DOCTORAL THESIS

Generic Skills and Competences for Graduate Profiles: A Comparative Analysis of Scores and Underlying Dimensions among Stakeholders and Regions

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ABSTRACT

Generic skills and competences are considered as important outcomes of Higher Education. However, course and curricula design deserve differentiated treatment across countries. It is therefore vital for higher education institutions to equip graduates with generic skills and enable them to function effectively in the world of work and in life generally. This thesis sketches the importance of generic skills and competences as part of human resource formation and tries to identify key skills and competences proposed by stakeholders from different regions.

Student centred learning and learner autonomy is high on the agenda on higher education reformation. The concept of graduate employability has also become important for national economies and for an economically and knowledge-driven economy, skilful individuals are considered as productive and rewarding. A common issue for these initiatives is the importance given to key generic skills and competences. In spite of controversies on the matter of generic or transferable skills, there is a tacit consensus that they have to be introduced in the curricula. Several studies and projects have attempted to develop key skills and competences and Tuning project is one of the most important ones among such projects.

As generic skills and competences have become crucial factor in higher education, this thesis would like to identify key skills and competences by using the data collected by the Tuning project. In this thesis, human capital theories are used to support the relevance of skills and competences. Key skills and competences are selected from the Tuning list of general competences and underlying structures and ranking of competences are

proven statistically using factor analysis and mean scores comparisons. With empirical examination, an effort is made to identify thinking styles of stakeholders from different regions and understand structural dimensions, thus to propose graduate profiles showing preferences for competences.

Analysing differences of opinion by respondents from different regions and subject areas would enable us to understand the present day relevance for demanded skills and competences. Once trends and dimensions are identified, proposals could be made for the contextualisation of generic skills within realistic practical activities of higher education formation and training. Presenting such evidences, this thesis intends to shed lights on how higher education institutions could (re)structure teaching and learning process understanding relevant skills and competences.

Keywords: Skills and competences, human capital, capability, higher education institutions, curricula, graduate profiles

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Dedicated to,

Jintha Thomas

Aiden Georgie

Aislin Maria

CHAPTER 1: INTRODUCTION AND BASIC CONCEPTUALISATION

1.1 Introduction

Today, competence is found to be an important factor for individual and for collective development. Policy makers and organisations have understood the relevance for skills and competence development, because the skilled workforce is considered as key to future wealth of nations. In addition to individual-level development, competence development is paramount for organisations, societies and nations. Competence acquisition makes people more productive and adaptable. To be more specific, 'each country's prosperity depends on how many of its people are in work and how productive they are, which in turn rests on the skills and competences they have and how effectively those skills and competences are used' (International Labour Organisation, 2010). Competence achieved through education and training is thus considered as the most important productive factor for socio-economic, cultural and political growth and development because 'higher education produces substantial private benefits in terms of higher income and social status for graduates than over non-graduates' (Agasisti and Catalano, 2006).

One of the main challenges faced by the countries around the world is to equip their young people to become active citizens, to find employment in constantly changing workplace environments, and to cope with and respond to changes throughout their lives (The International Bank for Reconstruction and Development, 2005). To meet the challenges of strong and balanced

growth, a sustainable action plan is required to equip individuals with competences that are necessary to obtain jobs. Understanding the great urgency for competence development, it is very important to see whether the required competences are acquired. The World Development Report Team 2013 of the World Bank, have stressed that jobs are the most important determinant of living standards around the world and improving skills is thus one of the most direct channels to enhance the value jobs have to individuals and society (World Bank, 2012).

Understanding the necessity of the present labour market, various studies and policies have been given profound attention to mitigate the changing requirements of the labour market and the need for new skills and competences (CEDEFOP, 2010; European Commission, 2010; ILO, 2010; OECD, 2001; World Bank, 2010, 2012). From the international point of view, competences have become crucial in updating the qualifications of human resource, therefore achieving better individual and social development. The global, demographic and technological changes have forced changes in the nature of work and necessitated the training and re-education of workforce (Velde, 2009). In this context, the relationship between higher education institutions (preferably universities in the present study) and labour market has a great significance. The role of universities, who prepare the future workforce (students), therefore is crucial at the present context. The restructuring of curricula with relevant skills and competences becomes an important step towards updating teaching and training.

Global challenges, like financial crisis, have serious effects to the labour market and to education systems in several nations. Higher education

programs, particularly graduates programs are seriously affected by changes due to economic reforms, changing social needs, changes in the demographic structure, advancing technology etc. A common factor that appears to be critical is the increased need for skills and competences to get jobs in a rapidly changing labour market. Different situations in the socio-economic status demand different actions. One among them is to equip students with new skills and competences. This necessitates students to update skills, competences, knowledge and abilities, so that they can face varying situations in powerful ways and acquired skills and competences from higher education institutions would enable them to participate in different situations efficiently.

Considering the above discussed matters, we could say that there are difficulties in providing demanded skills and competences (from the part of higher education institutions) which would satisfy the needs of the society-in-large (which involves employers, business world, labour market etc.). But it is interesting to know the different dimensions or various sets of skills that would shape future demand for skills. The present thesis tries to understand those dimensions analyzing opinions or preferences from the part of academicians, employers, graduates and students. In order to substantiate the general objectives of the present study, the study uses data from three regions such as Europe, Latin America and Russia which was available from Tuning Project (a detailed discussion on Tuning Project is carried out in Chapter 3). Based on the available data, the study makes an enquiry into the underlying dimensions of competences from the selected regions and makes a comparative study to obtain different perspectives on skills and competences.

1.2 Graduate Employability: Skills and Competences

It has become a fact that all national economies face common challenges arising from globalization and financial crisis. International organizations and national economies have identified skills and competence formation as an essential component of raising competitiveness. National and international policy makers have agreed on the fact that the hard realities of financial crisis can be resolved by generating employment in various sectors of the economy. Since the requirements of the regional, national and international labour market have changed tremendously, it is agreed that graduates must be equipped with skills and competences needed to face the challenges of the present economic situation. Therefore, graduate employability has become very significant in policy arena.

From the hard realities that the nation-states are experiencing, it can be observed that the dream of the present generation to have a better life than their parents have been in vain, because youth unemployment is raising precariously all around the world. According to the latest statistics, almost 23 million people throughout the European Union- about 1 in 10 of the economically active population- are unemployed (European Commission, 2010). In almost similar way, global economic crisis has had a severe impact on other countries and on different sectors, especially in the labour market with high level of unemployment being the consequence. Since the crisis affected most of the economies, global leaders have taken several measures to overcome the crisis. Improving and updating the skills and competence for the labour force has become the primary step to overcome the above mentioned global challenges.

In addition to the high level unemployment rate, the labour market faces several problems. One of the great problems is the shortage of skills and competences which are needed for the changing structure of the economy. Globalization, technological and organizational changes combined with demographic changes (fuelled with ageing population) have changed the sectoral (primary, secondary and tertiary sectors) growth. While service sectors (business and other services) has a positive growth, agriculture and manufacturing and production industries are facing losses. A study by CEDEFOP (2010) explain that, in the period 2010-20, further substantial loss in employment in agriculture (loss of around 2.5 million jobs) and manufacturing and production industries (loss of around two million) is projected. In spite of loss in jobs in traditional sectors, the main areas of employment growth are in services, especially marketed services. Business and other services are projected to see a growth of around seven million jobs in the period 2010-2020 (CEDEFOP, 2010). This trend shows a clear pattern of growth of new sectors and new jobs in the economies.

It is a fact that high unemployment has severe setbacks to the smooth functioning of the economic system. But several prospective studies on the occupational growth demonstrate that the demands for skills and competences will grow. According to CEDEFOP (2010), substantial increases are projected for those who are qualified at the higher level, holding a university level or equivalent (16 million) and increase of supply with medium-level qualifications (one million), while labour force with low-level qualifications is projected to fall by around 15 million. This indicates that the future labour market will be dominated by people with high and medium-level qualifications.

The above stated facts clearly mention that there is a great need to prepare the present and future labour force. Towards that, teaching and updating of skills and competences are very relevant. Therefore, education and training has great role in this situation. But it is clear that there is considerable diversity in the education and training policy strategies across regions. In the words of Winterton (2007), 'EU policy is directed to create an integrated market through social dialogue, combining social and economic objectives, Asian Economies are based on consensual decision-making, where trade unions have no role in developing regional policies. The discourse on skill formation policies is different in economies facing transformation (as in the former Soviet Union), restructuring (everywhere but especially in those economies with a high proportion of agriculture or primary industries), reconstruction (as in South Africa) and modernization (in degrees ranging from Vietnam to Turkey)' (Winterton, 2007).

Though there are differences in policy formulations, it is recognized that skills-competence formation is inevitably central to the process of economic transformation, social and economic restructuring and modernization for all regions. Economists are of the opinion that the development of human capital is more important in explaining patterns of long-term economic growth than physical capital (Briggs, 1987). The possession of various skills and competences and the ability to use human capital have become the principle criteria for the jobs that are emerging. Therefore, it is crucial to see whether demanded skills and competences are promoted and learned through education and training through universities.

1.3 Statement of the problem

The above stated facts clearly show that rapidly changing labour market requires individuals with various skills, competences, knowledge and abilities. Since globalization has opened up opportunities, individuals are required to have competences that are demanded globally. Though the demand for skills is dynamic, the supply of skills is static. For instance, new business opportunities create job vacancies with different set of skills. Therefore, individuals who are interested to obtain those positions need required competences for the new business world. But educational institutions and training institutions, who are providers of those competences, are static. Static in a sense that educational institution prepare students for certain academic periods and provide skills required for a specific time period. This makes a gap between the demand for skills and supply of skills. An enquiry into the demanded skills is interesting while we are situated in a period where globalization has posed challenges to both of labour market and higher education institutions.

Taking into account certain changes in the society, human resource management and investment in human capital is crucial for socio-economic growth and development. Education is considered as important for human resource development and investments could improve competences and skills for human capital resource. Improving the competence-base is considered as the basic strategy to increase the productive capacity. In this sense it is well acknowledged that 'human capital is embodied with knowledge and skills and economic development depends on advances in technological and scientific knowledge and on the accumulation of human capital' (Becker,et.al, 1994). Therefore, importance should be given to update the skills and competences

of individuals who are facing rapid changes in the global economy which is propelled with highly advanced technologies.

In this rapidly changing socio-economic situation, the role of higher education institutions (preferably universities) in providing necessary skills and competences to students is crucial. Educational institutions are considered to be the prime agents to enrich the skill-base of individuals. In a wider concept, educational institutions prepare individuals to be ready for labour market, where human capital is nourished and up-skilled. It is important to note that globalization has resulted for a change in the old-fashioned human resource management systems and training programs. Nowadays, the labour market requires higher level of skills for individuals to handle additional responsibilities. Therefore, more skills and competences are demanded in addition to the existing professional qualifications and work experiences. Educational institutions, in such a situation, have to provide latest information and equip individuals with required skills and competences.

Considering the demanded skills and competences and looking to the supply of skills and competences from the higher education institutions, we could identify a gap between the skills needed and its supply for the newly emerging jobs. In a situation where there is an expected growth of jobs in different sectors and a need for high and medium-level qualifications and skills, it is of great importance to look into the reality of this critical gap. Though there are various studies based on the above discussed themes, there are limited studies based on empirical data. From various research articles and publications, we could understand that the present economic situation requires individuals to have various kinds of skills and competences. The present study

makes an attempt to understand the underlying dimensions in the preferences for competences and tries to list out some of the important skills and competences which are greatly needed.

In order to build the empirical analysis, the study has used a set of secondary data from the Tuning Project (Tuning Educational Structures in Europe, Tuning Latin America, Tuning Russia and Tuning Africa)[1]. The data is collected in different phases in different years and questionnaire method is used as the primary method to collect data. The project has collected a number of questionnaires from different regions of the world. The study wishes to use that information and understand the underpinning trend with regard to opinions on a set of generic competences.

1.4 General objectives

The purpose of this study is to bring out and specify underlying dimension of structure and the raking order of competence. This is intended to assist educational policy makers and higher education administrators to select competences which are required for preparing graduate profiles. Since regional requirements and policy formulations are different in regions, the study proposals for graduate profiles are different in the selected regions. As the thesis is supported with data, I would like to consider general competences from different subject areas, proposed by different stakeholders

[1] Tuning project is a world-wide movement that is directed towards restructuring of educational system. The project is funded by the European Commission (Source: http://www.unideusto.org/tuning/)

from different regions. More specifically, the present study is focused on the following objectives:

- To understand economic and social implications of general skills and competences
- To identify underlying structural dimensions in the scores for importance and achievement of competences
- To understand the ranking on the importance and achievement of competences
- To find out interactions of structural patterns for general competences

These objectives are examined and the results are discussed in different chapters. The first objective is examined in the second chapters whereas all other three objectives are analyzed in fourth chapter.

1.5 Conceptual definitions

The study of competence is a wide topic and is considered differently from different subject perspectives. The present study considers only some relevant aspects from such a wide topic. Therefore, it is very important to understand that the present study looks only into the competences required for higher education institutions/universities to prepare curricula by considering regional and stakeholders' perspectives and for different subject areas. Though the study of competence needs wide explanation from socio-cultural and civic life perspectives, the present study discusses some of those aspects but mostly based on labour market perspectives. Therefore, more importance is given to the relation between university level education & training and labour market

needs. In order to follow a logical order, it would be very important to define some of the basic concepts used in the following chapters.

1.5.1 Competence

The study is about general/generic competences and explores underlying dimensions of competences in different regions and for stakeholders. Therefore, it is very important to make a clear definition on the term which will be used mostly throughout this study. As the study follows discussion on general competences, specific competences are not taken into consideration. As the term general comprises is a wide term, it is important to specify the term as follows;

> Competence means being capable according to some set of standards (Trivett in Hoerig, 1981) and represent a dynamic combination of knowledge, understanding, skills, abilities, values, attitudes, rules and standards, techniques and procedures (Gonzalez and Wagenaar (2005); Sanchez and Ruiz (eds.) (2008).

The present study would like to consider competence as explained above. From higher education policy perspective, the above mentioned definition would help the study to consider general capabilities or characteristics involved in the discussion about competence. The definition is also relevant from a labour market and employability perspective too. As given above, the definition would support the following discussions and when competence is referred, the term would encompass the defined term. As the term competence is considered generally, discussions followed in the chapters would use the term competence and skill interchangeably.

Since the present study focuses competence in the higher education perspective, it is important to refer the term learning outcomes. "Learning outcomes are statements of what a learner is expected to know, understand and/or be able to demonstrate after completion of learning and they can refer to a single course unit or module or to a period of studies and are expressed in terms of competences" (Gonzalez and Wagenaar, 2005). When learning outcome is compared with the above mentioned definition on competence, it can be noted that competence encompasses a broader dimension including the elements of personality, culture, citizenship and socio-economic aspects. On the other hand, learning outcomes refer to only the learning and knowledge acquired in a specific period of time. Therefore, the study follows the definition of competence described above.

In addition to the definition of competence, the study also use some basic concepts used in the Tuning project. As this thesis is supported with the data from the Tuning project, the discussions carried out in the following chapters are structured on some basic factors, which are defined as follows.

1.5.2 Regions

Since Tuning Project was carried out in different regions, we would like to consider regions such as Europe, Latin America, Russia and Africa. There are two reasons for the selection of four regions. Firstly, the Tuning project was successfully carried out in all these regions and secondly, data were available for all these regions.

1.5.3 Stakeholders

Data for the Tuning project was collected based on the responses from academicians, employers, graduates and students. As these groups are more critical in the higher education area, these groups of respondents are considered as stakeholders in the present study. In the study, data analyses and discussion are based on the opinions of these respondents. The study considers that the selected groups of respondents can be a deciding factor in making general evaluations regarding the skills and competences required. Recognizing the role of these groups in socio-cultural and economic (re)formation, the present study considers the results that could be obtained would help future policy formulation. More concretely, as the study evaluates competences that are important for the present labour market, the stakeholders are considered as agents who have major role in making decisions in the labour market. For this study, stakeholders' responses are evaluated with their functions, as noted below.

Academicians: those who are responsible for formation and training imparting relevant skills and competences with which learners would be able to lead successful personal and professional lives.

Employers: those who demand individuals with required skills and competences for the growth and development of their organizations.

Graduates: those who have already finished their formation and training and those who have obtained jobs or are looking for jobs within a year.

Students: those who are undergoing education and training process and considered as future labour force.

1.6 Tuning project

As the present study is based on the data obtained from Tuning project, the methodology adopted in the Tuning project has great significance. 'Tuning is a university driven project, in which universities have contributed effectively, systematically and in a coordinated manner to the new challenges and the novel opportunities' (Gonzalez and Wagenaar, 2005) created by integration and emergence of higher education space. This process is well recognized by the expansion of Tuning project to different regions in the world. The project was started in 2001and is being currently carried out in several regions of the world, such as in Europe, Latin America, Russia, Africa and United States of America. A detailed explanation about the Tuning methodology is given in the third chapter.

1.7 Data collection and analysis

The study follows an exploratory method and uses secondary data analysis. A descriptive framework of analysis is carried-out using academically support theories. To support the main argument of the study, Gary S Becker's human capital theory and Amartya Sen's capability theory is used. A detailed review of these theories is given in the second chapter. From the literature review, an effort is made to propose a model which we would like to prove with the available data from the Tuning project. The model is explained in the third chapter and would be tested with confirmatory factor analysis in the fourth chapter.

In order to provide a more detailed analysis, we would like to use exploratory factor analysis to explore information available from the data, which would be

carried out in the fourth chapter. The data obtained would be analyzed with Statistical Package for Social Science (SPSS), a statistical package which is used for computerized analysis and reporting. In addition to factor analysis, mean values are also examined to know the rank-order. It is calculated that the rank order will provide a list of highest rated skills and competences. Those highest ranked can be considered as most important, having received the highest scores from the respondents using Cohen's *d* values.

It is also expected that there will be some similarities and differences of opinion from the respondents. Therefore data would be analyzed to examine interactions of factor scores. Once the structural dimensions are identified, graduate profiles are proposed for each region.

1.8 Justification of the study

The development of the study is very significant from several points of view. From an academic point of view, this investigation is important because analysis on the importance of a specific set of generic competences supports the development of curricula plans for higher education institutions. Restructuring of curricula is very relevant as the requirements of the society and economy are changing rapidly. This would help curricula planning more efficient and competitive. For higher education institutions, it is also helpful to plan yearly teaching and learning plans to make graduate programs very attractive and effective.

From a socio-economic point of view, the study is relevant because it intends to bring out the most important generic competences that the socio-economic

situations of each region demands for. This would help higher education institutions to supply those necessary competences and shorten the critical gap between demand for and supply of skills. Socially, this investigation is important since it would list out most important skills that individuals should possess to face the challenges in the global labour market.

From an economic point of view, the study tries to indicate that a proper policy for skill formation would help countries to prosper by generating employment with highly skilled people. Efficient and competitive human resources lead a country to be self-sufficient and sustainable. The study makes an effort to suggest that a proper policy formation for identifying demanded competences would lessen the burden of unemployment situation.

A general view on the generic competences from four different regions of the world would bring out a clear view on specific trends and preferences from different respondents. This analysis would bring this subject to an international debate that would consider and evaluate graduate skills and labour market demands. Given the result of the international evaluation from this study, a different approach to key competences will come up, which would facilitate institutional proposals to improve the present systems of skills formation.

In addition to the above mentioned aspects, the methodological relevance of the study brings out some implications. Interpreting ranking from four types of respondents would make the study more authentic and meaningful. Moreover, opinions collected from four different regions would also bring out some significant information in relation to key competences.

1.9 Presentation of chapters

In order to understand the general objectives of the present study and to explain the importance of those objectives, we follow a logical order. The first chapter introduces the importance and significance of the selected topic of the study. Additionally, socio-economic importance of skills and competence is also discussed in the first chapter

As the selected topic of the study has greater significance, a supporting literature review is carried out in the second chapter. The role of universities, the relevance of competence based education and the importance of competences are explained in the first part of the second chapter. This is followed with the explanation of Gary S Becker's Human Capital theory. Then, the role of competence is compared to Capability approach of Amartya Sen. Adding to the importance for competences, explanations on various studies and methodologies in competence measurement are carried out from which Tuning Project is depicted as one of the important study in identifying key competences.

A detailed description on the methodology adopted is given in the third chapter. In the chapter, more details on the Tuning methodology are given. In addition to that, an explanation regarding confirmatory and exploratory factor analysis is carried out. An explanation on the Tuning data base and the use of Statistical Package for Social Science (SPSS) is used. A comparative study of Tuning methodology with Delphi method is also undertaken in this chapter. In the third chapter, an effort is made to develop a model of six employability skills to be tested with the available data.

The fourth chapter presents the results of the analysis. Discussions on results from various regions and between stakeholders are carried out in the chapter. An effort is made to answer the general objectives of the study. The contributions of the fourth chapter lead to the fifth chapter where discussion is carried out on the possibilities of further studies and this thesis ends with a general conclusion.

1.10 Limitations of the study

As it is presented, a study on skills and competence in higher education context and restructuring curricula to satisfy the needs of the wider society is highly necessary. Though the present thesis intends to provide some interesting contributions, we have faced some difficulties in the approaches taken to support the ideas presented in the thesis. A study on skills and competences is a wide topic and to base our discussion on a specific topic becomes very difficult since this topic is covered from all disciplinary areas. Therefore selection of a specific theory and a model was the most difficult task.

In addition to the difficulty in selecting a particular theory, we also faced difficulty in supporting the quantitative analysis part of the thesis with academically proven statistical procedures. As the Tuning Project data base was available, we had a good opportunity to link the objectives with experimental results, but one of our difficulties was to support the model implied in the Tuning Project with an academically proven methodology. Therefore we had to test the data with different statistical tools.

From the statistical point of view, we use only basic statistical analyses, which are not then substantiated with other social and economic indicators. In order to make further interpretations we should use social and economic data to the conclusions achieved in this thesis. Another important weakness of the present thesis is the lack of specification in the selection of regions. Although Tuning Data base provided information on specific countries in each region, the thesis focused its discussion on three selected regions and it is not possible to address results for specific countries.

In spite of the above mentioned limitations or weaknesses, the thesis tries to explain the basic theme of the study with an empirical analysis. The results obtained from the study could be considered as some important dimensions seen in the arena of skills and competence study. The proposed profiles and different dimensions explained in the thesis would enhance further academic discussions and research.

2 CHAPTER: SOCIO-ECONOMIC IMPLICATIONS OF SKILLS AND COMPETENCES

"The most valuable of all capital is that invested in human beings."
Alfred Marshall, Principles of Economics (1920)

The discussions from the previous section (Chapter 1) demonstrate that competency-skill based education and training is of great relevance at the present socio-economic situation. More specifically, if students are equipped with most relevant competences, they will be able to obtain jobs or professions which are offered in the present labour market. In addition to obtaining a job or profession, obtaining relevant competences would help them to lead a successful personal and social life. In addition to professional positions and then better personal situation, the society-in-large will be enriched and rewarded through better higher education.

Acknowledging the above mentioned factors, the present chapter tries to *understand economic and social implications of general skills and competences*, which is the first general objective proposed for the present thesis. This chapter is divided into different sections where discussion on the following two main topics are covered; firstly, the theoretical underpinnings of competence-skills based learning and secondly, socio-economic perspectives on education and learning, specifically on skills and competences.

When discussing the above mentioned areas, it is important to note that the term competence and skill are used interchangeably in the present thesis as stated in Chapter 1. A discussion on classical and modern theories on skills and competences helps us to understand the relevance of the terms for socio-

economic growth and development. Therefore theories mentioned in this chapter focus more on the human capital perspective of education and training and relate with general skills and competences. In order to connect the theoretical base of the themes of the study, some recent policies on skills and competences are also discussed from a global perspective. These matters are taken into consideration in the following sections.

2.1 Introduction

Contemporary society faces intensified and unprecedented challenges due to rapid socio-economic and political changes and some apparent reasons to these challenges are a multifaceted mix of economic and social factors driven by globalization [2], competitive advantage, technological advances and knowledge economy (Lerche, 2013; Jarvis, 2007; Giddens, 2002 and Hutton and Giddens, 2000). The rate of change in this knowledge society is fast, resulting to new technology and knowledge, new market and new products, new regulations and new way of life. While discussing the uncertainty and confusion about the business world in the rapidly changing world, Kahle (2011) pointed out that "in 1900, the total amount of knowledge available to mankind was doubling about every 500 years, in 1990 it was doubling about every 2 years, today the rate of change is doubling every 35 days". From the changes occurred in the society due to fast knowledge creation, we can

[2] Globalisation directly affects economic policy, the welfare system, environmental problems, the definition of public goods and much else besides (Giddens,2002) and more specifically in education, globalisation has demanded more educated and continually educated workforce (Jarvis, 2007)

understand that all spheres of human and social life are restructured, including education and training activities.

It is interesting to note that, at present, global wealth is concentrated less and less in factories, land, tools and machinery and on the other hand, knowledge, skills and resourcefulness of people are increasingly critical to the world economic growth (World Bank, 2000). Although human potential becomes an important factor for growth and development, employees at the present society, for Kirschner in Wesselink *et. al* (2010), 'have to be able to operate in increasingly complex environments, characterized by ill-defined problems, contradictory information, informal collaboration, and dynamic and highly integrated process'. In such changing situations, knowledge, skills-competences and creativity are needed above all to give the economy competitive edges which are the distinctive assets of a knowledge driven economy (Hartley, 2003). Moreover in a highly competitive business world, 'knowledge acquisition, based on core competences, is an integral feature of the cultural and learning environment that exists within the intelligent organisation' (George and Jonathan, 1999).

Considering the above mentioned facts and students being regarded as prospective employees, educational institutions need to restructure curricula and teaching-learning process to equip students to be successful in the labour market. In response to the socio-economic changes, higher education institutions are not considered only as a place for education and research but also as agents for "regional and societal influencing" which is considered as 'third task' by Nurmi and Paasio (2007). Since higher education institutions have to reach out to the externally facing needs such as, academic-enterprise

practices, socio-political needs etc., necessary changes have to be made in the education scenario combining the roles of education and research together with societal influencing. Because, according to Westera (2001), 'the traditional emphasis on factual knowledge no longer seems to meet the requirements of a changing society'.

The debate on the competitiveness and economic growth in the knowledge economy has recognized the role of human capital development and skill-competence formation as crucial for economic growth. This is clear from the statement that 'innovation and human capital development are generally accepted as the propelling agents of economic growth in this economy' (Martinus K, 2010). Importance for skills-competence formation for human capital development would thus result in socio-economic growth and development. From the above mentioned literatures and studies, it is clear that the role for skills and competence is crucial in directing the pattern of socio-economic changes. As noted above, the reminder of this chapter tries to understand the theoretical implication and socio-economic perspectives on education and learning aspects, specifically on skills and competences.

2.2 Education: as investment in human capital

There has been a tremendous increase in the educational attainment in all countries after 1960. Noticeable increase in educational achievement depicts the fact that there is a positive relationship between the level of education among the people and the economic status. According to Checchi, D (2006), 'countries with higher educational achievements are also characterized by lower differences in educational achievement in the population and income inequality tends to be lower in countries where average educational

achievement is higher'. These facts are well noted in several studies (Becker, 1993,1994; Schultz, 1993; Bradley, 1997; Kuepie et.al., 2009; Hickman and Olney, 2011) where it is stated that educational attainment has positively contributed to the growth and development of societies.

In studies with regard to investment in education and human capital development, skills and competences are mostly discussed as an important factor. The role of skills and competences is discussed as part of educational process. From a theoretical point of view, the terms skills and competences are also studied from different backgrounds, such as sociology, educational psychology, economics etc. In organizational terms, skills and competences are considered as key concept in production process and organizational changes. Educational psychologists and human capital theorists use the skill concept to analyze properties of workers and they tend to treat skills as personal cognitive or physical fitness for task completion (Anderson and Gagne in Van Loo and Bert, 2005). The development of the term skill or competence can now be seen as the reaction to the changes taking place at the present socio-economic situation because 'skills have become a highly valued commodity in the new "knowledge society" and a strategic asset in the economic competition among nations' (Mayer and Solga, 2008).

Looking into different viewpoints on skills and competence formation, the economic perspectives for skills and competences have great significance because highly skilled human resources are often regarded as key element for successful activity in contemporary socio-economic scenarios. Taking into consideration the above mentioned facts on skill-competency formation, the

following sections looks into more details on educational and economic points of view of skills and competences.

2.3 Education and learning: a labour market perspective

The human capital approach, according to Killeen, et.al., (1999) works on the assumption that there is an economic pay-off from additional educational investments in a population, improving the productive capacity of the worker thus improving the economic growth. As an engine of growth, education enhances both private and public benefits that are ultimately reflected in measures such as per capita income (Evans and Oneal in Baldwin and Borrelli, 2008). Education, with its capacity to push the engine of growth, has become a primary medium of globalization and in the transformation stage, globalization creates new kinds of education (Marginson,1999). Since the knowledge society has opened up a free space for learning (through different forms such as, formal, non-formal and informal learning, work-based learning etc.), there are two kinds of worker in the new economy: 'generic' and 'self-programmable'.

Castells in Hartley D (2003) describes that;

> "Generic workers are classic 'hands' of the 19th century factory floor: these 'human terminals' can be replaced by machines, or by any other body around the city, the country or the world, depending on business decisions. While they are collectively indispensable to the production process, they are individually expendable. Self-programmable worker,

on the other hand, has the ‘capacity to redefine the necessary skills for a given task, and to access the sources for learning these skills".

Education in such a changed situation, according to Meng in Florit et.al., (2007) increases ‘workers’ freedom to decide how to do the work, workers’ influence on the decisions of supervisors, and their content with the physical environment of the job’. Due to the rapid changes in the provisions of education and training, the objective of learning thus became a way for betterment of personal or working life. The educational sector has an important role to prepare people with necessary skills which would then help to reduce the long-term unemployment situation in the labour market. Labour market, as a workplace of the skilled people, contributes to the economic growth (Clancy, 2009).

European educational system, when looking from the above said perspectives, has changed widely in accordance with the socio-economic and global economic pressures persisting. There were several initiatives to propose changes in the system and educational policy that has always been an important tool for achieving stated economic aims, notably free movement of goods, services and capital to ensure the EU’s global economic competitiveness (Brockmann, et.al, 2008). Towards achieving economic competitiveness and to ensure better life of the people, there were several initiatives to reform the educational sector particularly giving more importance to Vocational Education and Training programs in Western, and European countries (Kelly, 2001, Hayward, 2004, Brockmann et.al, 2008 and King and Palmer, 2010).

In another case of an industrialized society like the USA, policy makers are of the opinion that there should be more initiatives to strengthen the link between school and the workplace (Atkinson, 2003 and Jacobson, 2009). This signifies that, to meet the demands of the 'knowledge economy', there should be more highly skilled and qualified personnel. Proponents argue that many students in USA and Canada are not adequately prepared to meet the 'knowledge economy' demand for highly skilled workers and nations must respond quickly if their citizens are to maintain their standard of living (Taylor, A, 2002). To meet the needs of the knowledge-based economy, educational institutions have to re-frame their policies.

As European and Western countries faced dramatic changes in all spheres of life, regions like Russia and Latin America also changed their system (especially educational system) to cope up with the needs of the knowledge economy. In the words of Gounko and Smale (2007), "Educational reforms brought new ideological and managerial freedom for universities as well as new opportunities and demands". The reforms applied in the educational sector in Russia were achieved through structural changes, curriculum reform, institutional autonomy, the diversification and modernization and expansion of higher education, student demand and the introduction of tuition fees in public institutions (Gounko and Smale, 2007 and Heyneman, 2010).

From 1980s, there had been several proposals for changing and improving higher education system in Latin America (Schwartzman, 1993 and Didrikesson, et.al, in Gazzola and Didrikesson (eds.), 2008). According to them, the Latin American higher education system has been a topic for research and enquiry due to some important political, social and economic

changes developed that pointed to the presence of new trends and profound alterations in the education system. All those changes that took place in the higher education sector in this region lead to expansion of higher education in terms of quality and quantity. Holm-Nielson, et.al, (2005) notes that, faced with rising demand for advanced learning opportunities, governments in several countries in Latin America have deregulated the market for higher education, bringing an end to what had been a public sector monopoly and as a result, private institutions in Latin America, currently account for more than 40 percent of higher education enrollment.

In response to the structural shift in the economies and labour markets, policies in higher education sector, especially with regard to policies for skills formation, focus on the importance of competencies which would contribute more to the productivity and competitiveness. Additionally, there are several studies showing a great need for skilled workforce for a robust economy (Thurow, 1999; Dörge, 2010; Patrinos and Psacharopoulos, 2011; Velasco, 2012). A situation with skills gap and great need for skilled workforce calls for an investment in skill development. It is clear that the earlier ways of work style and job profiles have changed drastically and new ways of work order is established. Due to technological advancement and various ways of learning opportunities, skills and competences of persons have to be updated. Irrespective of disciplines and areas of work, the need for new skills and competences is the most important objectives for policy makers and higher education institutions, especially for universities.

Universities are now becoming key players in the social reformation and economic growth and development. This is because universities, who are

central to the knowledge-driven economy with civic responsibilities, have the responsibility to produce edified citizens with capacities that would satisfy market demands (Liu and Dubinsky, 2000; Kothari and Handscombe, 2007and Powell, 2012). Therefore it has become crucial for higher education institutions that they should put more emphasis in developing skills and competences which would enrich skilled workforce for future.

2.4 Human Capital Theory with reference to Education

The link between education and economic development was initiated by the so-called human capital school originating at the University of Chicago in the early 1960s (Becker, 1993). This school of thought viewed the time spent in schooling as the investment in human resource development. Becker argues that:

> "Schooling, a computer training course, expenditures on medical care and lectures on the virtues of punctuality and honesty are capital too in the sense that they improve health, raising earnings, or add to a person's appreciation of literature over much of his or her lifetime. Consequently, it is fully in keeping with the capital concept as traditionally defined to say that expenditure on education, training, medical care, etc., are investments in capital. However, these produce human capital, not physical or financial, because you cannot separate a person from his or her knowledge, skills, health or values the way it is possible to move financial and physical assets" (p.15-16).

After the seminal work of Becker many studies were there initiated (Mincer, 1962; Schultz, 1993; Psacharopoulos and Patrinos, 2002 and Neagu, 2012) which were based on the relation between human capital and education. A study by the World Bank (Patrinos and Psacharopoulos, 2002) describes that: "According to early versions of human capital theory, expenditure on education is an investment with many similarities to investment in machines. National resources are used while the student is in school, in the form of direct outlays to education and foregone labour earnings. But later in life more educated workers contribute to national output more than less educated workers. The discounted difference between the cost and benefit flows related to education can lead to estimates of the profitability of investment in human capital" (pp.5).

