would enhance their communication skills.
The participants of the focus groups did not feel they had any specific expectations related to the study abroad. The members of FC1 felt it was a good opportunity to improve the language skills and this could possibly be useful in the workplace. The participants of FC2 perceived the entire experience would be beneficial but could not describe specific areas or applications of that experience.

**HR Perceptions of the Importance of International Experience**

In the opinion of the HR specialist, international study experience will usually put a candidate in front of other graduate candidates who do not have that experience. International study experience is important to employers, especially those operating in international markets. For an employer, an international experience means a person is not afraid of changes and challenges, that they are proactive, open-minded, open to new experiences and not just interested in remaining in their comfort zone. For a global corporation, it will also mean the candidate is prepared to work in an international environment with colleagues from different countries, backgrounds, and cultures.

Working in international job markets is demanding. Language skills are extremely important. It does not limit to language proficiency, but it also means an ease in communication with colleagues, sometimes in a foreign language. Both not necessarily go in line. English is a “must have” because it is widely used in the workplace and any additional language is an advantage. However, language requirements in each sector might vary. Good university marks increase the chance to get an attractive job. It is still one of the very important criteria in graduate hire for many employers. On the other hand, extra-curricular activities show proactivity and interest. Seeking more experience while studying, and studying abroad is an example of that, is a sign of motivation, enthusiasm and commitment. They might well prepare for first professional assignments.

There is no universal set of features most appreciated by employers, but communication skills, commitment, effective listening and work principles are valued. Furthermore, an employee should nowadays have an ability to think out of the box, solve problems in a creative way and stay motivated. Time management and organizational skills are praised. It expected that students work on those competencies already during the study period in order to be able to demonstrate them during the recruitment when looking for a job.

For a specific job, the employer will ask for a relevant education (study field). The second most common selection criteria for hard skills is some relevant experience acquired during the studies, even a project or a voluntary activity. Companies seek candidates with the experience with professional tools and language skills important to the position. Validating soft skills during the recruitment process is more difficult but they are as important as hard skills. Soft skills allow understanding how effectively a person might apply hard skills at work.

**CONCLUSIONS**

With this study, we have aimed to examine the role and importance of international experience in university business programs. We have combined the perceptions of students, those before having a study abroad experience and those who have returned from the mobility, with the perceptions of an HR recruitment specialist in order to understand whether there is any gap between the university (before-after mobility) and the job market perspective. Understanding the market is indispensable to prepare and adapt the educational offer. It seems prospective employers see the potential behind study abroad. Interestingly, despite a number of recognized advantages of study abroad, and competencies and career development perspectives related with international experience, evidence shows that US students are not much keen to familiarizing oneself with new cultures (Douglas & Jones-Rikkers, 2001). Undoubtedly, international experience enhances independence and open-
mindedness (Hadis, 2005), as well as intercultural competencies and tolerance. It contributes to flexibility and adaptability, gives a sense of perseverance, self-reliance and teaches responsibility. Often, students are challenged to work in teams, developing communication and negotiation skills in multinational and multicultural groups. University business programs should therefore continue investing in the development of study abroad experiences, providing international experience by means of programs abroad and in-house.

Kitsantas’s (2004) research has examined student motivations to study abroad and the outcomes resulting from international experience in developing students’ cross-cultural skills and global understanding. She has concluded that studies abroad “significantly contribute to the preparation of students to function in a multicultural world and promote international understanding” (p.447). International and global companies work at different dimensions and across multiple boundaries. Different backgrounds, perceptions and interpretations of their members need to be accounted for when seeking performance and creativity. Perhaps one of main challenges will be then ensuring a positive climate of diversity (Zander et al., 2015).

A Canadian Bureau for International Education report provides interesting data on education abroad (Knight-Grofe & Rauh, 2016). The interest in study abroad is high (86%), and students who have had international experience abroad admit the mobility has influenced their choice of career path (71%) or academic path (65%). Recent European data indicate that students with international study experience are more likely to find a job after graduating than those who do not have it. More specifically, international mobility program students have 70% more chance to get a job than other students (Santiago, 2015). These results are supported by other evidence. For instance, a large study on Italian recent graduates has found that the participation in international mobility program has a statistically significant effect on the likelihood to be employed three years after graduation (Di Pietro, 2013). Evidence also shows that 64% of the employers find the international experience of the candidate a relevant factor when hiring. The previously mentioned study has showed that in the perception of the employer there is almost no difference between the importance of hard and soft skills (92% give preference to candidates with soft skills while 91% seek specific knowledge) (Santiago, 2015) suggesting that students should work on study-related knowledge together with other competencies and soft skills.

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Modern Communication in the Doctor-Patient Relationship – an Educational Aspect: Needs and Practice

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ABSTRACT
In the doctor-patient relations the core skill is the doctor’s ability to communicate with patients, because an effective communication provides many benefits not only to patients but also to doctors. Because the quality of medical communication in Poland is very poor, the aim of this article is to check if study programs at polish academies educating medical practitioners include communication and how the education in this field is provided. Thanks to desk research of curriculums at all polish medical faculties it was possible to find out that education in the field of doctor-patient communication is insufficient. Students don’t get enough information and don’t have enough practice how to interact with people. The problem results from too small number of classes, the inappropriate way of transferring knowledge, lack of integration with clinical teaching and too much theory instead of practice. The most important conclusion is that study programs have to be changed towards more comprehensive and integrated education in the field of communication.

Keywords: doctor-patient relation, communication, education, healthcare.

INTRODUCTION
The doctor-patient relationship has been changing for ages. The growth of patient autonomy and reorientation towards building of a partnership between patient and doctor characterise the current situation in medical services. Although the doctor’s power can be limited and the patient can influence the doctor, the main aim of doctor-patient relation is still to restore the health to the patient. This is only possible if they work together closely and communicate effectively.

The role of the communication
In the process of interactions between doctors and patients the core skill that enshrine the practice of medicine is the doctor’s ability to communicate with patients. An effective communication is one of the important elements to the establishment of a relationship of trust between them, which includes listening with empathy patient’s history, let patient express worries and transmit the diagnosis and any treatment for patient’s condition with words easy to understand (Cruz, 2012). Communication skills composed of shared knowledge, perceptions, feelings regarding the nature of the disease, goals of treatment and psychosocial support underlie a successful relationship (Duffy et al., 2004). For this reason an effective doctor-patient communication is a central clinical function and should be regarded as the heart of the art of medicine (Britt et al., 2010).

Effective communication provides many benefits to patients and doctors. It determines patients’ satisfaction with the consultation, compliance with medical recommendations, recall and understanding of the information and well-being (De Haes & Bensing, 2009, Mikesell, 2013). From an economic perspective increased patients’ satisfaction can reduce costs caused by switching between physicians due to dissatisfaction (Roter & Hall, 2006; Kim et al., 2004). Effective communication also determines doctors’ satisfaction - improves patients’ outcomes and as a consequence the doctor's well-being. The more intensive doctors educate in mindful communication, the more visible are effects (Krasner et al., 2003).

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Attitudes, motivations to learn about patients’ emotional problems, understanding the psychological needs and patients’ expectations and developing sensitivity to them are elements necessary in dealing with patients. Perception and proper understanding of patients’ needs by the doctor and proper behaviour result from the appropriate educational process. To possess expected by patients communication skills and ability to establish emotional contacts, doctors have two ways closely connected with each other: personality development during the six-year medical education and gaining professional knowledge and performance based on experience and achievements in many areas of the science (Hebanowski, 1999). In the first case the important role play conscious and subconscious imitations by students and young doctors of attitudes and behaviours in relations with patients of academic teachers and medical professionals. In the second case crucial issues are lectures, seminars and classes in such disciplines like sociology, psychology, ethics, interpersonal communication or doctor-patient relations. These very popular education forms in West Europe, USA and Canada become also popular in other parts of the world.

To support doctor-patient communication, The European Association for Communication in Healthcare (tEACH) (2014) formulated general principles for teaching and The Health Professionals Core Communication Curriculum (HPCCC): objectives for undergraduate education in health care professions (The European Association for Communication in Healthcare, 2012). The aim of communication is not simply to achieve more polite caregivers. It concerns the teaching of effective communication skills (interviewing, explanation and negotiation skills) so as to obtain better information (symptoms, medical history and patient's perceptions, ideas and concerns), provide information and negotiate plans and thereby improve diagnosis, concordance and medical outcomes. A communication as a tool for improved clinical competence, should be taught in clinical context. Teaching is focussed on behaviours and skills, learner-centred and utilises the following strategies: asking for prior knowledge/needs, adapting teaching content to needs, encouraging self-assessment, enhancing self-thinking and choices amongst suggestions, collaborating and engaging with the learner, reacting to learners' emotions, eliciting learners' perceptions, ideas and feelings, and checking understanding and learning. Teaching is problem oriented, interactive and experiential.

Aims set by tEACH for undergraduate education in health care professions are European consensus on learning objectives for a core communication curriculum in health care (Bachmann et all, 2013). A student of medicine masters many objectives of communication due to education. A graduate:
- shapes a conversation with regard to formal structure of appointments,
- elicits and explores the content of the patient’s bio-psycho-social history,
- uses techniques to build up an empathetic relationship and techniques of active listening,
- uses different types of questions according to the situation,
- shows awareness of the non-verbal communication,
- encourages the patient to express own ideas, concerns, expectations and feelings,
- gives information to the patient in a timely, comprehensive and meaningful manner,
- adapts own communication to the level of understanding and language of the patient,
- recognises difficult situations and communication challenges and deals with them,
- relates to the patient respectfully and recognizes the patient as a partner in shaping a relation.

In Poland in the Regulation of the Minister of Science and Higher Education of 5 June 2012 on education standards for medical, medicine and dentistry, pharmacy, nursing and midwifery faculties (Journal of Laws of the Republic of Poland, 2012) are listed general and specific learning outcomes covering communication and social competences. On the general level student graduating study places patient and his problems in the first place and can establish and maintain a deep and respectful contact with the patient. On the specific level education in the field of communication is fulfilled by the group of specific outcomes called “behavioral sciences with elements of professionalism”. Assumed outcomes have a form of knowledge, skills and social competences.
Modern communication in the doctor-patient relationship – an educational aspect: needs and practice.

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METHODS
The aim of this article is to check if study programs at polish academies educating medical practitioners include communication and how the education in this field is provided. This aim results from very poor quality of doctor-patient communication in Poland and low ability level in the field of building relationships with patients (OECD, 2015, 2016, 2017). A systematic review is performed to identify assumed outcomes, the quantity and the structure of teaching forms and to compare them with each other and with standards.

To achieve the aim, the desk research method is used. Study population involves all polish universities teaching medicine (14) according to Perspektywy Universities Ranking by Subject 2017 – Medicine: Jagiellonian University in Krakow, Medical University of Warsaw, Medical University of Lodz, Medical University of Gdansk, Poznan University of Medical Sciences, Medical University of Bialystok, Medical University of Silesia in Katowice, Wroclaw Medical University, Medical University of Lublin, Pomeranian Medical University in Szczecin, Nicolaus Copernicus University in Torun, University of Warmia and Mazury in Olsztyn, The Jan Kochanowski University in Kielce and University of Rzeszow. All study programs, educational standards and assumed outcomes were retrieved from official websites of universities in July 2018 and pertain to studies started in the academic year 2017/2018.

RESULTS
Behavioural sciences with elements of professionalism are core subjects at all polish faculties of medicine, but they are provided with a small number of teaching hours in proportion to total number of classes and implemented in a large part in the form of lectures (table 1).

Sociology in medicine, ethics in medicine and medical psychology are common, but the number of classes differs significantly. Most popular is medical psychology – on average over 31 hours. What is interesting there is no ethics in the curriculum at MUL. The worst situation is with education in the field of professional standards. Selected elements of professional standards are taught at 8 of 14 universities, but the average number of hours is only 20.5. Traditionally universities don’t offer core subjects closely related to communication except MUW (introduction to the medical communication and medical communication) and NCUT (communication and shaping attitudes towards an elderly person).