2.4.1 Human Capital and Economic Development

Education and training are the most important investments in human capital (Becker, 1993). The earnings of more educated people are almost always well above average, although the gains are generally larger in less-developed countries. Mincer (1962) considers education as a process of investment in manpower. Human capital analysis assumes that schooling raises earnings and productivity mainly by providing knowledge, skills and a way of analyzing problems. High school and college education has spread extensively in modern economies because the additional knowledge and information acquired in school is so important in technologically advanced economies. According to Becker, learning and training also occur outside of

schools, formal and informal and on-the-job training. As there are monetary gains for education, there are also non-monetary benefits for education.

While explaining about persistent economic growth of advanced countries Becker (1993) notes that continuous growth had resulted from the expansion of scientific and technical knowledge that raises the productivity of labour. He says that all countries which have managed persistent growth in income have also had large investment in the education and training of their labour force. Becker continues to say that the systematic application of scientific knowledge to production of goods has greatly increased the value of education, technical schooling and on-the-job training as the growth of knowledge has become embodied in people – in scientists, scholars, technicians, managers and other contributors to output.

There are studies explaining the positive result of education and training to the growth of income. Denison in Becker (1993) states that increase in schooling of the average worker in United States between 1929 and 1982 explains about one-fourth of the rise in per capita income during this period. Becker also states recent models of outstanding economic records of Japan, Taiwan and other Asian economies' (especially for Asian Tigers and Japan) growth structure relying on a well-trained, educated, hard-working and conscientious labour force.

2.5 Investment in Human capital: theory elaborated

From a human capital formation perspective, Becker (1993) has considered school as an institution specializing in the production of training, distinct from a firm that offers training in conjunction with the production of goods. When

mentioning the term school from Becker's perspective, it is well understood that universities are also considered as schools though there are differences in the specialization of skills between present day schools and universities. Universities provide knowledge and mastering of subjects requiring short and prolonged specialization. With regard to skill formation in schools, it is stated that the development of certain skills requires both specialization and experience. This is very relevant in the present day situation. Skills and competences, especially practically-oriented skills, are considered as very important.

From Becker's theoretical point of view, student does not work for pay while in school but may do so after or before school. His earnings are usually less than if he were not in school since he cannot work as much or as regularly. The difference between what could have been and what is earning is an important indirect cost of schooling. Tuition, fees, books, supplies, transportation and lodging are direct costs. Therefore, *Net* earning can be defined as the difference between actual earnings and direct costs. This is symbolized as follows

$$W = MP - k \qquad (1)$$

where MP is actual marginal product (assumed as equal to earnings) and k is direct cost. If MP_0 is the marginal product that could have been received, equation (1) can be written as;

$$W = MP_0 - (MP_0 - MP + k) = MP_0 - C, \qquad (2)$$

where C is the sum of direct and indirect costs and where net earnings are the difference between potential earnings and total costs. It is important to note

that indirect school costs are implicitly subtracted, for otherwise earnings would have to be defined as the sum of observed and forgone earnings, and foregone earnings are a major cost of high school, college, universities.

The above discussion on the theoretical side shows us the relation between the wage earnings of a productive student who has received education and training from school or universities. In the present study, we consider the student as an individual who decides to invest his time in university studies or in any type of training. It is also considered that the studies can be a short term or long term specialization in a particular subject, thereby acquiring skills required to perform certain jobs. In this sense, it is very important to understand the reason behind the investment in human capital through education and training. Individuals take decision to invest in education by looking into the employment opportunities with the qualification that would be achieved.

2.5.1 Education and rates of return

The theoretical explanation above shows that there is a relationship between schooling and the earning that would be gained in the future. Therefore investment in time (school years) dedicated for education and training (human capital formation) yields certain benefits which would compensate the cost incurred (direct and indirect cost). The human capital theory of Becker states that the most single determinant of the amount invested in human capital may well be its profitability or rate of return. Here it should be remembered that the amount invested cannot be determined from a known “investment period” (school years) since investment in human capital is usually extends over a

long and variable period (the period depends on the short and long term specialization).

The above discussed theoretical aspects can be expressed in terms of some examples. For instance, we consider some activity in which a person enter to get an earning. While explaining the term earning, it is important to consider two types of earnings, such as monetary earning and monetary equivalent of psychic benefits. Psychic here implies the satisfaction over life times (Swart, 2006). Since investment in human capital can be through education and training, on-the-job training, information, improved health and morale etc., the return can be of monetary and psychic nature. Therefore, let us consider that a person enters to an activity after schooling.

As explained in the human capital theory of Becker (1993), let us consider that an individual has to enter into the labour market with acquired education and training. For the explanation, let Y be an activity providing a person entering at a particular age, called age zero, with a real net earnings stream of Y_0 during the first period, Y_1 during the next period and so on until Y_n during the last period. Therefore, the present value of the net earnings stream in Y would be;

$$V\ (Y) = \sum_{j=0}^{n} \frac{\mathrm{Y}j}{(1+i)^{i+1}} \qquad (3)$$

where i is the market discount rate[3] (to simplify i is assumed to be the same in each period). The above equation shows how an individual can earn from an activity accessible to him.

Let us also consider the value of an activity when there are more activities. Let us consider that if *X* is an another activity providing a net earning steam of $X_0, X_1, \ldots\ldots X_n$, with a present value of *V(X),* the present value of gain (d) from choosing *Y* would be given by

$$d = V(Y) - V(X) = \sum_{j=0}^{n} \frac{Yj - Xj}{(1+i)^{i+1}} \qquad (4)$$

The above equation (4) can be more explicit when it could be related with costs and return. According to the human capital theory of Becker (1993), the cost investing in human capital equals the net earnings foregone by choosing to invest rather than choosing an activity requiring no investment. If activity *Y* requires an investment only in the initial period and if *X* does not require any, the cost of choosing *Y* rather than *X* is simply the difference between their net earnings in the initial period and the total return would be the present value of the difference between net earnings in later period.

From the above explanation, it is clear that there would be more gain in an activity which requires investment than from an activity which does not require investment. This is one of the important reasons for choosing short or

[3] The market discount rate is the investment or cost that is needed for search of jobs in the labour market. For Stigler (1962), a worker will search for wage offers until the expected marginal returns equals the marginal cost of search, i.e., when an individual will find a job.

long period of studies, especially in the case of university studies. It is clear that, in a normal situation, higher level of education bring more gains for individuals because long period of time is invested to make the individual more qualified for higher gains. Let us now analyze the gain from an activity using the following equation. Let us assume the following factors;

$C = X_0 - Y_0$ (C, the difference between the cost incurred for activities X and Y)

$k_j = Y_j - X_j$ (k is direct cost)

$j = 1 \ldots n$, (j is the time unit in years)

and if R the total return and the gain (d) from Y could be written as

$$d = \sum_{j=1}^{n} \frac{kj}{(1+i)^i} - C = R - C \qquad (5)$$

From the theoretical explanation, it can be understood that gain from an activity is the difference between return and cost. It can also be understood that the decision to choose an activity over other is based on the qualification that an individual has obtained over years. In other words, the human capital investment over many periods can determine the value of gain for individuals. This is very applicable for persons who take decisions to pursue their studies over years, even after their formal schooling.

Though the above paragraphs discuss shortly on the relations between human capital investment and rate of return, there are several other factors implied in taking decision for education and training. In addition to the rate of return and gain from an activity chosen, personal aspirations, family support, private

generosity, public policy, etc., influence the decision to make an investment in human capital. An explanation on these factors requires more space and time and cannot be considered as a matter of study for this thesis. Rather we move to some examples that can prove the above said relations between human capital and earnings.

2.5.2 Investment in Human Capital and Returns: Empirical Studies

The theoretical implication of the relation between human capital investment and earnings can well be explained with some empirical studies. This is of great importance because, according to Becker (1993, pp.), "education is of considerable interest in its own right and a matter of much current concern: laymen, policy-makers and researchers are all worrying about the role of education in promoting economic and cultural progress, and about ways to improve the educational progress". There are several studies (Mincer, 1962; Weisbrod, 1962; Burdett, et.al., 2011) which have proved the positive relationship between investment in human capital and economic growth. Authors in these studies clearly mention the importance of both firm-specific skills and general skills that would enable human resource for wage growth over their life cycle.

As an example to prove the relationship between human capital formation and income growth, let us consider an example put forward by Schultz (1962).

Table 1 Estimates of various stocks of capital

	Billions of Dollars		Annual Rate of Growth (per cent) (3)	Rate applied to 1957 (2) x (3) (Billion Dollars) (4)
	1929 (1)	1957 (2)		
1. Reproducible tangible wealth	727	1270	2.01	25.5
2. Educational Capital in population	317	848	3.57	30.3
3. Edcuational Capital in labour force	173	535	4.09	21.9
4. On-the-Job training for males in labour force	136 (for 1939)	347	5.36	18.6
5. Total of lines 3 and 4				40.5

Source: Schultz (1962, pp.6) (The table above shows the estimates of various stocks of capital and annual rates of increase between 1929 and 1957, in the United States in 1956 Dollars

The Table 1 above is used to explain the relation between human capital and growth in wealth. The table indicates an incremental increase of $25.5 billion for reproducible tangible wealth and $40.5 billion for two classes of human capital. It is clear from the data that the growth in investment in human beings have improved markedly the quality of work entering into economic endeavor and these improvements in quality have been a major source of economic growth. The above explanation in the table can be considered as a classical example which shows the relationship between human capital development and income/economic growth.

It is a fact that learning-by-doing remains as an important factor in the determination of wages, (Burdett, et.al., 2011). By understanding the importance the human capability for innovation and improvement, almost all

fields of action require individuals with skills and competences. Human capital formation requirestime and money. An empirical study by Crook, et.al., (2011) shows that investment in superior human capital generates better firm-level performance. In addition to the study of relationship between human capital and firm-based performances, there are studies which explore the relation between human capital formation (through education, experience, knowledge and skills) and success. Based on a meta-analysis using studies on human capital and entrepreneurial success, Unger, et.al., (2011) and Martin (2013) suggest that, there exists a positive relationship between human capital and success.

In addition to studies explaining relationship between human capital formation and entrepreneurial success, there are some studies which demonstrate the importance of skilled human resources. A study based on skilled migration by Di Maria and Lazarova (2012) shows us that there is a positive relation between skilled migration and economic growth in developing countries. Another study by Suhonen and Paasivaara (2011) among public health nurses and nurse managers explains us that there is a positive relationship between human resource management and project work success.

The above mentioned studies are used to support the idea that there is a positive relationship between human capital formation and positive improvements in individuals' working areas. As we have noted from some fields, like entrepreneurship, education, health and migration, human resource management results to positive improvements to individuals and systems. In

the following paragraphs, the same argument is explored by analyzing the Capability Approach by Amartya Sen from welfare economic perspective.

2.6 Amartya Sen's Capability Approach

In welfare economics, Capability Approach (CA) has a great place in explaining the importance for individuals' growth with limited resources. In addition to welfare economics, development studies and political philosophy have also considered the importance for CA. Because of its broad range of applications, educational theory has shown a rising interest in using CA to explain some specific phenomena in education (LeBmann, 2009). In capability approach to work and welfare, says Salais and Villeneuve (2005), "what matters for public policies is what a person can do and be with the resource over which he/she has command". In a broader sense, the capability approach focuses on the personal achievement of an individual with which he or she can avail all desired goals. The capability approach logically follows some basic principles put forwarded by Sen. He explains the theory with empirical evidences and confirms that, "when faced with the same hazard, people are unequal in their capabilities of doing and being with the same basket of commodities or amount of money" (Sen, 1999).

Since social and economic objectives of the national economies are to widen the welfare activities of the people and provide opportunities for better life, the question here is to provide solutions through education and training. Capabilities (referring to skills, competences, knowledge etc.), for Sen, provide possibilities so that everyone can enjoy full freedom. He argues in favor of focusing on the capability to function, i.e., what a person can do or

can be and argue against the more standard concentration on utility (opulence).

For Sen, much of economics is concerned with the relation between commodities and people and investigates how people arrange to make commodities, how they establish command over commodities, what they do with commodities and what they get out of commodities. Sen says that closely related to this basic concern of economics is the question as to how a person's interests may be judged and his or her personal 'state' be assessed. To achieve maximum satisfaction, individuals prefer commodities with different characteristics. In a theoretical perspective, securing amounts of these commodities give the person command over the corresponding characteristics. When we consider this perspective in the realm of human resource development and education, we can compare these characteristics' features in relation to skills and competences of individuals. A distinctive feature of education and training is the possibility to improve skills and competences and capacities of a person, rather than gaining a control over it. Therefore when an individual is better off with his or her skills and competences (basket of commodities for Sen), more resources and possibilities would be available.

2.6.1 Competences as Capabilities and Functioning

In the following discussion of this thesis, we consider skills, competences, capacities etc. from capability approach put forward by Sen. When we discuss about skills and competences, it is always related with its utility for personal and professional development. From a labour market perspective,

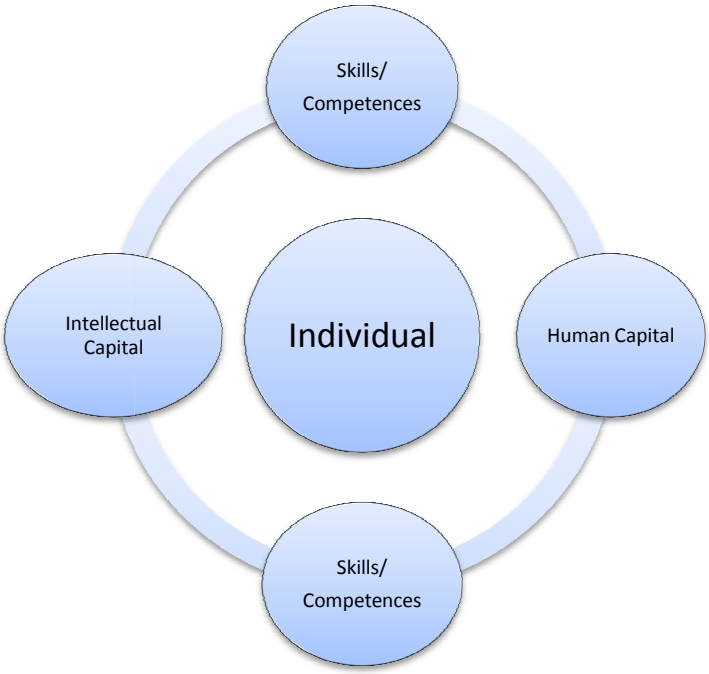
skills and competences of a person give a clear picture of the capacity of that person in a particular role or position. When capabilities are considered as the improved status of a person to enjoy full freedom, it can also be said that skills and competences acquired through education and training would also improve the status of individuals.

Sen, in his capability approach, has also explained the functioning of a person as an achievement of a person. In other words, achievements mean what he or she manages to do or to be. It reflects, as it were, a part of the 'state' of that person. It is evident that functioning status of a person with capabilities improve the status of a person. Skills and competences thus achieved through education functions as a force for improving the 'state' of an individual. From the theoretical explanation carried out, it was made clear that skills and competences could be considered as capabilities and human capital formation could be implemented to improve the status of an individual.

2.7 Defining Competence

Competences have become key factor for knowledge economy. Education and training as engine of growth have now become providers of 'capabilities' to human resource. Universities as focal point in the flow of knowledge creation, prepare individuals to become competent and sustainable. Considering this flow of knowledge creation as a circular flow, let us now imagine the flow of competence as shown in Figure 1.

Figure 1 Circular flow of competence building



In this circular flow, individual is pictured at the center in the knowledge creation and is enriched with the process involved in the creation of knowledge surrounded to him/her. In this flow, by knowledge creation, we mean capacity building with skills and competences. In the figure above, in one side, we see knowledge creation as human capital formation and on the other side we see knowledge creation as intellectual capital formation. In the circular flow depicted above shows that skills and competences have become very important factors in knowledge creation. As this flow is centered around the individual, fuelled with skills and competences, the individual would become capable to attain successful personal and professional life.

Though skills and competence are referred as an important factor in education and training, they are regarded as different in various work-related contexts. Since skills and competences are considered in differently in different

disciplines, scholarly debate in key skills and competences has addressed definitional issues. Additionally, the determination of key skills and competences based on statistical bases are also lacking (Van Loo and Toolsema, 2005). In order to make a general idea, a discussion of different perspectives on competences is carried out as follows.

In the context of vocational education and training, Wesselink (2010), defines:

> "Competence is the ability to perform successfully in a complex environment characterized by ill-defined problems, contradictory information, informal collaboration and dynamic and highly integrated process".

For Gehmlich (2009) Competence ("Kompetenz" in the German context) is understood as:

> "A set of knowledge, skills and competences not only to perform a narrowly defined job but to be capable of operating successfully in an array of activities related to a particular occupation respecting values of the society. This definition underlines the paradigm shift: from the teacher to a learner centered approach, enabling learners to face and master challenges".

When discussing about job-specific or cross-occupational skills, Fabbris (2007) points out that:

> "Competences are the results of a complex personal elaboration of the educational and experiential inputs. This process implies a continuous matching with individual values, beliefs and aims" (Keagan in Fabbris).

Comparing qualitative framework on competence based education Baartman (2007) mentions a common notion of most descriptions of competence.

> "Competence consists of connected pieces of knowledge, skills and attitudes that can be used to adequately solve a problem".

Making a broad consensus on competences, Winterton (2007) defines that:

> Competence embraces the ability (capability or capacity) to perform tasks to a certain standard, which consists of knowledge, skills and dispositions beyond cognitive ability, such as self-awareness, self-regulation and social skills".

The above mentioned definitions on competence give us an idea that competence is considered as ability, capability or capacity and skill to perform a task. It is also considered as the ability to gather information with which problems are solved. Competence as a capacity or skill is gained through education and training.

2.7.1 Approachess to the development of competences

In addition to the above discussed definitions, there are different approaches towards competence development. As there are formal, informal and non-formal ways of education and learning, there are different approaches towards

competence development, such as personality and behavioural characteristic view, functional or work-based view etc. These are shortly discussed in the following paragraphs.

Personality and Behavioural Characteristics: White (1959) is of the opinion that competence has personality characteristics associated with superior performance and high motivation. White defines competence as an 'effective interaction (of the individual) with the environment and there is a 'competence motivation' in addition to competence as 'achieved capacity'. In addition to the personality characteristics, competences are fundamentally behavioral and susceptible to learning, says McClelland (1998). Competence-based Human Resource Management has become widespread in all areas of Human Resource Development. Even within the predominantly behavioral approach, many conceptions of competency now include knowledge and skills alongside attitudes, behaviors, work habits, abilities and personal characteristics (Winterton, 2007).

Functional or work-based competences: The approach was mainly developed in UK during 1980s when National Vocational Qualification framework was adopted. Functional competence is based on the ability to demonstrate performance to the standards required of employment in a work context (Winterton, 2007). 'Skills/competency approaches to workplace and economic policy have emerged based on a range of perceptions which are shared internationally' (Sawchuk, 2008). With an objective to make the economy competitive, flexible and skilled, national economies now focus the

provisions on the right mix of 'hard skills'[4] and 'soft skills'[5]. To gain high productivity and to become competitive, each country should have a successful plan for a skilled workforce because 'economic competitiveness and future prosperity mean deepening the skills base of the workforce', Brown (2009). Towards this, understanding the demand and supply of skills within the changing labour market is a great social and economic concern. To meet the required changes in the global economy and labour market, there were several policy measures which mainly focused on human development through skills formation.

The World Bank (2010, p.2) in its study on 'Stepping up skills for more jobs and higher productivity' stress that:

> 'Skills are at the core of improving individuals' employment outcomes and increasing countries' productivity and growth because more of them face serious demographic challenges- from a "youth bulge" of new job seekers in Africa and the Middle East, to a demographic transition of shrinking labour force in Eastern Europe and Central and East Asia'.

According to a study carried out by International Labour Organization (2010, p.1), skills development is essential to address the opportunities and

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[4] Hard skills such as digital and transversal competences, languages and media literacy (TUNING, 2007 and Reuter, C et.al., 2011)

[5] Soft skills such as personal, social and cultural competences (taking responsibility, analyzing and organizing complex information, taking decisive actions, working in a multicultural environment, volunteering, cultivating social and self-competences) (TUNING, 2007 and SOLIDAR report, 2011)

challenges to meet new demands of changing economies and new technologies in the context of globalization. Towards achieving a strong, sustainable and balanced growth, another study by the International Labour Organization (2010, p.2) identified skills development as a strategic objective by mentioning that:

> "With the globalization of markets, the high pace of innovation and technological diffusion and demographic change, equipping the workforce with the skills needed to achieve broader choices and high levels of productivity is an imperative, in all countries".

Critically evaluating the functioning of One-Stop Careers in the United States, Jacobson (2009) suggests that the existing job matching and other job search assistance services will be effective to face the challenges of the present financial crisis. According to him, programs like these:

> "In a period when jobs with advancement opportunities are scarce, many workers are likely to benefit from building new skills rather than simply taking the best job available"

To alleviate the effect of the crisis and prepare for the economic upturn, the European Commission launched employment support initiative which aims to promote employment and reintegration into the labour market of workers made redundant through activation, retraining and skills upgrading measures (European Commission, 2009). Indicating the context of a 'skills ecosystems' in which individuals, employers and the broader economic and social context are in permanent dynamic interaction, the Expert Group of the European Commission (2010) explains that;

> "Improving people's skills is a real 'win, win' for all- for the economy, for society, for employers and of course for individuals themselves. Improved skill levels help you 'get in' (to work in the first place, from education or from unemployment), 'stay in' (keep in work after entering the labour market) and 'get on' (progress through the labour market into better jobs)".

The above stated policy suggestions indicate that skill formation is the priority for recovery from financial crisis and face the challenges of globalization, ageing population and urbanization. Since the labour market has become more flexible and competitive, these policy measures would enable the worker to enhance his or her skills with the support from governments. Let us now look into a form of education and training that is based on skills-competences, which is known as Competence Based Education.

2.7.2 Competence-based education

The term competence is used in the teaching and learning process. Competence Based Education (CBE) is used as a successful tool for the renewal of education at all levels (Hoerig, 1981). 'Although the concept of 'competences' first made its appearance in 1890, a growing interest in competence base education and training appeared in the 1960s and 1970s as a result of various publications on competence based organizational training and competence based teacher education in the United States', Struyven and Meyst (2010). Nowadays educational institutions are becoming aware of the need for changing teaching learning structure based on competence so that

educational programs would become competitive and appropriate to the needs of the society and economy. CBE has become the most popular method for educational institutions which enables students to prepare themselves to become competent employees by means of an authentic and self-steered learning experience (Wesselink, 2010).

CBE is considered as a tool to restructure the curricula in response to the challenging requirements of the present society and this tool is very much recognized by educators and policy makers. Competence based approach to education "is a process which places high emphasis on the specification, demonstration and assessment of learning outcomes that reflect competence in a given area" (Schmieder in Hoerig, 1981, p.1). According to Sturing et.al, (2010), CBE 'better prepares students to become competent professionals, contributes to students' (professional) identity development, prepares students for participating in contemporary society and prepares students to adapt to changes in work practices within the same occupation'.

In addition to the academic relevance of education and training based on skills and competences in higher educational institutions, public and private enterprises plan their activities based on medium and high skill requirements. As the current situation demands a change for and renovation of old-fashioned system, individuals and organizations are forced to accept activities that require skills and competences. Therefore, there is a great need for understanding the importance for skills acquisition that would enrich the lives of individuals and improvement of the society as a whole.

2.7.3 Policy initiatives on New Skills for New Jobs

The new economy is said to be 'informational', 'global' and 'networked' Castells in Hartley (2003) and the human capital competences, understood as those talents, skills and capabilities that contribute to multi-factor productivity gains, are perceived as a key element for sustainable economic growth and development in the globalised economy Hartog in Aracil and Velden, (2008). In such a situation 'governments, employers and trade unions increasingly face a need to prepare workers for a new and more flexible labour market and the prospect of a working life which involves a variety of occupations and skills has emerged, facilitating and regulating the development of workers' competences and transferable skills' Lucio, et.al., in Sawchuk, (2008). From a political economy perspective there is a global consensus involving governments and international organizations on the need to increase the level of workforce skills in line with technological developments and the emergence of a knowledge-based economy, as stated in Winterton (2007).

Though the argument for skills and competencies formation is not new, the knowledge society and its growth momentum has created a need for considering the issue as relevant among policy discourse. In this respect, the global pressures for labour market reformation with skilled workers have produced an acceptance for several initiatives for proving new skills for the emerging jobs in the rapidly changing labour market. The importance of these initiatives has got a pushing effect due to financial crisis and its direct consequences in the labour market.

A common feature of the recessions in 1980's, 1990's and 2008/09 was the loss of jobs in all economies Jenkins (2010). The latest recession had badly

affected the labour market losing more jobs. According to Clancy (2009), in September 2008, the unemployment rate in UK was 6.0 per cent, which had not reached since 1999, while in US unemployment increased from a low of 4.4 percent in March 2007 to 6.7 per cent in November 2008. Within the EU 27, according to Reuter, et.al., (2011) the unemployment increased from 6.8 per cent in January 2008 up to 9.5 per cent in January 2011 meaning 23 million people of the active EU population were unemployed.

Studies on the economic crisis and its impact on the labour market have found that reducing the skills gap among nation's workforce is critical to sustaining a robust economy. Two important facts are interesting to look. First, a contradicting situation exists with high unemployment rate and hard-to-fill job vacancies. Researches on labour-market skills shortages indicate that employers report skills shortages or hard-to-fill vacancies for a variety of different reasons (Watson, et.al (2006), Lewis (2008). A study carried out by Atkinson (1998) reveals that firms in a wide range of industries face serious difficulties in hiring workers with the needed skills. Another study done by Rotundo and Sackett (2004) also proves that entrants to the workforce lack basic skills in language use, mathematics and problem solving as well as interpersonal skills. For Gordon (2010) there are millions of jobs vacant but workers do not have the skills the firms want, and business are struggling to find the talent needed to compete in this new world.

Secondly, a situation with opportunities for more job. According to Reuter, et. Al., (2011) 'in the next 10 years, high level jobs such as professionals, managers and technicians, requiring knowledge and skills-intensive capacity will increase by 8.5 million and also, elementary, retail and distribution jobs

are also expected to increase by around 2 million'. An extensive study carried out by CEDEFOP (2008, 2010) states that in total, Europe is expected to see more than 13 million additional jobs (net change) by 2015, 6.6 million jobs in business and other service sector and 2.8 million jobs in distribution and transport sector.

The above mentioned facts clearly exhibit that at a time of increasing unemployment, there are deficiencies in the supply of necessary skills (demanded skills) to the labour market and more jobs would be arising which requires new skills. According to World Bank studies (2010, p.1) there are jobs vacant sometimes because of insufficient education, but also because education and training did not provide the skills that employers want. This critical condition in economies requires a great relevance to provide a solution by supplying necessary skills to match demand of the vibrant and changing labour market. It is also evident that modern labour market requires new skills and therefore new skill requirement would demand new profiles of jobs. In the words of Atkinson (2001), 'the new economy provides two challenges for crafting an effective workforce development policy; first, as skills become more integral to boosting productivity growth, many companies need workers with higher skills and second, as the new labour market becomes less stable and more risky, workers need new tools with which to successfully navigate it'.

The rapid changes in the economy and society have altered the patterns of life and work of the people and have posed several challenges. The young workforce in the economy is the greatly challenged section by losing jobs and at the same time they are required to learn new skills and competencies. This

is because changes in the structure of the labour market over the past two decades have had impacts on the options available to young people (Barham, et.al 2009). In addition to this, evidences from UK, US and OECD countries show that both employment levels and earnings of the least well educated are declining relative to those of the most well educated Mclntosh (1998). These facts show that entry to jobs at present requires new skills.

2.8 Provision of key competences: a critical gap

According to Educational International (2010), in almost half of the countries in Europe, the education system has been confronted with new cuts as a result of the global economic crisis. Adding to the low resources, another serious concern among the educational policy formulators is about the 'wide gap' between the skills and competences of graduates and the changed requirements and demands of the work environment in an increasingly mobile and globalised society, as explained in Andrews and Higson (2008). An increasing rate of unemployment in Europe, Reuter, et.al., (2011) and in US, Clancy (2009) shows the fact that the supply of skills is lagging behind.

The imbalances in the economy are interpreted as a sign that the labour market is not functioning efficiently in terms of matching individuals to jobs as a result of changes in the demand or supply of labour in the economy, as explained in Stam and Long (2010). In addition to the economic imbalances and unemployment growth, policy measures taken to boost new skills, particularly the EU policy, was reported to be poor, as explained in Maniscalco (2010). The absence of key/core skills in young people constitutes

one of the major weaknesses of education and training system, as explained in Hodgson and Spours (2002).

There have been several initiatives to reconstitute the education system, for example in New Zealand, as explained in Fitzsimons (1999), for the augmentation of skill formation in individuals to compete in the world marketplace. At the same time there were initiatives to solve the problem of unemployment. Many social scientists have suggested about different ways to mitigate the unemployment problems; for example the idea of *unemployment insurance system* propounded by the Nobel laureate Christopher A Pissarides (2010). In this he discusses about the optimal compensation package for people who lose jobs due to changes in economic environment. Though the study concentrates on the economic compensation system, it is also noted that a worker has to invest some time and money to find out another job after she loses her job.

The world economy is now in a state of evolution, facing challenges brought by technological innovations. Crisis and increasing trend of unemployment in several countries pose challenges to the future prosperity. There are several initiatives to improve the quality of skill formation and increase the number of jobs in the economies. Some of them would lead to better results while others would not be successful. It is therefore very important to introduce a sustainable mechanism combining educational institutions and industries to observe the labour market changes and to supply the necessary skills. Stukalina (2008) suggests that the integrated educational environment, where students have an opportunity to develop their creative potential, is an efficient means of preparing students for productive and satisfying careers in the

knowledge-based economy. A similar idea is put forward by Maniscalco (2010) stating that a close cooperation between the commission, the member states' governments, the social partners and centers for research is needed in order to continue building up the skills of its people and assuring them better perspectives and quality living.

2.8.1 Knowledge Economy and Skill Competence Needs

The present economic condition reveals the fact that knowledge is imperative for socio-economic growth and development. Towards the creation of a knowledge-economy, more importance is being given to a collaborative approach between educational institutions and industry. In the higher education area, universities have a greater role in promoting this cooperation because universities are becoming prime agents in "the formation of human resources and the generation of knowledge to the more specific focus of solving problems and attending to social needs" Fuentes and Dutrenit (2012). It is widely accepted that educational institutions or research organizations have become the key generator of knowledge for innovation and growth. By knowing the needs of the society, they become a key player 'for upgrading the national systems of innovation', as explained in Dutrenit and Arza (2010).

Understating the current trends in the global economy, human resources have to be prepared to face several challenges. One among them is to attain certain skills and competences to become a global citizen and also to become skilled personnel. In this process of gaining skills, competence, knowledge etc. some specific competences needs to be achieved by an individual. This is because, 'from the point of view of the whole economy, according to Jensen et.al.,

(2007), the transformation of local knowledge into global knowledge is of great interest'. Global knowledge economy therefore demands some common skills and competences from the part of individuals who wish to face the challenges of the present time.

Knowledge has become the main factor of production for a competitive and technology-based economy. Recent policies on education and training adopted by national and international policy makers substantiate the view that new skills and competences are needed to restructure the knowledge economy. The demand for and supply of skills have received greater attention and policies are directed to improve the skills-set to enable people to enter into the labour market. In relation to the skill-set, CEDEFOP (2010) have indicated that the future labour market needs high-level skills. It is well acknowledged that higher-level education and skills-set would improve the economic status of individual because 'labour market participation increases significantly when it passes from less than compulsory to secondary and post secondary education' , as explained in Checchi (2006).

2.8.2 Demand for and Supply of skills

Though there are differences between developed and developing countries, the statistics on labour force participation in almost all countries reveals the fact that there is high proportion of people with higher level education. This is because of the fact that, 'education seems to promote labour market participation and employability', as explained in Checchi (2006). In addition to the differences in the policy strategies towards skill formation, skills mismatches are common as a result of employer reluctance to provide training

and educational provisions insufficiently adapted to the needs of the labour market, as explained in Winterton (2007).

Skills formation has changed due to technological and socio-economic advancements and critics are of the opinion that labour demand deficiencies are not only solved with supply-side solutions, as explained in Winterton (2007). According to international organisations like OECD, the need to develop new skills for the emerging knowledge-based economy represents a policy priority that has clearly influenced supranational bodies like the EU and APEC. Despite this consensus, shared by most national governments, the focus on supply-side issues can be criticised for neglecting the demand side.

2.8.3 Universities: New roles and functions

Considering the above mentioned factors, it can be assumed that universities have a great role. In addition to the traditional task of education and research, 'the universities operational environment has expanded and new ways of thinking have emerged', says Nurmi and Paasio (2007). In response to the fast changing market requirements, the knowledge economy requires its agents to satisfy the needs of the real world situations. New ways of work and thinking is one of the several options to face changes. As universities play leadership role in the knowledge economy, they have the responsibility to equip the future workers with required competences and skills.

Accepting new roles and functions in the academic management (in education and research), universities undertake responsibilities to provide demanded competences to prospective employees: students. In addition to academic

orientations, the roles and functions of universities have widened, to a phase which is named as "academic enterprise"[6] or "enterprising universities"[7] for Powell and Deyson (2011). This envisages that universities are required to share the knowledge creation process with enterprises in a collaborative and cooperative manner. This collaborative process in the creation of intellectual capital[8](IC) makes universities to expand their functional environments. This form of value creation not only benefits universities but would lay value addition to firm's intellectual capital rather than its physical and financial capital, as explained in Cuganesan in Bezhani (2010).

It has become evident that the traditional concepts of universities, as centers of education and research, have changed; rather they have become a place of 'engaged learning' or 'engaged institutions'[9] for Leodis (2012). Together with an expansion of academic environment to the global needs, universities also specialize to persuade needs of local social needs. To achieve those needs,

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[6] Academic Enterprise is an umbrella term used to address the development of best practice with respect to Reach-out to business, industry, civil and voluntary services and the community. Universities become m ore enterprising in their ways of Reaching-out/Outreach, where knowledge sharing between all parties in any partnership is virtuous (Powell and Clark, 2012).

[7] Enterprising Universities is also a term used in similar meaning as Academic Enterprise. By Enterprising Universities, Powell and Dayson (2011) means that universities are fully engaged with its locality, and helping transform the lives of its citizens, communities, industry, business and the civil and voluntary services

[8] Intellectual Capital (IC) is considered as an important issue by policy analysts. IC means the knowledge created through research and transmission of knowledge, mainly through universities. For a detailed analysis, refer to Nerdrum and Erikson (2001) and Bezhani (2010). IC is also used to signify human capital, structural capital, intellectual assets and intellectual property (Seetharaman, *et.al*, 2004)

[9] Engaged Learning or Engaged Institutions refers to the term which describes about engagement which has evolved from concerns of "access," "diversity," and "public service" between the academy and communities (Leodis, 2012)

‘academic enterprises’ have their priority to equip students with most important competences with which the future workers would be able to achieve those needs.

Since academic institutions have restructured the process of education and research into new modes, the focus of the curricula is to develop competences. It is well understood that human potential with relevant competences are sine qua non for a society to pave its way for growth and development. While we discuss the role of universities, it is very important to mention the activities carried out in universities. One of the most important activities is the human resource formation through education and training. In the following section, let us discuss about intellectual capital and human capital and the relevance for competence.

2.8.3.1 Intellectual Capital: different perspectives

From knowledge society perspective, the term Intellectual Capital (IC) has got great significance. This is because ‘the world is viewed as becoming less labour intensive, less material intensive, less energy intensive but more knowledge intensive’, as explained in Chaharbaghi and Cripps (2006). In both personal and professional level, individuals have to consider knowledge or intellectual capacity as an important factor which would help them to be well informed and updated. Considering the students’/graduates’ lives in the universities, skills, competences, knowledge, information etc., are considered as the capital that they would accumulate. This would also be well replicated in terms of competences that they have acquired from each module. Entering

to a wider society with these acquired competences help them in obtaining the desired professions because, for Thurow in Camuffo and Comacchio (2005), knowledge represents the critical resource for both business and individuals.

The knowledge-intensive resource creation has become one of the most important ways for competitive and sustainable society because 'in a knowledge society, competitive advantage shifts from material and financial assets to intangible assets' Ruiz, et.al., (2011) and 'efficient management of IC is a key factor for competitiveness', as explained in Terzic (2012). The key to success in a competitive society depends upon the ability to visualize, create and leverage intellectual capital O'Donnell, et.al., (2000) and Seetharaman, et.al., (2004). Therefore, it can be said that IC has its role to play to make the society sustainable and competitive. To get a clear view of the relevance of IC, it is useful to understand IC from some important definitions. While explaining about the creation of intellectual capital, O'Donnell, et.al., (2000), points out that:

> Intellectual Capital as a highly complex and dynamic phrase, embraces "language, experiences, history, culture, process, understanding, interactions, interpretations, routines, information, data and knowledge".

In addition to the creation of IC by acquiring knowledge, information, data, etc., creation of IC is also seen from an economic or business point of view. Miller, et.al., (1999) and OECD, (1999), defines that:

> Intellectual Capital 'is the economic value of two categories of intangible assets of a company; organizational and human capital'.

While discussing about the measurement of intangible assets like intellectual capital, Bradley (1997) defines that;

> "Intellectual capital is the ability to transform knowledge and intangible assets into wealth creating resources, both for companies and countries".

Bradley (1997) explains that in addition to a competitive advantage from knowledge, intellectual capital is an important source of wealth and it provides tools and capacity to innovate and generate ideas. Edvinsson and Stenfelt (1993) are also of the opinion that IC is also an important source of wealth creation and observe that states the relevance for measuring it. They define IC as;

> "The hidden values of individuals, enterprises, institutions, communities and regions that are current the current and potential sources for wealth creation".

The above discussed matters clearly explain that intellectual capital is an important factor from social and economic perspective. It is clear from the above definitions that IC encompasses a wider concept since it is applied in every field. Intellectual Capital, according to Camuffo and Comacchio (2005), encompasses a wider perspective because it comprises two types of knowledge and knowing: the individual and organizational. Though both are important in the knowledge-based society, in the present study, we consider the individual part of IC. Therefore, acquiring knowledge, information, data and other resources from individualistic perspective is very relevant since it makes professional and non-professional status better.

2.8.3.2 Human capital: different perspectives

The term Human Capital (HC) is well understood in social science as a total of a persons' abilities, skills, knowledge and information. Moreover, all these capacities are considered as 'capital' when related with socio-economic situations. As financial capital or physical capital (land, machinery, infrastructure etc.), in the organizational or economic perspective, the knowledge of a person is also considered as 'human capital' (as preferred by economists). According to Nerdrum and Erikson (2001), it was 'William Petty (in the 17th century) was the first economist who emphasized labour quality differences and who labeled human capital when he argued for an inclusion of the ``value of workers'' in accounting for wealth for actuarial purposes'.

According to Chen and Lin (2004), 'Human brains contribute to the value added of products with knowledge that brings forth wealth'. The concept of human capital is a complex and multifaceted one, consisting of: native human capital (biological), educational capital, health capital and social skills, as stated in Neagu 2012). The educational and social capital view of human capital is well acknowledged while talking about skills and competences. Though human capital is considered and measured in terms of income level of a person or in economic value, that is per capita income, it is the share of the educational cost or investment in education that determines the economic value. There will be observable differences between persons with good educational level and those with no education. Therefore, the importance for investment for education, for human resource development, gains more attention and relevance.

Since the present study considers skills and competences as personal attributes (abilities or capabilities, knowledge, information etc.), it is the human capital perspective that would fit in the following discussion. More than pure capitalistic view, human capital theorists and educational scientists view skills and competences as individual attributes or capabilities that would add value to human resource Becker (1962) Garavan, et.al. (2001) and Van Loo and Toolsema (2005).

In the above sections, we have discussed the human capital perspective of skills formation. Therefore it would be interesting to understand whether the above discussed matters on skills and competences really matters in the current situations. In order to understand the need for the demand and supply of skills and competences, studies-research programs are very important to find out the realities in different settings. In the following part, some important studies are mentioned which are dealing with the relevance of skills and competences.

2.8.4 Different studies on skills and competences development

Studies on skills and competences have positively resulted to the management and improvement of educational practices and training. Positive impacts from several studies and analysis indicate the importance for continuous improvements on skills and competence learning, especially for the world of work. In the following sections, some important studies, projects, researches are mentioned to display an overall view on the importance given on skills and competence formation.

As social, economic, cultural and political situations all around the world have changed, there is now a focus on new skills approaches. The focus on new skills and competences has become serious as we face the high rate of unemployment in all economies. Evidences from many countries (including major economies in EU, and the USA) show a state of over-education, with rising graduate unemployment. There is a great consensus among European countries that there is a great need for establishing national agendas towards skills formation. On this basis several national authorities have considered important policy restructuring towards skills and competence formation. For instance, Skills Task Force established by the UK Labour party-led government in 1997, Lisbon Summit in March 2000 (Europe to become 'the most competitive and knowledge-based economy in the world capable of sustainable growth and better jobs and greater social cohesion' by 2010) and The Barcelona Summit, March 2002 (European education and training system a world quality reference by 2010) take several policy measures and actions towards increasing high quality education and training.

Since there is an increasing trend in the unemployment level, skills and competence development is an essential factor for sustainable growth and development. While proposing a framework towards Skills Towards Employment and Productivity (STEP), World Bank shares that 'creating jobs and increasing productivity are top of agenda for policymakers across the world', World Bank (2010). Although globalisation brings benefits to society, low skilled and poorly trained people lose many opportunities that would contribute betterment to a life-cycle. Moreover, as crisis and financial problems affect all organizations and institutions (including enterprises), employers look for individuals with high skills. This is because that 'a

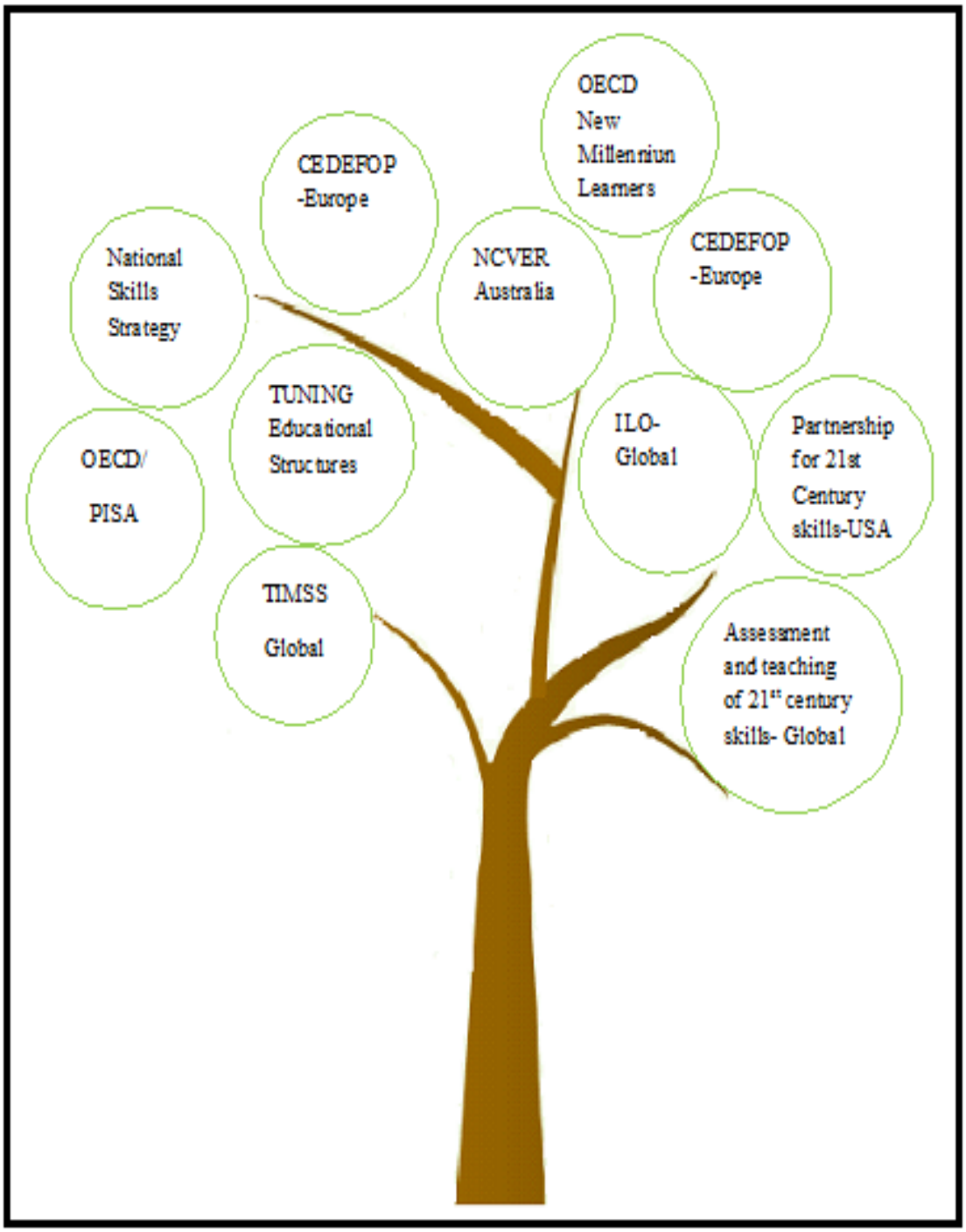
workforce that has been appropriately trained and is able to continue learning boosts investor confidence and thus job growth', Christine (2012).

Although recent policies focus more on skills formation for high productivity and growth, improving the high skills standard of the workforce had been one of the important focuses among policy makers. This can be demonstrated by stating some of the important studies as shown below in Figure 2.

The tree diagram pictures some of the important studies focused on skills and competence studies directed by several important public and private organizations around the world. The more important thing that is to see from the above diagram is that these studies have been carried out in almost all countries in the world. Short descriptions about some of such important studies are given in the following table. It is important to note that studies and projects mentioned in

Table 2 are some selected works which are related to the main theme of the present study.

Figure 2 Tree diagram on skills studies



Source: Author's own elaboration

Table 2 Description about studies on skills

Entity or Framework	**Year**	**Main Focus**	**Methodology or Approach**	**Countries Involved**
Organisation for Econ Cooperation and Development (OECD-PISA)	1999	Studies are carried out to monitor the outcomes of education systems in terms of student achievement, within a common framework that is internationally agreed	Paper and pencil tests are used to assess student's reading literacy, mathematical literacy and scientific literacy	OECD countries
TUNING Educational Structures	2000	Restructuring Curricula by proposing important skills and competences	Survey among Academicians, Employers, Students and Graduates	Europe, Latin America, Russia, Africa etc.
The Higher Education Academy-Economics Network	2006, 2007, 2008	The survey aimed to provide valuable information on students' perceptions of studying economics including identifying strengths and weaknesses in the learning and teaching of economics. The results of surveys are used to inform curricula development.	Online and focused group survey among undergraduates and postgraduates.	United Kingdom
National Skills Strategy-Expert Group on Future skills needs	2007	Identify the skills required for Ireland to make the transition to a competitive, innovation-driven, knowledge-based, participative and inclusive economy by	Secondary sources	Ireland

		2020		
CEDEFOP (European Center for the Development of Vocational Training)	Various years	This agency supports the development of European VET policies and contributes to their implementation in collaboration with national agencies	Uses case studies, national policy evaluations, statistical analysis and projects to conduct studies	Europe
National Center for Vocational Education Research (NCVER)	2008	The study is focusing on the relationship between the country's future skill needs and the VET system	Secondary sources	Australia
Trends in International Mathematics and Science Study (TIMSS)	1995 and 2008	To evaluate the intended, implemented and achieved curriculum to help improve teaching and learning in mathematics and science, and to this end the project is designed specifically to provide important, policy-relevant information that can be used to evaluate the success of educational systems	Curriculum analysis and data collection using questionnaire method	Armenia, Islamic Rep. of Iran, Italy, Lebanon, Netherlands, Norway Philippines, Russian Federation, Slovenia Sweden
Organisation for Economic Cooperation and Development (OECD) and Center for Educational Research and Innovation (CERI) project on New Millennium Learners	2009	To analyze the effects of new digital technologies on young people's cognitive development, values, lifestyles and educational expectations and to examine the responses to the emergence of this new phenomenon in terms of educational policy and practice.	Questionnaire method	OECD countries

(LML)				
CEDEFOP (European Center for the Development of Vocational Training)	2009, 2012	New skills and jobs in Europe and anticipating and matching labour market and skills needs	Secondary data analysis and forecasting	EU member countries
Assessment and teaching of 21st century skills	2010	Delivering a framework for assessment and teaching	Assessment and construction of task variables, gathering students responses and modeling with results	Australia, Finland, Singapore, USA, Costa Rica, Netherlands and Russia
International Labour Organisation	2011	The policy proposes to implement recovery plans that support decent work, help preserve employment and prioritize job growth	Policy notes	G 20 Countries
Partnership for 21st century skills	2012	Identification and definition of 21st century skills/competences Implementation issues Consideration for assessment	Academic subjects and curricula assessments	USA

From the above table, it is clear that the content of all studies are basically directed towards the improvement of skills profiles. These case studies acknowledge the fact that skills formation has to be considered as an important factor for the socio-economic growth and development. Skills training, especially high-skills training become sine qua non in times of crisis and builds up more opportunities for individuals.

2.9 Summary

In this chapter, a discussion is carried out to understand the importance of skills and competences from a human capital perspective. In addition to physical capital like land, labour and capital, human knowledge, abilities, capacities, skills and competences are considered as one important capital. Unlike other, human capital needs to be nurtured and improved as life goes on. Education and training is considered as one of the important medium for the improvement of human capital. This view is theoretically presented in this chapter, adding a classical theory proposed by Gary S Becker as well as mentioning a modern welfare theory proposed by Amartya Sen.

In addition to theories, this chapter demonstrate approaches for skills and competences development. These approaches are also supported with current policy initiatives which focus more on the needs of labour market and the relevance on employability skills and competences. Therefore the chapter pus arguments that there is a critical gap in the provision of required skills and

suggests for actions which should focuses more on the demand for and supply for new-employability skills.

As the chapter discuses some important studies based on the above discussed matter, the present thesis tries to relate its objectives with one of the important project, namely Tuning Project, which initiated in the year 2000. As the data base from this project was available, it was very fortunate for the present thesis to investigate the importance of skills and competences. As we see from the above discussion that skilled human resources are considered as wealth, it is important to understand the importance of skills and factor groups of skills from different perspectives. By analysing the available data base, it is expected to understand the underlying dimensions of general skills and competences. A detailed analysis of the methodology for the present thesis is given in Chapter 3.

3 CHAPTER: STUDY RESEARCH METHODOLOGY

The purpose of the third chapter is to explain the methodology used in this thesis. In the previous chapters, it is stated that skills and competences are very important and the development and formation of demanded skills and competences are very crucial. Thus we see that the general objectives of the thesis are supported with academic discussions which were carried out in the second chapter. As we noted earlier, in order to verify those arguments, we use data available from Tuning Project (TP). A detailed explanation on TP is carried out in this chapter. This chapter also discuss about some suitable statistical tools which help us to extract some important information from the data available.

3.1 Data and mixed methods

The data used in this study come from the Tuning Project (henceforth TP). The TP data are collected from different stakeholders from different regions, where the main units of analysis comprise on the importance and achievement of competences. The data was collected with questionnaire mode and stakeholders answer questionnaire by ranking their preferences. The data obtained contains information from three regions such as Europe, Latin America and Russia and data was collected from the period between 2003 and 2011. An important and interesting feature of the data used in the thesis is that the arguments posed in the second chapter can be tested with data available.

By considering general objectives of the thesis and available data from TP, it is decided that we use Mixed Method Research because "the mixed approach helps to improve the quality of research because the different research approaches have different strengths and different weaknesses" , as explained in Johnson and Christensen (2012). The data provide us information on competences from three different regions and stakeholders and also from different subject areas. Thus we try to use qualitative research method to explain similarities and differences that would be evident from the results. To do so, comparative method is used as a qualitative approach. To support explanations, we use some statistically proven basic methods such as factor analysis and mean average analysis. More details on these methodologies are discussed below.

We consider that mixed methodology (using both quantitative and qualitative methodologies) is useful because in social sciences, statistical analyses are carried out to explain some important social factors that would help people to comprehend the world around them. According to Frankfort-Nachmias and Nachmias (1996) 'the ultimate goal of social and all other sciences is to produce a cumulative body of verifiable knowledge which enables us to explain, predict, and understand the empirical phenomena that interest us'. From the main facts discussed earlier, we have identified some basic facts and those phenomena can be explained with suitable methods. Once some questions and related facts are constructed scientifically based on theories, scientists and investigators test their hypothesis empirically so that their explanations have a firm basis in fact, , as explained in (Cohen, et.al, 2007). By doing so, statistical procedures help ensure that the information or

observations are presented and interpreted in an accurate and informative way (Gravetter and Wallnau, 2009).

Thus we assume that the mixed methodology adopted would help us to understand basic objectives mentioned in the first chapter. As the data for the thesis is obtained from TP, an explanation of the project and its methodology is critical before we discuss about the qualitative and quantitative methods. The following part therefore is dedicated for a discussion on Tuning Project.

3.2 Tuning Project

In the framework of the present thesis, the Tuning Project is a project which analyses the importance and achievement of generic and subject specific competences. The project was initiated in Europe in the year 2000 and now it is being implemented in many other countries. "Tuning Educational Structures in Europe is a university driven project which aims to offer a concrete approach to implement the Bologna Process at the level of higher education institutions and subject areas" (Gonzalez and Wagenaar, 2005 and 2008). Tuning approach consists of a methodology to re-design, develop, implement and evaluate study programs for each of the Bologna Cycles (Gonzalez and Wagenaar, 2008). According to them this project has become worldwide and the methodology is also used in all Tuning projects, therefore the project can be applied everywhere in relation to methodology re-design, development and implementation in higher education area.

"The name Tuning has been chosen for the project to reflect the idea that universities do not look for harmonization of their degree programs or any

sort of unified, prescriptive or definitive European curricula but simply for points of convergence and common understanding" (Gonzalez and Wagenaar, 2008). The TP is a European Commission funded project and all the information regarding the project is publically available from the official website of the project (www.unideusto.org/tuningeu). This project basically analyses generic competences and subject-specific competences. In this thesis we are considering only the generic competences. The list of competences used in Tuning Project is given in Appendix 1. As we understand details about the project from the information available, we can understand that the methodology adopted in all projects are similar. The following section mainly deals with the methodology adopted in TP.

3.2.1 Tuning Methodology

As the present thesis has considered the data from the Tuning Project, it is very relevant to mention the specific model used in the project. In all publications of the project, details of specific Tuning Model[10] and Tuning Methodology are mentioned. Although there is no clear explanation regarding a specific model from a wide academic perspective, the methodology adopted in the project is considered as a process to analyze opinions from different stakeholders. Main stakeholders of TP are Academicians, Employers, Students and Graduates. Once the list of competences and subject areas are decided by the decision making process (which is explained below), opinions

[10] Tuning Project has developed specific model to design, implement and deliver the curricula keeping diversity and autonomy (http://www.unideusto.org/tuningeu/tuning-methodology.html#model)

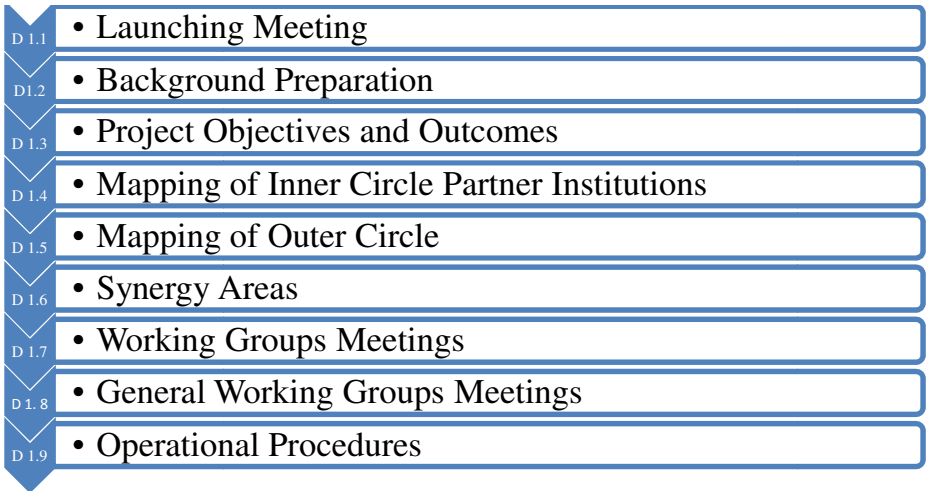
from stakeholders are collected through questionnaire method. A model of the questionnaire is given in Appendix 2. The data thus made available from surveys are analyzed and published for policy formulations (Interview with Julia Gonzalez, 2013, Appendix 3).

3.2.2 Decision making process in Tuning model

The decision making process for Tuning Model is very important. Since the TP has considered the above discussed stakeholders in the process of information gathering, the project carries out a transparent and regional specific decision making process (Interview with Julia Gonzalez, 2013 and European Commission, 2001). A review on Tuning projects meetings documents makes clear about a specific decision making process in all phases of the project.

Since the Tuning project has large number of participation from the decision making bodies, the process involved has a stable and concrete style. This process can be clearly identified in various documents of the Tuning project. It can also be seen that the model adopted in the first phase of Europe is carried out in all phases of the project. A graphic representation of this process is given below in Figure 3.

Figure 3 Diagrammatic representation of Tuning decision making process



Source: Document 1, First Meeting on Tuning Educational Structures in Europe, European Commission

As indicated above, the pattern of decision making in Tuning project is somewhat similar to the process given in the diagram. As indicated in the above figure, the process is carried out to ensure the regional preferences or to ensure ownership if it is carried out regionally other than in Europe. As the Tuning project was initiated from Europe, there are doubts on Europeanization with this project in other regions. This problem is avoided by ensuring the mentioned decision making process.

More understanding of the process in Tuning project decision making leads to comment that this process can be shortened to four important phases. They are: *Phase one* involves the preparing of the background on the needs for such a study, preparing a global vision and set out specific objectives. This phase includes D.1.1, D.1.2 and D.1.3. The *second phase* involves the decision making on key players that would participate in the project, which includes D.1.4, D.1.5 and D.1.6. In the *third phase*, the list of competences is prepared based on the regional requirements, which includes D.1.7 and D.1.8. The

fourth phase is the phase where the execution of the actual project is carried out, which includes D.1.9.

As it is described above, the Tuning Model and the processes involved in the decision making has some similarities to the process involved in the Triangular Method by Senge and Delphi Method. Therefore, the present study makes an effort to substantiate that the Tuning model and its decision making process has the methodological support as we can see from the Triangular Method and Delphi Method, which are described in the following section.

3.3 Triangular design and Delphi's Method

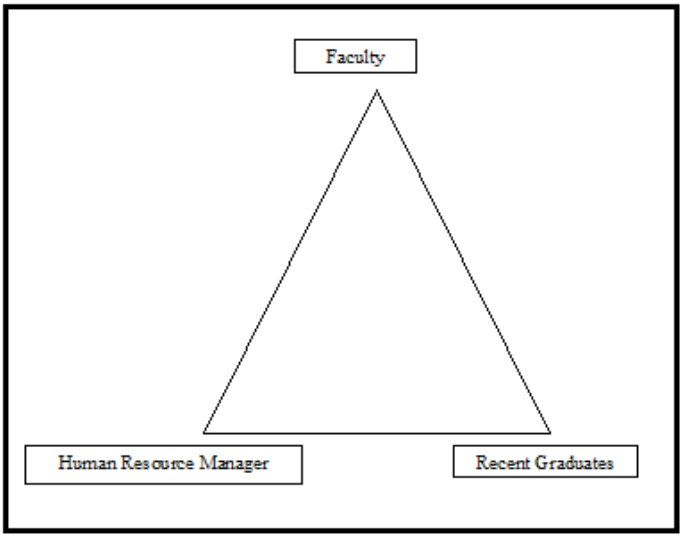
In order to understand ranking preferences on competences (importance and achievement), the Tuning project used four dimensional data gathering process, using stakeholders' opinions. As the study has considered the stakeholder's view on competences, it is important to see whether there are some methodologies use the same pattern. As mentioned above, this thesis brings into focus two important methodologies which have similar process in the TP methodology. On the one hand, it is the 'triangular design approach' proposed by Senge in Rosenberg, S et.al (2012) and on the other hand 'the Delphi Method' proposed by Linstone & Turoff (2002). Both describe the importance of combing individual ranking and the process towards final decision making.

3.3.1 The triangular design approach

The triangular design approach proposed by Senge discusses the decision making process conducted on the basis of individual's ranking. This model

proposes a methodology eliciting opinion from three important players, when the author conducted the study on basic employability skills. The Figure 4 displays the triangular design model.

Figure 4 Triangular Design Approach



Source: Senge P, 2000 in Rosenberg, S et.al, (2012)

Senge, in his model, has considered three distinct groups to study their attitudes towards employability skills, such as recent graduates, faculty who taught them and human resource manager who recruit them. The study has used questionnaires for each these categories, an evaluation of scores between these groups sound meaningful, because a triangular design approach, according to Senge (Senge in Rosenberg, et.al., 2012), permits us to study the problem from multiple points of view, providing a richer and ultimately more useful way of addressing the issue under consideration. This is very meaningful in the case of the present study since the study evaluates importance and achievement of a group of generic competences ranked by these groups of respondents.

Although not equal, TP methodology has something similar to the triangular design method. In the place of faculty, TP considers academicians, whose roles are equal. TP recognizes employers wherein there are considered as human resource managers in the triangular design method. Finally, the category of recent graduates in the triangular method is similar to graduates in TP. Only exception in this comparison is the category of students in TP which is not considered in triangular design method.

When we understand the triangular design method, we can see that a similar mode of action is considered in the TP, though adding one more category. Therefore, we can say that Tuning Method has some academic relevance since it follows a methodology which is adopted in some other academic researches. So far we have discussed about the players in the decision making process in a particular setting. But now let us now look how we reach to a final decision while we gather opinions or information from some experts or key players. In order to do that, the Delphi Method is presented here.

3.3.2 The Delphi Method

The Delphi Method is considered as one of the useful technique for improving decision making (Dalkey, 1969; Linstone & Turoff, 2002; Loo, 2002), consultation process (CAIPE, 2007) and gain consensus of opinion (Chipchase, et.al., 2012 and Rossouw, et.al., 2011). The Delphi technique is a group process involving an interaction between the researcher and a group of identified experts on a specified topic, usually through a series of questionnaires (Yusuf, 2007). Studies have proven that Delphi method and the phases involved in it in the final decision making are crucial. Though this method has been applied in several studies to make strategic decisions, more

studies have been done in higher education level, especially for designing curricula and academic programs. Therefore it becomes important to discuss about the Delphi method because the Tuning model and its process of decision making is typical for Delphi method. As Tuning is about the study of competences in the higher education area, here an effort is made to refer an academically proven method which is similar to the Tuning model.

The Delphi method consists of different phases to collect broad levels of data to form concise summaries (Linstone & Turoff, 2002). According to Powell (2003) 'it is a technique that is useful for situations where individual judgments must be tapped and combined in order to address a lack of agreement or incomplete state of knowledge and this method is particularly valued for its ability to structure and organize group communication'. In the following paragraph, different stages used in Delphi technique is described, which is adapted from Powell (2003).

First Round: The first round questionnaire is usually unstructured and seeks an open response. The role of the first round is to identify issues to be addressed in later rounds. Open-ended questions are recognized to increase the richness of the data collected.

Subsequent Rounds: The second and subsequent rounds are more specific, with the questionnaires seeking quantification of earlier findings, usually through rating or ranking techniques.

Expert Panel: (Panel Size) numbers of participants will vary according to the scope of the problem and resources available and more participants there are the better, suggesting that as the number of judges increases, the reliability of a composite judgment increases (Qualification of an

expert) experts should be chosen for their work in the appropriate area and credibility with the target audience.

Analysis of findings: Methods of data analysis appears to vary according to the purpose of the Delphi study, structure of the rounds, types of questions and numbers of participants.

Meaning of Consensus: The consensus is made based on the scientific merit and goodness criteria.

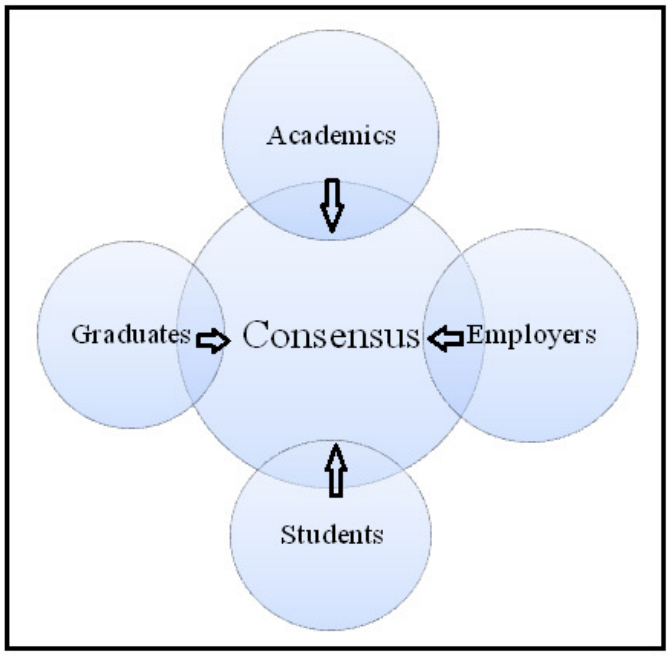
The above explanation shows that the Delphi technique mainly consists of five stages or rounds. In the first round, a questionnaire is used to receive general opinions. Based on the general comments from first phase, a more precise questionnaire is prepared and is used in the second phase. The third round is the selection of expert panel which depends on the panel size and qualification of an expert. Panel size depends upon the study requirement and experts are selected based on the study area. Once information is gathered, the fourth round is the analysis of findings and it is connected with the final round, the meaning of consensus, which depends on scientific merit and goodness criteria (Powell, 2003).

The Delphi method is very good in understanding how consensuses are made when information are gathered through questionnaire or by some other similar ways. If we look to the Tuning method, we can see that the project also gathers information or opinion through questionnaire method. It is also discussed above that the Tuning project has a decision making process before the start of project. But on the other hand, Delphi method applies both decision making process and opinion gathering together to reach a consensus.

Therefore we can supplement this academic relevance of Delphi method to the Tuning model.

Once the Triangular Approach and Delphi's Method are compared with Tuning Project method, we can analyse some similarities in those models and in the process of decision making. In order to strengthen the academic relevance of Tuning Model, I combine the above mentioned methodologies and would like to propose a 'Fourfold Tuning Methodology' which encompasses aspects of Triangular Approach and Delphi's Method. The fourfold methodology is referred as proposed since there is not such a fourfold methodology in Tuning Project. Considering the similarities of the process involved in the stakeholders' consultation in TP, it can be compared to the Triangular Design Approach and Delphi, which then helps the present study to propose a 'Fourfold Tuning Methodology' which is shown in Figure 5.

Figure 5 Proposed Fourfold Tuning Methodology



Source: Author's own elaboration

This elaborated Fourfold Tuning Methodology acknowledges the four similar groups of experts which is referred in Triangular design method. We can also see that Tuning project also uses several step-based decision making strategy, which we see in the Delphi method. Therefore, all these factors provide us evidences to compare methodologies and it would be convenient to use a combined approach.

3.4 The comparative method

This thesis applies 'Comparative Education Method' to explain the cross-country differences in the importance and achievement of 'generic competences'. Since a large-scale database was available from the Tuning Project, the present study intends to look into stakeholder's preferences for generic competences from a regional perspective. Therefore an explanation from a comparative perspective would enrich the discussion carried out in the analysis chapter. In the following paragraphs, the importance of comparative method in social science and education is mentioned.

3.4.1 Comparative education method

Comparative education has traditionally meant the study of national education systems, says Green, (2003)[11] and comparative methods have used to compare educational achievements (Postlethwaite, and Leung, (2007) comparing curricula (Adamson, and Morris, (2007) and cross-country comparative analysis (Robone, et.al., (2011). The comparative method with the use of

[11] For a detailed explanation on comparative education and globalization, see Jarvis (2007) and Green (2003)

quantitative data analysis is considered as one of the best methods in social science research. Due to globalization, educational systems have some similarities in many countries and comparative analysis brings out commonality in educational structures and performance in various countries. Fairbrother (2007) notes that there is a 'quest for generalisable explanations and universal principles applicable to educational phenomena across societies and cultures as well as to transfer educational theories, practices and policies across international borders and a desire to seek global solutions to global problems'.