Table 1: Obligat*ory lectures (L), seminars (S) and practical classes (C) in the group ”behavioral sciences with elements of professionalism” at polish medicine faculties
(Source: Study programs at polish medicine faculties)
Modern communication in the doctor-patient relationship – an educational aspect: needs and practice.

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<table>
<thead>
<tr>
<th>University</th>
<th>Sociology in medicine</th>
<th>Ethics in medicine</th>
<th>Selected elements of professional standards</th>
<th>Medical psychology</th>
<th>other</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>L</td>
<td>S</td>
<td>C</td>
<td>L</td>
<td>S</td>
</tr>
<tr>
<td>Jagiellonian University in Krakow (JU)</td>
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<td>0</td>
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<td>7</td>
<td>5</td>
<td>25</td>
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<td>15</td>
<td>8</td>
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<td>5</td>
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<tr>
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<td>30</td>
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<tr>
<td>Medical University of Lublin (MULU)</td>
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<td>62</td>
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<td>Pomeranian Medical University in Szczecin (PMUS)</td>
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<td>10</td>
<td>15</td>
<td>0</td>
<td>30</td>
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<tr>
<td>Nicolaus Copernicus University in Torun (NCUT)</td>
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<td>0</td>
<td>0</td>
<td>10</td>
<td>15</td>
</tr>
<tr>
<td>University of Warmia and Mazury in Olsztyn (UMWO)</td>
<td>10</td>
<td>5</td>
<td>0</td>
<td>15</td>
<td>10</td>
</tr>
<tr>
<td>Jan Kochanowski University in Kielce (JKUK)</td>
<td>15</td>
<td>0</td>
<td>0</td>
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<td>0</td>
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<tr>
<td>University of Rzeszow (UR)</td>
<td>30</td>
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<td>0</td>
<td>15</td>
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<td><strong>Total</strong></td>
<td>113</td>
<td>190</td>
<td>93</td>
<td>179</td>
<td>168</td>
</tr>
</tbody>
</table>

* Introduction to the medical communication: 20 hours of lectures + 10 hours of practical classes, Medical communication: 10 hours of practical classes
** Communication: 6 hours of practical classes, Shaping attitudes towards an elderly person: 6 hours of lectures

Core subjects from group behavioral sciences don’t cover in 100% communication issues so they have to be complemented by electives. In a very large group of optional courses proposed by polish universities (some universities offer over 50 different electives) are some electives in the field of communication and building relations, e.g. empathy in medicine, clinical communication, techniques of interpersonal communication and mechanisms of social influence or contacts with the patient as part of the treatment (table 2).
Modern communication in the doctor-patient relationship – an educational aspect: needs and practice.

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<table>
<thead>
<tr>
<th>University</th>
<th>Electives</th>
<th>L</th>
<th>S</th>
<th>C</th>
</tr>
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<tbody>
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<td>Jagiellonian University in Krakow</td>
<td>Suffering and the phenomenon of care in the perspective of transcultural bioethics</td>
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<td></td>
<td>Axiological conception of a man,</td>
<td></td>
<td>30</td>
<td></td>
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<tr>
<td></td>
<td>Psychology of human behavior,</td>
<td></td>
<td>30</td>
<td></td>
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<tr>
<td></td>
<td>Ethical dilemmas in medical practice</td>
<td></td>
<td>30</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Therapeutic contact with the patient</td>
<td></td>
<td></td>
<td>30</td>
</tr>
<tr>
<td>Medical University of Warsaw</td>
<td>Motivating the patient to the healing process</td>
<td>30</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Medical University of Lodz</td>
<td>Academic and medical professionalism</td>
<td>10</td>
<td>15</td>
<td></td>
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<tr>
<td></td>
<td>Science of behavior</td>
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<td>10</td>
<td></td>
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<td>Psychological tools for working with an awkward patient</td>
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<tr>
<td></td>
<td>Doctor-patient communication</td>
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<td>25</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Interpersonal communication in doctor’s surgery</td>
<td></td>
<td>15</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Mediations in the healthcare</td>
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<td>Medical University of Gdansk</td>
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<td>Poznan University of Medical Sciences</td>
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<td></td>
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<tr>
<td></td>
<td>Contacts with the patient as part of the treatment</td>
<td>15</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>Social communication - influencing people</td>
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<tr>
<td></td>
<td>Essentials of communication with patient</td>
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<td>Communication skills within multicultural context – diversity and equality</td>
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<td></td>
<td>The patient comes to the doctor - a workshop of effective interaction</td>
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<tr>
<td></td>
<td>Psychological aspects of care for a child with cancer and his family</td>
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<td>5</td>
<td></td>
</tr>
<tr>
<td>Medical University of Bialystok</td>
<td>no courses</td>
<td></td>
<td></td>
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<td>Medical University of Silesia</td>
<td>Communication with patient</td>
<td>4</td>
<td>14</td>
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<tr>
<td></td>
<td>Passing the bad health information to the patient</td>
<td>4</td>
<td>14</td>
<td></td>
</tr>
<tr>
<td>Wroclaw Medical University</td>
<td>Active listening and other coaching tools</td>
<td>20</td>
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<tr>
<td></td>
<td>Workshop of communication with child</td>
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<td></td>
<td>The code of medical ethics</td>
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<td></td>
<td>Conflicts – recognition and resolution methods</td>
<td>10</td>
<td></td>
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<tr>
<td></td>
<td>Negotiations - negotiation techniques</td>
<td>20</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Doctor-patient relation – theory and practice</td>
<td>20</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Medical University of Lublin</td>
<td>no courses</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pomeranian Medical University in Szczecin</td>
<td>Empathy in medicine</td>
<td>20</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Elements of interpersonal communication</td>
<td>20</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Techniques of interpersonal communication and social impact mechanisms</td>
<td>15</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nicolaus Copernicus University in Torun</td>
<td>Psychological techniques improving quality of doctor-patient relation</td>
<td>30</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
The possibilities to educate in the field of communication differ widely. Three universities don’t offer any electives from this group. PUMS and MUL offer 7 subjects. At WMU students can choose 6 such courses. Electives are mostly in a form of seminars.

![Figure 1: Structure of obligatory courses and electives in the field of communication.](image)

Regarding to the number of hours offered by universities in the field of communication they can be divided into four groups. The first group (JU, PUMS and MUL) provides more than 250 hours of courses about communication, the second group (WMU, MULU, UR and NCUT) - 150-200 hours, the third group (SUM, MUB, MUW and PMUS) - 100-150 hours and the last group (UWMO, MUG and JKUK) - 100-150 hours. Analyzing the number of hours of obligatory subjects only 2 universities offer more than 150 hours.

**DISCUSSION**

The curriculums at polish medicine faculties have been still changing. They are in a big part concurrent with suggestions and recommendations formulated by domestic and international bodies and better adapted to new conditions on the medical services market now. Different forms of classes and summer practical training are used to teach new generations of medical professionals. Educational standards and assumed outcomes are included in universities’ regulations. Unfortunately this is only a theory regard to communication.

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1 E.g. The European Association for Communication in Healthcare (tEACH)

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The assumed outcomes in universities’ documents regarding to medical studies point to broad spectrum of skills and abilities in the field of medical communication. Education at polish medicine faculties doesn’t cover assumed outcomes. The number of core subjects from the group of behavioural sciences with elements of professionalism and optional classes in the field of communication is too little and often taught only at the beginning of education. Just four universities (JU, MUL, PUMS and MUL) scheduled more than 100 hours of sociology, psychology, ethics and professional standards courses. The problem is not only because of relatively small number of classes, but also because subjects from the group of behavioral sciences with elements of professionalism don’t educate how to communicate with patient. To know how patients react, what they feel and what they look to, doctors need more information and practice. Unfortunately only two universities added to their lists of the core subjects medical communication (MUW and NCUT).

Even though electives should support and complement knowledge in the field of communication, the problem is because not all universities offer optional courses educating in the field of communication and students, if they have such possibility, don’t have to choose them. The list of optional courses is sometimes so long and full of very interesting subjects in the specific fields of medicine (e.g. toxicology, genetics, biotechnology, ultrasonography and much more) that in the practice students choose them instead of communication. In consequence the quality of communication between doctor and patients in Poland is very poor (OECD, 2015, 2016, 2017).

Low quality of communication between doctors and patients in Poland confirm documents and researches. In the latest OECD report (2017) devoted to health care patients generally report positive experiences when it comes to communication and autonomy in the ambulatory health care system. In Poland the situation is completely different. Poland has the lowest rates if it goes about providing easy-to-understand explanations and involving patients in care and treatment decisions. Only less than one in two patients report having been involved in their care and treatment during consultation (an average rate for all OECD countries is 83,1%). A little bit better is the situation with providing easy-to-understand explanations. Almost 70% of patients agree that doctors speak understandably. Polish doctors take next to last position regarding to time spent with the patient. 40,4% of patients think doctors put in consultation not enough time.

CONCLUSIONS
Education in the field of doctor-patient communication at polish medical faculties is insufficient. The practice confirmed by research shows very poor quality of communication. Programs of education are not adjusted to the contemporary conditions and requirements of health services. Due to the inappropriate way of transferring this knowledge, lack of integration with clinical teaching and too much theory instead of practice polish doctors can’t communicate with ill people.

Skilful communication is so important, because doctor and patient interactions are aimed at the best outcome and patient’s satisfaction. Without high quality communication doctors are not able to build close relations with patients crucial in the treatment process. For this reason people deciding about the programs and plans in medical schools have to change their way of thinking that disciplines like behavioural sciences or communication are of little use and stop including them to paramedics. Moreover the emphasis on the requirement of specific doctors’ communication skills is not only a matter of patient's well-being, but most of all the effectiveness of treatment. Good communication results in greater accuracy of medical diagnosis, better cooperation in the treatment process and, finally, a reduction in the number of lawsuits for damages.

Doctors can know the guidelines on the communication but developing and practical application is an ongoing journey and a lifelong process of refining this art. (Warnecke, 2014). One of the most important ways to improve the quality of communication and consequently the quality of health
services and patients’ satisfaction is the proper pre-graduate and postgraduate (specialization training and lifelong learning) education of medicine students and doctors. The same recommendations was made by erected in Poland Sector Competence Council - Health Care and Social Assistance². To help to increase knowledge about the qualification and professional needs in the health care and to adapt the education system to the needs of employers and the market it is essential to teach students and doctors how to communicate with patient to see how their relations with patients thaw. The reason is a big gap in doctors’ interpersonal skills resulting from treating them at universities as unrelated to medical knowledge.

REFERENCES


Hebanowski M. (1999). Komunikacja lekarza z pacjentem w kompetencjach lekarza rodzinnego. Medycyna Rodzinna, 2, s. 3-4.


² An author is a member of this Council.

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Sustaining a Culture of Excellence in the Academe

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Dean, Graduate School of Business
Trustee, San Beda University
Deputy Secretary General
House of Representatives
Congress of the Philippines

ABSTRACT
Different post-graduate schools presented propositions to sustain excellence in the academe using prevailing standards, business models, and best practices from the industry. While those measures may be considered as practical solutions, are they relevant and competitive? To lead the path to sustain global competitiveness, this paper describes how the leadership of a graduate school builds up the school community and promote excellence, in and off campus. It details the management strategies undertaken to encourage the school community to be proactive in a shared learning process while providing students with an experience of community, quality instruction deepened by innovative curricular and co-curricular programs – scholarship and research, faculty development, alignment of infrastructure needs, alumni involvement, the establishment of innovative practices and fortification of community engagement programs.

INTRODUCTION
Economic growth and social development during the Industrial Revolution in the 18th-19th centuries significantly improved the living condition of people around the world. Several job opportunities were generated from rapid growth of industries and businesses. However, despite the creation of new jobs, many remained poor and unemployed as the newly-created jobs required higher skills that the people know little of and are not work-ready.

The growing mismatch between the quality of workforce and the new skills required of the newly-created jobs remained a reality even to this date as many graduates are either unemployed or underemployed. Notwithstanding that many also had no education or did not finish school especially in underdeveloped countries due to poverty or lack of educational facilities in far-flung areas. Many other social and economic factors may have influenced the labor-education mismatch, but the most prominent factor is the lack of qualifications for the even most basic jobs.

To fill the labor demand for the growing economy, investments in education consequently increased to provide individuals with the necessary skills and knowledge required for the jobs. Meanwhile, leaders and managers are equipped with advance knowledge and specialized training by graduate schools required for positions of responsibility.
Education - The Driving Force Towards Competence

Education in developed countries particularly Europe and the United States of America has proven to be successful in meeting the demands of their fast-changing economies. The global economic recession of the 1980’s which slowly recovered towards the end of the century stimulated the call for reforms not only in economic, political, and social systems but also in education. Competitiveness and strong excellence were the rallying cries of various economic and educational reform movements in order to fully recover from the recession.

Thomas Toch, a policy education expert, emphasized that “educational reforms are tied to the nation's quest for greater competitiveness.” As the world undergoes transformation, education changes as well to foster the competencies needed by the growing economy and the society. Significant reforms and innovations are put in place academic excellence, focusing not only to literacy and numeracy but also to learning environments and new strategies with the integration of a strong commitment to the common good based on respect, dignity, and human development.

The Path Towards Excellence

Measurement of excellence today goes beyond the traditional assessment of good reputation and resources, high admission rates and enrolment retention, increase productivity, high profitability, distinguished outcomes and high rankings.

In the book Achieving Education Excellence, author Alexander Astin measures excellence as the institution’s ability to affect the students' and faculties’ intellectual and scholarly development to make a positive difference in their lives. “Impact on student's knowledge and personal development and on the faculty members' scholarly and pedagogical ability and productivity are deemed important characters of educational excellence”. (Astin, p. 61).

The World Bank affirms that education contributes to the economic and social development of a nation and has the responsibility to equip individuals with the advance knowledge and skills, advanced quality research and teaching, in order for education to be responsive to the labor market demands of government, business, and the profession. Ben-David, the pioneer of modern sociology of science, adds that these specialized knowledge and skills have to be “cultivated and transmitted at its highest level to be utilized in the professional activity.” Essential in building academic excellence is the engagement of highly competent and motivated teaching staff and a supportive professional culture and the ability of institutions to continuously evaluate, monitor and innovate quality training and research outputs.

In the book Managing Education Excellence, a shared set of attitudes, values, and beliefs to develop common expectations are characters of a robust organizational culture. This is a shift of focus of institutions from policy to aspiration and from allocation to quality of education.

Education develops critical thinking, independent judgment, problem-solving, and information and media literacy that contributes to changing people’s mindset and perspectives expanding their opportunities to choose meaningful lives with equal dignity. Improvements in the
quality of education, and in the provision of economically and socially relevant learning as determined by individuals and communities, are intrinsic to making these shifts (Sustaining, p ).

Over time, development of the potential of individuals became the central concern of education and management. In Rethinking Education, ‘an empowering education is one that builds the human resources we need to be productive, to continue to learn, to solve problems, to be creative, and to live together with nature in peace and harmony. When nations ensure that such an education is accessible to all throughout their lives, a quiet revolution is set in motion: education becomes the engine of sustainable development and the key to a better world’.

EXCELLENCE FOR THE COMMON GOOD

Education is a process of creation, control, acquisition, validation, and use of knowledge. It must be made commonly available to the people, especially to the profession. Education, therefore, is not limited to acquiring and validation of knowledge, but also to the development and transmission of knowledge for common use. As such, knowledge and education are considered as common good.

Perceived to be a common good, education must be equitably shared and be made available to all the people, regardless of culture, economic status, nationality, age, and religious belief because education is a basic human right. As such, “it is the right and duty of the State to protect, according to the rules of right reason and faith, the moral and religious education of youth, by removing public impediments that stand in the way.” (From Rappresentanti in terra, Quotation on Education, Authors of Society, Catholic Social Teaching, p. 397).

The fundamental purpose of education has evolved to sustain and enhance the dignity, capacity, and welfare of the human being, in relation to their community and the society. This new approach can best be realized if enhanced with the concept of common good that leaders are committed to implementing at all levels of decision making and inspire others to do the same. Therefore, it would be the best interest of organizations “to support the building of healthy communities on the basis that what is good for the community is good for the company.” (Alexander and Buckingham, p. ).

This theory of common good emphasizes that an organization is a community of persons who need each other to satisfy one’s own needs and subsist, but above all to develop as a person and be happy as life with others is part of the very idea of happiness.’ (Argandoña, p. 7). Meanwhile, the Catholic church social teaching focuses on the dignity of the human person as each individual is made in the image and likeness of God. Each individual has value and must be respected by the society.

The common good approach, therefore, is not exclusively identified with the provision of material goods and services and creating infrastructure for the benefit of the organization and the society but must also include the support of human and cultural value such as self-discipline, integrity, trust, and solidarity to sustain human capital that would involve the businesses, government, and the civil society.
Hindu statesman and philosopher Kautilya describes common good as a shared good between corporate and the society at large. He maintains that the strength of a successful business lies in its ability to incorporate the system of values and norms embedded in the respective societies and culture. A skilled and talented workforce, a robust market for goods and services, and above all, a healthy local and international community that is based on the principle of what is good for the community is good for the company to make a business successfully efficient.

In the case of Japan, Kautilya cites that its economic and business success is not much on profit but generally on Japanese ethos and business ethics embodied in non-profit motivations including honor, trust, entrepreneurship, devotion to the enterprise, selfless work and so on.

**Lessons learned from San Beda University’s Graduate School of Business**

San Beda University is a Benedictine Catholic educational school in the Philippines committed to the Christian formation of the Beda community as its service to the Church, the Philippine society, and the world. It aims to form its members in faith (fides), knowledge (scientia), and virtue (virtus).

Being a Benedictine Catholic school, it follows the Ten Hallmarks of Benedictine Education, to wit: 1) love of Christ and neighbor; 2) Prayer: a life marked by lectio, liturgy and mindfulness; 3) Stability: commitment to the daily life of a Benedictine monastery; 4) Conversatio: the way of formation and transformation; 5) Obedience: a commitment of listening and consequent action; 6) Discipline: a way toward learning and freedom; 7) Humility: acceptance of the demand for realism and accountability; 8) Stewardship: respect for the beauty and goodness of creation as a sacrament of God; 9) Hospitality: call to openness; and 10) Community: call for service to the common good and respect for the individual.

The Ten Hallmarks of Benedictine Education became an encompassing centerpiece of all factors leading to the sustenance of excellence in the academe for the common good. It has been the guiding post of San Beda University that enabled its Graduate School of Business to offer a world-class education inspired by the tenets of leadership and governance. Below is the Sustainability Framework used by the Graduate School of Business that illustrates the process of actualizing developments and achieving organizational goals.

*Figure 1: Sustainability Framework of the San Beda University Graduate School of Business*
Using this framework, the Graduate School of Business envisions to produce professionally competent as corporate and business individuals, fully aware of their significant role in society, and responsibly committed as agents of change for the good of society and for the greater glory of God. It seeks to train knowledgeable, principled and skilled leaders that have a “global mindset” and skills in navigating organizational realities with emphasis on leadership development, critical, creative and integrative thinking and learning.

It also provides a serious agenda that seeks to develop universal principles of leadership and promote good governance in both the private and public sectors with accountability and responsibility at its very core.

**Understanding the situation**

It is a given that educational system should be leading the path towards global competitiveness. But the question remains on how an institution can lead the students if the foundation for progress is insufficient and lacking in necessary infrastructures and programs.

The list may go on and on in identifying the internal challenges that any graduate school may encounter. There may be many things achieved in the past that may have been proven to bear significant value to a graduate school. However, the fundamental question arises - given scarce organizational resources: on which of these things that matter most to students should be the main focus?

In Malcolm Gladwell’s book, The Tipping Point, the author recommended the application of the power of context. He explained in the book that the inner states are the results of the outer circumstances (Gladwell, 2002). Research, therefore, is a crucial first step towards an improved understanding of the current situation.

As practiced in the business industry, the benefit derived from “situation analysis”, from a two-tiered vista: externally and internally, cannot be overemphasized. External factors affect organizations without any recourse or influence. Internal factors, on the other hand, contribute to the enhancement or limitation of the strategic alternatives. Knowing what you have reveals the extent of what you can utilize to be able to attain what you want to achieve.

Best practices yield unique insights into proven and practicable paradigms. Prominent academic institutions and professional associations, both locally and internationally, have embarked on specific programs in their drive for excellence. However, there is no one-size-fits-all formula that may be uniformly applied across organizations - across corporate cultures. Various nuances abound and they need to be properly considered.

**Leadership in action**

Internalizing the challenges presented, the advancement of quality management in the graduate school must be anchored on the concept of leadership (Prager and Surch, 2010). Facing the abovementioned challenges requires an accurate appreciation of leadership in its truest essence.
Essentially, one must believe that leadership is not a noun - leadership is a verb. Leadership connotes action, leadership requires action, and leadership in action.

The San Graduate School’s transformation to excellence rests on the initiation and guidance of the leadership. It is directly clear to the leader the values and purpose of the Graduate School in particular and the University in general and most of all, the fundamental aim of developing talents of students and the faculty to their fullest. The leader communicates across to the rest of the academic community the school’s goals, programs and innovations to the students and the faculty through various forms including speeches, conference, training and symposia.

With this framework, ideas and actions enumerated in this article were all tested and implemented by the author in a graduate school that has resulted in its continuous development.

**Build from within**

Leadership is not just about getting the best people in your organization. Leadership is about influencing people in your organization to become better persons and helping them achieve their full potential. Developing people you lead is a leader’s first order of business. Without their self-esteem and cooperation, you can never inspire, energize and empower them to be better than what they already are; and if you cannot inspire, energize and empower them, you cannot lead them. John Maxwell, another international author on leadership and one who has mentored great people in leadership positions, aptly capsulizes this concept into a single sentence: “People do not care how much you know until they know how much you care” (Maxwell, 2012).

This aspect of leadership, focusing on people, should be the first priority in fully integrating the faculty towards the main goals of a graduate school. The key resolve is to glue together all the bright minds and provide them with the right mindset pursuing the institution’s focus on research and development (BizEd 2008).

As a first step, conducting a Research Agenda seminar will allow the faculty members to revisit and improve the research direction of the institution. Through careful deliberation, the faculty will identify the technical aspect, administrative and structural support of the institution as important drivers in a successful research program.

On the aspect of curriculum enhancement, the Curriculum Mapping seminar will enhance the alignment of subjects offered both in the Doctor’s and Master’s programs. More than a compliance to the government’s rulings, this effort must be conducted annually to consolidate innovative ideas from the faculty members that will further improve and provide value-adding changes in the curriculum.

The Research Writing Seminar should be a staple event in the graduate school with attendance from both the students and faculty members. This will ensure the quality of thesis and dissertation produced tantamount to the high standards of Ivy League schools in the US.
Capacity building

Indeed, leaders derive strength from the people in the organization. But how could these people perform and produce results if the capacity is limited? Simultaneous to the efforts given in investing in faculty development, capacity building through infrastructure development is yet another piston that powers the engine for change. The school’s infrastructure must go hand in hand with the education service to support the growing needs of the graduate school. As discussed in the book Tipping Point, human beings are a lot more sensitive to their environment than they may seem to be (Gladwell, 2002). This only shows that structural improvement translates to increase in effectiveness and advancement of the organization.