According to Noah and Eckstein (1990), the purpose of 'reviewing the development of comparative education is not simply to trace the materials that have been examined earlier but to search in the predecessors of modern comparative education those elements of their thought, motives, the type of data used and their interpretations'. This in fact helps the researchers to understand the use of empirically based social scientific approach. In the words of Kirk (2011) 'one of the enduring strengths within the field of comparative and international education is the ability to explore and understand how educational reforms and practices in one part of the world can affect educational systems in disparate geographical and cultural settings'. The present study makes use of the comparative method to analyze how general competences are considered and achieved in graduate programs for different national settings. As we are in a global learning spectrum, Jarvis (2012) notes that comparative studies can analyze different policies and strategies; the differing ways in which educational institutions are becoming part of the learning market and how this is affecting the way that they operate; the ways in which the educational system is becoming more open, more

accessible and more lifelong; the way that the educational system responds to the demands of the global infrastructure in different countries, etc.

Though comparative method helps to understand a general view on educational system' convergence in different countries, it also shows light on the differences in interpretation and practices of policies and strategies. This is one of the reasons why the present study uses comparative method, because, the study looks into differences of opinions in the formation of graduates in four regions. Therefore, a detailed analysis of data for different regions would bring out differences in the opinion for some specific general competences. While explaining the implications for comparative education, Green, et.al., (1999) notes that there is substantial evidence that education and skills formation systems do tend to cluster along regional lines. The same trend can be analyzed and verified in this study using comparative method. Since comparative method has the above mentioned goodness in the present day research fields, this methodology is widely applied in various studies. In addition to that, comparativists recognize the use of this particular method from centuries back.

3.4.2 Historical approaches to comparative education method

Historical analysis is found to be a better way to understand different ideas and process in the earlier times. Social scientists have done different historical investigations to understand social changes. 'Comparative education seeks to make sense out of the similarities and differences among educational systems' (Bereday, 1964). From the earliest days, social scientists have used comparative education to understand different types of educational systems. The development of comparative education has been marked by five

identifiable stages (Noah and Eckstein, 1990). Each of these stages is characterized by a different motive and each produce a different type of work. The five stages describes the ways in which information was gathered in the past. The following five stages are well described in Noah and Eckstein's book *Toward a Science of Comparative Education (1969)*.

The first important stage in the development of comparative education is the *Travelers' Tale*. The tales brought by the foreign travelers to the home country was one of the primitive comparative education observations. These were the description of foreign experiences that they have seen in their journey. The travelers with their experiences from exotic places tend to write for the leaching and learning of their fellow citizens. 'The reporting on foreign experiences by travelers, visiting statesmen and itinerant mendicants is as old as the human race. There have always been the Ibn Khaldun, the Marco Polos, the Alexis de Tocquevilles, eager to take to their countries the tales of wonders elsewhere encountered' (Bereday, 1964). Though the tales were an explanation about the encounters of the travelers, those explanatory reports had important objectives and purposes. 'At the end of the seventeenth century Robert Molesworth urged his English compatriots to travel abroad to understand the problems and possibilities of their own political systems' (Noah, 1990).

The second important stage was the *educational borrowing* from the foreign countries. The travelers made foreign visits to learn educational theory, methodology and teacher training information useful for preparing the educational programs in their own countries. It is understood from the literature that several countries have drawn useful lessons from foreign

educational examples. ‘In the nineteenth century, American educators were visiting the major European countries; English commissions were inspecting European and American schools; Russian educators went to France, Switzerland and Germany’ (Noah, 1990). The purposes of the visits by the statesmen and educators were to understand different educational systems in foreign countries and to compare with their system for improvement and modification.

The period of educational borrowing was marked by the lessons of Marc Antoine Jullien (1775-1848). He was of the view that one should look at facts in a structured way and that on this basis alone, proposals might be made to improve the condition of society (Noah, 1990). Educators from different nations were aware of the potential values of educational system in other nations and they tried to improve their system with good one. Though the borrowings were useful, there were negative opinions regarding this practice. ‘Count Leo N Tolstoy (1828-1910), writer, educator and social critic convinced that what he had observed in foreign education was completely unsuited to the further development of schools in Russia and he rejected Russia’s borrowings from the West’ (Noah, 1990).

The third stage was marked with the *international educational cooperation*. Before permitting the transplantation of the borrowed educational policies, the educators thought of connecting the societies that accept the similar views. To serve wider interests of humanity, educators thought for international educational cooperation. The important characteristics of this motivation of comparative education were to study educational problems which appeared to

be international in scope, expression of statistical data, international cooperation and to promote harmony and cooperation between nations.

This stage was initiated by Sir Michael Sadler. 'He worked at the turn of the century for the acceptance of the principle that each educational system is not readily detachable but is instead intricately connected with the society that supports' (Bereday, 1964). The cooperation argued for extensive exchange of scholars, students and publications. International contacts promote international understanding as well as the improvement of social and educational institutions around the world. 'The work of I.L. Kandel (1881-1965) and Nicholas Hans (1888) is charged with similar internationalist concern, as is the work of the contemporary international educators' (Noah, 1990).

Comparative education was given more importance in fourth stage where some *forces and factors* were identified as reasons for some favorable outcomes. Education was considered as the mirror of society and the society in turn was molded by the schools. Education at this stage was considered as comprehensive, more analytical and explanatory that could engineer the future shape of society. 'This stage was accompanied with a short essay by Michael Sadler (1861-1943). From this point onwards, new prospects on comparative education were revealed that were more comprehensive, more analytical and that had greater explanatory potential. In this period educational systems were regarded as the contemporary outcomes of an identifiable set of historical and social forces and factors' (Noah, 1990).

The fifth stage of comparative education is the period of *explanation based on the concepts and techniques of the social sciences.* The rise of quantitative

empirical research based on numerical data in social science, an improved technology for sorting, manipulating and retrieving data, and the widespread use of new statistical technique helped the comparative education to apply data based studies. Social scientists in this period formulated sophisticated models and methods that can be used to investigate society and its institutions. Comparative technology uses these techniques in the analysis. 'Kay-Shuttleworth (1804-1877), a comparative educator surveyed the condition of schools and society in Europe in the 1840's. He hypothesized that the extent to which elementary education was developed in Europe varied with the effects of the reformation. He tested this proposition country by country using quantitative data and concluded that with the exception of England Protestant countries were more advanced in their elementary provision than Catholic countries' (Noah, 1990).

3.4.3 Comparative education and comparative social science

The international application of studies relating to educational policies, school effectiveness, curriculum, pedagogy etc. have intensified the necessity of comparative studies. Comparative social science, a branch of social science, is concerned with cross-societal differences and similarities. 'Comparative social scientific enquiry is not independent from other social scientific enquiry because their respective goals are identical to explain social phenomena by establishing controls over the conditions and causes of variation' (Ragin, 1987). 'Comparative education, use methods of cross-cultural comparison to study and analyze institutions and methods in various educational systems in order to gain information on the conditions under

which they operate and continue to develop. Comparative education owes its own development to the advancement of the social sciences and depends on cooperation within the field of education, particularly between pedagogical phenomena and those of other dimensions of society' (Robinsohn, 1992). Since comparative education uses empirical, quantitative, qualitative and interdisciplinary studies like other comparative fields of study, it is grouped in comparative social sciences.

In comparative education, historical and sociological methods have an important role to explain education and social change. 'Comparative history is not new. As long as people have investigated social life, there has been recurrent fascination with juxtaposing historical patterns from two or more times or places' (Skocpol, 1980). Historical methods analyses social factors comparing with other factors. There are mainly three historical methods, such as Parallel Demonstration, Contrast Method and Macro-causal Analysis and Case-study method. Historical methods explain the theories, compare and contrast different theories and findings and bring out new results by evaluating common factors.

Comparative education has thus got importance in today's global economy too because education is considered as one of the important factors for growth and development of societies. Therefore, policy makers and educators have given more importance to the field of comparative education. Comparative method is one of the widely used methods in social sciences. The cross-national comparisons help policy makers to understand the importance of a particular phenomenon and take necessary steps to put those into practice. In the educational theory, comparative methods help to analyze the situation in

comparison with other situations and bring possible solutions which will be more relevant to the social changes.

After careful observation of the data available to the study and from the literature review, it is obvious that the present study can be reasonably explained with the comparative education method. The above discussed characteristics of the comparative education method demonstrate that the major objectives of the study can be very explicit with this method. In a study like this, where different country details are cross-matched, comparative method can explain various relational and generalisable factors.

3.5 Factor analysis: a tool for quantitative analysis

In line with the above discussions on the type of data available and the methodological approaches consists of, it is very relevant to focus on the statistical tool that will be used for the further explanation. Taking into account the nature of the data, factor analysis is considered to be ideal tool. Quantitative data analysis is a powerful research form (Cohen, et.al., 2007) and factor analysis is widely used as a quantitative technique in social sciences. In the words of Kline (2013), "factor analysis is unique among multivariate statistical procedures in that it was developed mainly by psychologists in order to test hypotheses about the correspondence between scores on observed (manifest) variables, or *indicators*, and hypothetical constructs (latent variables), or *factors*, presumed to affect those scores". "Since its inception a century ago, factor analysis has become one of the most widely used multivariate statistical procedures in applied research endeavors across a multitude of domains (e.g., psychology, education, sociology, management, public health) (Brown, 2006).

The thesis employs Statistical Software for Social Sciences (SPSS) for the data analysis because, according to Cohen, et.al., (2007), numerical analysis can be performed using software like SPSS. This is a widely used computer program designed to aid the statistical analysis of data and it has become the "industry standard" software for data analysis (Brace, et.al, 2006). SPSS is considered as one of the powerful and convenient method for statistical analysis, especially with large data base. This software is specifically designed to work with big samples and its functions are very useful for social science researches. It is also seen that we can perform factorial models in a simultaneous way. Considering a large quantity of data from various countries on generic competences, principal component analysis is applied to understand the ranking by respondents and how they have clustered into different groups. The study has extensively used factor analysis and has grouped generic competences into different clusters.

According to DeCoster (1998), Factor analysis is a collection of methods used to examine how underlying constructs influence the responses on a number of measured variables and there are basically two types of factor analysis: exploratory and confirmatory.

- Exploratory factor analysis (EFA) attempts to discover the nature of the constructs influencing a set of responses.
- Confirmatory factor analysis (CFA) tests whether a specified set of constructs is influencing responses in a predicted way.

Both EFA and CFA have its own merits and weaknesses and the merits of exploratory and confirmatory factor analysis have long been debated and have resulted in some extremely energetic exchanges on both the research methods

and the structural equation modeling networks. Although there are differences of opinion for EFA and CFA, there is a consensus among academics that there is a place for both types of factor analysis and that the appropriateness of each depends on the study context (Hurley, et.al, 1997). Although the goal of most factor analyses is to identify and interpret a smaller number of factors that explains most of the common variance, there are some limitations. Kline (2013) points out two important critical issues in factor analysis, such as *factor indeterminacy:* means that although the results of a factor analysis might indicate that a particular measurement model is consistent with observed covariances, there may be nevertheless other factor structures just as consistent with the same data and *naming fallacy:* the false belief that the name assigned to a factor by a researcher means that the hypothetical construct is understood or even correctly labeled.

3.5.1 Confirmatory factor analysis

"Confirmatory factor analysis (CFA) is a type of structural equation modeling (SEM) that deals specifically with measurement models, that is, the relationships between observed measures or *indicators* (e.g., test items, test scores, behavioral observation ratings) and latent variables or *factors* and a fundamental feature of CFA is its hypothesis-driven nature" (Brown, 2006). One of the important features of CFA is that it should have *a priori* model which is based on past evidences and theory. CFA tests the existing model and gives us possibilities for evaluation and statistical reliability. In order to analyse the TP data, a model is developed in this thesis. In the following section the Model of Six Employability Skills is elaborated.

3.5.1.1 The model of six employability skills

As the present thesis uses the list of competences suggested by the Tuning Project, an attempt is made to support the selection of skills and competences by proposing a model of employability skills. The model of employability skills is a set of different groups of skills and competences which are proposed by various authors. This model is developed to examine whether Tuning Project's suggested skills and competences would fit to the model of employability skills. The statistical analysis of this part is carried out in the fourth chapter.

The model of employability skills involves six important groups of skills and competences. Skills and competences are grouped according to the orientation that each skill and competence suggest. They are:

The Knowledge Broker (Hargadon, 2003; Hayton and Kelley, 2006): links information and knowledge from various internal and external sources leading to new opportunities. Competences include: information gathering from various sources, linking knowledge and information, networking, etc.

Communication and Presentation Skills (Brown, Hesketh & Williams (2003): represents both oral and written communication and presentation skills. Competences include: oral and written communication in native language, communication skill in foreign language, presentation skills etc.

Adaptability Skills (Carnevale, Gainer and Meltzer,1990): consists of skills and competence which are necessary to adapt to new situations

and use own capability to carry out specific duties and responsibilities. Competencies include: problem solving, creative and critical thinking, capacity to analyze, capacity to take decision etc.

Developmental Skills (Carnevale, et.al., 1990): developmental skills means those skills relate to personal and group development activities. Competences include: self esteem, motivation and goal setting, personal management, autonomous learning, spirit of enterprise etc.

Group Effectiveness Skills (Carnevale, et.al., 1990): represents those skills and competences which would support effective team work and successful leadership. Competences include: interpersonal, teamwork and negotiation, interpersonal and interaction skills, ability to work in an international context etc.

Life Skills (Binkley, et.al., 2010): consists of those transferable skills that would enable an individual to lead a successful life at the present time. Competences include: respect for diversity and multiculturality, social and civic awareness, ethical and justice oriented etc.

3.5.1.1.1 The knowledge broker

Historical evidences, says Hargadon (2003), shows that brokering of knowledge had been prevailing from centuries before and has led innovations, thereby development to society. 'Knowledge brokering involves exploiting the preconditions for innovation that reside within the larger social structure by bridging multiple domains, learning about the resources within those domains, linking that knowledge to new situations, and finally building new

networks around the innovations that emerge from the process' (Hargadon, 2002).

Knowledge has become the most important key factor for making a person employable at the present social and economic situations. Knowledge brokers – individual or organizations – profit by transferring ideas from where they are known to where they represent innovative new possibilities (Hargadon, 1998). Employers prefer individuals with basic and updated knowledge that can be utilized with day-to-day affairs. To face the complex socio-economic situation, knowledge is of great importance. While explaining about corporate entrepreneurship, Hayton, and Kelley (2006) have mentioned about brokering as one of the key competences. From the questionnaire, a set of five important generic competences are grouped into the knowledge broker for the present study.

3.5.1.1.2 The communication and presentation skills

Researchers have opined that communication skills are considered as basic employability skills (Andrews and Higson, 2008; Rosenberg, et.al., 2012) and presentation skills are vital to achieve success in all aspects of daily life (Harper, 2004). Brown, et.al., (2003) have grouped skills and competences under four main categories and communication and presentations skills is considered as most important for employability in a knowledge-driven economy. The present study has also considered three generic competences as important.

3.5.1.1.3 Adaptability, Developmental and Group Effectiveness Skills

In one of the reports for the American society for Training and Development, Carnevale, et.al., (1990) have grouped skills into five and three important among them were adaptability, developmental and group effectiveness skills. The SCANS (1991) report also has considered those skills as important for work.

3.5.1.1.4 Life skills

This is also known as 21st century skills and considered as inevitable to all those persons seeking better employment opportunity. While focusing on the importance of life skill education for youth, World Health Organisation (WHO, 1999) explains that life skills facilitate the development of psychosocial skills that are required to deal with the demands and challenges of everyday life. The present study has classified six generic competences from the list of competences into life skills. In addition to being helpful for graduates in gaining employment, life skills, values and virtues help them thriving throughout life (Jones and Lavallee, 2007).

The six employability skills explained above is designed with a view to help the thesis to get statistically significant results when analyzing the data base from the TP. Explanation regarding this part is carried out in the first part of the fourth chapter.

3.5.2 Exploratory factor analysis (EFA)

As we have discussed above EFA is another type of factor analysis. Compared to CFA, the EFA does not require any *a priori* model. EFA with the help of computer procedure could theoretically generate all possible unrestricted factor solutions, which equals the number of indicators. EFA computer procedures rely on default statistical criteria for determining the number of factors to retain. These defaults do not always correspond to best practice, but EFA does not require the researcher to specify the number of factors in advance (Kline, 2013). The two important objectives of EFA are to determine (a) the number of common factors influencing a set of measures and (2) the strength of the relationship between each factor and each observed measure (DeCoster, 1998).

In addition to the above discussed factory analysis, we also use mean average analysis. As the data base includes ranking on importance and achievement of skills and competences, it is important to find out mean averages, because mean scores would provide us the measures of central tendency and mean scores helps us to identify the point around which most of the scores in the distribution tend to be located (Gravetter and Wallnau, 2009; Heiman, 2000 and Lewis-Beck, 1993). In order to analyse data with mean, averages would be calculated on the basis of factor groups resulting from factor analysis. This part is carried out in the final section of the fourth chapter. In the following paragraphs, details of data used for the present thesis are presented.

3.5.3 Mean scores

In addition to factor analysis, mean scores would also be calculated to identify the order of ranking for competences. Once the factor groups are explored from the factor analysis, it would very useful to understand the order of ranking for those factor groups. Therefore we use mean scores. In statistical analysis the significance level (*p-value)* is used as the probability of obtaining sample results. When doing statistical analysis with big samples *p-value* tend to be statistically meaningful ($p<0,05$) even when identifying small differences among groups or relations among variables. Under these circumstances if we focus mainly on *p-values* it would be difficult to discuss differences, because many of them would have similar *p-values* (about zero) in spite of not having equal differences. As we will be examining a big sample which is available from the Tuning project, it would be difficult to discuss the differences. Therefore, "Cohen's *d"* measure or "effect size" would be calculated to discuss the mean differences. These are clearly explained in the fourth chapter (section 4.5.1).

3.5.4 The general characteristics of the data used in the study

The sample accessed from the Tuning Project database for this study is composed of opinions ranked by academicians, employers, students and graduates (who are considered as stakeholders) from Europe, Latin America, Russia and Africa. Since the TP is carrying out studies related to current trends competences in different subjects, it is interesting to see the similarities and relationships among regions. It can be seen from the Table 3 that data is collected in different phases. Although the overall time span of the Tuning Project is from 2003 to 2011, data collection were carried out in different

years. It is clear from the table below that the first phase started in 2003 in Europe, which has now extended up to third phases. Lists of competences selected for each region are given in Appendix 1.

Table 3 General characteristics of data

PHASE	COUNTRY	YEAR	GROUP	SUBJECTS
1	Europe	2003	Academicians	Generic Competences
1	Latin America	2005	Academicians, Employers, Students and Graduates	Generic Competences
1	Russia	2011	Academicians, Employers, Students and Graduate	Generic Competences
2	Latin America	2005	Academicians, Employers, Students and Graduates	Generic Competences
2	Europe	2008	Employers, Students and Graduates	Generic Competences
3	Europe	2011	Academicians, Employers, Students and Graduates	Generic Competences
3	Latin America	2011	Academicians, Employers, Students and Graduates	Generic Competences

The table above explains details about data considered for this thesis, which was collected in different phases of Tuning project.

It is very important to note that though data were collected in different years or phases, the present study has considered all information as single-phase data because of two reasons. First, data collections from stakeholders or regions were carried out differently in different years. For example, in the case of Europe, though the process started in 2003, only academics were involved, the rest of the stakeholders groups were involved in 2008 (in the

second phase), whereas in Latin America, all stakeholders were involved from the first phase (year 2005). The second reason for the consideration of single-phase data is that data were not collected in every region in the same year within the same stakeholders. Russia and Africa were not involved in the first and second phases, except for Latin America, where they carried out second phase data collection in 2005. In the third phase (year 2011), all four regions were considered and respondents for the third phase were totally different for Europe and Latin America from the previous phases.

As it is clear from the above table, considerable amounts of data were obtained for the study. Though the Tuning Data base consists of information on both generic and subject-specific competences, the present thesis has considered only information regarding generic competences. More detailed explanation on the study sample is carried out in the fourth chapter. A preliminary observation on the selected data base gave more clarity for the further use of statistical procedure. Considering generic objectives of the present thesis and the nature of the data available, it was decided that factor analysis would be suitable for the quantitative analysis.

3.6 Summary of the chapter

This chapter has analyzed three important aspects which are very important for this thesis. By explaining the Tuning Project and its methodology, the academic significance of the data used to examine the general objectives of this thesis is verified. As the tuning project is being implemented for more than one decade, a data base containing such a large quantity of information would help us to elicit some important findings, which are explained in the following chapter. Since the Tuning Methodology is not an academically

disputed method, an effort is taken to compare the methodology with two important academically proven methods which helped the thesis to propose a combined methodology namely Fourfold Tuning Methodology.

The thesis generally employs a comparative strategy to explain and clarify theories and statistical results. Therefore, explanation on comparative methodology underpins the importance of the method for this thesis. As explained above, the analytical part is discussed with the results obtained from the factor analysis. Both CFA and EFA are used to understand the underlying dimensions of the data used. Detailed information on the analysis part is given in the next chapter. Analysis of data with mean averages also will help to substantiate inferences based on factor analysis.

4 CHAPTER: FINDINGS, ANALYSIS AND DISCUSSION

The thesis analyses the importance and achievement of generic competences for higher education programs in a global context and we focus our analysis to evaluate the importance and achievement of generic competences on the basis of 'employability aspect'. The importance of generic skills and competences for employability has been explained in the literature review in the second chapter. In the third chapter, we discuss the relevance of Tuning Project and the availability of data from the project which would help us to understand some of the important objectives of the study. Therefore, this chapter is dedicated to analyse the data available and we try to verify the objectives of the study. For the analysis, we use a mixed methodology to understand some important patterns and dimensions. It is important to see that the study intends to study only the differences of opinion for a set of generic competences, whereas, the study avoids comparison between educational institutions and avoids comparison of any educational policies from any of these regions.

This chapter mainly considers the third and fourth objectives of the study, such as;

- To identify underlying structural dimensions in the scores of importance for importance of competences (Section 4.4)
- To understand the ranking on the importance and achievement of competences (Section 4.5)
- To find out interactions of structural patterns for general competences (section 4.56)

In order to find out study objectives, we use different statistical procedures. To understand the structural dimensions, we use factor analysis where as mean comparison is used to understand the ranking of competences. The interactions of structural dimension are examined by considering results obtained from factor analysis and mean scores. These analyses and discussions are carried out in the following part of the chapter.

4.1 Sample

A cross-national sample from Europe, Latin America, Russia and Africa is obtained from the Tuning project and data consist of information from academicians, employers, students and graduates from these regions. From the available information, the study looks into the ranking of importance and achievement of competences by (a) academicians (b) employers (c) students and (d) graduates, ranked with a scale of 1= none, 2= weak, 3= considerable and 4= strong. It was made clear that competences selected for the Tuning Project in these regions were almost similar but decision makers and subject group experts in each of the regions selected competences and total number of competences according to regional preferences (Interview with Tuning general coordinators, Appendix 3). Different list of competences for the Tuning project is given in Appendix 1.

From the Tuning Project data base, detailed information from 91066 questionnaires was available and relevant information for the present thesis were considered from those questionnaires. Though the secondary data available consisted of information on subject specific competences and generic competences, the present thesis has utilized only information on

general competences. A detailed view of the sample available to the study is given in the following table.

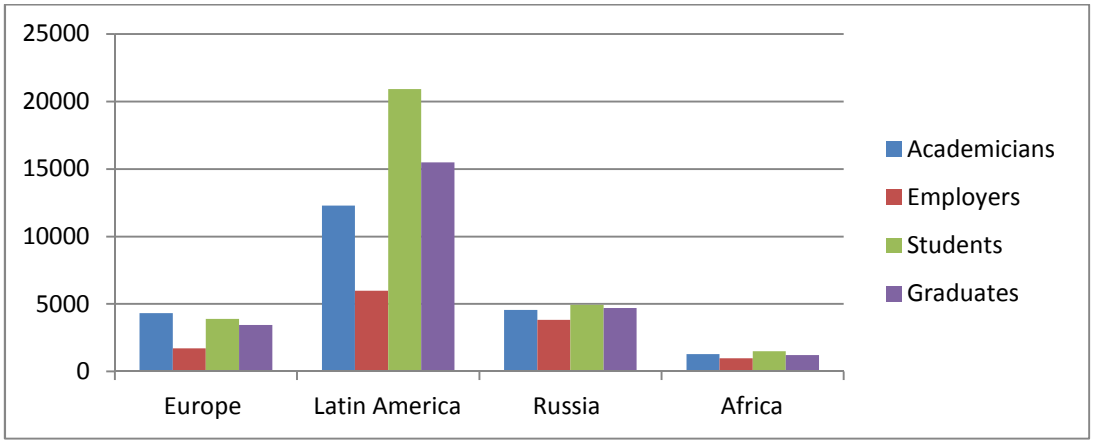
Table 4 Responses rate of the study

	Europe	**Latin America**	**Russia**	**Africa**	**Total**
Academicians	4325	12285	4550	1297	**22457**
Employers	1728	5972	3816	977	**12493**
Students	3894	20921	4950	1500	**31265**
Graduates	3439	15487	4710	1215	**24851**
Total	**13386**	**54665**	**18026**	**4989**	**91066**

Source: Calculated from Tuning Project data base

The table above explains volume of response rates from stakeholders from different regions. It is clear that response rates are varying for regions and stakeholders and we could see that a significant amount of data is available from each region to make statistical analysis. Let us now consider variations in information from each region specifically, which is more clear in the following Figure 6.

Figure 6 Sample distribution



Source: Calculated from Tuning Project data base

The figure shown above demonstrates the data used for the present analysis. It is clear that data from Latin America, Europe and Russia are considered to be sound enough to make statistical analysis. But from a close evaluation of the data from Africa, it was clear that the information obtained from Africa was not sufficient enough to make comparable analysis. Therefore, we could only consider data from Europe, Latin America and Russia for this thesis.

4.2 Instrumentation

As explained in the methodology chapter, we would apply factor analysis and mean analysis to explore information from the data. But before conducting the statistical analysis, it was important to simplify some information from the data because Tuning project has large amount of information from different regions, stakeholders and subject areas using different set of questionnaires. So it would be convenient to simply some information before we proceed with statistical analysis.

Firstly, Tuning project uses different questionnaires for different regions, with variations in the definition of each competence and in total number of competences. In order to carry out statistical analysis in a unique and simple way, competences from all three regions were compared and a single list of competences was chosen for the conveniences of the present study. The unified list of competences is given in Table 5.

Table 5 Unified list of competences for all regions

id_study	Competences	id_EU	id_LA	id_RU	id_AF
i001	Ability for abstract thinking, analysis and synthesis	1	1	1	1
i002	Ability to apply knowledge in practical situations	2	2	6	4
i003	Ability to plan and manage time	3	3	19	NA
i004	Knowledge and understanding of the subject area and understanding of the profession	4	4	26	2
i005	Ability to communicate both orally and in written word in the native language	5	6	10	7
i006	Ability to communicate in a second language	6	7	7	NA
i007	Skills in the use of information and communications technologies	7	8	8	6
i008	Ability to undertake research at an appropriate level	8	9	25	NA
i009	Capacity to learn and stay up-to-date with learning	9	10	9	8
i010	Ability to search for, process and analyze information from a variety of sources	10	11	22	NA
i011	Ability to be critical and self-critical	11	12	21	3
i012	Ability to adapt to and to act in new situations	12	13	NA	9
i013	Capacity to generate new ideas (creativity)	13	14	3	10
i014	Ability to identify, pose and resolve problems	14	15	4	5
i015	Ability to make reasoned decisions	15	16	12	0
i016	Ability to work in a team	16	17	2	11
i017	Interpersonal and interaction skills	17	18	24	12
i018	Ability to motivate people and move toward common goals	18	19	NA	NA
i019	Ability to communicate with non-experts of one's field	19	NA	18	NA
i020	Appreciation of and respect for diversity and multiculturality	20	22	14	NA
i021	Ability to work in an international context	21	23	NA	14
i022	Ability to work autonomously	22	24	11	15
i023	Ability to design and manage projects	23	25	5	0

i024	Commitment to safety	24	NA	23	0
i025	Spirit of enterprise, ability to take initiative	25	NA	NA	17
i026	Ability to act on the basis of ethical reasoning	26	26	16	NA
i027	Ability to evaluate and maintain the quality of work produced	27	27	20	16
i028	Determination and perseverance in the tasks given and responsibilities taken	28	NA	NA	NA
i029	Commitment to the conservation of the environment	29	20	17	13
i030	Ability to act with social responsibility and civic awareness	30	21	15	18
i031	Ability to show awareness of equal opportunities and gender issues	31	NA	NA	NA
i032	Social responsibility and commitment to citizenship	NA	5	NA	NA
i033	Ability for critical thinking	NA	NA	13	NA
i034	Ability to resolve conflicts and negotiate	NA	NA	27	NA
i035	Ability to focus on quality	NA	NA	28	NA
i036	Ability to focus on results	NA	NA	29	NA
i037	Ability to innovate	NA	NA	30	NA

**id_EU = number of competence in the list for Europe, id_LA = number of competence in the list for Latin America, id_RU = number of competence in the list for Russia, id_AF = number of competence in the list for Africa*

***NA denotes that the particular competence is not in the list of competences for that region*

Source: Calculated from Tuning Project data base

In order to build up the single list of competences as given above, all competences from each region were compared and similar competences were grouped. Then a specific id (which is referred in table as id_study) was assigned to the selected competences. Accordingly similar competences were compared and named as equal for each region. Therefore with id_study, we can easily identify a single competence for each region. As a result of this simplification of various lists of competences, there are some competences which are not same for all regions. This is because of two reasons. First, the

total number of skills and competences for each region are different and secondly, there are some skills and competences which are not defined as same as in all three regions. Therefore, new competence identification numbers (ids) were created (which is from id number 32 in the above table). Competences which are not considered as similar in meaning are given as NA (not available) for each region.

The second important simplification was carried out was with regard to subject areas covered in the Tuning Data. There were almost 40 subject areas covered in the data collection and they are being reduced into 5 groups in this thesis for data analysis conveniences. The list is explained in the following table

Table 6 Classification of subject areas

Subject Group Number	**Classification of subjects for the present study**	**Tuning Project area codes and subjects**
1	Arts and humanities	2 Education
		21 European Studies
		24 Communication Sciences
		25 Art History
		26 Linguistics
		27 Literary Studies
		28 Theology
		3 History
		31 Education-RU
		33 Foreign Language Teacher Training
		34 Foreign Language Translation
		44 Teacher Education
		7 Education- only for Colombia
2	Social Sciences and Law	1 Business Studies
		12 Law- only for Latin America
		30 Economics
		36 Law- only for Russia
		37 Management
		38 Social Work
		39 Tourism

		8 Administration- only for Colombia
		9 Law
3	Sciences	14 Physics
		15 Geology
		18 Chemistry
		29 Ecology
		4 Mathematics
4	Health sciences	13 Nursing
		17 Medicine
		42 Psychology- only for Latin America
		45 Medicine
5	Engineering and architecture	11 Architecture
		16 Civil Engineering
		32 Environmental Engineering
		35 ITC
		40 Agronomy- only for Latin America
		41 Informatics- only for Latin America
		43 Agricultural Sciences
		46 Mechanical Engineering
		47 Civil Engineering

Source: Calculated from Tuning Project data base

In the above paragraphs, how some important information from Tuning data are simplified is explained. Once the simplified list of competences was ready and common list of subject areas were generated, we decided to make some statistical analysis. As a first step for the statistical analysis, we planned to carry out a Confirmatory Factor Analysis (CFA). If the results from CFA will not provide reliable results, we will use Exploratory Factor Analysis (EFA). In addition to the factor analysis, mean average scores would be used to make an analysis on the importance and achievement of competences. These statistical analyses are carried out in the following sections.

4.3 Initial descriptive results

As discussed above, from this part we are using some simple statistical procedures to explore the data. For this thesis, we are using data from Europe, Latin America and Russia. From these regions, we use available

information on the ranking of competences by four important stakeholders, such as Academicians, Employers, Students and Graduates. As mentioned above, these rankings were collected from almost 40 subject areas and we have reduced those groups such as Social Sciences & Law, Arts & Humanities, Health Sciences, Engineering & Architecture and Sciences. An initial review on generic competences obtained from the data gave some interesting results and these are explained in Table 7. The results obtained show following patterns for an exploratory study, such as;

(i) clustering of competences showing different patterns for different regions, stakeholders and subject areas
(ii) high importance of certain competences among regions stakeholders and subject areas and
(iii) differences in scores of opinions for importance and achievement of competences.

Understanding the relevance of these dimensions from an employability perspective let us now examine the data using factor analysis.

Table 7 Descriptive statistics

	Percentage of responses with following rankings				**Mean**	**Std. Deviation**	**Skewness**
Competencies (Importance)	***None(1)***	***Weak(2)***	***Considerable(3)***	***Strong(4)***			
Ability for abstract thinking, analysis and synthesis	1,0	4,9	26,8	65,3	3,5961	,63422	-1,555
Ability to apply knowledge in practical situations	1,0	4,9	24,4	67,7	3,6191	,63144	-1,671
Ability to plan and manage time	1,0	5,6	27,5	49,8	3,5037	,67681	-,908
Knowledge and understanding of the subject area and understanding of the profession	1,0	5,1	25,2	56,7	3,5639	,67181	1,554
Ability to communicate both orally and in written word in the native language	1,4	7,2	30,7	58,8	3,4984	,69302	-1,281
Ability to communicate in a second language	3,2	10,6	29,7	49,0	3,3449	,81569	-1,097
Skills in the use of information and communications technologies	1,4	7,5	32,9	56,3	3,4684	,69975	-1,199
Ability to undertake research at an appropriate level	1,7	7,8	27,7	46,8	3,4229	,74336	-1,158
Capacity to learn and stay up-to-date with learning	1,6	6,5	28,9	61,0	3,5232	,69694	-1,162
Ability to search for, process and analyse information from a variety of sources	1,0	5,2	27,9	49,9	3,5081	,66670	-1,250
Ability to be critical and self-critical	1,3	6,9	30,9	50,3	3,4560	,69946	-1,151
Ability to adapt to and to act in new situations	1,2	6,1	26,0	44,9	3,4646	,70655	-1,205
Capacity to generate new ideas (creativity)	1,4	7,5	33,4	53,9	3,4545	,69914	-1,144
Ability to identify, pose and resolve problems	1,1	5,3	27,0	62,8	3,5763	,64833	-1,498
Ability to make reasoned decisions	1,4	5,7	26,9	56,1	3,5281	,68460	-1,416
Ability to work in a team	1,5	6,5	28,8	59,3	3,5187	,70759	1,333
Interpersonal and interaction skills	1,4	6,7	31,2	47,7	3,4400	,70386	-1,131
Ability to motivate people and move toward common goals	1,2	6,5	24,6	36,3	3,3993	,73008	-1,043
Ability to communicate with non-experts of one's field	,9	4,6	11,3	9,8	3,1234	,81716	-,621
Appreciation of and respect for diversity and multiculturality	2,6	8,8	26,4	40,1	3,3371	,80374	-1,064
Ability to work in an international context	2,1	7,3	21,4	34,0	3,3490	,80294	-1,085
Ability to work autonomously	1,3	6,3	26,4	48,9	3,4827	,70419	-1,268

Ability to design and manage projects	1,3	6,8	25,3	39,4	3,4124	,73232	-1,094
Commitment to safety	1,7	3,8	8,9	9,8	3,1050	,91244	-,764
Spirit of enterprise, ability to take initiative	,7	2,5	6,7	8,0	3,2323	,83006	-,867
Ability to act on the basis of ethical reasoning	1,6	5,1	18,2	40,8	3,4942	,74238	-1,438
Ability to evaluate and maintain the quality of work produced	,9	4,0	19,6	43,3	3,5537	,66519	-1,456
Determination and perseverance in the tasks given and responsibilities taken	,4	1,2	4,4	5,5	3,3040	,79814	-1,022
Commitment to the conservation of the environment	3,8	10,0	27,4	39,6	3,2725	,85328	-1,007
Ability to act with social responsibility and civic awareness	2,6	9,5	29,0	38,2	3,2970	,81773	,906
Ability to show awareness of equal opportunities and gender issues	1,1	2,1	3,8	3,8	2,9582	,97974	-,576
Social responsibility and commitment to citizenship	,7	4,1	18,1	35,0	3,5130	,70153	2,745
Ability for critical thinking	,6	2,4	7,7	7,7	3,2196	,79778	-,815
Ability to resolve conflicts and negotiate	,1	,9	3,5	5,2	3,4211	,70623	-1,023
Ability to focus on quality	,1	,5	3,2	5,9	3,5408	,63125	-1,239
Ability to focus on results	,1	,4	3,0	6,2	3,5824	,61235	-1,353
Ability to innovate	,3	1,2	4,0	4,2	3,2335	,79837	-,862

Source: Calculated from Tuning Project data base

4.4 Factor analysis

The following section discusses on the results obtained based on the third important objective of the study, i.e., *to identify structural dimensions in the scores for importance of competences*. Since the study employs factor analysis to examine the data, KMO and Bartlett's Test are used to understand the internal structure. After employing these tests, it was found that for Europe, the Kaiser-Meyer-Olkin (KMO) measure of Sampling Adequacy test gave the result of 0.943 and Bartlett's Test of Sphericity result found to be 0.000. The result for Latin America was also similar to the above discussed results. The KMO Measure of Sampling Adequacy test result was 0.962 and Bartlett's Test of Sphericity found to be 0.000. The result of reliability test for Russia was similar to Europe and Latin America. The KMO Measure of Sampling Adequacy test result was 0.947 and Bartlett's Test of Sphericity was 0.000. Since the results for internal structure are favorable, we follow the analysis using factor analysis.

4.4.1 Confirmatory Factor Analysis trial

The first step used in this analysis part is the trial used with Confirmatory Factor Analysis (CFA). As it is mentioned in the third chapter, a model of six employability skills is developed (Table 8) and is used to understand whether similar patterns explained in the model could be identified using the unified list of competences (Table 5). In order to make the experiment with CFA, competences from unified list are grouped according to the model and this is shown in Table 8.

Table 8 General Skills compared with Six Employability Skills

Employability Skills	**Competences list for the Tuning Project**
The knowledge broker *	i002 Ability to apply knowledge in practical situations i004 Knowledge and understanding of the subject area and understanding of the profession i007 Skills in the use of information and communications technologies i010 Ability to search for, process and analyze information from a variety of sources i027 Ability to evaluate and maintain the quality of work produced
Communication and Presentation Skills©	i005 Ability to communicate both orally and through the written word in native language i006 Ability to communicate in a second language i019 Ability to communicate with non-experts of one's field
Adaptability Skills†	i001 Ability for abstract thinking, analysis and synthesis i008 Ability to undertake research at an appropriate level i009 Capacity to learn and stay up-to-date with learning i011 Ability to be critical and self-critical i012 Ability to adapt to and act in new situations. i013 Capacity to generate new ideas (creativity). i014 Ability to identify, pose and resolve problems. i015 Ability to make reasoned decisions i033 Ability for critical thinking i037 Ability to innovate
Developmental Skills†	i003 Ability to plan and manage time. i018 Ability to motivate people and move toward common goals i022 Ability to work autonomously i023 Ability to design and manage projects i025 Spirit of enterprise, ability to take initiative i028 Determination and perseverance in the tasks given and responsibilities taken i034 Ability to resolve conflicts and negotiate i035 Ability to focus on quality i036 Ability to focus on results
Group Effectiveness Skills†	i016 Ability to work in a team i017 Interpersonal and interaction skills i021 Ability to work in an international context
Life Skills[a]	i020 Appreciation of and respect for diversity and multiculturality. i024 Commitment to safety i026 Ability to act on the basis of ethical reasoning i029 Commitment to the conservation of the environment. i030 Ability to act with social responsibility and civic awareness. i031 Ability to show awareness of equal opportunities and gender issues i032 Social Responsibility and Commitment to Citizenship

*Source: *Hayton, J C and Kelley, D J (2006); ©Brown,P., Hesketh, A. & Williams,S (2003);†Carnevale, AP, Gainer L J and Meltzer (1990); [a] Binkley M et.al (2010)*

In the table above, competence list used in the Tuning project is combined with the model of Six Employability Skills developed in this thesis. We use the above list of competences and run the confirmatory factor analysis.

From the result obtained, the goodness of fit indexes delivered really poor values. Chi square provided very meaningful results ($p = 0.000$), indicating a lack of coherence between our theoretical model and the structure of our data. Although this analysis is considered to be too sensitive in very large samples, further indicators as the Root Mean Square Error of Approximation (RMSEA) corroborated the poor fitness ($RMSEA > 0.10$). Although several attempts were made for introducing adjustments in the analysis, the results were consistently negative. Since the results are negative, we use exploratory factor analysis for further analysis and discussions.

4.4.2 Exploratory Factor Analysis

Since confirmatory factor analysis result was not favorable to the data available, let us now continue our analysis using Exploratory Factor Analysis (EFA). An exploratory study is thus carried out to explore dimensions and patterns which were identified in the initial descriptive analysis. It was also clear that initial results provided ample evidences showing differences on preferences among different regions in the world. In addition to regional differences, the descriptive statistic results also show us that there exists differences among stakeholders and their opinion differs based on subject areas. As these differences are very important when considering the thesis objective, let us now examine those patterns and dimensions using EFA.

In the following sections on factors analysis, it is important to see that we do not proceed with an overall or general factor analysis because, except in Europe, in regions like Latin America and Russia, some very relevant data were missing and they are not the same items. We discussed above that the list of competences were different and some competences were not same for all regions. So the resulting factor structure will not be representative of the underlying dimensions of the mindset of the people in the sample. Since we did not use every items or same items in the three regions, a joint analysis will be lame. For that reason we decided to proceed with one factor analysis for each region and extract three factor structure or three models and then combine them in a theoretical way with a final model.

4.4.2.1 Exploratory factor analysis by region

In order to make a comparative study, the first part of this section describe results based regional basis. As it was mentioned above, we could obtain sufficient information from data on Europe, Latin America and Russia. So let us now conduct exploratory factor analysis separately for each region.

4.4.2.1.1 Europe

In the Tuning project, a list with 31 competences was used for Europe. Since the study do not employ any prior factor structure, principal components factor analysis using a correlation matrix was used as the type of factor analysis. In the rotation process, Varimax rotation was selected. Before moving to a detailed analysis, The Kaiser-Meyer-Olkin (KMO) measure of Sampling Adequacy test and Bartlett's Test of Sphericity were executed to

verify whether the items were strongly enough related to conduct a factor analysis. As a result from the data analysis, we have got the KMO value of 0.943 which is above the satisfactory level of 0.5. The Bartlett test outcome of .000 was also obtained. The results from these two tests indicated sufficient ground to manifest that variables are correlated and they have relationships. Therefore, the factor analysis using principle component methods was applied. The Table 9 shows the eigenvalue (EV) and the percentage of variance of each factor, along with a sample item for each factor (the first item of each factor is given as sample).

Table 9 Result of factor analysis

Factors	**Sample item**	**EV**	R^2
Factor 1	Ability to act with social responsibility and civic awareness	27.63	12.21
Factor 2	Ability to motivate people and move toward common goals	7.12	11.63
Factor 3	Capacity to learn and stay up-to-date with learning	5.00	8.56
Factor 4	Ability to undertake research at an appropriate level	4.10	8.26
Factor 5	Ability to communicate in a second language	3.81	6.1
Total			46,76

Note: EV, eigenvalue;R^2, percentage of variance

Source: Calculated from Tuning Project data base

The Table 9 shows the final number of items for each factor and provides details about the minimum and maximum factor loadings of the items for the five aspects. The point above 0.3 is considered to be moderately high and high if they are greater than 0.6. The result for Europe shows that all loadings are higher than 0.3 and for majority of factors, item loadings are higher than 0.6

Table 10 Number of items, the minimum and maximum loadings

Factors	**Items**	**Minimum**	**Maximum**
Factor 1	6	.604	.767
Factor 2	9	.450	.598
Factor 3	6	.365	.707
Factor 4	7	.376	.632
Factor 5	3	.554	.709

Source: Calculated from Tuning Project data base

The result of factor analysis for Europe indicates five distinct factors regarding the importance of competences (Table 10). It is clear from the result that all of the factors exhibit a loading greater than 0.36. The five factor solution accounted for 47.66 % of the variance. A close evaluation of the table exhibits that four out of these five factors contains more than six items, except the fifth factor, which has only three items. The first factor contains six items, the second with nine items, third with six items, fourth with seven items and fifth with three items. Considering the values of all these items, it is clear that all these factors give sufficient ground to explore some specific dimensions. A detailed view of the results is shown in Table 10. The following paragraphs explain in detail about the items in each factor, the grounds for labeling the factors and underlying dimensions.

Factor 1: Ethics; Equity and Diversity: The loading of factors in this group clearly exposes the dimensions of abilities, based on ethical-equity-diversity-based characteristics. Included in this factor are items dealing with ethics, more specifically on the social responsibility, civic awareness and commitment to the environmental issues. In addition to that, awareness for equal opportunity and gender issues, respect for diversity and

Table 11 Factor analysis result for Europe

Factor Loadings					
	Factor Groups				
	Factor 1	**Factor 2**	**Factor 3**	**Factor 4**	**Factor 5**
i030.- Ability to act with social responsibility and civic awareness	,767	,185		,135	
i031.- Ability to show awareness of equal opportunities and gender issues	,752	,153	,163		,110
i026.- Ability to act on the basis of ethical reasoning	,707	,231		,210	
i029.- Commitment to the conservation of the environment	,666	,178			,314
i020.- Appreciation of and respect for diversity and multiculturality	,646	,170	,322		
i024.- Commitment to safety	,604	,352		,112	
i018.- Ability to motivate people and move toward common goals	,310	,598	,174		,181
i017.- Interpersonal and interaction skills	,275	,595	,281	-,101	
i016.- Ability to work in a team	,171	,588	,222		,133
i003.- Ability to plan and manage time	,129	,579		,256	
i012.- Ability to adapt to and to act in new situations	,166	,575	,221	,155	,106
i015.- Ability to make reasoned decisions	,168	,536	,200	,277	
i002.- Ability to apply knowledge in practical situations		,487	,108	,305	
i025.- Spirit of enterprise, ability to take initiative	,283	,459			,416
i019.- Ability to communicate with non-experts of one's field	,349	,450		,190	
i009.- Capacity to learn and stay up-to-date with learning			,707	,106	,147
i028.- Determination and perseverance in the tasks given and responsibilities taken	,190	,233	,658		,168
i014.- Ability to identify, pose and resolve problems		,225	,570	,243	,198
i022.- Ability to work autonomously			,558	,292	,117
i027.- Ability to evaluate and maintain the quality of work produced	,317	,267	,377	,329	
i005.- Ability to communicate both orally and in written word in the native language	,215	,227	,365	,285	
i008.- Ability to undertake research at an appropriate level	,183			,632	,342
i001.- Ability for abstract thinking, analysis and synthesis			,215	,574	,147

i010.- Ability to search for, process and analyse information from a variety of sources	,105	,166	,237	,548	,169
i004.- Knowledge and understanding of the subject area and understanding of the profession	,204	,203	,168	,513	
i013.- Capacity to generate new ideas (creativity)		,226	,156	,410	,359
i011.- Ability to be critical and self-critical	,229	,203	,359	,393	
i007.- Skills in the use of information and communications technologies		,368		,376	,334
i006.- Ability to communicate in a second language			,188	,106	,709
i021.- Ability to work in an international context	,253		,127	,198	,676
i023.- Ability to design and manage projects	,110	,330	,231	,108	,554
Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization.					
Rotation converged in 9 iterations.					

Source: Calculated from Tuning Project data base

commitment for safety portrays a specific dimension. The items included and the dimension of the factor represents the how respondents have ordered their preferences based on set of competences.

The first factor comprises the following items:

Factor 1	Ethics; Equity and Diversity
i030	Ability to act with social responsibility and civic awareness
i031	Ability to show awareness of equal opportunities and gender issues
i026	Ability to act on the basis of ethical reasoning
i029	Commitment to the conservation of the environment
i020	Appreciation of and respect for diversity and multiculturality
i024	Commitment to safety

The abilities and capacities referred in each of the items in this factor expose the importance for ethical-equity-diversity based skills and competences according to the responses from stakeholder in Europe. Therefore, the first factor from European data shows the specific dimension of ethical and other social activities.

Competences such as, the ability to act with social responsibility and civic awareness, gender equality and actions on the basis of ethical reasoning, exposes preferences of respondents that makes the society more ethics-based. Scholars like Sue, D W, et.al (1992); Ponterotto, J G, et.al (1994); Frame, M W and Williams, C W (2005); Lassiter, P S, et.al (2008); Vespia, K M, et.al (2010); Hipolito-Delgado, C P, et.al(2011)Chao,RC(2013) have also expressed similar preferences for ethics, equity and diversity based skills.

Factor 2: Motivation and Management: The second factor in the list has more items than other groups, which relate to motivation and management related skills and competences. The grouping of nine items in this factor expresses how respondents from Europe have conceptualized their views on certain competences. A close evaluation into those details of this factor shows that all the skills and competences signify the extent to which motivational and management skills are relevant for graduates. The items within this factor describe the relationship or mutually-related dimension of motivational and management skills where knowledge and reasoning are important.

The second factor comprises the following items:

Factor 2	Motivation and Management
i018	Ability to motivate people and move toward common goals
i017	Interpersonal and interaction skills
i016	Ability to work in a team
i003	Ability to plan and manage time
i012	Ability to adapt to and to act in new situations
i015	Ability to make reasoned decisions
i002	Ability to apply knowledge in practical situations
i025	Spirit of enterprise, ability to take initiative
i019	Ability to communicate with non-experts of one's field

In the above mentioned factor group, competences such as, ability to motivate and move towards common goals, interpersonal and interaction skills and ability to work in team shows that in Europe these capacities are considered together. Such specific dimension is constructed so that important changes

could be made because according to McMahon, M (2009) "students who are more motivated achieve academic success at higher levels than their peers who are less motivated, in about 30% of cases". Competences such as ability to plan and manage time, to make decision, ability to apply knowledge and ability to communicate, team work, motivation and initiative also make the structure of self management dimensions. These abilities indicate the extent to which an individual can be successful in managing self.

Factor 3: Learning and Responsibility: Six items in this group are correlated which brings out learning and knowledge/reasoning-based and responsibility-related skills and capacities, which expresses yet another preferences for respondents from Europe

The third factor comprises the following items:

Factor 3	**Learning and Responsibility**
i009	Capacity to learn and stay up-to-date with learning
i028	Determination and perseverance in the tasks given and responsibilities taken
i014	Ability to identify, pose and resolve problems
i022	Ability to work autonomously
i027	Ability to evaluate and maintain the quality of work produced
i005	Ability to communicate both orally and in written word in the native language

The third factor explores aspects of learning capacity, determination and perseverance, ability to identify and resolve, being autonomous, quality oriented and communication skills. Since these competences together show some specific dimension, the factor is labelled as learning and responsibility. The items within this factor demonstrate an individual's learning and

knowledge based skills which can make them capable to learn and perform activities while maintaining quality of the work produced. For example, items such as up-to-date learning capacity and ability to identify, pose and resolve problems involves the learning aspects. Other items in this factor also demonstrate that in addition to learning, responsibility related skills are also related. For example, determination and responsibilities in the task taken, ability to work autonomous and maintaining quality in the work produced expresses the extent to which respondents consider that responsibility is related with learning aspects.

Factor 4: Research and Creativity: The fourth factor consists of seven items, which comprises of abilities and skills related to scientific research and creativity. The items on this factor show the grouping of thinking capacities and creativity and the group is labelled s research and creativity.

The fourth factor comprises the following items:

Factor 4	Research and Creativity
i008	Ability to undertake research at an appropriate level
i001	Ability for abstract thinking, analysis and synthesis
i010	Ability to search for, process and analyze information from a variety of sources
i004	Knowledge and understanding of the subject area and understanding of the profession
i013	Capacity to generate new ideas (creativity)
i011	Ability to be critical and self-critical
i007	Skills in the use of information and communications technologies

The factor namely, research and creativity, shows the structure of specific dimension expressed by Europeans and competences based on knowledge and

creativity that are related with professional and research skills. Items such as ability to do research, and synthesis, ability to search and analyze information and ability to understand the subject area indicate the degree to which these items express the research-based skills. Moreover, adding creativity-related skills make the group more meaningful. Items such as the capacity to generate new ideas and ability to be critical shows that research skills with creativity enable individuals to be successful.

Fifth factor: International Profile: The fifth and final factor is composed of only three items, which describes the relationship between the ability to communicate in any foreign language and the ability to work in international contexts for projects. Though there are fewer items in the factor, these three items reflect a global dimension and is labelled as international profile.

The fifth factor comprises the following items:

Factor 5	**International Profile**
i006	Ability to communicate in a second language
i021	Ability to work in an international context
i023	Ability to design and manage projects

The three items show how European respondents consider these three abilities. The ability to communicate in a language distinct from native language is much related to the ability to work internationally. These two factor also link with the ability to design and manage projects. This factor describes a dimension in which an individual can work in international contexts.

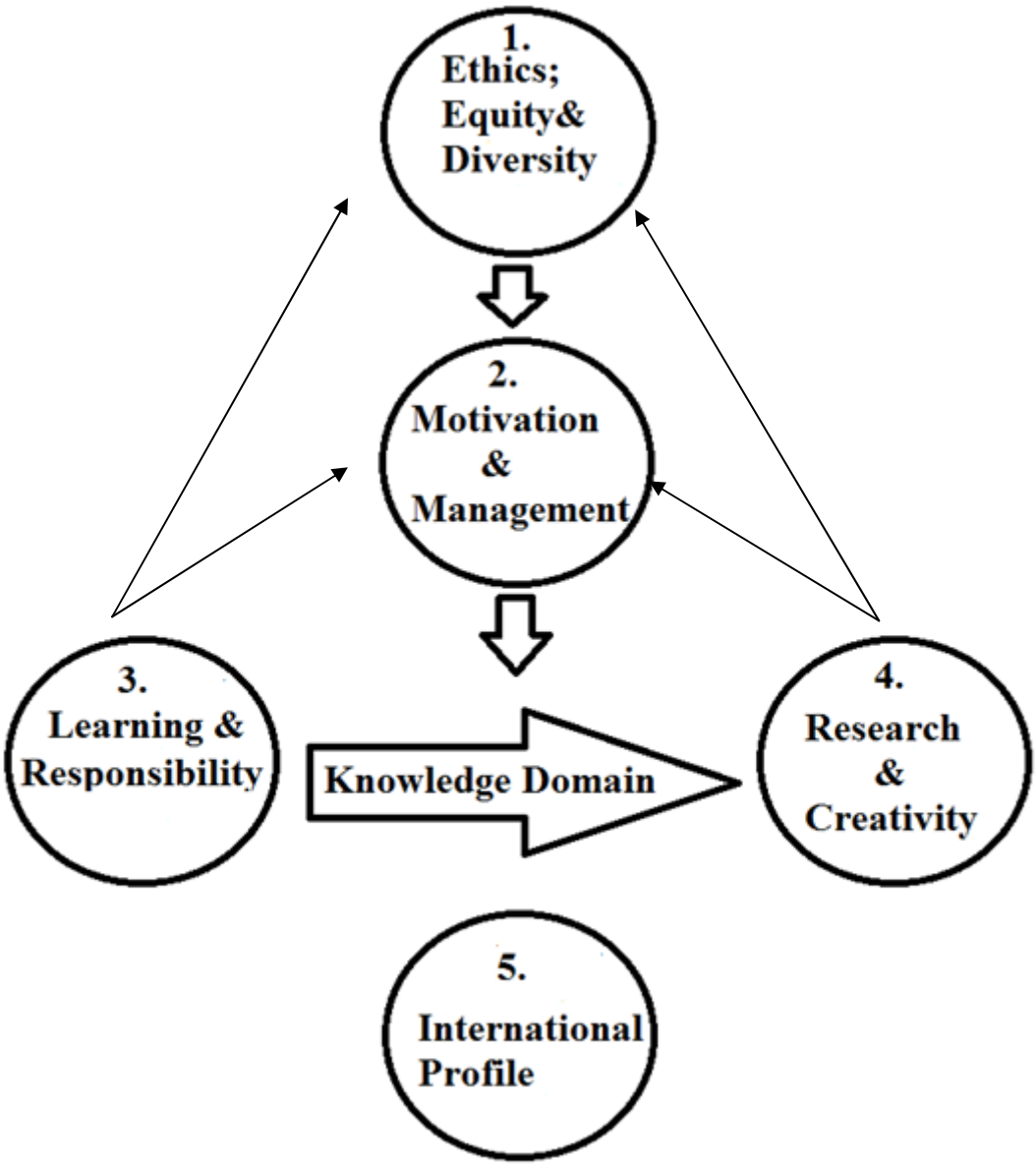
As a conclusion from the above discussed factors for the European level study, the present study proposes a profile which exposes an underlying dimension from the rankings of the competences. This is depicted as proposed profile in Figure 7 which involves basically five domains. This is also considered as flow of knowledge and information which are based on the skills and competences discussed above in each factors. These flows connect different dimensions explained in five factors. Each factor in the above diagram is considered as a domain which includes skills and competences included in each factors. All these domains are inter-connected and inter-related and the flows or directions of skills and competence make the role of each domain in the profile.

The first domain in the profile expresses the ethics-based flows of skills and competences. This involves equity and diversity related skills too. We propose that this domain and flow of skills are independent from all others since it is not a result of any other factors. Therefore, it is in the first level, which we consider that every individual posses as a result of their interactions and life experiences in the society. The relevance for this domain is in the result it makes to other domains. This ethics-based domain gives directions or provides reasons for all other domains.

The second domain is in the second level, which is very much influenced by the first domain and which also leads to the third domains. We propose that an individual needs to have motivation and self and group management skills to be successful. Highly motivated individual can do successful things and can lead groups. As this is influenced by the first domain, the ethics-based

skills and competences help an individual to be highly motivated and managed.

Figure 7 Proposed graduate profile: Europe



The importance of this domain is in the energy involved in this domain. As these skills and competences involved in this domain make an individual

motivated and managed, the positive energy obtained by the individual can produce knowledge, which leads the individual to the third domain. This domain actually provides tools for being successful in the following domain.

In the third domain, we enter into Knowledge Domain, which involves third and fourth domains. This domain is also influenced by the above discussed two domains. The third domain is for acquisition and use of knowledge. This reflects the third factor, which involves learning and responsibility. Therefore, this is an important phase where knowledge is acquired and used. The flow of knowledge in this domain is important. It is clear from the above diagram that the flow is a right side directed flow. This means that in the knowledge domain, the third domain is important to reach to the fourth domain.

The fourth domain is for crating knowledge, which is the result of the third domain. It is visualized that after acquiring and using knowledge, an individual would be able to create knowledge. The experiences that an individual obtains from the above domains make the individual to create or produce knowledge.

The last domain is called international profile. It is visualized that this domain is provisional, which means that this is only applicable when we discuss about international or global level profiles. Because the skills involved in this domain shows that this is applicable when an individual needs to involve in international contexts.

When we look into the flows of different domain in the profile, we can see different levels of flows or directions. The first domain is independent, while all other domains are inter-related. It is very important to note the up-side

level flow in the diagram. The third and fourth domains are also related to first and second domain. This means that an individual, who is capable of acquiring and creating knowledge, would be able to increase the knowledge needed in the first and second domains.

From the result obtained, it could be argued that the above explained prolife can be considered as a graduate profile, which would make a graduate more ethics-based, learnt, motivated, creative and innovative.

4.4.2.1.2 Latin America

The data available for Latin America provides information on 27 competences and the data was analyzed based on principal component factor analysis method. As it was done in the case of Europe, the study do not propose any prior structure, therefore exploratory factor analysis is used with Varimax rotation. Before executing a detailed analysis, the KMO Measure of Sampling Adequacy test and Bartlett's Test of Sphericity were carried out to verify whether the items were strongly enough related to conduct a factor analysis. As a result from the data analysis, we have got the KMO value of 0.962 which is above the satisfactory level of 0.5. The Bartlett test outcome of .000 was also obtained. From these results it is understood that the data for Latin America is sufficient to see correlation among variables to form factor groups. Therefore, the factor analysis using principle component methods was applied. The

Table 12 shows the eigenvalue (EV) and the percentage of variance of each factor, along with a sample item for each factor (the first item of each factor is given as sample item).

Table 12 Result of factor analysis Latin America

Factor	**Sample item**	**EV**	R^2
Factor 1	Capacity to learn and stay up-to-date with learning	34.9	15.6
Factor 2	Ability to work in a team	5.9	11.4
Factor 3	Ability to act with social responsibility and civic awareness	4.5	9.94
Factor 4	Ability to evaluate and maintain the quality of work produced	4.08	8.90
Factor 5	Ability to communicate in a second language	3.9	7.41
Total			53.25

Note: EV, eigenvalue;R^2, percentage of variance

Source: Calculated from Tuning Project data base

The Table 13 shows the total number of items for each factor and provides details about the minimum and maximum factor loadings of the items for the five factors. The result for Latin America shows that all loadings are in between 0.4 (moderately high) and 0.8. It is also interesting to note that for majority of factors, item loadings are higher than 0.6 (high). The five factor solution accounted for 53.25 % of the variance.

Table 13 Number of items, the minimum and maximum loadings

Factor	Items	Minimum	Maximum
Factor 1	10	.401	.633
Factor 2	6	.443	.664
Factor 3	4	.631	.769
Factor 4	4	.541	.725
Factor 5	3	.533	.755

Source: Calculated from Tuning Project data base

The result of factor analysis for Latin America provided five distinct factors regarding the importance of competences. It is clear from the result that all of the factors exhibit a loading greater than 0.401. A close evaluation of the table exhibits that four out of these five factors contains more than four items, except the fifth factor, which has only three items. The first factor contains ten items, the second with six items, third with four items, fourth with four items and fifth with three items. Considering the values of all these items, it is clear that all these factors give sufficient ground to explore some specific dimensions. The following paragraphs explain in detail about the items in each factor, the grounds for labeling the factors and underlying dimensions.

From Table 14 it is evident that there are five factors resulted with factor analysis using 27 competences for Latin America. The factor loadings of these groups helped to understand the relationship between variables and propose factor names. Considering the content structure of each factors and the importance resulted from the factor loading, names were given to all those five groups. Therefore, there are five important factor groups, such as Learning and Research, Motivation and Management, Ethics and Diversity, Research and Responsibility and International Profile. A discussion on these factors is carried out below.

Table 14 Factor analysis result for Latin America

Factor Loadings					
	Factor Groups				
	Factor 1	**Factor 2**	**Factor 3**	**Factor 4**	**Factor 5**
i009.- Capacity to learn and stay up-to-date with learning	,633	,196		,202	,137
i001.- Ability for abstract thinking, analysis and synthesis	,620			,142	,119
i004.- Knowledge and understanding of the subject area and understanding of the profession	,593		,192	,117	
i002.- Ability to apply knowledge in practical situations	,583	,174		,153	
i008.- Ability to undertake research at an appropriate level	,565		,229	,153	,348
i010.- Ability to search for, process and analyze information from a variety of sources	,561	,212	,190	,141	,197
i011.- Ability to be critical and self-critical	,543	,254	,276	,145	
i005.- Ability to communicate both orally and in written word in the native language	,528	,287	,154	,142	,138
i014.- Ability to identify, pose and resolve problems	,475	,389		,310	,144
i013.- Capacity to generate new ideas (creativity)	,401	,331	,208	,211	,145
i016.- Ability to work in a team	,167	,664	,167	,183	
i015.- Ability to make reasoned decisions	,289	,655		,232	
i017.- Interpersonal and interaction skills	,153	,648	,329	,141	,116
i018.- Ability to motivate people and move toward common goals		,622	,307	,170	,213
i012.- Ability to adapt to and to act in new situations	,383	,453	,106	,280	,113
i003.- Ability to plan and manage time	,415	,443	,116		,227
i030.- Ability to act with social responsibility and civic awareness	,188	,168	,769	,139	
i029.- Commitment to the conservation of the environment		,233	,708		,219
i020.- Appreciation of and respect for diversity and multiculturality	,160	,163	,679	,322	,102
i032.- Social responsibility and commitment to citizenship	,378	,149	,631		
i027.- Ability to evaluate and maintain the quality of work produced	,222	,226		,725	
i026.- Ability to act on the basis of ethical reasoning	,252	,182	,276	,668	

i022.- Ability to work autonomously	,252	,144	,200	,571	,251
i023.- Ability to design and manage projects	,245	,282	,114	,541	,347
i006.- Ability to communicate in a second language	,306	,173			,755
i021.- Ability to work in an international context		,134	,221	,370	,701
i007.- Skills in the use of information and communications technologies	,355	,307			,533
Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization.					
Rotation converged in 7 iterations.					

Source: Calculated from Tuning Project data base

Factor 1: Learning and Research: The first factor group has ten competences and they relate to learning and research. This reflects the preferences of respondents from Latin America. Let us look into more details of this factor. The following table consists of competences included in this group.

Factor 1	Learning and Research
i009	Capacity to learn and stay up-to-date with learning
i001	Ability for abstract thinking, analysis and synthesis
i004	Knowledge and understanding of the subject area and understanding of the profession
i002	Ability to apply knowledge in practical situations
i008	Ability to undertake research at an appropriate level
i010	Ability to search for, process and analyze information from a variety of sources
i011	Ability to be critical and self-critical
i005	Ability to communicate both orally and in written word in the native language
i014	Ability to identify, pose and resolve problems
i013	Capacity to generate new ideas (creativity)

From the details on the first factor, we can understand how Latin American people have constructed their perspectives for a group of competences. As labelled, these competences reflect two dimensions. For example, competences like, capacity to learn and ability for abstract thinking, analysis and synthesis, solving problems and creativity describes learning aspects whereas abilities to undertake research and analyze information and communication skills shows the research aspects. All these competences show how Latin American people have conceptualized their views taking into account some relevant competences from the list.

Factor 2: Motivation and Management: Six items loaded as a factor group show respondent's perception about certain competences. Considering that perceived dimension, this factor is labelled as motivation and management. All competences included in this factor are listed in the following table.

Factor 2	Motivation and Management
i016	Ability to work in a team
i015	Ability to make reasoned decisions
i017	Interpersonal and interaction skills
i018	Ability to motivate people and move toward common goals
i012	Ability to adapt to and to act in new situations
i003	Ability to plan and manage time

As we see from the list the factor consists of competences which shows two aspects, such as competences related with motivation and management. For instance, team work, ability to motivate people and adaptation skills convey motivation dimension. Additionally decision making skills, interpersonal skills and ability to plan and manage time address the management dimension. From the factor analysis result it is made clear that Latin American respondents perceived these skill and competences together.

Factor 3: Social action and Diversity: Four items that loaded in another factor related to skills based in social, civic and diversity aspects. Thus the factor is being labelled accordingly as 'social action and diversity. Let us now look into those competences particularly and they are given in the following table.

Factor 3	Social action and Diversity
i030	Ability to act with social responsibility and civic awareness
i029	Commitment to the conservation of the environment
i020	Appreciation of and respect for diversity and multiculturality
i032	Social responsibility and commitment to citizenship

As mentioned above, four competencies are grouped together and they convey social and diversity dimensions expressed by the respondents. For example, actions based on social responsibility and civic awareness refers to the need for abilities and commitment towards social actions while appreciation of and respect for diversity and multiculturality and commitment to citizenship relate with diversity dimension.

Factor 4: Ethics and Responsibility: Another group obtained in the result is composed of four competences. Understanding those dimension, the group is labelled as ethics and responsibility. Items in this factor demonstrate construction of ideas for respondents based on certain competences. Competences included in this factor are listed in the following table.

Factor 4	Ethics and Responsibility
i027	Ability to evaluate and maintain the quality of work produced
i026	Ability to act on the basis of ethical reasoning
i022	Ability to work autonomously
i023	Ability to design and manage projects

Competencies included in this factor represent personal and professional abilities that frame responsible and ethical persons. For example, ethical reasoning with autonomous work with quality is specified in this factor.

Factor 5: International profile: The last group consists of three competences and as they indicate some specific dimension, the factor is labelled as international profile.