In a graduate school, the immediate effect of structural change must be initially felt inside the classroom. With this, renovation of classrooms must be put on top of the list. Of course, the school may have been burdened financially. Thus, financial support from the alumni can be sought to fund the construction on a per room basis. In return for their generosity, the renovated rooms can be labeled based on the name of the sponsoring alumnus.

Complementing the newly renovated rooms are the purchase of state-of-the-art equipment that must be simultaneously installed and fixed as part of the classroom interiors. These important acquisitions will no longer require students to borrow equipment from the central equipment office just to have a classroom slide presentation.

Another innovative addition to the existing infrastructure is the establishment of a conference room and research center solely devoted to the graduate school. This unique section in the institution’s premises will provide students and faculty members with a research haven where they could focus on their thesis and dissertation writing and consultation. The conference room can accommodate at least 25 people where pocket meetings may be held comfortably at the disposal of a coordinator. On top of the main college library, an exclusive library incorporated in the said room would be value adding by offering the latest books in the business industry.

Constructing research hubs in the Graduate School addresses the needs of the students and faculty for a conducive venue in holding strategy paper, thesis and dissertation defenses. It is the facility that will help elevate the quality and quantity of student and faculty researchers and possibly catapult the school’s standing as one of the most productive academic research institutions.

Connectivity and access to information around the world is important in the developing the research capability of the graduate school. On the initiative of the Graduate School, the University is keen on upgrading the information and communication technology (ICT) infrastructure to enhance the academic and research collaboration, community outreach program, and education and support services of the institution. With an enhanced ICT, the Graduate School will be able to provide learners easy access to knowledge anytime and anywhere. ICT will support the university’s search for knowledge and navigate through the vast amounts of data and information worldwide. Through ICT, the university will have new ways of teaching and learning. ICT does not only improve learning quality, innovation and creativity, but also simplifies administrative and management processes and services. The establishment of the Center for Information and Communication Technology will provide a reliable, accessible, secure, resilient, and sustainable integrated digital ecosystem in the University.
Alumni involvement

As previously narrated, running a graduate school entails managing of people on one hand while ensuring quality educational services, on the other hand, leaving the Dean’s hands full. Despite the heavy loads, the Dean keeps his doors open for communication with students. The Deans are expected to be a model for the people in their organization. They cannot give what they do not have. They cannot influence and inspire the people they lead to be successful if they do not know and have not experienced success themselves. For, as they say, leaders can never take their people farther than they have traveled (Maxwell, 2011).

To fill this communication gap, someone has to play the role of a master of success. Postgraduate education should make use of master-apprenticeship relationship in the learning process so as to guide them to an effective ongoing development process. More importantly, the real challenge to our desired dynamic postgraduate education is the creation of a mentor-protégé relationship to facilitate continuous learning beyond the formal education process (Hahn, 2014).

Who else could fill this role but the alumni of the school who are now trailblazers, pioneers, chief executive officers, presidents and chairmen in various multinational, conglomerate and local companies. Through various recognitions, the Graduate School can capture the interest of alumni to become role models and masters of success to the students. It has pioneered the Icon of Entrepreneurship Award to outstanding Bedan alumni. These awards can be specifically introduced that will highlight the success, contributions, and achievements of the alumni in the business industry. More than the awards, these management gurus may all share their wisdom and valuable messages as baccalaureate guest speakers during the school’s commencement exercises or in specially-organized seminars.

Innovative Partnership

Only through continuous development that a graduate school may have better chances of surviving the ever-changing business, economic and organizational world (University Business, smallcaps2016). One cannot be contented with what is, nor should one relax and sit on his laurels elated by his accomplishments of improving on what was. A leader concerns oneself not only with what is new but more importantly on what should be new. In the current pace of competition in the graduate school market, keeping the lead is already a tall order. But in being several steps forward, one can only hope for survival, not just leadership and success. Success belongs to those who dare to innovate, those who always thirst for something new and something better.

In order to scale up the competitiveness of the Graduate School, implementation of an innovative and strategic partnership with private companies is a big step forward. With a tailored-fit MBA program, the graduate school opens its doors to private companies and caters to the needs of its senior and junior executive employees. With this unique off-campus program, the quality of postgraduate education reaches out to more professionals and in the process, permeate the business industry.
Closed linkages with several successful private companies and other education institutions through advanced training course, competitive research progress, consultancies, and continuing education programs enable the students and faculty to learn best practices and challenges in the industry.

Given that classes are held from Monday to Friday or just every Saturday in some graduate schools, the classes under the off-campus program can be held on Sundays at the company’s venue in coordination with the industry-practitioner professors of the graduate school.

On top of the tailored-fit MBA program for private companies, a graduate school may also develop an executive learning program targeting the professionals and companies who share the same passion for continuous professional development. The concept is about investing in people-based strategy as a tool in gaining a strong leverage from today’s highly competitive market. Similar to the off-campus MBA program, the modules are tailored-fit to the needs of the company and its employees.

Top industry practitioners who are leaders in their respective fields will serve as professors and discuss comprehensively the modules under the executive learning program which will be delivered in two sessions for four hours each at the preferred training venue of the company. The said program can be complemented by a range of other development programs which focus on specific aspects of leadership and management.

**Helping hands**

In an educational institution, it is not only about the quality curriculum and outstanding facilities. The true worth of a school is also measured by its contributions to society. Remember that leaders do not live for themselves alone; leaders live for the organization and the society (Milana, Rasmussen, and Holford, 2016). One must think big in the context of assuming a scope beyond what is good not only to one but also as a leader. The idea of applying that learned knowledge in business must manifest in the outputs that are beneficial for the common good.

The offspring of this mission is the establishment of global extension and linkages program in the Graduate School. It aims to extend the helping hands of the members of the Graduate School in the local and global community.

In the local setup, the Graduate School actively promotes entrepreneurship among the non-teaching employees of the institution. Every year, the participants learn new skills directly from the experts in the field with programs such as flower arrangement, perfume making, deli making and Santa Claus figure making. These pieces of training are conceptualized to inculcate the “herd behavior” in the whole community, seeking to harmonize actions toward a common goal.

**Fine tuning the details**

Summarizing the key areas in managing a graduate school, a Dean invests in faculty development, aligns the infrastructure needs, involves the alumni, establishes innovative practices, and fortifies the extension program. Focusing on the big areas will sufficiently create a big impact on
the students and in attracting applicants to the Graduate School. However, there are times that even the smallest details matter and require careful attention and consideration.

**Awards and Recognitions**

One of the measures that gives instant impact is the awarding of special recognition to students who qualify in the Dean’s List. Through this simple recognition on a trimestral basis, students immediately feel the fruits of their labor in studies. They appreciate the efforts of the Graduate School management in recognizing them which will continuously inspire them to excel in their academics. Aside from the certificates, the students’ names are also be posted both in the campus and in the official publication.

Even the faculty members’ performance is hyped-up with such recognition activity from the graduate school management. Faculty members are acknowledged for their outstanding performance based on the faculty evaluation report. Moreover, the professor who garnered the highest evaluation result is awarded a Plaque of Recognition for being the Most Outstanding Faculty for a specific trimester. With this effort, the faculty members are being challenged that outstanding performances merit such recognition from the Graduate School management. Also, professors with perfect attendance are given with tokens of appreciation for completing the required full attendance in their respective classes.

**Faculty Evaluation**

The Graduate School implemented the mid-trimester evaluation of professor. This faculty evaluation maintains the high quality of education provided. In order to receive accurate and timely feedback from the evaluation, this evaluation is rendered in the middle of the trimester instead of its usual accomplishment every end of the trimester. In this way, professors may immediately adjust their teaching process, address the concern, and refocus the subject matter if needed.

**Student Magazine**

Establishment of the student publication encourages free speech inside the institution. Students are given free hand to publish their own magazine funded by the graduate school. The magazine can be fully institutionalized as the official publication of the Graduate School complete with editorial and article contributions from the students and the faculty. Through this service, it captures the dynamics of the Graduate School community in varying stages of change in the students’ lives and professions. It also serves as the avenue of communication where students and faculty could freely publish their thoughts and ideas regarding the industry and their perspective on various issues.

**Research Journal**

As result of the Research Agenda seminar, the Graduate School actively commits itself in producing a research journal at least twice a year. Being a research-focused institution, the research journal is the School’s response to more opportunities and venues for scholars and practitioners to further advance new knowledge in the field of business, and enable the development of new policies, processes, services, and products. The research journal is a double-blind refereed journal that highlights thesis and dissertation with relevant scope addressing the prevailing or emerging issues that affect the ever-changing global business landscape.
Research Digest

To address the limited capacity of the Research Journal, the Graduate School publishes a management digest to provide a definitive standard for a comprehensive reference learning tools for students. It serves as another platform for professors to share their insights on effective practices in business and management through this bi-annual publication. It is a supplementary reading material for students with direct inputs from their professors on top of the regular classes.

GSB Night

Organizing a cultural night can be a much-awaited event in the Graduate School. Spearheaded by the student council, the cultural night will showcase an event full of serenade and performances from talented students. It is also a gathering of all the clusters of the Graduate School from MBA to DBA and even those from its off-campus programs. It can be normally held in a posh venue outside the school where students and professors alike come in their best tuxedos for men and elegant gowns for the ladies. To cap the night of celebration, the Graduate School management uses this event to award various recognitions to all deserving students who have merited outstanding performance and career in school and in the workplace.

Stricter policies

School policies are drafted and implemented based on the existing condition affecting the community. To better serve the interest of all members of the community, stricter implementation is a must with immediate effect to the primary beneficiaries - the students. In the Philippines, one of the prevailing condition in the graduate school is the influx of foreign students whose general purpose of studying is just for their visa extension in the country. Placing a total ban or increasing the standards of qualification for these foreign students will benefit the genuine students in the graduate school. Because of the language barrier problems, these foreign students normally experience difficulties in comprehension, thus affecting the total class environment.

Another policy is the high standard set in hiring professors. The professor must be an industry practitioner with years of experiences in the managerial and executive position, and holds a Doctorate degree in the related field. With this policy, the students will benefit the most as they will learn from the actual gurus in the field of business management.

In terms of the school facility, special parking rate is offered to the Graduate School students who wish to park their cars securely inside the school. Since classes are only held on Saturdays, the Dean negotiated this special rate of half the price lower than that paid by students from other colleges.

The Impact of Change

With all these programs, the San Beda Graduate School of Business is one that is marked with an overwhelming passion and dedication of the members of the community. All these mentioned programs and developments are geared towards the making of a world-class graduate institution. With clear objectives of equipping the relatively young student professionals to acquire new knowledge and competencies in their fields; having a greater sense of educational values, and unwavering commitment to serving both the local and global communities, the Graduate School will achieve
newer heights of success that will enable it to withstand all the present external factors and competitions initially experienced.

Predictably, the Graduate School will see a double-digit rise in enrolment at 20% average growth annually. With this, increase in student population will require more classes to be opened and classrooms to be made available. Correspondingly, increased enrolment means additional income for the school which will also result in increase in budget allocation for the improvement of the Graduate School. Also, more student applicants will enroll primarily because of word of mouth and the active recruitment campaign implemented by the graduate school management team.

The growing population of the Graduate School proves the captured the interest of the best and the brightest leaders in the field of business. Several high-ranking executives join the faculty bolstering the already competitive roster of the graduate school.

Because of the consistency in granting recognition to top performers per trimester, the students and faculty members alike develop a stronger aspiration to maintain their high-level performances in the graduate school. Proving the effectiveness of the Perfect Attendance recognition, faculty attendance will reach as high as 95% attendance as compared to previous records. Faculty evaluation is given serious considerations since students perceive it as their contribution to further improving the quality of educational standards through the resulting immediate response of the assigned faculty.

In the research aspect, the Graduate School doubles its thesis outputs primarily due to the increased student population, faculty contributions and mini-thesis production in every subject. Corresponding with the quantity, the quality of thesis outputs significantly improves after investing in several research enhancement seminars conducted by credible research experts.