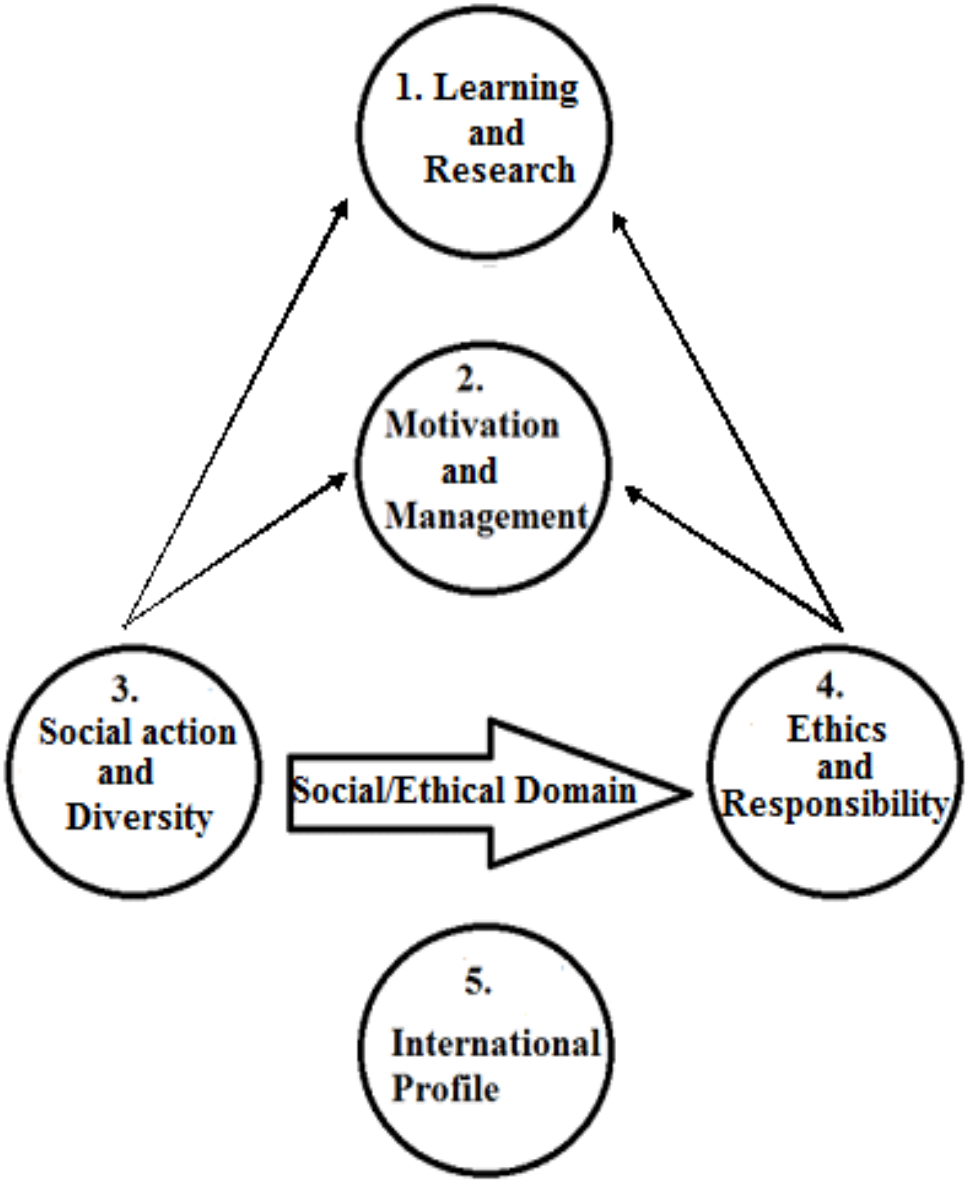
Factor 5	International Profile
i006	Ability to communicate in a second language
i021	Ability to work in an international context
i007	Skills in the use of information and communications technologies

Those listed competences show how respondents have expressed their views on some particular competences and how they are structured defining a specific dimension. Items such as ability to work in an international context and communication skills reflects international dimension. So the factor analysis result from Latin America shows us that these competences are to be structured like this.

Understanding those underlying dimension from factor analysis results for Latin America, a graduate profile is suggested which is explained in Figure 8. Since the factor analysis result has produced five factors, the profile involves five domains.

The following profile is based on the flow of knowledge and information which are based on the skills and competences discussed above in each factors. These flows connect different dimensions explained in five factors. Each domain includes skills and competences as explained in each factors. All these domains are inter-connected and inter-related and the flows or directions of skills and competence make the role of each domain in the profile.

Figure 8 Proposed graduate profile: Latin America



As it is given in the figure above, the flow begins upward from the first domain. The first domain, domain of learning and research, is proposed as the foundation in the profile. Understanding the order of the factor groups and the skills and competencies included in the first factor, it is considered that

capacity for updated learning and ability for research is fundamental for stakeholders in Latin America. Ten items included in the first domain demonstrates that learning and research would promote further learning.

The second domain involves competences of the second factor, motivation and management. As displayed in the figure, this domain is based on the first domain and leads to other domains. Motivational dimension is been more specified in this domain since the factor loadings in this factor are higher (>.662) than in comparison with other factors. One of the interesting aspects of this domain is the state of encouraged mentality for an individual to go upward to other domains, once proper learning has occurred as mentioned in the first domain. Considering management related abilities, it is understood that personal and professional-level management abilities are also helpful. As the flow is of circular, it can also be said that motivation and management related competencies can influence other domains.

The third domain in this proposed profile includes two factor groups, such as social action and diversity (factor 3) and ethics and responsibility (factor 4). Considering items in these two factors, it can be suggested that this domain can be developed in parallel to each other. Learning in the first domain and then with motivation in the second domain would promote social and ethical based actions in an individual. As the flow is circular this domain is also inter-related with other domains.

The fourth domain in the proposed graduate profile involves the fifth factor group, international profile. As it is clear in the figure, the fourth domain is represented with different background style. Though it is with different shape,

it does not mean that this domain is outside from the res o main. It is only meant that this domain is an addition in the proposal for graduate profile.

Following the flows of different domain in the profile, we can see different levels of flows or directions. The first domain is independent, while all other domains are inter-related. It is very important to note the up-side level flow in the diagram. As the first domain is situated as the foundation, other domains can be developed once competencies in the first domain are achieved. The second domain is exposed as an influential domain since competencies included in the factor positively influences other domains. The third domain is also related to first and second domain. This means that an individual can build up social and civic oriented competencies once competencies from the first and second are achieved.

Admitting stakeholders opinion from Latin America and exploring underlying dimension from each factors, it could be argued that the above explained prolife can be considered as graduate profile, which would make graduates more learned, motivated and socially and ethically responsible.

4.4.2.1.3 Russia

In the following section, we analyze results obtained for Russia using factor analysis. The data provides information on 30 competences and the data was analyzed based on principal component factor analysis method, as it was same for other regions. As it seen in the case of other regions, the study do not propose any prior structure, therefore exploratory factor analysis is used with Varimax rotation. As it is done for other regions, Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy test and Bartlett's Test of Sphericity were

carried out to understand interrelationships among variables. As a result from the data analysis, KMO value is 0.947 which is above the satisfactory level of 0.5. The Bartlett test outcome of .000 was also obtained. From these results it is understood that the data for Russia is sufficient to see correlation among variables to form factor groups. Therefore, the factor analysis using principle component methods was applied.

The following Table 15 shows the eigenvalue (EV) and the percentage of variance of each factor, along with a sample item for each factor (the first item of each factor is given as sample item for each groups).

Table 15 Result of factor analysis

Factors	Sample item	EV	R^2
Factor 1	Ability to work autonomously	28.1	10.9
Factor 2	Ability to focus on results	6.1	9.9
Factor 3	Commitment to the conservation of the environment	4.9	9.3
Factor 4	Ability to undertake research at an appropriate level	4.0	7.3
Factor 5	Interpersonal and interaction skills	3.5	6.5
Factor 6	Ability to work in a team	3.3	6.2
Total			50.1

Note: EV, eigenvalue;R^2, percentage of variance

Source: Calculated from Tuning Project data base

From the information obtained it is clear that the first factor has more percentage of variance and with eigenvalue of 28.1. All other factors in the above table have percentage of variance more than 6%. The six factor solution accounted for 50.1 % of the variance.

The Table 16 shows the total number of items for each factor and provides details about the minimum and maximum factor loadings of the items for six factors.

Table 16 Number of items, minimum and maximum loadings

Factor	Items	Minimum	Maximum
Factor 1	10	.400	.645
Factor 2	5	.431	.719
Factor 3	5	.352	.758
Factor 4	4	.442	.632
Factor 5	3	.495	.655
Factor 6	3	.590	.666

Source: Calculated from Tuning Project data base

The above table shows that all loadings are in between 0.4 (moderately high) and 0.7. A close evaluation of the table exhibits that three out of these six factors contains more than five items, while other factors are with more than 3 items. The first factor contains ten items, the second with five items, third with five items, fourth with four items, fifth with three items and sixth with three items. Considering the values of all these items, it is clear that all these factors give ground to explore some specific dimensions.

As a continuation to the above results, a detailed description of the factor analysis result for Russia is given Table 17. In the following paragraphs, a detailed explanation on the factor analysis is carried out. A discussion on each factor is also carried out, while mentioning the grounds for labeling the factors. All these explanation is intended to bring out underlying dimensions from the data on Russia.

Table 17 Factor analysis result for Russia

Factor loadings						
	Factor Groups					
	Factor 1	**Factor 2**	**Factor 3**	**Factor 4**	**Factor 5**	**Factor 6**
i022.- Ability to work autonomously	,645	,151	,157		,122	
i009.- Capacity to learn and stay up-to-date with learning	,631	,110		,202		
i015.- Ability to make reasoned decisions	,522	,327	,174		,126	,146
i033.- Ability for critical thinking	,494		,191	,396	,126	
i014.- Ability to identify, pose and resolve problems	,486	,224				,418
i002.- Ability to apply knowledge in practical situations	,473	,311				,276
i005.- Ability to communicate both orally and in written word in the native language	,469	,102	,146		,436	
i007.- Skills in the use of information and communications technologies	,448	,163		,181	,178	,187
i010.- Ability to search for, process and analyze information from a variety of sources	,435	,426		,162		
i001.- Ability for abstract thinking, analysis and synthesis	,400	,105		,342	-,105	,310
i036.- Ability to focus on results	,157	,719			,148	,154
i035.- Ability to focus on quality	,120	,707	,126	,161	,185	,110
i004.- Knowledge and understanding of the subject area and understanding of the profession	,303	,556	,141	,161		
i027.- Ability to evaluate and maintain the quality of work produced	,320	,529	,189	,101	,148	
i003.- Ability to plan and manage time	,326	,431	,103		,315	,137
i029.- Commitment to the conservation of the environment			,758	,155		,153
i030.- Ability to act with social responsibility and civic awareness	,203		,704	,107	,299	
i024.- Commitment to safety		,298	,673			,167

i026.- Ability to act on the basis of ethical reasoning	,218	,113	,619		,382	
i019.- Ability to communicate with non-experts of one's field	,211	,206	,352	,242	,165	
i008.- Ability to undertake research at an appropriate level	,130	,203	,306	,632		
i006.- Ability to communicate in a second language	,113			,616	,258	,178
i037.- Ability to innovate		,339	,198	,528		,308
i011.- Ability to be critical and self-critical	,266	,240	,240	,442	,206	
i017.- Interpersonal and interaction skills	,168	,271	,138	,155	,655	,122
i034.- Ability to resolve conflicts and negotiate		,395	,171		,570	,205
i020.- Appreciation of and respect for diversity and multiculturality	,170		,494	,306	,495	
i016.- Ability to work in a team		,134	,158		,300	,666
i013.- Capacity to generate new ideas (creativity)	,149		,105	,389		,594
i023.- Ability to design and manage projects	,178	,105	,144	,312		,590
Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization.						
a. Rotation converged in 9 iterations.						

Source: Calculated from Tuning Project data base

Factor 1: Learning and communication: The first factor consists of ten items for Russia and is labelled as learning and communication. As it is evident competences related to learning and communication are grouped together and this factor expresses the dimension perceived by respondents. The following table shows competences included in the factor group.

Factor 1	Learning and Communication
i022	Ability to work autonomously
i009	Capacity to learn and stay up-to-date with learning
i015	Ability to make reasoned decisions
i033	Ability for critical thinking
i014	Ability to identify, pose and resolve problems
i002	Ability to apply knowledge in practical situation
i005	Ability to communicate both orally and in written word in the native language
i007	Skills in the use of information and communications technologies
i010	Ability to search for, process and analyze information from a variety of sources
i001	Ability for abstract thinking, analysis and synthesis

It is clear from the above table that items in the factor reflect two dimensions. For instance, capacity to learn and ability to make decisions, critical thinking, solving problems, apply knowledge, search for information and analyzing capacities related with learning dimension whereas oral and in written communication skills and ability to use of information and communications technologies shows the communication dimension. The results thus obtained express how Russian respondents have thought about these competences and how the factor explains its dimensions.

Factor 2: Responsibility: The second factor with five items has grouped together which conveys some specific dimension. Based on the dimensions evident from the competences of the group, the factor is labelled as responsibility and management.

Factor 2	Responsibility
i036	Ability to focus on results
i035	Ability to focus on quality
i004	Knowledge and understanding of the subject area and understanding of the profession
i027	Ability to evaluate and maintain the quality of work produced
i003	Ability to plan and manage time

Looking into items included in the above list, we can see that all these competences have a dimension related to responsibility aspects. For example, competences like ability to focus on results and quality, knowledge of the subject area, ability to evaluate and maintain the quality of work produced and ability to plan and mange time reflects responsibility dimension.

Factor 3: Social action and Ethics: The third factor consists of five items and is labelled as social action and ethics. Let us look into details of this factor by analyzing each item.

Factor 3	Social action and Ethics
i029	Commitment to the conservation of the environment
i030	Ability to act with social responsibility and civic awareness
i024	Commitment to safety
i026	Ability to act on the basis of ethical reasoning
i019	Ability to communicate with non-experts of one's field

From the above table let us consider items such as commitment to the conservation of the environment', social responsibility and civic awareness and commitment to safety. These competences reflects social dimension expressed by the respondents. In addition to this dimension, ethical reasoning expresses ethical dimension expressed in the factor. In addition to the above mentioned competences, there is one more item in the group, i.e. ability to communicate with non-experts of one's field. Comparing the specific dimension of this factor, it is seen that the mentioned item do not link with other items of the group. This is also expressed from the factor analysis result, with a loading of 0.352, while all other factors have loading greater than 0.619.

Factor 4: Research and Innovation: The fourth factor for Russia has been resulted with four items. Though items in the group are different with meanings, we can find out some specific dimension deriving out of this group and is labelled as research and innovation.

Factor 4	Research and Innovation
i008	Ability to undertake research at an appropriate level
i006	Ability to communicate in a second language
i037	Ability to innovate
i011	Ability to be critical and self-critical

The grouping of these types of competences explains how respondents have framed their views resulting with some specific dimensions. Item like ability to undertake research and communication skills reveals the research dimension while innovation and critical abilities show innovation dimension.

Factor 5: Motivation and Diversity: The fifth factor consists of three items and is labelled as motivation and diversity. Let us look into these items from the following table.

Factor 5	Motivation and Diversity
i017	Interpersonal and interaction skills
i034	Ability to resolve conflicts and negotiate
i020	Appreciation of and respect for diversity and multiculturality

From the above table, items such as interpersonal and interaction skills and ability to resolve conflicts and negotiate indicate the motivation dimension whereas appreciation of and respect for diversity and multiculturality indicates the diversity aspects. Taking into account these two underlying dimensions, we can understand how respondents have evaluated and framed their perceptions for certain competences.

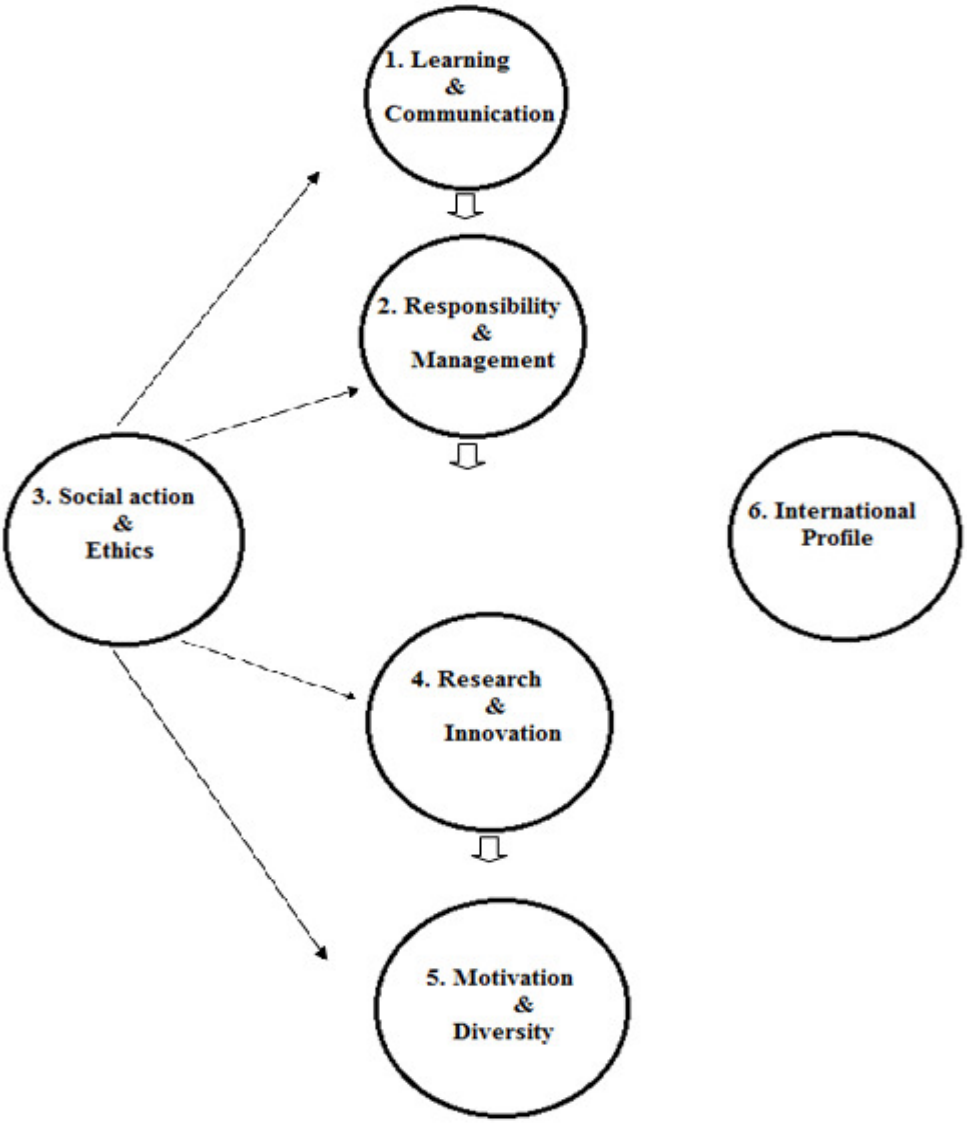
Factor 6: International Profile: The last factor for Russia has three items. This factor is labelled as international profile. Let us look into this specific dimension considering the following table.

Factor 6	International profile
i016	Ability to work in a team
i013	Capacity to generate new ideas (creativity)
i023	Ability to design and manage projects

For stakeholders in Russia, competences such as team work, generating new ideas and ability to design and manage project are structured together explaining the international aspects as explained here.

As it is explained above, it is understood that structures of all six factors for Russia provide some specific dimensions. Considering underlying dimension among factors, the present thesis proposes a graduate profile for Russia. This is explained in the following figure.

Figure 9 Proposed graduate profile: Russia



As it is shown in Figure 9 there are six parts for the proposed graduate profile for Russia and they are indicated by group's labels. With a close evaluation to competences included in each of these groups, it can be seen that stakeholders have expressed their importance for competences in a specific manner. Therefore, the graduate profile is based with competences in relation to 'learning and communication', which ensures 'responsibility and management'. It is very obvious that competences related to 'social action and ethics' has also importance in this profile. In addition to those mentioned above, competences related to 'research and innovation' and 'motivation and diversity' give strength to the structure of the profile. As it is seen from other regions profiles, the 'international profile' is considered as an added factor to the profile.

It is also important to look into positions of the each factor in the profile. As a first step, the profile is based on competences that makes an individual learned and be able to communicate effectively and efficiently. From the stakeholder's observation from Russia, it can be argued that, graduates have to acquire a profile with autonomous learning, capacity to learn and be effective in oral and written communication. Once an individual has learnt and is successful is communicating, stakeholders opine that they have to obtain responsibility and management skills.

If we look to the design of the graph, the position of the factor group on social action and ethics is positioned towards the left side, whereas all other major four factor groups follow, except the group on international profile. This is to show that competences related to social action and ethics have indirect effects to other groups, although competences which lead to social action and ethics

are very important once an individual is learnt and responsible. Together with the most important factor groups, competences that related to social, civic, ethical and safety issues are important concerns for Russian stakeholders.

As the individual is able to perform well with competences mentioned above, capacity to do research and innovation is critical as the next step. As social and professional life is diverse and problematic, graduates should be motivated and diverse to go ahead with already acquired knowledge. As the world is wider and competent, competences that would make an individual to be successful help them to look for opportunities outside from local settings, therefore competences that constitute 'international profile' get importance.

The flow or direction from one factor to another is also interesting to note. As it is given in the Figure 9, flow of directions among four important groups is one way directed. It is meant that acquiring competences of one factor leads to acquisition of more competences in the other factors too. As each factor is unique with its competences structure, further acquisition of competences depends on obtaining skills and competences in every factor groups. It is also interesting to note from the figure that four groups of skills and competences have downward direction, while the third group is placed on the left of the diagram. This signifies that stakeholders' opinion from Russia shows much importance to learning/communication, responsibility/management, research/innovation and motivation/diversity.

The explanation on the factor analysis results for Russia gives us an idea that stakeholder's perceptions on importance of competences have greater significance in the graduate profile preparation. It can be seen from the result that each of the groups are different in the structure with list of competences.

This shows that there are distinct and varied opinions on competences by stakeholders which make the result different and meaningful for Russia. Since factor results have provided significant indications with regard to the profile structuring, it is thought that insights from the proposed profile can improve profile restructuring.

4.4.2.2 Exploratory factor analysis by stakeholders

In higher education scenarios, opinions from stakeholders become very relevant when decisions are taken to reformulate or restructure competency profiles for learners. A preliminary review on the available data shows us that there are some important factors that are to be considered while analyzing competency profile. So the following part discusses how stakeholders are different while considering a particular list of competences. By doing so, we try to understand how academicians, employers, students and graduates have shown their preferences for importance of competences. Once the regional dimension is discovered, it is interesting to know how stakeholders think without considering their regional aspects.

In order to carry out this study, we would like to explore the data available from the Tuning project and we employ exploratory factor analysis. As we carried out in the earlier part, we also use the unified list of competences (Table 5) for this part. Although we use the unified list, we can see that all listed competences are not present in all regions. From out of 37 listed competences, 14 competences are not common in all regions. Therefore it is important to note that, to analyse stakeholder's perspectives, we can use only those competences that are common to all regions and we find that there are

only 23 common competences. Therefore, we carry out the following analysis selecting competences common to Europe, Latin America and Russia.

4.4.2.2.1 Academicians

This part of the discussion begins by analyzing data on rankings marked by academicians. In the above section in sample description, we discovered that we have sufficient data available to make general analysis. Therefore, we examined academician's ranking on the importance of general competences and we used EFA to explore more details. The result obtained with factor analysis is given in the table below. The result shown in the table clearly demonstrates that there are 3 factor groups for academicians. When we considered academicians from all three regions, we got a result with three main factors. In order to understand how academicians have structured their perspectives, let us now go into details of each factor. In general all these competences are grouped into three factor groups. Out of 23 common competences, we see that almost 11 competences are grouped into one and other 12 competences are split up into two groups. Let us look into them in detail in the following paragraphs.

Table 18 Exploratory factor analysis result for Academicians

Rotated Component Matrix[a] for Academicians			
	Component		
	1	2	3
i009.- Capacity to learn and stay up-to-date with learning	,614	,026	,204
i014.- Ability to identify, pose and resolve problems	,603	,082	,260
i004.- Knowledge and understanding of the subject area and understanding of the profession	,579	,188	,136
i022.- Ability to work autonomously	,577	,144	,204
i005.- Ability to communicate both orally and in written word in the native language	,535	,299	,057
i010.- Ability to search for, process and analyse information from a variety of sources	,524	,159	,305
i027.- Ability to evaluate and maintain the quality of work produced	,522	,380	,138
i015.- Ability to make reasoned decisions	,514	,396	,111
i002.- Ability to apply knowledge in practical situations	,485	,338	,076
i011.- Ability to be critical and self-critical	,405	,257	,350
i007.- Skills in the use of information and communications technologies	,384	,302	,341
i030.- Ability to act with social responsibility and civic awareness	,085	,775	,173
i026.- Ability to act on the basis of ethical reasoning	,210	,723	,078
i029.- Commitment to the conservation of the environment	-,060	,690	,342
i020.- Appreciation of and respect for diversity and multiculturality	,164	,657	,111
i017.- Interpersonal and interaction skills	,359	,588	,050
i016.- Ability to work in a team	,295	,498	,130
i003.- Ability to plan and manage time	,366	,449	,054
i006.- Ability to communicate in a second language	,036	,120	,696
i008.- Ability to undertake research at an appropriate level	,241	,095	,627
i013.- Capacity to generate new ideas (creativity)	,302	,170	,579
i023.- Ability to design and manage projects	,212	,293	,524
i001.- Ability for abstract thinking, analysis and synthesis	,434	-,078	,449
Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization. a. Rotation converged in 7 iterations.			

Source: Calculated from Tuning Project data base

- **Learning, Responsibility and Communication**

i009.- Capacity to learn and stay up-to-date with learning
i014.- Ability to identify, pose and resolve problems
i004.- Knowledge and understanding of the subject area and understanding of the profession
i022.- Ability to work autonomously
i005.- Ability to communicate both orally and in written word in the native language
i010.- Ability to search for, process and analyse information from a variety of sources
i027.- Ability to evaluate and maintain the quality of work produced
i015.- Ability to make reasoned decisions
i002.- Ability to apply knowledge in practical situations
i011.- Ability to be critical and self-critical
i007.- Skills in the use of information and communications technologies

The above table displays all competences that are grouped together, which is labelled here as Learning, Responsibility and Communication. The factor group is named like that since there are competences which indicate dimensions which relate to learning, responsibility and communication. When considering academicians in general, they confirm that for them all these competences are to be considered together. The grouping of competences explain that academicians prefers competences which has altogether aspects related with learning skills, combined with responsibility aspects and communication skills. The result demonstrates how academicians from three regions have constructed their mind set when thinking of some general competences. This conceptual framework is thus labelled here with dimensions of learning, responsibility and communication.

- **Social and Interpersonal**

Another factor group consists with 7 competences and the dimension evidenced from these concepts is labelled here as Social and Interpersonal. This framework display dimensions of social and interpersonal activities. Let us now see the following table to see those grouped competences.

i030.- Ability to act with social responsibility and civic awareness
i026.- Ability to act on the basis of ethical reasoning
i029.- Commitment to the conservation of the environment
i020.- Appreciation of and respect for diversity and multiculturality
i017.- Interpersonal and interaction skills
i016.- Ability to work in a team
i003.- Ability to plan and manage time

The above table displays that those 7 competences are grouped together to explain another dimension expressed by academicians. The distribution of competences in the above table clearly displays two aspects which are considered together for academicians. When ranking preferences for a set of competences are asked from academicians they revealed that the above set of competences have to be considered together. The list of competences above show us that the first four competences demonstrate an aspect of social actions and the rest three competences show interpersonal dimensions. These two aspects together explain yet another dimension expressed by academicians.

- **Research**

As mentioned earlier, the factor analysis result obtained from data for academicians displays another dimension. This factor group is labelled as research which is composed of five competences, which is displayed in the following table.

i006.- Ability to communicate in a second language
i008.- Ability to undertake research at an appropriate level
i013.- Capacity to generate new ideas (creativity)
i023.- Ability to design and manage projects
i001.- Ability for abstract thinking, analysis and synthesis

The competences given in the above table show us another dimensions expressed by academicians in relation to some general competences. Competences shown in the table are related with research activities and academicians confirm that they need to consider together when restructuring competency profiles.

The above discussion on exploratory analysis on academicians' preferences on a set of competences explains us that there are three important dimensions for the selected set of competences. Thus the results convey us those academicians from Europe, Latin America and Russia considers that there are three specific dimensions when we considered the unified list of competences. Although the above explained factor groups are mixed with different types of competences, we are able to understand some specific dimensions on certain competences expressed by academicians and these dimensions could have

relevant impacts since academicians are one of the most important stakeholders in higher education policy formulations.

4.4.2.2.2 Employers

The second important stakeholder group comprises of employers from three regions. And let us explore different dimensions that could be obtained by analyzing the data through factor analysis. The exploratory factor analysis obtained is given in Table 19 and as it is explained we have used the common list of competences which contains 23 competences. The factor analysis carried out provided four factors which expresses different dimensions. The result shows us a specific thinking pattern of employers when a list of competences is given them to make their preferences. Let us now evaluate them separately.

- **Learning**

The first seven competences in the list are grouped together and we have labelled that dimension as learning. The following table contains those competences which demonstrate the learning dimension expressed by employers.

i015.- Ability to make reasoned decisions
i003.- Ability to plan and manage time
i002.- Ability to apply knowledge in practical situations
i004.- Knowledge and understanding of the subject area and understanding of the profession
i027.- Ability to evaluate and maintain the quality of work produced
i010.- Ability to search for, process and analyse information from a variety of sources
i007.- Skills in the use of information and communications technologies

Table 19 Exploratory factor analysis result for employers

Rotated Component Matrix[a] for Employers				
	Component			
	1	2	3	4
i015.- Ability to make reasoned decisions	,615	,190	,196	,102
i003.- Ability to plan and manage time	,609	,202	,130	,044
i002.- Ability to apply knowledge in practical situations	,608	-,024	,156	,124
i004.- Knowledge and understanding of the subject area and understanding of the profession	,598	,181	,066	,150
i027.- Ability to evaluate and maintain the quality of work produced	,572	,210	,244	,051
i010.- Ability to search for, process and analyse information from a variety of sources	,545	,077	,171	,299
i007.- Skills in the use of information and communications technologies	,428	,053	,317	,247
i030.- Ability to act with social responsibility and civic awareness	,231	,795	,095	,101
i026.- Ability to act on the basis of ethical reasoning	,340	,713	,071	,051
i020.- Appreciation of and respect for diversity and multiculturality	,056	,709	,324	,116
i029.- Commitment to the conservation of the environment	,016	,656	,046	,315
i009.- Capacity to learn and stay up-to-date with learning	,186	,042	,639	,118
i017.- Interpersonal and interaction skills	,282	,319	,529	-,033
i006.- Ability to communicate in a second language	-,228	,114	,515	,436
i022.- Ability to work autonomously	,384	,142	,495	,053
i005.- Ability to communicate both orally and in written word in the native language	,340	,212	,475	-,016
i014.- Ability to identify, pose and resolve problems	,399	,011	,415	,218
i016.- Ability to work in a team	,333	,071	,382	,136
i008.- Ability to undertake research at an appropriate level	,019	,336	,053	,665
i001.- Ability for abstract thinking, analysis and synthesis	,306	-,031	-,031	,643
i013.- Capacity to generate new ideas (creativity)	,244	,138	,134	,606
i023.- Ability to design and manage projects	,160	,138	,380	,491
i011.- Ability to be critical and self-critical	,308	,326	,221	,355

Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization. a. Rotation converged in 7 iterations. *Source: Calculated from Tuning Project data base*

The competences listed in the above factor, which is labelled as learning, depict employer's thinking dimensions and their concepts of competences to be framed as learning activities. Eleven competences in the factor clearly indicate the learning direction that has to be followed. By confirming this direction, employers convey a message to structure educational practices based on these competences. For employers, competences such as abilities to make decisions, apply knowledge, evaluate and analyse information and plan and manage time are grouped together and they demonstrate all dimensions related to learning capacities of individuals. As employers are those who get direct benefit from skilled individuals, they consider that these competences are of great importance and have to be learnt together.

- **Social**

The factor that follows next in the employers group is the factor which demonstrates social aspects. The factor group has four competences and shows clearly the social dimension expressed by employers. Competences that are listed under the label social are listed in the following table.

i030.- Ability to act with social responsibility and civic awareness
i026.- Ability to act on the basis of ethical reasoning
i020.- Appreciation of and respect for diversity and multiculturality
i029.- Commitment to the conservation of the environment

The social dimension expressed by employers consists of competences that related to social responsibility, ethical reasoning, respect for diversity and commitment to the environment. It is evident that all these competences are

directly related to the social and environmental protection and employers think of all these competences together.

- **Interpersonal**

The third factor obtained from the factor analysis for employers consists of competences that are related to interpersonal dimensions. This factor includes seven competences and they express interpersonal dimension. The competences grouped together are showed in the table below.

i009.- Capacity to learn and stay up-to-date with learning
i017.- Interpersonal and interaction skills
i006.- Ability to communicate in a second language
i022.- Ability to work autonomously
i005.- Ability to communicate both orally and in written word in the native language
i014.- Ability to identify, pose and resolve problems
i016.- Ability to work in a team

In the table above we can see that competences such as interpersonal skills, autonomous learning, identify and resolve problems, communication and team work skills are grouped together. These skills exhibits the interpersonal dimension revealed by employers.

- Research

The factor analysis results for employers have also added another factor which is labelled here are research. Five competences have comprised together and all these competences show research dimension expressed by

employers. Let us now took to these competences which are given in the following table.

i008.- Ability to undertake research at an appropriate level
i001.- Ability for abstract thinking, analysis and synthesis
i013.- Capacity to generate new ideas (creativity)
i023.- Ability to design and manage projects
i011.- Ability to be critical and self-critical

Employers show that competences such as ability to do research, design and manage projects, ability for abstract thinking and analysis, creativity and to be critical are to be realized together. The direction evident from this group displays the research dimension preferred by employers.

In the above discussion on the factor analysis results for employers give us a clear picture on the thinking dimensions of employers on a set of 23 competences. According to employer's preferences, these competences are to be considered in four important groups and we saw how they are structured as groups. Considering those internal structure and dimensions comprised in all those factors, labels are given to them to indicate a general view of each factor. Thus we could understand how employers have thought about all these competences and this can be very helpful to prepare curricula and learning and training programs of the higher education institutions.

4.4.2.2.3 Students

In this exploratory factor analysis, we consider students as an important group of stakeholder. In order to get different views from four stakeholders, let us

analyse in details those results that we have obtained from the general analysis. As followed in earlier analysis, we are also using the same common list of general competences. The results obtained from students are given in Table 20. From the table we can see that there are four factor groups and each of them consists of different numbers of competences. As followed in the above discussion, lets us now consider each of those groups in detail and see how students have thought about the list of competences.

- **Learning**

The first part of the results obtained from the exploratory factor analysis show us a grouping of eleven competences. Looking into those dimensions and thinking styles acquired from students, we can label the factor group as learning. The following table shows us all those competences grouped together expressing capacities and skills related to learning.

i004.- Knowledge and understanding of the subject area and understanding of the profession
i027.- Ability to evaluate and maintain the quality of work produced
i010.- Ability to search for, process and analyse information from a variety of sources
i022.- Ability to work autonomously
i003.- Ability to plan and manage time
i015.- Ability to make reasoned decisions
i005.- Ability to communicate both orally and in written word in the native language
i009.- Capacity to learn and stay up-to-date with learning
i014.- Ability to identify, pose and resolve problems
i011.- Ability to be critical and self-critical
i002.- Ability to apply knowledge in practical situations

Table 20 Exploratory factor analysis results for students

Rotated Component Matrix[a] for students				
	Component			
	1	2	3	4
i004.- Knowledge and understanding of the subject area and understanding of the profession	,591	,152	,126	-,059
i027.- Ability to evaluate and maintain the quality of work produced	,584	,291	,117	,073
i010.- Ability to search for, process and analyse information from a variety of sources	,580	,100	,310	-,060
i022.- Ability to work autonomously	,560	,072	,181	,118
i003.- Ability to plan and manage time	,545	,180	,011	,247
i015.- Ability to make reasoned decisions	,519	,133	,100	,397
i005.- Ability to communicate both orally and in written word in the native language	,468	,284	,065	,172
i009.- Capacity to learn and stay up-to-date with learning	,463	,041	,328	,145
i014.- Ability to identify, pose and resolve problems	,419	-,049	,378	,350
i011.- Ability to be critical and self-critical	,413	,339	,194	-,020
i002.- Ability to apply knowledge in practical situations	,395	,041	,253	,353
i030.- Ability to act with social responsibility and civic awareness	,232	,753	,093	,117
i026.- Ability to act on the basis of ethical reasoning	,260	,727	,040	,116
i029.- Commitment to the conservation of the environment	,002	,690	,262	,045
i020.- Appreciation of and respect for diversity and multiculturality	,171	,688	,095	,115
i006.- Ability to communicate in a second language	-,001	,136	,650	,045
i013.- Capacity to generate new ideas (creativity)	,125	,144	,566	,277
i001.- Ability for abstract thinking, analysis and synthesis	,271	-,027	,524	-,049
i023.- Ability to design and manage projects	,182	,215	,524	,241
i007.- Skills in the use of information and communications technologies	,317	,155	,451	,068
i008.- Ability to undertake research at an appropriate level	,349	,282	,428	-,390
i016.- Ability to work in a team	,068	,262	,269	,646
i017.- Interpersonal and interaction skills	,372	,339	,013	,467

Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization. a. Rotation converged in 6 iterations. *Source: Calculated from Tuning Project data base*

The competences grouped together in the factor labelled as learning and communication expresses that students have given more preferences to skills and capacities that are related with learning and communication aspects. When we look to that group we can see that, knowledge of the subject area, ability to evaluate and analysis, identify and resolve problems, ability to criticize and manage time and communication abilities are suggested together by students. This grouping of competences exhibits that from student's perspectives, these skills and abilities need to be achieved together.

- **Social**

Similar to other stakeholder's opinions, students have also expressed their perspectives on certain group of competences together. Looking into the specific dimensions displayed in the factor group, the factor is labeled here as social. Let us now see what are the competences suggested together by students which exhibit social dimension.

i030.- Ability to act with social responsibility and civic awareness
i026.- Ability to act on the basis of ethical reasoning
i029.- Commitment to the conservation of the environment
i020.- Appreciation of and respect for diversity and multiculturality

As we mentioned above, competences displayed above together expresses clearly the social dimension. When we compare with other groups, competences have become exactly similar to form one dimension. Therefore, we could assume that the thinking styles for students have also become relevant and could be considered with suggestions expressed by other stakeholders in the sample.

- **Research and communication**

The third factor group resulted from the factor analysis for students have six competences and are composed of two important dimensions in factor. Therefore this factor is labelled as research and communication. The labelled dimension can be clearly seen in the distribution of competences given in the table below.

i006.- Ability to communicate in a second language
i013.- Capacity to generate new ideas (creativity)
i001.- Ability for abstract thinking, analysis and synthesis
i023.- Ability to design and manage projects
i007.- Skills in the use of information and communications technologies
i008.- Ability to undertake research at an appropriate level

Competences given in the above table can be described in two dimensions, one showing the research dimension and other dimension showing communication aspects. By grouping these competences, we could say that students have expressed their ideas for learning these skills and competences together. Students express an idea that though research capacities are important to acquire, acquiring communication skills would make research activities more effective.

- **Interpersonal**

From the general results obtained from factor analysis for students have also grouped two competences together which is here labelled as interpersonal. As we observed from the other discussions, we can see that the two competences

listed in the factor demonstrate students' conceptualization for showing interpersonal dimension.

i016.- Ability to work in a team
i017.- Interpersonal and interaction skills

The above discussion based on the factor analysis results obtained from students' perspectives give us four important dimensions, such as learning, social, research and communication and interpersonal. When we compare these factor groups and competences included in all these factors, we can see that some of these factors are somewhat similar to the conceptualizations of ideas by other stakeholders in the sample.

4.4.2.2.4 Graduates

The fourth important stakeholder group included in the sample is the group of graduates. The sample includes all rakings on the importance of general competences. As mentioned earlier, we use the common list of competences for factor analysis and we have considered only 23 competences in total which are selected as similar in Europe, Latin America and Russia. The factor analysis results obtained for graduates are given in Table 21 below. The results given in the table demonstrate that competences are grouped into four factors consisting of different numbers in total. An overview of the results brings us an idea that graduates have also expressed their ideas on a list of competences which are similar to other stakeholders in the sample. As we see some important dimensions in the factor analysis, let us now look into more details.

Table 21 Exploratory factor analysis results for graduates

Rotated Component Matrix[a] for graduates				
	Component			
	1	2	3	4
i010.- Ability to search for, process and analyse information from a variety of sources	,648	,085	,003	,177
i022.- Ability to work autonomously	,588	,029	,190	,111
i011.- Ability to be critical and self-critical	,534	,277	,027	,125
i027.- Ability to evaluate and maintain the quality of work produced	,513	,266	,228	,097
i004.- Knowledge and understanding of the subject area and understanding of the profession	,508	,225	,112	,078
i009.- Capacity to learn and stay up-to-date with learning	,475	-,001	,236	,224
i015.- Ability to make reasoned decisions	,472	,170	,421	,054
i014.- Ability to identify, pose and resolve problems	,436	-,051	,366	,312
i008.- Ability to undertake research at an appropriate level	,412	,375	-,323	,379
i002.- Ability to apply knowledge in practical situations	,394	,073	,347	,152
i030.- Ability to act with social responsibility and civic awareness	,171	,787	,167	,022
i026.- Ability to act on the basis of ethical reasoning	,212	,760	,184	,013
i029.- Commitment to the conservation of the environment	,019	,709	,045	,198
i020.- Appreciation of and respect for diversity and multiculturality	,120	,651	,211	,156
i016.- Ability to work in a team	-,006	,167	,641	,281
i017.- Interpersonal and interaction skills	,145	,276	,626	,079
i003.- Ability to plan and manage time	,350	,071	,459	,062
i005.- Ability to communicate both orally and in written word in the native language	,368	,180	,415	-,004
i006.- Ability to communicate in a second language	,013	,120	,017	,743
i023.- Ability to design and manage projects	,172	,131	,253	,581
i013.- Capacity to generate new ideas (creativity)	,228	,163	,136	,562
i001.- Ability for abstract thinking, analysis and synthesis	,385	-,059	,018	,423
i007.- Skills in the use of information and communications technologies	,278	,082	,289	,390

Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization. a. Rotation converged in 7 iterations. Source: Calculated from Tuning Project data base

- **Learning**

The factor analysis results given in the table above have four factors and let us analyse the first factor which comprises of ten competences. Looking into each competence and their structure in total, the factor can be labelled as learning. In general, majority of those competences have a dimension of learning and let us see them in detail from the following table.

i010.- Ability to search for, process and analyse information from a variety of sources
i022.- Ability to work autonomously
i011.- Ability to be critical and self-critical
i027.- Ability to evaluate and maintain the quality of work produced
i004.- Knowledge and understanding of the subject area and understanding of the profession
i009.- Capacity to learn and stay up-to-date with learning
i015.- Ability to make reasoned decisions
i014.- Ability to identify, pose and resolve problems
i008.- Ability to undertake research at an appropriate level
i002.- Ability to apply knowledge in practical situations

As noted above, we see that most of the competences have learning dimensions. The grouping of those competences together comprising learning aspects shows how graduates are expressing their thinking style for certain competences. As graduates have direct experiences from the labor market, we can see that this grouping have some relevance in the higher education scenarios. Graduates demonstrate that a group of competences which comprises of ability to gather information, analysis and evaluation capacities,

learning and applying knowledge, autonomous and critical learning altogether are to be learned and trained together. A profile comprising of these competence can make an individual more informed and trained to qualify them for labor market needs.

- **Social**

The second factor component comprises of four competences and as they demonstrate a particular dimension, the factor is labelled as social. As we have explained similar factor, let us now look into those competences in detail to make a comparative discussion.

i030.- Ability to act with social responsibility and civic awareness
i026.- Ability to act on the basis of ethical reasoning
i029.- Commitment to the conservation of the environment
i020.- Appreciation of and respect for diversity and multiculturality

The above table show us those competences included in the factor social and they clearly demonstrate the views of graduates. The competences included clearly show how graduates would frame their mental structure considering these competences. This structuring is being named here as social as we have seen in the case of other stakeholder groups.

- **Interpersonal**

The factor group named as interpersonal has four important competences. The factor group is named as interpersonal as these competences exhibit those skills and competences related with interpersonal activities. Let us now see those competences in detail from the following table.

i016.- Ability to work in a team
i017.- Interpersonal and interaction skills
i003.- Ability to plan and manage time
i005.- Ability to communicate both orally and in written word in the native language

The four competences listed in the factor show us that they expresses interpersonal dimension. This grouping shows the conceptualization of graduates upon certain competences and how they have resulted with a specific dimension. These competences of team work, interpersonal skills, planning and management of time with oral and written communication skills together make sense for a specific structure graduates, expressed here as social dimension.

- **Research and communication**

The fourth factor in the result comprises of five competences and considering their specific dimensions, the group is labelled as research and communication. Let us now look to the following table to see those competences which displays dimensions of research and communication.

i006.- Ability to communicate in a second language
i023.- Ability to design and manage projects
i013.- Capacity to generate new ideas (creativity)
i001.- Ability for abstract thinking, analysis and synthesis
i007.- Skills in the use of information and communications technologies

The competences list in the above table describes us how graduates have structured their concepts on specific competences and how they have results with a specific dimension. It is clear that graduates express their ideas to combine abilities to design and manage research works with communication skills. Thus they wish to convey that these competences have to be considered together.

While summing up the exploratory factor analysis carried out for stakeholders, it is important to say that the results have provided some important and comparable dimensions. All factors and competences included in each factor have demonstrated how stakeholders conceptualize their ideas on some selected competences and how each of them differentiates their thinking styles from others. In addition to the differences of concepts, we can also see some similarities of some dimensions evident in some factors. While discussing them in detail we could see that some of those factor components are similarly distributed in other stakeholder groups. These similarities are discussed in the following paragraphs and they are explained as interactions in factor groups.

4.4.2.3 Interactions in the exploratory factor analysis

In the above exploratory factor analysis, we have described mainly regional and stakeholders' perspectives. In each of those headings, we could see how regional aspects influences framing some dimensions and how stakeholder aspects structure their concepts. Although we see those factor results are different between regions and between stakeholder groups, we could see some specific dimensions common among regions and stakeholders. They are explained in the following sections.

4.4.2.3.1 Interactions among regions

In this section on interactions, similarities of ranking for competences are specifically mentioned. They are called as interactions since competences included in factors are similar. As noted in the above discussions, some competences could be seen similar in some factors and these are specifically mentioned to show the importance of that type of conceptualizations.

One important interaction is observed for the factor group labelled as ethics, equity and diversity. Let us look into the detail of this group from the following Table 22.

Table 22Interactions in factor ethics, equity and diversity

	Europe		Latin America		Russia
i030	Ability to act with social responsibility and civic awareness	i030	Ability to act with social responsibility and civic awareness	i029	Commitment to the conservation of the environment
i031	Ability to show awareness of equal opportunities and gender issues	i029	Commitment to the conservation of the environment	i030	Ability to act with social responsibility and civic awareness
i026	Ability to act on the basis of ethical reasoning	i020	Appreciation of and respect for diversity and multiculturality	i024	Commitment to safety
i029	Commitment to the conservation of the environment	i032	Social responsibility and commitment to citizenship	i026	Ability to act on the basis of ethical reasoning
i020	Appreciation of and respect for diversity and multiculturality			i019	Ability to communicate with non-experts of one's field
i024	Commitment to safety				

From the above table it is very clear that there are some competences which have become common in factor groups for three regions. Competences such as 'Ability to act with social responsibility and civic awareness' and 'Commitment to the conservation of the environment' have become common for all regions. Competences such as 'Ability to act on the basis of ethical reasoning', 'Appreciation of and respect for diversity and multiculturality' and 'Commitment to safety' are also present in similar factor groups of the regions. The similarity of competences among different regions gives us an idea that how respondents think of these competences together. This similarity of concepts shows us the fact that competences based on ethics, equity and diversity has equal preferences in all three regions and these competences could be constructed together.

There are also some other notable interactions of competences in different factor groups among regions. Though the competences are not grouped similar in all three regions, but can be seen in two regions. This is explained in Table 23.

Table 23 Interactions in factor motivation and management

	Europe		Latin America
i018	Ability to motivate people and move toward common goals	i016	Ability to work in a team
i017	Interpersonal and interaction skills	i015	Ability to make reasoned decisions
i016	Ability to work in a team	i017	Interpersonal and interaction skills
i003	Ability to plan and manage time	i018	Ability to motivate people and move toward common goals
i012	Ability to adapt to and to act in new situations	i012	Ability to adapt to and to act in new situations
i015	Ability to make reasoned decisions	i003	Ability to plan and manage time

The above given competences which are labelled in factor group interpersonal show us how competences have become similar in tow regional results. This similarity is seen in Europe and Latin America and all competences are seen shared equally in two regions. This result shows us that how respondents in two regions think similarly and how they have structured their thinking to construct a specific dimension.

Another interesting interaction is evident among factor groups in Latin America and Russia. This is shown in the following Table 24.

Table 24 Interactions in factor learning and research

	Latin America		Russia
i009	Capacity to learn and stay up-to-date with learning	i009	Capacity to learn and stay up-to-date with learning
i001	Ability for abstract thinking, analysis and synthesis	i014	Ability to identify, pose and resolve problems
i002	Ability to apply knowledge in practical situations	i002	Ability to apply knowledge in practical situations
i010	Ability to search for, process and analyze information from a variety of sources	i005	Ability to communicate both orally and in written word in the native language
i005	Ability to communicate both orally and in written word in the native language	i010	Ability to search for, process and analyze information from a variety of sources
i014	Ability to identify, pose and resolve problems	i001	Ability for abstract thinking, analysis and synthesis

The interaction of competences shown in the above table demonstrates how respondents from Latin America and Russia have constructed their thinking styles similarly. As it was evident in earlier interactions, almost all

competences are shared equally in these factors and they show similar dimensions.

Although regional higher education and labour market settings are entirely different in all regions, the interactions in some factor groups show us that how respondents from those regions have expressed their thinking dimensions and how they have become similar to suggestions from other regional respondents. Additionally let us now look whether there were some similar interactions among stakeholders. Interactions of competences structure among stakeholders are shown in the following section.

4.4.2.3.2 Interactions among stakeholders

In the discussion of factor analysis results for stakeholders, some similar dimensions were noted. Such similar conceptualizations of ideas are taken together and see whether they repeated among stakeholders. Considering those components distributions in all factors for stakeholders, three important interactions are identified. They are explained as follows.

One of the important interactions evident was for factor labelled as learning. When we observe those competences together, we can see that competences labelled under this factor group are shared similar in all stakeholders. We can see that in detail from the following Table 25. From the table, we can see that almost seven competences were similar for this factor in the case of all stakeholders. This interaction shows us how all stakeholders have constructed their concepts similarity and how competences are distributed similarly forming similar dimension.

Table 25 Interaction for factor learning

i009.- Capacity to learn and stay up-to-date with learning
i014.- Ability to identify, pose and resolve problems
i004.- Knowledge and understanding of the subject area and understanding of the profession
i022.- Ability to work autonomously
i010.- Ability to search for, process and analyse information from a variety of sources
i027.- Ability to evaluate and maintain the quality of work produced
i015.- Ability to make reasoned decisions
i002.- Ability to apply knowledge in practical situations
i011.- Ability to be critical and self-critical

From a comparative perspective, we can also underline yet another important interaction observed in the factor distribution. This specific interaction was identified for the factor labelled as social and all those competences are same for all stakeholders. Let us once again examine the factor namely social (Table 26) and those competences in the factor to understand the interaction.

Table 26 Interaction for factor social

i030.- Ability to act with social responsibility and civic awareness
i026.- Ability to act on the basis of ethical reasoning
i029.- Commitment to the conservation of the environment
i020.- Appreciation of and respect for diversity and multiculturality

From the table we can see that four competences are constructed to define the structure of the factor social. It was very interesting to note that all these competences were equally shared for all stakeholders, thus defining the social dimension. This give is the conclusion that all stakeholders have thought similarly and shared structured a specific dimension with same competences.

The third most important interaction was observed in the factor namely, research. Although all competences in the same factor for all stakeholders were seen similar, four competences were similar for the same factor for all stakeholders. Let us now see what are those competences shared between all stakeholders and is given in Table 27.

Table 27 Interactions for factor research

i006.- Ability to communicate in a second language
i023.- Ability to design and manage projects
i013.- Capacity to generate new ideas (creativity)
i001.- Ability for abstract thinking, analysis and synthesis

The four competences given in the table above were similar for all stakeholders and that factor is labelled as research. The interaction of competences for stakeholders also tells the similar thinking perspectives of stakeholders and this factor demonstrate us that for stakeholders these competences are structured together to make a specific dimension as we called as research.

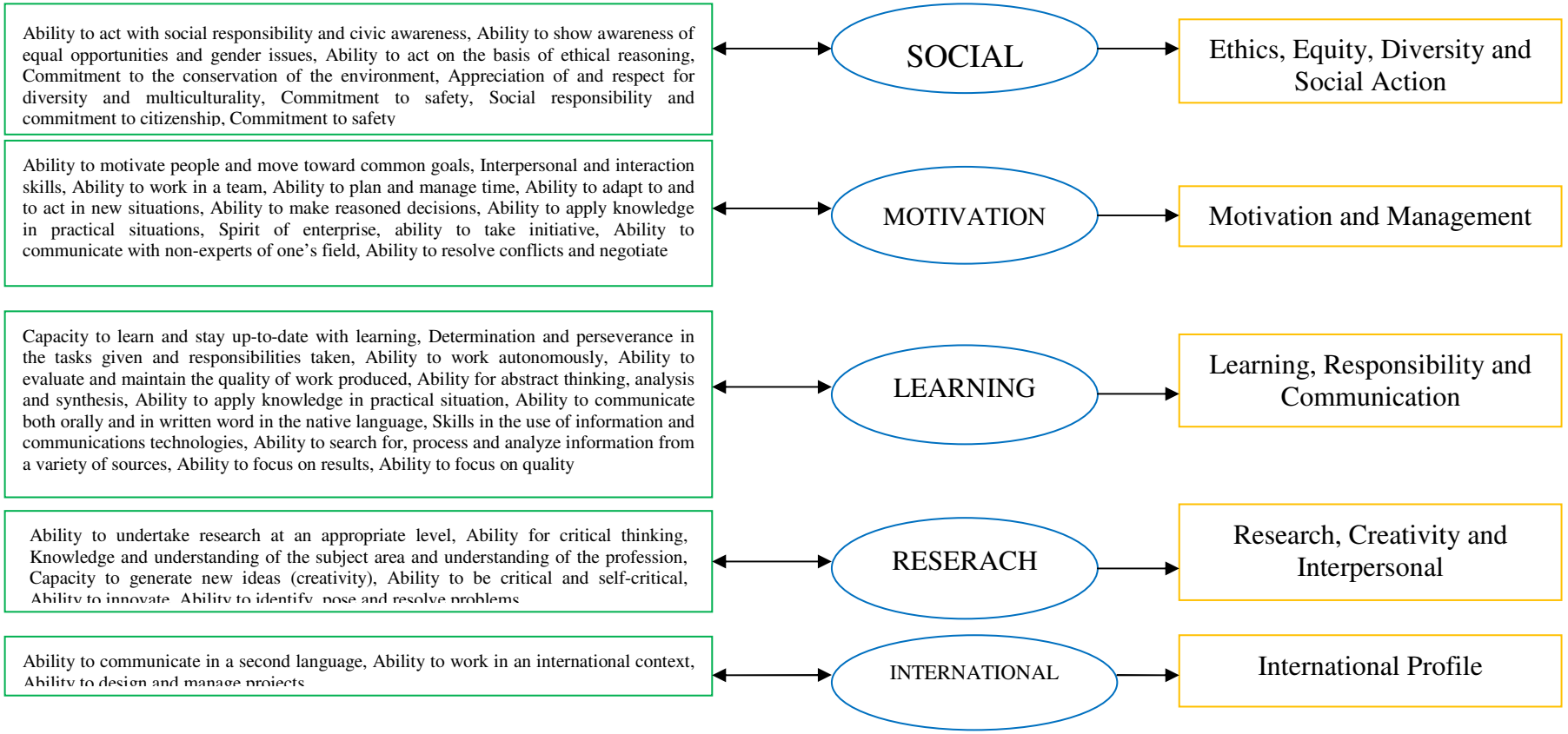
4.4.2.4 Final comprehensive model

The results obtained from exploratory factor analysis and the discussion carried out above helped to identify underlying structural dimensions in the scores. From a separate analysis for regions and stakeholders, we could find that the results provided differences and similarities. Additionally, we could find some interesting interactions among regions and between stakeholders. As noted earlier (section 4.4.2) we analyzed factor structure for each regions and stakeholders separately. Therefore a common model was not obtained but

separate structures and dimensions obtained from the results were examined together and it was decided to propose a final comprehensive model. The comprehensive model is depicted in Figure 10.

The final comprehensive model is the model which sum up all finding from factor analysis. In this model all factors from factor analysis for regions and stakeholders are taken together and competences' interactions are grouped. From all interactions, five major groups are identified and named as social, motivation, learning, research and international profile. In the model above, competences included in each factors are also shown. Therefore, by exploring underlying structural dimensions from regions and from stakeholders, the study proposed the above comprehensive model.

Figure 10 Final comprehensive model



4.5 Mean scores analysis

In the above section on factor analysis, we analyzed the ways of thinking of stakeholders from three regions. The following section discusses results based on the fifth objective of the thesis, i.e., *to analyse the similarities and differences of scores for importance and achievement of general competences among different regions, stakeholders and academic areas*. In order to understand this trend, we analyse the Tuning Data, comparing means and interpreting the results in terms of effect sizes (Cohen's *d*). It would be interesting to know the differences and similarities of competences because in the theoretical part we have seen that modern educational policies give emphasis to the teaching and training of competences and on the achievement of these competences. Additionally, from an employability point of view, it is also very important to see how stakeholders rate general competences and how regional factors affect their preferences.

4.5.1 Mean differences and effect size

In the section on factor analysis, we have analyzed scores based on the stakeholder's perspectives and regional level. But in addition to these two important aspects, the following part includes an analysis based on subject areas. Therefore, the following section on mean average score analysis, we examine scores on importance and achievement of general competences from three regions (Europe, Latin America and Russia) by four stakeholders (Academicians, Employers, Students and Graduates) on five subject areas, such as (1) Arts and Humanities (2) Social Sciences and Law (3) Sciences (4) Health Sciences and (5) Engineering and Architecture.

As we have three categorical independent variables (regions, stakeholders and areas) for several dependent variables (importance and achievement scores on five factors), the resulting matrix would be extremely complex. Instead of using very sophisticated statistical tools, we have decided to cope this challenge by using more simple statistics and then making them a little bit more complex in a progressive way.

In statistical significance analysis, *p-value,* is commonly used and is used as the probability of obtaining sample results (Goodman, 1999 and Gosselin, 2011). When doing statistical analysis with big samples *p-value* tend to be statistically meaningful (p<0,05) even when identifying small differences among groups or relations among variables. Under these circumstances if we focus mainly on *p-values* it would be difficult to discuss differences, because many of them would have similar *p-values* (about zero) in spite of not having equal differences. That's why we will not pay too much attention to the *p-values* and we have decided to put our focus on the direction to analyse the size of the differences. For this we use Cohen's d, which standardizes the effect size and report the difference's scores using standard deviations as units for comparison (Fritz, et.al., 2012).

We could also have used Eta squared (η2 proportion of variance associated with main effects) in the context of a variance analysis, but it informs about the overall size of the differences without reporting specifically between means which have more or less relevant differences (Brown, 2008). That's was an additional reason for simplifying the comparisons using Cohen's *d*. In order to explain the similarities and differences between these groups, we use Effect Size Estimates (Cohen's *d*) because 'effect sizes allow us to identify

generally interpretable and quantitatively descriptive size of an effect' (Fritz, et.al, 2011) and its is an important tool in reporting and interpreting effectiveness (Pažek, et.al, 2011)

The "effect size" is a relatively simple way of empirical evaluation for difference between two groups that has many advantages over the use of tests of statistical significance alone and it could be presented as a useful supplement to statistical significance testing, especially by measuring the standardized differences between the means (Pažek, et.al, 2011). Cohen (1962, 1964) introduced a measure similar to a standard score in which one of the means from the two distributions is subtracted from the other and the result is divided by the population standard deviation (σ) for the variables:

$$\mathrm{d} = \frac{Ma - Mb}{\sigma}$$

where *Ma* and *Mb* are the two means and (σ) refers to the standard deviation for the population. Cohen suggested that *d* values of .8, .5, and .2 represent large, medium, and small effect sizes, respectively, or perhaps more meaningfully described as obvious, subtle, and merely statistical and he advise that these vales in practice depend on the particular area of study and he recommends these values for use only when no better basis for estimating the effect size index was available (Fritz, et.al., 2012). As we see that the effect size could give us more exact ideas, the following section on mean analysis will use the effect size (*d values*) to explain the order of rankings.

4.5.2 General results

In analyzing effect size in the following sections, for feasibility reasons, we use factor scores instead of competence scores separately. If we would have considered individual competences' scores, a comparison of 37 competences in three regions among four stakeholders and five subject areas would become unfeasible and unmanageable. Complexity of these variables can be reduced with factor scores and it makes analysis more feasible and will facilitate a comparative study. Therefore, instead of individual competences we consider groups of competences explained in factors which are proposed in the final comprehensive model (Figure 10), i.e., five competence factors such as social, motivation, learning, research and international. Although we are considering five factors, it is acknowledged that a detailed analysis on specificities on each competences score is relevant but that type of analysis could be convenient for further studies.

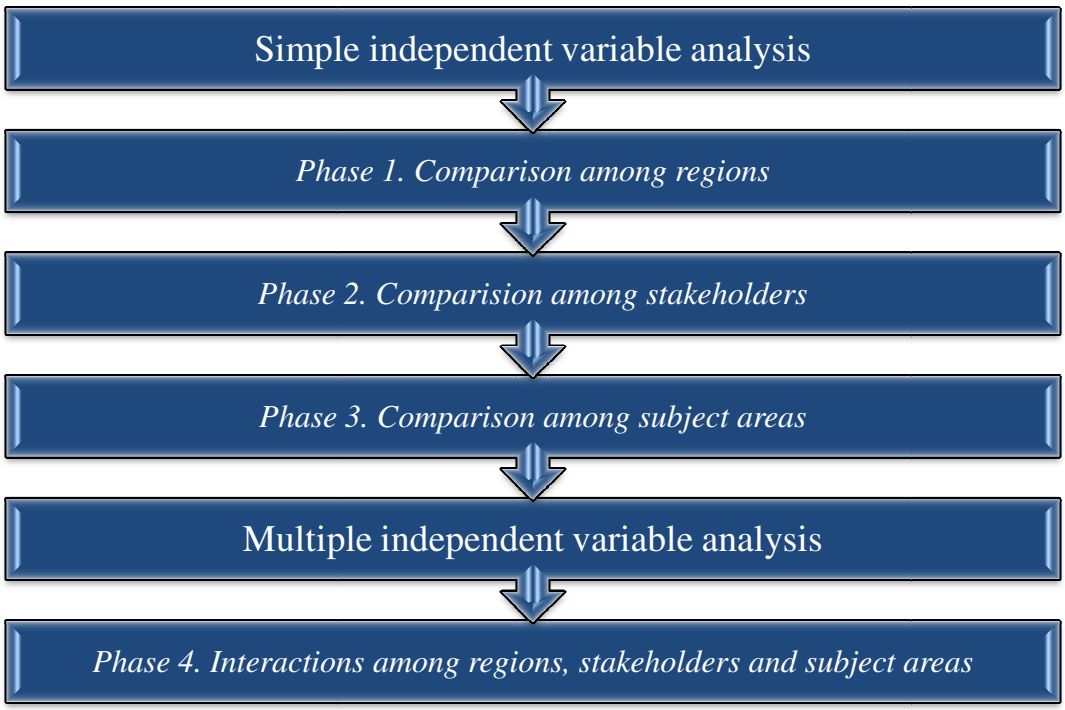
So we use five factors and mean analysis will be carried out based on scores for factors scores. In the following sections, these five factor scores are compared separately among three regions, four stakeholders and give subject areas. To get a general picture, let us now look to the means scores for five factors from the results given in Table 28.

Table 28 General mean results

Mean scores										
Region										
	Social		Motivation		Learning		Research		International	
	Importance	Achievement	Importance	Achievement	Importance	Achievement	Importance	Achievement	Importance	Achievement
Europe	3,06	2,52	3,29	2,71	3,34	2,82	3,28	2,74	3,12	2,41
Latin America	3,49	2,77	3,57	2,80	3,60	2,82	3,57	2,80	3,47	2,52
Russia	3,22	2,80	3,41	2,89	3,45	2,95	3,43	2,92	3,33	2,77
Stakeholders										
Academicians	3,36	2,61	3,46	2,70	3,53	2,78	3,51	2,73	3,35	2,52
Employers	3,33	2,72	3,49	2,77	3,52	2,82	3,46	2,78	3,31	2,58
Students	3,39	2,78	3,50	2,86	3,52	2,86	3,51	2,84	3,42	2,57
Graduates	3,35	2,76	3,52	2,86	3,54	2,90	3,49	2,85	3,41	2,58
Subject areas										
Arts and Humanities	3,40	2,77	3,47	2,82	3,52	2,84	3,52	2,86	3,34	2,55
Social Sciences and Law	3,35	2,84	3,51	2,93	3,53	2,95	3,47	2,91	3,41	2,72
Sciences	3,18	2,53	3,34	2,67	3,43	2,78	3,39	2,69	3,30	2,43
Health Sciences	3,55	2,88	3,68	2,93	3,62	2,95	3,61	2,89	3,45	2,72
Engineering and Architecture	3,29	2,61	3,48	2,73	3,52	2,75	3,49	2,71	3,40	2,50

The results shown in the above table give us some important information regarding the ranking of factors. As factor groups represent general competences, it is very relevant to know the order of ranking. Ranking order for region is different from stakeholders and order in subject areas is also different from other groups. The results also show us that there are some similarities in the order of rakings for factors between each group. Since the general has given only some basic information regarding ranking, let us make an effort to examine these differences and similarities in more detail. To do that specific analysis, we consider each group differently. The following Table 29 presents the steps followed in further analysis and discussion.

Table 29 Schematic presentation of mean average score analysis



The above showed schematic presentation resumes following analyses of data. As shown above there are mainly two levels of analysis in different phases. They are (a) Simple independent variable analysis and (b) Multiple

independent variable analysis. It is also seen that in the first level, there are three main phases, such as analysis and discussion comparing regions (Phase 1), comparison among stakeholders (Phase 2) and comparison among subject areas (Phase 3). In the second level on multiple independent variable analysis, we have Phase 4 where we analyse interactions in between regions, stakeholders and subjects areas. By interactions, we mean that whether we can find similar patterns of rankings between multiple independent variables.

4.5.2.1 Simple independent variable analysis

In the simple independent variable analysis we are considering each region, stakeholder and subject area as separate independent variables. Therefore, in this first section we consider only differences among regions and analyse that section, then we analyse the second section on stakeholders and analyse that part only and finally we analyse subject areas and do an independent analysis on subject areas.

4.5.2.2 Multiple independent variable analysis

In this section we are going to see the interaction between two or more dimensions in their effect on competences. We are going to check whether those patterns that we would identify in the simple independent analysis remain same if we look to each stakeholder and to each subject area, or if they change systematically when considering other variables. More explicitly, if we see some differences among regions in the first stage, then, in multiple independent variable analysis, we are going to analyse whether we see the same differences repeated within each stakeholder group and within each area. In that way we can identify the strength of the pattern that we could

identify and we could probably identify interactions among independent variables. This way we are doing multiple independent variable analysis and we can see an interaction between regional dimension, stakeholder and subject area dimensions.

We begin mean analysis with simple independent variable analysis. As mentioned in the above paragraph, in the following section, we consider regions, stakeholders and subjects separately and we make analysis using mean scores for each variable.