The expected inflow of positive results encourages the Graduate School community to remain and continuously embark on improving further their program offerings. These potential accomplishments give leverage for the Graduate School to face new challenges in the areas of identity, mission and culture; administration and governance; curriculum and program offerings; classroom instructions; assurance of learning; instructional resources; quality and relevant research and intellectual contributions; community involvement; value-adding linkages; and, recognition and accreditation.

**Synergy**

The potential of individuals and organizations are best realized when the best efforts are exerted, and when the best of everything is hoped, dreamt, and worked for - nothing less. A true leader inspires and encourages the people he leads to give their best as he himself gives his best. Anything short negates the real essence of leadership.

A successful graduate school is not built as a one-day nor a one-man wonder. A center where passionate people come together to collaborate and elevate the successes and achievements higher than yesterday’s is the proof of the bolts and joints that will come together over the years.
My hope is that the ideas, insights, and recommendations presented will help other academic institutions and not just the Graduate School in crafting a developmental roadmap following the well-proven strategies and tactics. All of the measures that were laid down in this may influence all other educational institutions to rigorously apply the concepts. In the academe, we are all united with an aim to produce quality graduates who are well-equipped with research tools, advanced knowledge, and analytical skills to better prepare them for the challenges of the highly competitive and dynamic twenty-first-century business environment.

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Education in Terms of Operation Management in the Marine Power Plant

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ABSTRACT
Maritime University of Szczecin on the Faculty of Navigation and Mechanics educates navigator officers and marine engineer officers for the work on the marine vessels. Students attending Faculty of Mechanics of Maritime University of Szczecin have to get not only typical specialized knowledge connected to exploitation of the marine power plant, but also the knowledge concerning managing a team responsible for correct functioning of equipment and mechanisms in the power plant. In the material we characterized the scope and area of knowledge conveyed to students of the specialty “exploitation of the marine power plants in the scope of managing and leading the team as well as the possibilities of getting new knowledge essential for leading the teams in the marine power plant. Critical remarks on the knowledge taught to students, as well as leading and managing the work in the marine power plant have been presented and modification of this content (both compulsory and complementary) has been proposed.

Keywords: education, crew, power plant.

INTRODUCTION
Contemporary fast development of science and technology, progress and changes which occur in the scope of global general knowledge, as well as at the workplace contribute to the fact that everyone who is employed or intends to take up employment is forced to continuously broaden their knowledge and skills, and gain new qualifications. It is usually an effect of quality education, gaining new skills and improving ones we already have and acquiring new competences. It is possible thanks to continuous education and its improving quality.
This work characterises the necessity of continuous supplementing of education by marine engineer officers who are graduates of the Faculty of Mechanics of Maritime University of Szczecin working on the marine vessels. Maritime University in Szczecin takes part in a world education system of marine officers and mechanics. It is a state technical university. It falls under direct command of the Ministry of Marine Economy and Inland Navigation and relies in its operation on the Act of 27 July 2005 Law on Higher Education with subsequent amendments (Dziennik Ustaw 2005 nr 164 poz. 1365. Ustawa z dnia 27 lipca 2005 r. Prawo o szkolnictwie wyższym z późn. zm., 2005).
The Maritime University is a member of the Polish Chamber of Maritime Commerce. As a first maritime university in the world it was awarded with the certificate of education compliance with the Standards of Training, Certification and Watchkeeping, 1978–STCW 78/95 (Dziennik Ustaw z 1984 Nr 39 poz. 201. Międzynarodowa konwencja o wymaganiach w zakresie wyszkolenia marynarzy, wydawania świadectw oraz pełnienia wacht, z późn. zm., 1984.) concerning training of

In the Maritime University, including the Faculty of Mechanics we rely on Quality Management System compliant with standards of PN-ISO 9001:2008 series, certified by Lloyd’s Register Quality Assurance. For an objective assessment of acquired knowledge and skills we introduce, as a support tool, tests of knowledge and skills, as well as performing tasks on the real objects. The Faculty of Mechanics of the Maritime University in Szczecin which educates marine engineer officers exists in the University organizational structure since its foundation, which is 20 August, 1968. It continues the traditions of the Faculty of Mechanics of the State Maritime School (post-secondary education) which existed since 1968.

Due to the of diversity of scientific knowledge which has to be possessed by the graduate of the Faculty of Mechanics of the Maritime University in Szczecin, the curricula meet education standards of Ministry of Science and Higher Education (Dziennik Ustaw 2007 nr 164 poz. 1166. Rozporządzenie Ministra Nauki i Szkolnictwa Wyższego z dnia 12 lipca 2007 r. w sprawie standardów kształcenia dla poszczególnych kierunków oraz poziomów kształcenia, a także trybu tworzenia i warunków, jakie musi spełniać uczelnia, by prowadzić studia międzykierunkowe oraz makrokierunki, 2007) as well as the requirements of the STCW Convention 78/95 (Dziennik Ustaw z 1984 Nr 39 poz. 201, 1984). According to the requirements of the STCW Convention 78/95 there is an extensive apprenticeship system, especially on the marine ships, included in the curriculum which enables to the graduate earning a rank of watchkeeping engineer officer. The graduate of the Maritime University of the fields of, so called, board training achieves all licenses allowing them to work for all shipowners around the world.

CHARACTERISTICS OF EDUCATING A MARINE VESSEL OFFICER

The graduates of first-degree studies of the Faculty of Mechanics of the Maritime University in Szczecin in the field of Mechanics and Machine building, of the specialty of, so called, board training which can be identified with the education of marine vessel officer and which has been characterized slightly more thoroughly in the further part of this paper possess basic knowledge and skills necessary for understanding the matters of building, manufacturing and exploitation of machines. The graduates should know a foreign language in a communicative way in speech and specialized way and they should know specialized language in their field of study and occupational health and safety on the vessels. They should be prepared to work in the shipowner companies and vessel crew members, machine industries, and others performing manufacturing and exploitation of machines, design, construction, and technological bodies, as well as technological processes connected to production organization and automation of technological processes; products’ and materials’ technical acceptance bodies; accreditation and validation bodies scientific and research units, consulting units and other economic, administrative and educational units requiring technical and information technology knowledge.

The graduates of the Faculty of Mechanics of the Maritime University in Szczecin may get their education in one of the following specialties: marine power plant operation: 4-year full-time studies (8 semesters) and 4-year part-time prepare to work as power installations operator – especially on the marine power plants. The curriculum of studies and apprenticeships offered by the university enables the graduates to occupy the management positions of in the marine power plants, in compliance with the international Convention STCW 78/95.

The graduates of the specialty marine power plant operation are prepared to take up master studies and to operate the machines as well as on-land and marine equipment, operate marine and on-land
power plants, organise and supervise work in the marine and on-land power plants, diagnose machines as well as on-land and marine equipment, organise, supervise and execute maintenance work in the marine and on-land power plants.

In line with the knowledge and skills they have acquired during studies they are especially predisposed to occupy positions as members of marine crews – machine faculty officers, as technical supervision specialists working for shipowners, in the Classification Societies, in production and maintenance shipyards, in the marine industry companies and other which manufacture and maintain the machines; design, construction and technological bodies connected to the marine and machine industry, in the marine administration. A graduate of exploitation of marine drive systems and power-generating systems (4-year – 8-semester studies) is well prepared both theoretically and practically to work as marine engineer officers, technical supervision specialists working for shipowners and in the Classification Societies. Having studied this specialty, the graduate possesses the knowledge of mechanics enriched with the knowledge in electrotechnology and automation. They possess a good command of English, modern technical knowledge, especially in mechanics and power systems, skills of maintaining all the systems of marine power plant, skill of maintenance management of marine power plant, skill of implementation of technical innovations and training others, high physical stamina and manual dexterity, stress resilience, and responsibility in fulfilling tasks. A graduate of diagnostics and overhaul of machines of marine systems (4-year – 8-semester studies) has got qualifications to occupy positions in the marine crews and repair yards. They hold a diploma of engineer in the field of Mechanics and Machine building and possess a general engineering knowledge, engineering knowledge in the scope of building and functioning of machines and working units (power engineering equipment), specialised knowledge on machine diagnosing (including specifics of machine and marine equipment diagnosing), knowledge on operating the machines, equipment and their systems, specialised knowledge on modern planning and executing repairs and overhauls. This specialised knowledge includes especially quality control methods of machine elements, analysis of damages, installation technology, machine and equipment diagnostics, planning of overhauls, technology of repairs and regeneration of machine elements.

Proportions between lectures and tutorials together with laboratory classes clearly stress applying active methods in didactics which allow for the direct participation of a student in acquiring knowledge. It is assumed that the graduates of this programme will take up work which will require autonomy in decision making. Therefore the curriculum includes subjects which allow for functioning in a team, in this case – marine crew.

**TRAINING IN THE SCOPE OF TEAM MANAGEMENT ON A SHIP’S POWER PLANT**

Students of the Faculty of Mechanics of the Maritime University in Szczecin acquire the knowledge on team management on a ship during the following classes:
- Working and management studies – 24 h;
- Basics of shipbuilding and crew organisation – 22 h;
- Ship safe exploitation management – 19 h;
- Supervision organisation – 24 h.

So to sum up, the students have 89 hours of preparation to work in a team on a ship, including a team of marine power plant employees. Programme content of a subject working and management studies include the following (Dannelon, 2007; Hardingham, 2004; Jarmolowicz, 2007; Penc, 2007):
- basic concepts on human work and management;
- main law acts regulating human work;
- basic management functions;
- teamwork organisation principles and principles of efficient work organisation;
- functions of a man in a process of work;
- work planning;
- managing the people in the process of work;
- motivating at work;
- rules of professional ethics and ethical aspects of working on the sea;
- sources of stress in a profession of seafarer and conflicts at work;
- communication at work.

Programme content of a subject **Basics of shipbuilding and crew organisation** in the scope of team management include among others activity of IMO and Classification Societies, as well as division of competences of crew members required by the Convention STCW (SOLAS (International Convention for the Safety of Life at Sea), 2004; STCW (International Convention on Standards of Training, Certification and Watchkeeping) 78/95, 1984; Dziennik Ustaw Nr 105 poz. 117 – Rozporządzenie Ministra Infrastruktury z dnia 24.08.2000 r. w sprawie wyszkolenia i kwalifikacji zawodowych, pełnienia wacht oraz składu załóg statków morskich o polskiej przynależności, 2000).

Programme content of a subject **Ship safe exploitation management** include the following, among others (SOLAS (International Convention for the Safety of Life at Sea), 2004; STCW (International Convention on Standards of Training, Certification and Watchkeeping) 78/95, 1984; Dziennik Ustaw Nr 105 poz. 117 – Rozporządzenie Ministra Infrastruktury z dnia 24.08.2000 r. w sprawie wyszkolenia i kwalifikacji zawodowych, pełnienia wacht oraz składu załóg statków morskich o polskiej przynależności, 2000; Międzynarodowy Kodeks Zarządzania Bezpieczeństwem IMO, from www.mi.gov.pl; International Ship and Port Facility Security Code (ISPS), 2003):
- conventions and law regulations concerning occupational safety and life protection on the sea;
- qualifications requirements and competences of marine crews’ members in the light of STCW Convention;
- watchkeeping procedures as well as principles of taking over and reporting responsibilities;
- machine watchkeeping principles and unattended supervision of marine power plant;
- tasks and responsibilities of crew members in a scope of safe exploitation of ship and sea life protection;
- duties of crew members during alerts and emergency situations;
- installations and equipment of the ship underlying sea life protection;
- principles of instructions and trainings on a ship;
- risk analysis during exploitation activities;
- ship documentations;
- Ship and Port Facility Security Code;
- International Safety Management Code;

- ship documentations concerning technical exploitation of a ship;
- human resources and power plant equipment in the marine power plant exploitation;
- machine crew work organisation;
- preparations of a ship to the yard repair;
- ship documentations concerning safety of sea navigation;
- ship documentations issued by Classification Societies;
- keeping engineer’s log book, manoeuvre log book, ORB, etc.;
- keeping documentation of performer work;
- organisation of work in the machine department, work permits, check lists, risk analyses.
CONCLUSIONS
Realization of tasks included in the curriculum in the scope of human resources management on a ship should ensure:
- gaining knowledge on the basic concepts concerning work and management;
- acquiring organisation skills of working in a team and managing it;
- acquiring a skill of team work organisation;
- acquiring a skill of motivation and communication in a working process;
- learning the structure of marine organisations and administrations and scope of their functioning;
- learning division of competences of ship crew members required by STCW Convention;
- learning about the requirements of Conventions: SOLAS and STCW, as well as ISM and ISPS Codes and their use in a daily work on a ship;
- learning about the principles underlying the acting of people groups in emergency situations;
- building skills of carrying out the analysis of risk connected to chosen activities performed on a ship;
- building awareness and skills of interpreting technical requirements concerning technical supervision organisation of a ship in the light of law requirements in force;
- building skills connected to conducting ship documentation concerning technical exploitation of a ship;
- building skills of machine crew organisation during standard exploitation and in emergency situations.

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Voltage Distortion by Grid-Connected Solar PV Systems and its Effect on Bottom Line

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ABSTRACT
This paper discusses the additional costs towards electrical power consumption to end users, due to the influence of voltage distortion through solar PV production. PV inverters produce undesirable harmonics due to fast switching during pulse width modulation (PWM), in the voltage control process. An investigation on how the power factor of a facility is influenced by network voltage distortion due to grid-tied solar PV generation is done. The effect of poor power factor on electrical costs and tariffs, due to solar PV production is highlighted in a case study where energy and harmonic measurements of a facility are simulated and logged. An important finding and conclusion is that network voltage and current distortion due to the accretion of harmonics plays a significant role on a business’ bottom line. Poor power quality also leads to premature component and/or system failure and unreliable energy delivery.

Keywords: voltage distortion, harmonics, power quality, Distortion Power, electrical tariffs.

INTRODUCTION
The South African government has a huge 2030 renewable energy target of 17 800 MW, according to its integrated resource plan for electricity (IRP 2010-2030). On the 4th April 2018 the Minister of Energy, Jeff Radebe signed the long awaited independent power producers (IPP) contracts and announced an investment of R56 billion for 2300MW renewables. This will result in big renewable energy plants being connected to the South African high voltage electrical grid. Some municipalities have already taken the initiative and are allowing customers in the residential, commercial as well as the industrial sectors to install rooftop solar PV systems. Although these grid-connected solar PV systems will add to capacity building, their resulting voltage distortion will have a huge effect on not only the end user bottom line, but also on that of the utility. Energy cost is the third largest component of operating expenses after municipal rates and property taxes (Chandan, 2015). The requirement to reduce energy costs of commercial establishments is far more compelling in developing countries because of certain key characteristics related to supply and demand. With the cost of solar PV panels progressively declining, commercial building owners are expected to use multiple sources of electricity, such as the grid, DG and solar PV systems. However, renewable integration also brings challenges, such as power quality problems. (Nawhal, 2016).

Voltage Distortion
Harmonics are frequencies at integer multiples of base or fundamental frequencies. A harmonic of the nth order is equal to n times the fundamental frequency, where n is a positive integer. A good illustration of the effect of harmonics on a waveform is shown in Figure 1. The fundamental
frequency is 50 Hz. It can clearly be seen how the influence of a third harmonic on the fundamental results in a new generated distorted waveform.

![Figure 1: The effect of Harmonics on a waveform. Source: Singh, Jayaprakash & Kothari, 2009](image)

With voltage distortion, the square root of three cannot simply be used to convert line-to-line voltages to line-to-neutral voltages and currents in power calculations (Bingham, 2005).

**Harmonic generating Sources**
Non-linear and domestic loads that use switching control circuits generate unwanted harmonics. They are light dimmers, LED lights, fluorescent tubes, compact fluorescent lamps (CFLs), mobile device chargers, microwave ovens, refrigerators, laptops and high power consuming motor drives such as washing machines and vacuum cleaners. In industry common three phase non-linear loads are three phase rectifier and adjustable speed drives. They typically use 6 pulse controlled rectifiers for AC-DC conversion. Odd negative sequence harmonics cause overheating of transformers and induction motors. Single phase non-linear loads such as electronic fluorescent lamp ballasts, laptops, computers, office equipment and uninterrupted power supplies are the sources of third harmonics. Triplen or zero sequence harmonic causes the neutral line to overheat. However, passive loads such as transformers, machines and magnetic ballasts are also the source of triplen harmonics due to iron saturation. (Rodney & Ramachandaramurthy, 2012).

**Harmonics generated by solar PV systems**
Solar PV systems generate unwanted harmonics in the DC to Ac inversion process and it leads to poor power quality of a system (Smith, 2001). Solar PV inverters are designed in such a way that it should also operate at low power levels under decreased solar irradiation patterns. These inverters then produce more undesirable harmonics due to the use of pulse width modulation (PWM), in the voltage control process to keep the supply output level constant. Low order harmonic amplitudes increase with a decrease in PV inverter output power (Du, Lu, James, & Cornforth, 2013). It might become policy to disconnect grid connected PV systems in the early hours of the morning not to affect the power quality of residential networks (Grady & Santos, 2001)

**Power losses due to voltage distortion**
Voltage and current harmonics produced by nonlinear loads increase power losses and, therefore, have a negative impact on electric utility distribution systems and components as well as on end user bottom line (Grady & Gilleskie, 1993). The basics can best be explained through a Power Diagram, shown in Fig 2. The amount of current drawn by a load from a supply depends on the proportion of reactance relative to resistance. A very high reactance in relation to resistance (which means low power factor) will require the source to supply higher current for a given power demand. This relates to a high reactive power \( Q_T = V_I \sin \theta \) as shown in the power diagram of Fig 1. The drawing of additional harmonic current should be avoided because it leads to an increased reactive power due to higher power losses and voltage drops in the power transmission system. This of course leads to a higher electrical account. If there are less harmonics on a network, the reactive power \( Q_T \) shall be reduced to a lower value \( Q'_T \) resulting in the apparent power \( S_t \) to be reduced to a lower value \( S'_t \).

\[ Q_T = V_I \sin \theta \]
\[ S_t = V_I \]
\[ Q'_T = V_I \sin \theta' \]
\[ S'_t = V_I \sin \theta' \]

\[ \theta' < \theta \]

Figure 2: The Power Diagram
Source: Boylestadt, 2005

Since \( S_t = V_I \) it means the current \( I \) will then be reduced, since the supply voltage \( V \) stays the same. So decreasing the THD, decreases the current demand of a load by decreasing the net reactive power of the load. This is clarified as follows:

With harmonics on the system the load impedance is; \( Z = R + jwL_1 + j2wL_2 + \ldots + jnwL_n \)
where \( n = 2, 3, 4, \ldots \),
and the total load reactive power is; \( jQ_T = jV_1I_1 \sin \theta + j2V_2I_2 \sin \theta + \ldots + jnV_nI_n \sin \theta_n \)
where \( n = 2, 3, 4, \ldots \),
By attenuating the harmonics \( n \) where \( n \neq 1 \) becomes near zero and the load reactance is reduced to \( Z = R + jwL_1 \). This leads to a reduced reactive power \( Q'_T \) and reduced apparent power \( S'_t \), smaller \( \theta' \) and higher power factor, smaller load current and lower energy consumption account.

Another way of looking at it is with the concept of Distortion Power \( (D) \).
\[ D = S_t - (P + Q) \]
Where \( P = \) True power, \( S_t = \) Apparent Power, \( Q = \) Reactive Power

This relationship between harmonics, Total Harmonic Distortion (THD), Distortion Factor (DF) and Power Factor can be seen in the following equations:

\[ \text{Power Factor} = pf = \frac{P_{avg}}{V_{rms}I_{rms}} \]  
(1)

\[ I_{rms} = \sqrt{(I_{dc})^2 + \sum_{r=1}^{\infty} (I_{r,rms})^2} \]  
(2)
The power factor of a system is dependent not only on the phase angle between the current and voltage fundamental, but also on the THD of the current. THD is an indication of how much extra heat will be dissipated when a distorted voltage is fed to a resistive load. This ties up with (8) and is an indication of additional losses due to current flow (IEEE Task Force, 1993).

**CASE STUDY: BEAUFORT WEST POWER, HARMONIC AND ENERGY COSTS MEASUREMENTS**

PQ measurements were taken Beaufort West, a typical South African town. It has a 15MW electrical demand, with a population of approximately 34,000. Fig. 1 shows a map of the town layout, indicating grid connected rooftop solar PV plants in the order of 3 to 60kWp.
Voltage distortion by grid-connected solar PV systems and its effect on bottom line. Wilfred FRITZ

Figure 3: Beaufort West town layout indicating rooftop solar PV locations

Table 1: Electrical tariffs of Beaufort West

THD measurements were made at the encircled network of interest. It has 3kW and 20kW solar PV systems connected to the 400V LV side of the MV/LV Pieter Jacobs mini-substation. A Fluke 1735 Power Logger was used and measurements were made at the point of common coupling (PCC) at the LV feed-in connections of the two grid-tied PV systems. Data was collected over October 2017, with a 10 minute sampling integration period. If we have a look at the plot of the measured current THD on the 28th October 2017, as shown in Figure 5, it can be noted that the average THD measured on each of the three line currents sometimes exceeded 30%. This coincided with the daytime period when the solar PV inverters were busy generating.

![Figure 4: Equivalent network of part of the town grid used in Simulation](image-url)
A harmonic load flow simulation was done with DigSilent PowerFactory. The total current THD was computed. Equation (3) is applicable if there is no voltage distortion, since THD is zero. Equation (8) is applicable in the presence of THD. An increase of 0.29 THD due to the solar PV inverters was simulated under a load condition of 100kVA and 0.9 power factor. If we use (3) and (8) and calculate the active power then harmonics equates to additional costs as displayed in Table 2.

**Table 2: Additional energy costs due to voltage distortion**

<table>
<thead>
<tr>
<th>S(kVA)</th>
<th>THD</th>
<th>Displ F</th>
<th>Distort F</th>
<th>P(kW)</th>
<th>P(kW diff)</th>
<th>hrs/day</th>
<th>kWh</th>
<th>Additional Energy Cost (ZAR)</th>
</tr>
</thead>
<tbody>
<tr>
<td>100</td>
<td>0</td>
<td>0.9</td>
<td>1</td>
<td>90</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>100</td>
<td>0.29</td>
<td>0.9</td>
<td>0.960</td>
<td>86</td>
<td>4</td>
<td>2</td>
<td>7.1</td>
<td>R 7.40</td>
</tr>
<tr>
<td>100</td>
<td>0.58</td>
<td>0.9</td>
<td>0.865</td>
<td>77.85</td>
<td>12.15</td>
<td>2</td>
<td>24.3</td>
<td>R 25.24</td>
</tr>
</tbody>
</table>

The energy charge is taken from Table 1, where the updated electrical tariffs of Beaufort West are displayed. The Results listed in Table 2 shows clearly that there is a noticeable energy cost in the presence of a very small THD of 0.29, under the same Apparent Power of 100kVA. If the THD value is doubled to 0.58 then the additional energy cost increases from R7,40 to R25,24.

**CONCLUSION**

Onsite measurements of current THD in the case study, clearly shows the additional harmonic production on the power network, due to solar PV generation. The average THD measured only exceeded 30%, during daytime when the solar PV inverters were busy generating. The higher the harmonic content of a network supply, the more voltage distortion, the worse the power factor. The worse the power factor, the higher the reactive power becomes relative to active power and the higher the energy account. In general, harmonics cause overheating problems. THD is an indication of the dissipation of extra power and is an indication of additional losses due to unwanted harmonic current flow. Equation (9) shows that current is inversely proportional to power factor. The typical home consumes between 230kWh and 340kWh per person per month. In the case study it can be seen that the calculated costs of harmonics is initially low but can add up and can be a few percent of an end-users energy account. Network voltage and current distortion due to the accretion of harmonics play a significant role on a business’ bottom line. Poor power quality also leads to premature component and/or system failure and unreliable energy delivery. This leads to additional maintenance costs. DigSilent PowerFactory also has a Techno Economical Calculation feature that can be used to calculate the cost for losses. This shall be used in future research to predict the amount of losses in an electrical account of an end-user in a network.

**ACKNOWLEDGEMENTS**

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Design and Simulation of a Reconfigurable Hydraulic Press Brake
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ABSTRACT

In this study a reconfigurable hydraulic press brake was designed using Solid works and simulated on a hydraulic FESTO Fluidsim. The designed press brake comprises of frame balance, conveyor rollers and support, belt, chuck, six hydraulic cylinders assembled with bolts and nuts. In order to prevent distortion of length and section the buckling force was determined analytically and compared with the results obtained from finite element analysis simulation (FEA). The Von mises stress theory was used to determine the stress, resultant load and displacement. Results obtained from FEA simulation was however compared with the mechanical properties of the hydraulic press brake. The maximum stress induced is significantly lower than the tensile strength of the hydraulic press brake, hence stress induced due to bending cannot cause the cast alloy to yield. Also, the buckling force significantly exceeds the resultant force giving no chances for buckling. The designed hydraulic press brake is flexible enough for effective control using hydraulic cylinders and also enhances satisfactory strength and rigidity during clamping and loading conditions.

Keywords: Buckling Force, Distortion, Hydraulic Cylinder, Press Brake

INTRODUCTION

According to Thomas et al. (2014), hydraulic press is a machine using a hydraulic cylinder to generate a compressive force to perform various pressing operations like metal forging, punching, stamping, etc. The press provides an efficient means of pushing and pulling, rotating, thrusting and controlling load (Sharma 2005; Sumaila and Ibhadode, 2011). Some applications of hydraulic presses includes; compression moulding, injection moulding, drawing, forging, blanking, coining, Clamping, compacting, Forming, pad forming, potting, punching, stacking, bending stamping and trimming (Thomas et al., 2014; Lai et al., 2012). The use of hydraulic cylinders for controls boasts of cost effectiveness, high rate of production, positive response to changes, ease of control of parameters and mostly suitable when heavy workpiece is to be machined (Eltantawie, 2013; Lange 1975, Sumaila and Ibhadode, 2011). Other advantages also comprise tonnage adjustment and cycle time maximization (Thomas et al. 2014; Ferreira et al., 2006). According to Maneetham and Afzulpurkar (2009), hydraulic servo systems (HSS) has been used in a wide range of modern industrial applications by virtue of their small size to power ratios and its ability to apply very large force and torque. On the other hand, the use of simulation model of for hydraulic systems enables the dynamic performance of these systems to be verified in the absence of physical hardware which is done using specific modeling and simulation tools (Prabhu, n.d; Grant et al., 1998; Koivo et al., 1996; Krutz et al., 2002). In addition, the bending forces and moment can easily be predicted using simulation tools in order to determine the magnitude of stain, buckling and distortion (Farsi and Behrooz et al., 2011; Florica et al., 2007; Grizelj et al., 2010). This will enhance the development of hydraulic systems with sufficient clamping force that ensures satisfactory strength without distortion. The aim of this study is to design a reconfigurable press brake assembly with hydraulic controls for holding work piece during machining operations on a press brake in other to enhance adequate clamping and precision. The objectives of the
study are to redesign the locating, supporting and clamping methods and design a reconfigurable press brake using hydraulic controls.

**METHODOLOGY**

This work designs an automatic hydraulic brake press controlled with six hydraulic cylinders. The designed press brake comprises of frame balance, conveyor rollers and support, belt, chuck, six hydraulic cylinders assembled with bolts and nuts. Solid works was employed for the design and modelling of the fixture. The hydraulic fixture is suitable when a heavy work piece is to be machined on the brake press.

According to Khurmi and Gupta (2005), the maximum distortion energy theory for yielding is expressed as Equation 1.

$$
(\sigma_1)^2 + (\sigma_2)^2 - 2\sigma_1 \times \sigma_2 = \left(\frac{\sigma_y}{F.S}\right)^2
$$

Where;

$\sigma_1$ is the maximum principal stress (N/m$^2$); $\sigma_2$ is the minimum principal stress (N/m$^2$)

$\sigma_y$ is the stress at yield point (N/m$^2$); $F.S$ is the factor of safety

The maximum and minimum principal stress calculated from Von mises stress analysis is given as $2.39365 \times 10^5$ N/m$^2$ and $5.44655 \times 10^{-7}$ N/m$^2$ respectively.

The volumetric parameters for the entire model is given as mass:442.634 kg, volume:0.056748 m$^3$, density:7800 kg/m$^3$ and weight:4337.82 N. The model of the designed fixture assembly as well as the assembly drawing is shown in Figures 1 and 2 respectively.

There is risk of buckling in the lower beam where the fixture is loaded. In order to assess the risk of buckling, results obtained from analytical formula are compared with FEA simulation. The length of the support for the tested section is 150 mm while the flexural rigidity which is the product of the modulus of elasticity and moment of inertia equals $6.6 \times 10^6$ Nm$^2$. Therefore, buckling force is expressed as Equation 2.

$$
F_b = \frac{EI \pi^2}{L_c^2}
$$

Where

$F_b$ is the buckling force (N); $EI$ is the flexural rigidity ($6.6 \times 10^6$ Nm$^2$) and $L_c$ is the effective length (m)

Since both ends are pinned the effective length equals the actual length. Hence,

$$
L_c = L
$$

From Equation 2, the buckling force is calculated as $2.8958 \times 10^9$ N. Considering the fact that the section only has to support a resultant load of 499.716 N, hence the buckling force exceeds the resultant force giving no chances for buckling.
Figure 1: The Model of the Designed Fixture

The strain, stress and displacement analysis on the entire assembly using Von mises stress analysis is shown in Figures 3, 4 and 5 respectively.

From Figure 3 the maximum strain was $5.5862 \times 10^{-7}$ while the minimum was $2.2633 \times 10^{-16}$.
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Figure 3: Strain Analysis of the entire Fixture
For the entire fixture model, the maximum stress induced was $2.39365 \times 10^5 \text{N/m}^2$ while the minimum was $5.44655 \times 10^4 \text{N/m}^2$ as shown in Figure 4.

Figure 4: Stress Analysis of the entire Fixture
From Figure 5, the maximum relative displacement of the cylinder from its mean position is 8.77685 mm.
Figure 5: Displacement Analysis of the entire Fixture

3. Results and Discussion

The mechanical properties of the cast alloy steel employed for the entire fixture is presented in Table 1.

Table 1: Mechanical Properties of Cast Alloy Steel for the Fixture Model

<table>
<thead>
<tr>
<th>S/N</th>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Yield strength</td>
<td>2.41275e+008 N/m²</td>
</tr>
<tr>
<td>2.</td>
<td>Tensile strength</td>
<td>4.48083e+008 N/m²</td>
</tr>
<tr>
<td>3.</td>
<td>Elastic modulus</td>
<td>1.9e+011 N/m²</td>
</tr>
<tr>
<td>4.</td>
<td>Shear stress</td>
<td>3.36062e+008 N/m²</td>
</tr>
<tr>
<td>5.</td>
<td>Poisson's ratio</td>
<td>0.26</td>
</tr>
<tr>
<td>6.</td>
<td>Mass density</td>
<td>7300 kg/m³</td>
</tr>
<tr>
<td>7.</td>
<td>Shear modulus</td>
<td>7.8e+010 N/m²</td>
</tr>
<tr>
<td>8.</td>
<td>Thermal expansion coefficient</td>
<td>1.5e-005/Kelvin</td>
</tr>
</tbody>
</table>

For a cast alloy steel, using the linear elastic isotropic model type and von mises failure criterion the simulation result obtained is presented in Tables 2 and 3 respectively.

While Table 2 presents the summary of the reaction forces and moments. The resultant reaction force obtained from Solidworks simulation is 499.716 N. This force is not sufficient to produce any bending as the resultant bending moment is zero.

Table 2: Reaction Forces and Moment

<table>
<thead>
<tr>
<th>Selection set</th>
<th>Units</th>
<th>Sum X</th>
<th>Sum Y</th>
<th>Sum Z</th>
<th>Resultant</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reaction Forces</td>
<td>N</td>
<td>9.51035</td>
<td>499.625</td>
<td>0.000166947</td>
<td>499.716</td>
</tr>
<tr>
<td>Reaction Moment</td>
<td>Nm</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

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Table 3 presents the simulation results obtained for the strain, stress and displacement analysis. The maximum and minimum strain was 5.58621e-007 and 2.26322e-016. Both are negligibly small. This indicates that there is no significant change in the fixture orientation during bending operation. Also, the maximum and stress induced from Von mises analysis was 239365 N/m² and 5.44655e-007 N/m². When compared with the tensile strength of the cast alloy from which the fixture was designed (4.48083e+008 N/m²), the maximum stress induced is lower than the tensile strength. Hence stress induced due to bending cannot cause the cast alloy to yield. The tensile strength is also sufficient to withstand bending forces without displacement or distortion as the maximum value of displacement is 8.77695 mm.

Table 3: Strain, Stress and Displacement Analysis for the Fixture

<table>
<thead>
<tr>
<th>Name</th>
<th>Type</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strain1</td>
<td>ESTRN: Equivalent Strain</td>
<td>2.26322e-016</td>
<td>5.58621e-007</td>
</tr>
<tr>
<td></td>
<td>Element: 2491</td>
<td>Element: 26763</td>
<td></td>
</tr>
<tr>
<td>Stress1</td>
<td>VON: von Mises Stress</td>
<td>5.44655e-007 N/m²</td>
<td>239365 N/m²</td>
</tr>
<tr>
<td></td>
<td>Node: 33371</td>
<td>Node: 54832</td>
<td></td>
</tr>
<tr>
<td>Displacement1</td>
<td>URES: Resultant Displacement</td>
<td>0 mm</td>
<td>8.77695 mm</td>
</tr>
<tr>
<td></td>
<td>Node: 315</td>
<td>Node: 56061</td>
<td></td>
</tr>
</tbody>
</table>

Figure 6 shows the hydraulic circuit comprising of a configurable 3/n way valve with three connections and negligible hydraulic resistance as well as the 4/n way valve with four connections. It also comprises of a double acting cylinder with shock absorber at the stroke end. The piston of the cylinder is controlled by the connected pressure loads while the shock absorber can be adjusted by means of two adjustable screws. The piston of the cylinders contains a permanent solenoid which can be used to operate a proximity switch. The diameter of the piston is 20 mm with a maximum stroke length of 200 mm. The tank is integrated into the pump unit. The filter with negligible hydraulic resistance limits the contamination of the fluid in order to reduce the risk of damaging the component. The pump unit supplies a volumetric flow with the operating pressure limited by the internal pressure relief valve. The pump has two tank connections. The circuit also comprises of the relief valve which is closed in the normal position. If the operating pressure is reached at one end opening, the other opening opens when the pressure drops below the present level then the valve closes again with the pilot pressure generated by the input pressure. It also consists of a pilot stage and a main stage; when open there is less volumetric flow at the pilot stage.
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CONCLUSION
A reconfigurable hydraulic press brake was designed using Solid works and simulated on a hydraulic FESTO Fluidsim. Results obtained from FEA simulation when however compared with the mechanical properties of the hydraulic press brake indicates that the reconfigurable hydraulic press brake possesses satisfactory strength to prevent buckling, strain, distortion and displacement.

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5-KW Hybrid Solar System for an Average Residential Household in Vanderbijlpark, South Africa

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ABSTRACT
This paper presents design considerations and results for a hybrid solar system installed in an average residential household in Vanderbijlpark, South Africa. Design considerations include the choice of inverter, solar panels and batteries. Results presented are for summer months (Oct 2016 – Febr 2017), an assessment and report for wintertime will be presented in a following paper. These results are in the form of load readings taken over an extended period of time, as well as graphical representation of power usage as loads within the household varies. The influence of the solar system and subsequent electricity savings are assessed, and found to be considerable, and completely economically viable.

Keywords: Photovoltaic, Loads, Strings, Inverter

INTRODUCTION
The demand and supply of electricity in South Africa was a topic for debate over the last couple of years. Load shedding was at the order of the day, but thankfully has been limited in recent times. That, and the general escalation of electricity cost, makes alternative sources a topic for research in power replacement.

This paper presents the challenges faced with the design and installation process of a solar photovoltaic (PV) system; as well as experimental procedures and setups for the monitoring of electricity usage in an average household. The results and discussions as well as conclusions complete the paper.

DESIGN AND INSTALLATION
Design

A needs analysis and electricity accounts (not presented) for this household indicated that a hybrid solar system with an output capacity of at least 3 kW was necessary to lead to a significant saving in electricity usage, as well as provide back-up electricity during times of electricity outage. An example of a hybrid system is depicted in Fig. 1 (Energy Informative website).

![Example of a hybrid PV solar system. Modern inverters also include a charge controller, so these devices are not needed separately any longer.](image)

With this type of system, the household is still connected to the utility grid, but the inverter can be programmed to supply electricity from the solar panels (during sunshine) or the batteries (during...
outage and PV not available due to lack of sunlight). Furthermore, the option is also there to isolate some loads (like a geyser, stove and oven) from the solar system, and allow these loads to make use of electricity from the utility grid only. However, energy management must also be applied, in that a timer switch was installed on the geyser, allowing it to be switched on twice a day for sufficient hot water supply.

After thorough consideration of needs and availability, the choice fell on 285 W-peak Trina solar panels. These panels deliver a peak voltage and current of 31.8 V and 8.97 A, respectively, while the open-circuit voltage and short-circuit current are 39.3 V and 9.45 A, respectively [(Trina website). The inverter that was decided upon, was a 5 kW maximum input Growatt 5000TL string inverter (Growatt website). This inverter can accommodate 4 parallel strings of 3 series connected Trina solar panels, as per specification (Growatt website). This amounts to 12 panels in total, of which the installation will be discussed in the next section. Four 12 V / 100Ah Renesol Gel batteries, connected in series to the inverter, completed the system.

In order to install PV panels on the roof, panel sizes and available north-facing roof space needs to be considered. Fortunately, sufficient north-facing roof space was available, however, some trees had to be removed in order to prevent shading on the panels.

Installation

The dimensions of the solar panels are 1650 x 992 mm (Trina website), and with sufficient spacing between them after mounting, determines the size of the north-facing roof that is needed. Panels can be installed either landscape or portrait, depending on the space available, as well as the connection needs and positions. However, it is very important to keep in mind that panels needs to be cleaned regularly, and provision must be made for space and procedures to do cleaning.

Another installation consideration is the angle at which the panels are installed. The preferred angle for Vanderbijlpark is between 16° and 36°, depending on the type of panel and load (Asowata, Swart, Pienaar and Schoeman). The mounting of panels at an angle is not only for better performance, but also for cleaning purposes, especially for “self-cleaning” during rainy periods. The angles allow water to not gather on the panels, but to flow away automatically. The panels in the current installation were installed at a tilt angle of around 25°. The arrangement and connection of the panels can be seen in Fig 2.

Figure 2: Solar panel arrangement as installed on the roof of the house. Each of the four strings consist of three PV panels connected in series, as indicated. The four strings are then connected in parallel to the inverter.
The four parallel strings were connected in a connector box (Fig. 3(a)) on bus bars, from where it was connected to the inverter. The connection to the inverter was made through a 63-A DC breaker and surge protectors, contained in a suitable distribution board (DB), as depicted in Fig. 3(b).

Figure 3: Pictured in (a) is the connector box for PV panels. Four incoming (from panels) strings and one outgoing wire (to inverter) can be seen on the positive and negative connecting bar. In (b) is the distribution board with the breakers for DC (PV) and AC visible. The two surge protectors are also clearly visible. The picture in (c) shows the connection of PV system from the inverter to the main household DB. Positive terminal (top right) is connected to the first 7 breakers from the right, connecting the solar system to all wall plugs and lights in the household. The three breakers from the top left represent a main switch, as well as breakers for the stove and oven, respectively. The breaker for the geyser (with timer switch) is to the bottom centre left.

The final connection to the household distribution board can be seen in Fig. 3(c). The positive terminal (top right) is connected to the first 7 breakers from the right, connecting the solar system to all wall plugs and lights in the household. The three breakers from the top left represent a main switch, as well as breakers for the stove and oven, respectively. The breaker for the geyser (with timer switch) is to the bottom centre left. The timer switch, as mentioned earlier, is used to control times when the geyser is switched on, in order to do better energy management in the household. The white cable connected to the thick input cable is connected to the meter for data logging via the internet. This metering will be discussed in the next section.

The connection from the inverter to the AC DB of the household grid, was also made through AC breakers in the DB depicted in Fig. 3(c). The battery bank (Fig. 4(a)) was connected on the appropriate connectors on the inverter through connector fuses (Fig. 4(b)).
Figure 4: Battery bank (a) and connection fuses from battery bank to inverter (b).

DATA LOGGING AND ANALYSIS

Metering and data logging was done with an Efergy Engage Hub Kit. The meter connected to the main electricity input can be seen in Fig. 3(c) (white cable connected to meter at bottom right of the picture). This meter transmits readings to a hub connected to a Wi-Fi rotor every minute. Real time monitoring can therefore be done through registering on the efergy website anywhere and anytime (Efergy website). Data is stored on the dashboard of the registered site, and can be downloaded in various forms for analysis.

These analyses are presented in the next section in the form of bar and line graphs for hourly, daily as well as monthly electrical energy uses in order to illustrate the advantages of the hybrid solar system. Readings and graphs of cost savings over time is also presented.

RESULTS AND DISCUSSION

Results are presented in the form of load wattage measurements for various periods of time. Readings were taken for extended periods, and the graphs presented are representative of specific time periods.

Monthly readings

Readings were taken over a period of five months, i.e. Oct 2016 – Feb 2017. These graphs are presented in Fig. 5 to Fig. 9, and clearly show the variation in kilowatt-hour (kWh) electrical energy used for the five-month period.

Figure 5: Electrical energy usage per day in kWh for October 2016.
Figure 6: Electrical energy usage per day in kWh for November 2016.

Figure 7: Electrical energy usage per day in kWh for December 2016.
Figure 8: Electrical energy usage per day in kWh for January 2017.

Figure 9: Electrical energy usage per day in kWh for February 2017.

The graph in Fig. 5 for Oct. 2016 represent a month without the influence of the solar system. The daily use is very seldom below 30 kWh, and over 40 kWh a few times, while the total electrical energy used for this month is 1 187.73 kWh. The solar system was fully installed on 15 November, and the influence can be seen since then. The daily usage dropped below 30 kWh in general, and even below 20 kWh for a number of days. A summary of total energy used per month is given in Table 1.

Table 1: Electrical Energy used per month for Oct ’16 to Feb ‘17

<table>
<thead>
<tr>
<th>Month</th>
<th>kWh</th>
</tr>
</thead>
<tbody>
<tr>
<td>October 2016</td>
<td>1 187.73</td>
</tr>
<tr>
<td>November 2016</td>
<td>866.57</td>
</tr>
<tr>
<td>December 2016</td>
<td>531.59</td>
</tr>
<tr>
<td>January 2017</td>
<td>377.12</td>
</tr>
<tr>
<td>February 2017</td>
<td>598.37</td>
</tr>
</tbody>
</table>

The usage in December and January are not very representative, as the family was away on their summer holiday for part of both months, and the geyser was switched off completely. However, lights and appliances, like fridges and freezers, were still switched on and used the normal electrical energy. This trend can be seen in the graphs represented in Fig. 7 and Fig. 8. Abnormal low usage is observed from approximately mid-December until mid-January.

The notable fact is the usage for Nov. ’16 and Feb. ’17. The influence of the solar system and the optimization thereof can be seen in the decrease in electricity usage for these months.

Day Monitoring

In this section results are presented in order to illustrate the difference between days with no influence from the solar system compared to days with limited and maximum influence. Random representative days were selected, and these graphs are presented in Fig. 10 to Fig. 12.
Figure 10: Electrical energy usage (without solar system) for 5 October 2016.

Fig. 10 represents graphs showing electricity usage for 5 Oct, a day were the solar system was not activated, nor any energy management was done. Many peaks above 4 kW are observed, with some peaking above 6 kW. The total usage for this day was 45.82 kWh (see Fig. 5).

Figure 11: Electrical energy usage for 15 February 2017.

In Fig. 11, the influence of the solar system can clearly be seen for 15 Feb. 2017. The solar system kicked in from 9h30 to 18h00, during which time no electricity was used from the grid. The geyser timer switch switched the geyser on at 5h00, and again at 18h00 in order to provide sufficient hot water for the household. The total electricity usage for this day was 19.88 kWh (Fig. 9)

It needs to be mentioned that the settings on the inverter is of such a nature that electricity is only supplied by the battery bank until the total voltage of the battery bank is 47 V, after which the usage
will be switched to the utility grid. This protects the battery bank, so that the batteries are never drained below 80% of capacity, and remain charged in order to be used in times of outages.

All batteries has a lifetime that is linked to a number of charge cycles, and this number is linked to the depth-of-discharge (DOD) of the battery. The DOD is a number that is prescribed by the manufacturer, and suggests to which percentage of maximum capacity a battery can be discharged and in the process not be harmed at all. Every general type of battery has its own DOD, as dictated by the manufacturer (Bestgo Power website).

Figure 12: Electrical energy usage for 2 January 2017.

In Fig. 12, a best-case scenario is represented. While the geyser was switched off (2 January 2017) and the electricity usage in the household was very stable, the batteries were constantly fully charged due to the fact that loads never exceeded the supply from the PV panels. This caused the solar system to be effective from around 5h00 on this particular day, and only switch back to the grid at around 19h30. This produced solar supply period of approximately 14h, leading to big savings for the day. The total usage for that particular day was only 7.30 kWh (Fig. 8). This was repeated for a few days in Jan. ’17, but did not happen very often during the five-month period of investigation.

**Savings**

The rate for electricity usage charged by the Emfuleni local Municipality in Vanderbijlpark during summertime is R 1-80 per kWh. Table 2 shows the monthly costs for the period considered, confirming the discussions earlier.

<table>
<thead>
<tr>
<th>Month</th>
<th>ZAR</th>
</tr>
</thead>
<tbody>
<tr>
<td>October 2016</td>
<td>R 2 137-91</td>
</tr>
<tr>
<td>November 2016</td>
<td>R 1 559-82</td>
</tr>
</tbody>
</table>
CONCLUSIONS AND FUTURE WORK
The results in this paper proves that a hybrid solar system can make a significant difference in the energy management and saving within an average household. However, a slight lifestyle change is needed, in that energy management is necessary. During day-time, when the solar system is supplying electricity, loads needs to be managed. For example, the kettle, microwave, washing machine and iron cannot be operated simultaneously, but needs to be managed. This takes calculation and adjustment initially, but is easy manageable when getting used to.

This study was done during summer months, and should be interesting to continue into the winter. The times of sunrise and sunset naturally varies, and will surely have an influence. Weather patterns in Vanderbijlpark might also have an influence, as there are less rain and cloudy days during wintertime. Shading on the panels is another factor that needs to be monitored, as the projection of the sun is different during winter months.

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REFERENCES