4.5.3 Comparison among regions

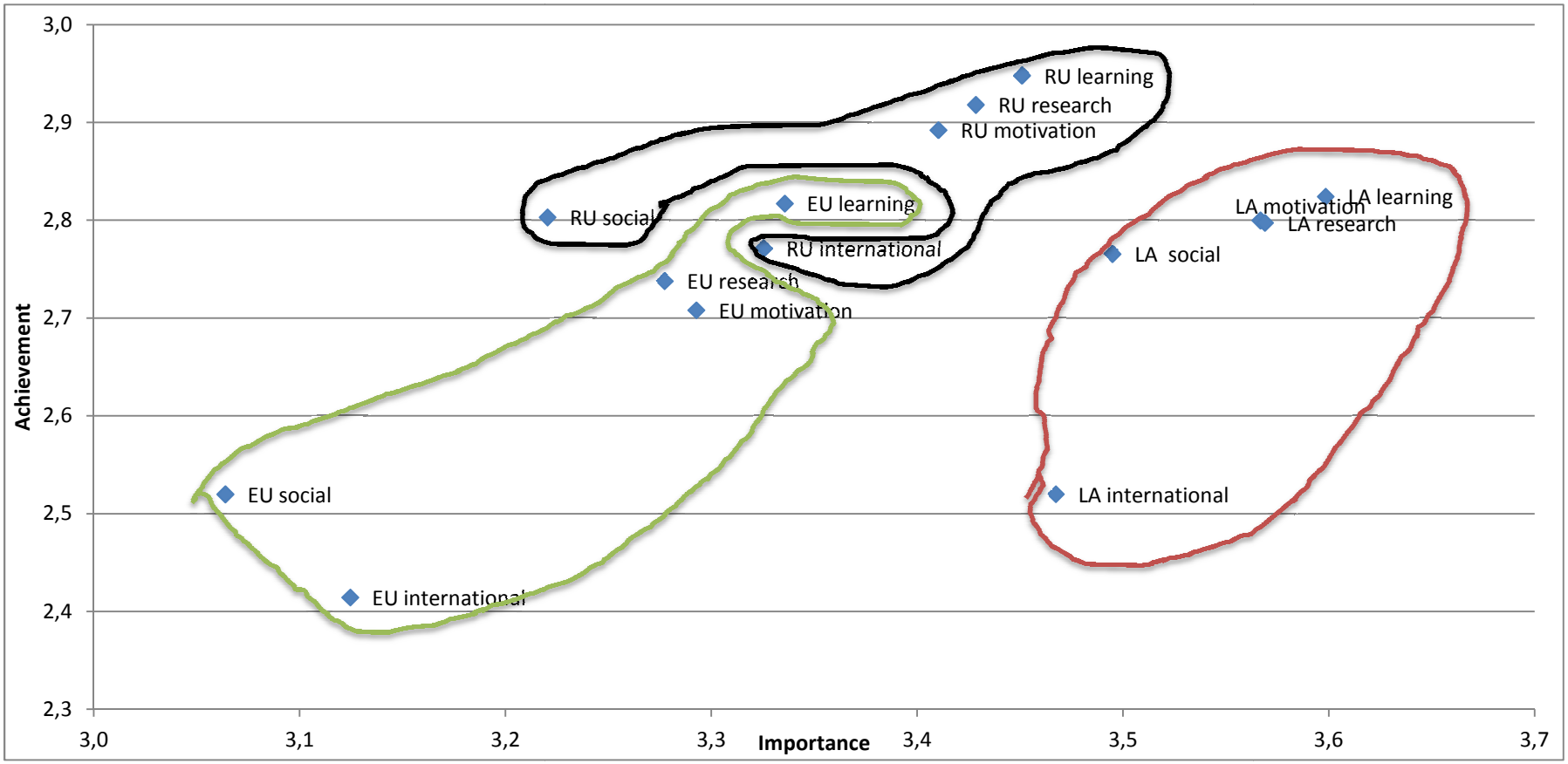
In the first part, we consider regional view on the scores of importance and achievement. For this part, we start by looking to the results obtained for data from Europe, Latin America and Russia. The result thus obtained is shown in Table 30 and the same is presented diagrammatically in Figure 11.

Table 30 Mean scores for regions

Factor	Mean Scores	
	Importance	Achievement
EU social	3,06	2,52
EU motivation	3,29	2,71
EU learning	3,34	2,82
EU research	3,28	2,74
EU international	3,12	2,41
LA social	3,49	2,77
LA motivation	3,57	2,80
LA learning	3,60	2,82
LA research	3,57	2,80
LA international	3,47	2,52
RU social	3,22	2,80
RU motivation	3,41	2,89
RU learning	3,45	2,95
RU research	3,43	2,92
RU international	3,33	2,77

EU=Europe, LA= Latin America and RU=Russia
Source: Calculated from Tuning Project data base

Figure 11 Scatter plot on average scores from Europe, Latin America and Russia



Source: Calculated from Tuning Project data base

The results obtained from the regional level analysis show us a general idea that there are no such big differences in the rankings for factors within each region but there exists differences between regions in the absolute scores. Let us now look into the following Table 31 which concisely displays main findings from the above results.

Table 31 Rankings obtained for regions

Table depicting differences in importance and achievement of competences between and within regions		
IMPORTANCE	Between Regions:	Latin America ≫ Russia > Europe
	Within Regions:	Learning > Motivation / Research > LA > Social / International; RU ≫ International ≫ Social; EU>>>International ≫Social
ACHIEVEMENT	Between Regions:	Russia≫ Latin America / Europe
	Within Regions:	Learning > Research / Motivation > RU> Social >International; LA> *Social* ≫ International; EU> Social >>> International

>: signifies the degree of differences for mean scores; EU: Europe, LA: Latin America and RU: Russia

The signal "**>**" used in the table signifies the effect size. Thus in the case of importance, it can be seen that there is considerable difference in scores for Latin America when compared with Europe and Russia, but there is a small difference between Europe and Russia. Let us now consider the effect size results between regions for importance. From the results shown above, a

medium sized effect $d = 0.58$ is obtained between Europe and Latin America, whereas $d = 0.27$ is between Europe and Russia and $d = 0.31$ between Latin America and Russia. Thus it can be said that between EU and LA there exists a medium effect size, whereas in other two cases there exists small effect size or the size is merely random. Almost a similar pattern can be seen from the results on achievement.

In addition to the overall effect size from regions, let us now let us look into the results on five different factor groups in different circumstances (i.e., differences among three regions). When we look into more details, we see that for factor Social, there is a medium effect size in between Latin America and Europe ($d = 0.66$). But on the other hand, we see that there is a small effect size for factor Social in between Europe and Russia ($d = 0.25$) as well as in between Latin America and Russia ($d = 0.41$).

Table 32 Cohen's *d* scores for regions

Cohen's *d* (Importance)			
Regions/ Factors	L.America - Europe	Europe - Russia	L.America - Russia
Social	0,66	0,25	0,41
Motivation	0,53	0,23	0,30
Learning	0,59	0,25	0,34
Research	0,59	0,31	0,29
International	0,53	0,32	0,21

From Table 32, we get a general regional view that the above mentioned pattern is followed in the case of all other four factor groups in between countries. In general for factor groups, scores displayed above explain that there is a little big effect size in between Europe and Latin America and small effect size in between two other cases. In the case of achievement the results

obtained indicated a very small effect size in general and the results are given in Appendix 4.

The main finding that we can draw out from the mean scores show us that Latin America has highest scores for importance and comparatively good scores on achievement, whereas Russia has highest scores on achievement and good scores for importance. Europe, on the other hand, does not show high scores on importance as well as for achievement. This general trend indicates that regions such as Latin America and Russia has similar pattern but different from European pattern. This point out that each region has specific aspects and importance should be given while structuring profiles for graduates. Additionally results for factor groups give us some important indications. When competences are grouped as factors, we can see that competences grouped as Learning has become critical, followed with factors groups such as Research and Motivation. When compared, factors such as Social and International has become comparatively less important in all regions.

Since we have some interesting findings from the above analysis, let us now discuss on some possible reasons for the differences in the mean scores and effect size. It has become clear that there are differences among regions and factors but there might be some specific reasons from these differences. Although there are several reasons to point out, here we would like to discuss on some possible reasons for these differences. (a) One of the major reasons could be the measurement error or potential differences in the measurement scale used in the data collection procedure of the Tuning Project. (b) Yet another cause would be the differences in the list of competences in the

questionnaires. In addition to these systematic errors, we argue for (c) differences of perspectives of old and new universities from Europe, Latin America and Russia. These arguments are discussed in details in the following paragraphs.

The first important potential factor for the high scoring of Latin America could be the differences of measurement options to respondents in the Tuning Project questionnaires. Tuning Project used similar pattern in answering options, giving a scale of 1 to 4. The following table clearly demonstrates answering options used in the Tuning Projects questionnaires.

Tuning Project in:	**Europe**	**Latin America**		**Russia**	
Ranking	Labels in European Questionnaire	Labels in Spanish Questionnaire	Meaning in English	Labels in Russian Questionnaire	Meaning in English
1	None	Nada	Nothing/None	не важно/нулевой уровень	Not important/ Zero
2	Weak	Poco	Little/ Few	маловажно/низкий уровень	Less Important /Low level
3	Considerable	Bastante	Sufficient	весьма важно/значительный уровень	Very Important/ Significant
4	Strong	Mucho	Very much	очень важно/ высокий уровень	Very Important/ high level

The above table shows four important measurement labels used differently in three regions. If we look to each measurement terms in each questionnaire, we can see that they are somewhat different. Although four important answering options are similar in meaning, they might be different in different settings. So that scores from these answering options may be different, although meant equal. For example, weak in EU, few (poco) in LA and less/low important (маловажно/низкий уровень) in RU, seems to be literally different and we

can expect different style of answering using these options. Therefore, it could be argued that notable differences of means scores are the results of differences in the measurement options.

In addition to the above potential factor error, we also speculate that differences in the questionnaires (Appendix 1) used in three regions might have affected variations in the general results. As it was explained in the third chapter, the basic questionnaire for Tuning Project was developed when project was initiated firstly in Europe. Although there are some differences for projects in Latin America and Russia, the Tuning Project has used somewhat similar lists of competences. From the list of competences in these questionnaires we can see that authors in the three regions tried to refer to similar competences but used different wordings in defining competences for each region. This might have lead to the participants to give different meanings to the items, thus providing different answers for each region. So we wish to state that the differences in regions are due to differences in the explanations given in questionnaires.

In addition to the above mentioned measurement errors, we could consider a 'third factor' effect for the difference in the results. The 'third factor' is related to the antiquity of the higher educational systems in these three regions because in the words of Kalleberg (2000) 'universities are among the oldest institutions in the world and are designed in varying ways in different societies'. In such a context, we have to remember that the Tuning Data used in this study is based on the higher education experiences from three different regional settings, such as European, Latin American and Russian. In general, educational systems in these regions would be different and educational

experiences and requirements in these different settings would be different too. This difference might have affected the thinking styles of stakeholders, which resulted in different mean average scores and gaps in between them. In the following paragraphs, we try to look into the issue of antiquity of universities.

The results show us that scoring from European stakeholders suggest that they do not see higher importance to any competences listed in the questionnaires of the Tuning Project and therefore resulted with less importance and achievement scores. It can be assumed that these kind of recently built up list of competences are already taught and trained in Europe because 'European Universities have a long history and tradition, where principles like freedom in search of truth, respect for all opinions or options and academic freedom in thinking and research were common' Gallifa and Gassiot (2011). Adding to Burrage (1996), 'practiced-based forms of professional education system were an integral part of the traditional Universities in Europe and America from 1800's '. These statements support our assumption that European University system has a long history in preparing students and learners with skills and competences required for the labour market. Therefore respondents from this region do not think that they have to be learnt or practiced again with these competences.

We also assume that the higher education system in Latin America is different from other regions. The results presented above suggest that stakeholders from this region give higher importance to almost all competences. We assume that we obtained a different pattern for the regions as new approaches to higher education in Latin America require similar types of skills and

competences listed in the Tuning Project questionnaire. Universities or higher education institutions in developing countries quite often prepare their curricula based on the changing requirements of the society. From the scholarly articles it can be understood that traditional (colonial) higher education system were not prioritized for social development in Latin American countries until 20th Century. According to Arocena and Sutz (2005); Schwartzman (2002), 'the original contribution of Latin America to the history of universities emerged only in the 20th century and universities were scarcely involved in social problems or in the promotion research in a modern sense and the expansion of higher education in the 20th century was associated with broad expectation on the labor market and growing number of graduates moving up the social ladder'. From the explanations of these authors, it can be seen that the colonial higher education scenario was not favorable to the socio-economic development but 'since the mid 20th Century, the traditional setting was transformed beyond recognition, while a whole new set of institutions, some public, but mostly private, were created' Schwartzman (2002). Therefore, we assume that stakeholders from Latin American region might have given high importance to all competences, thus showing differences when compared to other two regions.

Similar to the Latin American higher education scenario, we see some antiquity-based facts in the higher education system in Russia. The results obtained from Russia demonstrate that stakeholders gave high ranking for the importance of all competences listed in the Tuning Project. Similar to the case of Latin America, the result for Russia also show differences from other regions and we assume that the pattern is different due to the requirements of modern educational and social needs in Russia. While explaining old Soviet

system (polytechnical) Kurilla (2011) points out that the 'old system was characterized by a deep study of science and math and the virtual absence of options for pupils, while the new situation requires high school graduates to possess social and decision-making skills and a better knowledge of the society in which they live'. Additionally, Andreev (2009) mentions that the process of development of education in Russia before 1917 and after 1971 was different and he notes that "before 1917 has been customarily associated with backwardness, virtually universal illiteracy, and continual attempts by ruling authorities to extinguish the "lamps of reason" (as is often asserted, anything progressive during that era could take place only "in spite of the autocracy's reactionary policy") and after 1917, it has been portrayed as a rapid ascent to a flowering of enlightenment never before seen". Scholarly articles by various authors like Kolesnikov (2013); Mironov (2013); Ovsiannikov (2013); Burlutskaia (2014), comment that the modernization process of higher education in Russia was slow and caused dissatisfaction from stakeholders. Understanding the process of higher education system in Russia help us to suggest that the list of competences used in the Tuning Project might be relevant for further improvement in the higher education system, therefore stakeholders have given their higher preferences for the selected competences.

The results explained above and the discussion carried out thus help us to understand the regional differences on the importance and achievement of competences. Each region considered in the section thus show particular preferences and we were able understand the degree of differences among mean scores taking into consideration the effect size. As a continuation to the

simple independent variable analysis, let us now look to the results obtained for each stakeholder and analyse differences between them.

4.5.4 Comparison among stakeholders

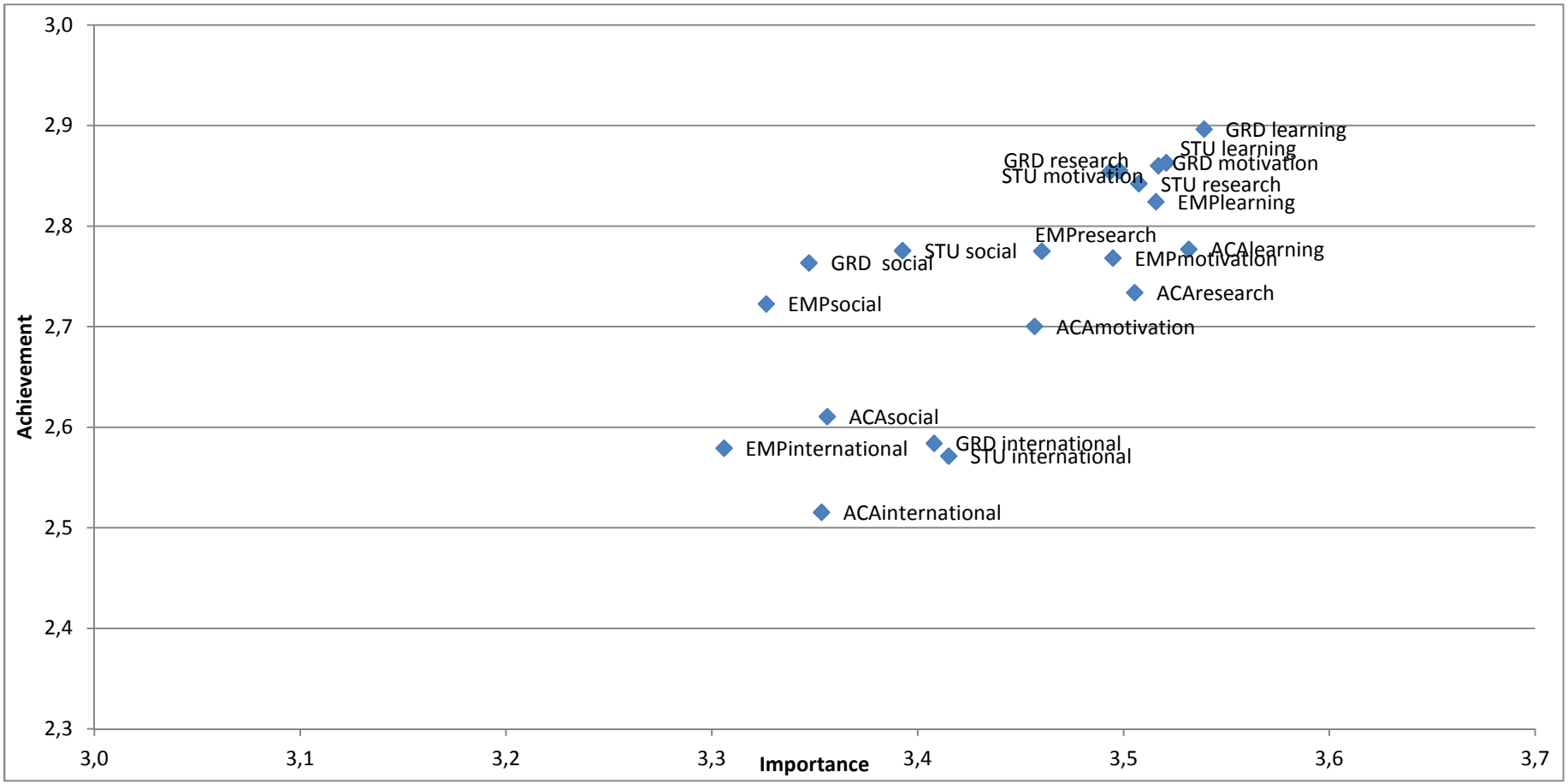
The above results on regional view showed us that regions have different patterns for important and achievement of competences. Therefore it is also good to understand how stakeholders' results vary. As we explained in the schematic presentation, we now move to the results obtained for each stakeholder for each factor group. The obtained results are presented in Table 33 and diagrammatically shown in Figure 12. The mean scores showed below shows different patterns in scores for importance and achievement.

Table 33 General Stakeholders Opinion

	Importance	Achievement
ACA social	3,3560	2,6107
ACA motivation	3,4567	2,7005
ACA learning	3,5317	2,7772
ACA research	3,5054	2,7340
ACA international	3,3533	2,5155
EMP social	3,3264	2,7228
EMP motivation	3,4948	2,7685
EMP learning	3,5157	2,8245
EMP research	3,4603	2,7753
EMP international	3,3059	2,5794
STU social	3,3926	2,7758
STU motivation	3,4980	2,8553
STU learning	3,5207	2,8632
STU research	3,5074	2,8425
STU international	3,4150	2,5715
GRD social	3,3471	2,7636
GRD motivation	3,5169	2,8603
GRD learning	3,5391	2,8966
GRD research	3,4934	2,8545
GRD international	3,4079	2,5841

ACA=Academics, EMP=Employers, STU=Students, GRD=Graduates
Source: Calculated from Tuning Project data base

Figure 12 Scores for general stakeholders



Source: Calculated from Tuning Project data base

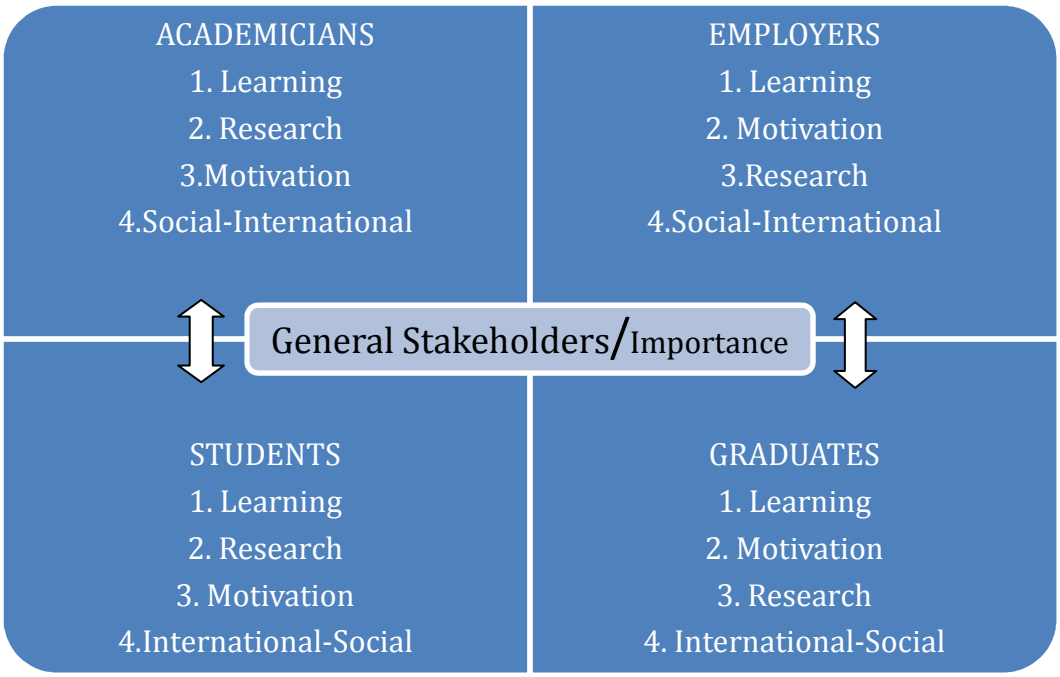
In order to understand specificities on scores on differences and similarities, let us know analyse the results with Cohen's *d* scores calculated. The effect size scores calculated are shown in Table 34.

Table 34 Cohen's *d* scores of stakeholders

Importance						
Stakeholders/ Factors	**Employers - Academics**	**Students - Academics**	**Graduates - Academics**	**Students - Employers**	**Graduates - Employers**	**Graduates - Students**
Social	0,05	0,06	0,01	0,10	0,03	0,07
Motivation	0,07	0,08	0,11	0,00	0,04	0,04
Learning	0,04	0,03	0,02	0,04	0,05	0,04
Research	0,09	0,00	0,02	0,03	0,07	0,03
International	0,07	0,09	0,08	0,01	0,15	0,01
Achievement						
Stakeholders/ Factors	**Employers - Academics**	**Students - Academics**	**Graduates - Academics**	**Students - Employers**	**Graduates - Employers**	**Graduates - Students**
Social	0,14	0,21	0,28	0,15	0,14	0,02
Motivation	0,18	0,23	0,23	0,13	0,13	0,01
Learning	0,08	0,15	0,2	0,15	0,14	0,14
Research	0,07	0,26	0,27	0,11	0,12	0,02
International	0,08	0,07	0,17	0,01	0,01	0,02

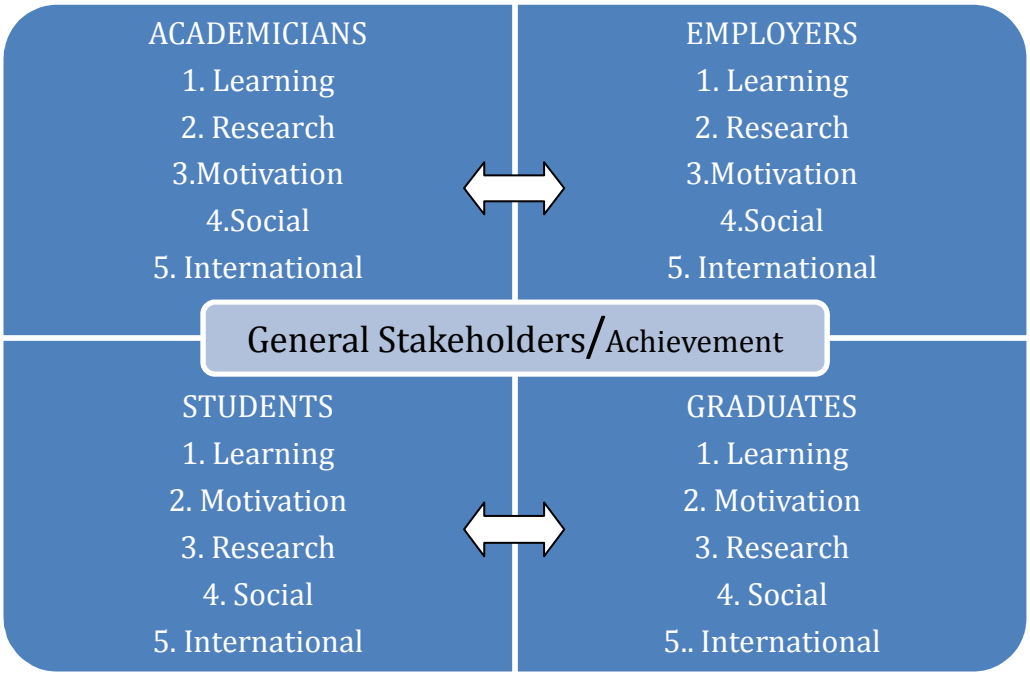
The mean scores and the effect size calculated clearly explain that there exist very small differences between stakeholders and within each factor groups. If we look closely, we can see that the effect size range between 0,036 and 0,068. Although the size of the differences are very small (expressed in terms of Cohen's *d*), it is interesting to see some more details on competences scores by stakeholders and some of those observations are shortly presented in Figure 13 and Figure 14.

Figure 13 General stakeholder's results on importance of competences



The information displayed in these two figures show different patterns on importance and achievement of competences scored by four stakeholders. The Figure 13 displays that for scores on importance, academicians and students have similar pattern and employers and graduates have similar pattern. On the other hand, for achievement scores (Figure 14), academicians and employers agree each other while students and graduates agree each other. From the identified patterns, it could be argued that preferences for competences (expressed in terms of importance) depend upon the professional roles or professional status of respondents. For instance, in relation to importance of competences, we see that academicians and students have similar pattern because their status are similar. Their roles or status always relate with academic matters. In the case of employers and graduates, we understand that they directly deal with world of work and their thinking mentalities or preferences for competences are similar, thus showing the scores as similar.

Figure 14General stakeholder's results on achievement of competences



The results for achievement also give us some interesting pattern. When we observe the above figure, it can be seen that patterns are different for achievement compared to the importance. From the result we see that academicians and employers are similar in their opinion while students and graduates are similar. As it is argued above, we could also support this pattern in terms of role or status of respondents. In the case of achievement of competences, we can see that roles of academicians and employers are same because academicians are those who teach and train demanded skills and competences whereas employers are those who require or receive individuals with required skills and competences. Therefore, their preferences could be similar and they could score similarly. On the other hand, students and graduates are those who are being trained and become workers. Therefore their opinion can be similar.

As we see some interesting patterns between stakeholders, we can also see some patterns within each competence factor groups. From the above displayed scored, it is shown that all stakeholders rank high for learning followed by research and motivation. Factors such as Social and International are the fourth and fifth preferred factor variables for stakeholders.

The results explained above acknowledge some ideas discussed in the theoretical part, where we see expert's opinions on the need for intellectual capital as an important part of human capital formation. The mean average analysis brings up the ideas that factor learning as the most important variable. The group learning has competences that are related to the improvement of intellectual capacity. Competences such as capacity to learn and stay up-to-date with learning, ability for abstract thinking, analysis and synthesis, ability to apply knowledge in practical situation, etc. are included in the factor group learning. Therefore, it can be understood that stakeholders opine that graduate profile has to be based on learning aspects which could establish the learning and formations path.

Motivation and Research are those factor variables which are also ranked highly by stakeholders. Once the graduate profile is based with Learning, motivation followed with research capacities makes the difference, according to the results obtained from stakeholder's scores. Mean scores for competences grouped under motivation and research, ensures us that learning path can be supported and enriched with motivation and research capabilities. Factor groups such as social and international are suggested as last groups by all stakeholders, indicating that these competences enables individuals to relate with social from regional and international perspectives.

4.5.5 Comparison among subject areas

According to the schematic description, the third part involves an analysis of scores of importance and achievement of competences by subject areas level. An analysis of scores on importance and achievement of competences by respondents from different subject areas would explain us if subject areas influence the opinion making. In addition, this analysis would help us to understand two factors. Firstly, to see whether we can find the same pattern in scoring as we found in the earlier analysis on regions and stakeholders. Secondly, to know whether those scores obtained in the earlier analysis could be related to differences among subject areas.

In order to analyse the data, we take into consideration all subject areas used in the Tuning Project. As there are almost 40 subject areas selected for the Tuning project, an analysis based on each of these subjects would become unfeasible. Therefore, we classified and grouped all these subjects into five main subject areas as we have explained in the section on instrumentation (section 4.2). The classification of subject areas into five groups is done only for the practicability of the data analysis for this thesis. So in the following section we use five subject groups represented in Table 6 and we examine the results on raking of competences for subject areas.

Now let us look how all stakeholders from different subject areas have scored their preferences for importance and achievement of competences grouped into five factor variables such as learning, research, motivation, social and international. The mean result thus obtained is presented in Table 35 and graphically shown in Figure 15 and the results shown some interesting facts.

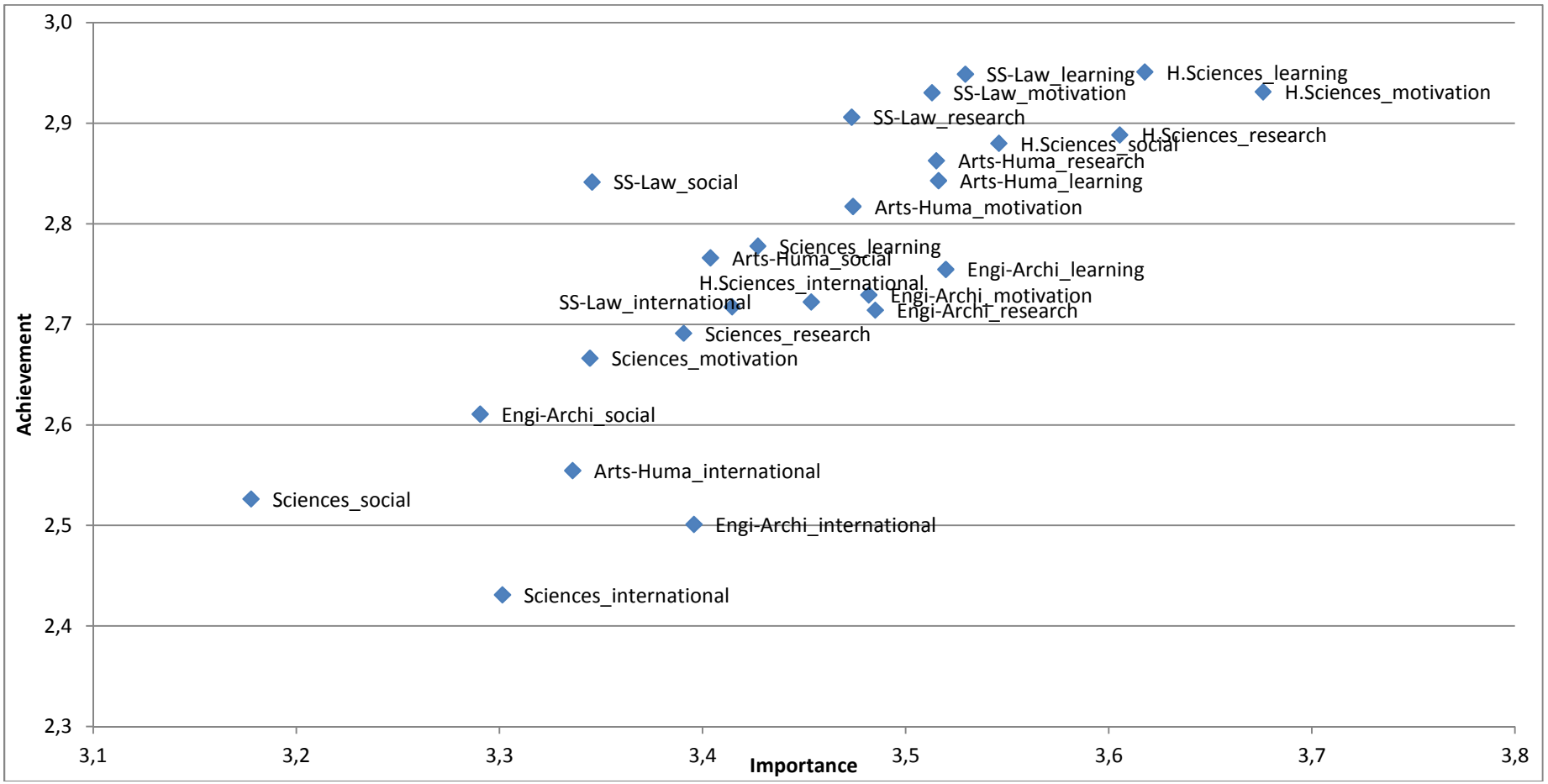
Table 35 Mean scores on general subject areas

	Importance	Achievement
Arts-Huma_social	3,4039	2,7662
Arts-Huma_motivation	3,4741	2,8172
Arts-Huma_learning	3,5162	2,8429
Arts-Huma_research	3,5151	2,8628
Arts-Huma_international	3,3360	2,5546
SS-Law_social	3,3456	2,8415
SS-Law_motivation	3,5129	2,9303
SS-Law_learning	3,5294	2,9488
SS-Law_research	3,4734	2,9061
SS-Law_international	3,4145	2,7174
Sciences_social	3,1777	2,5264
Sciences_motivation	3,3445	2,6663
Sciences_learning	3,4272	2,7778
Sciences_research	3,3906	2,6911
Sciences_international	3,3015	2,4310
H.Sciences_social	3,5459	2,8800
H.Sciences_motivation	3,6759	2,9312
H.Sciences_learning	3,6177	2,9510
H.Sciences_research	3,6054	2,8884
H.Sciences_international	3,4535	2,7223
Engi-Archi_social	3,2905	2,6107
Engi-Archi_motivation	3,4818	2,7293
Engi-Archi_learning	3,5198	2,7546
Engi-Archi_research	3,4850	2,7141
Engi-Archi_international	3,3957	2,5011

Arts-Huma:Arts&Humanities;SS-Law:Social Sciences & Law, H.Sciences:Health Sciences; Engi-Archi:Engineering &Architecture, Source: Calculated from Tuning Project data base

As we see some interesting patterns from the results, let us now look to rankings *between* subject area groups. In the case of importance of competences considered jointly, we can see that Health Sciences have the highest scores, followed by Social Sciences & Law, Arts & Humanities and Engineering & Architecture and finally by Sciences.

Figure 15 Mean scores on general subject areas



Source: Calculated from Tuning Project data base

We see that there are noticeable differences for rankings in between subject areas. As we carried out in the earlier discussions, let us now understand the mean score differences between subject areas using the effect size values (Cohen's *d*) and the effect size scores are displayed in Table 36. A general view from the scores give us an idea that there exists small difference between subject areas with an average value, *d*= 0.2. Within this small differences score, we see a special pattern in the case of Health Sciences. We can see a medium effect size (*d*= 0.5) in between Health Sciences with Sciences. Additionally, there exits notable differences for Health Sciences with all other subject areas.

In addition to the above pattern, we can also see yet another pattern from the effect size scores. When we compare science related subject groups with social sciences subject groups, we can see some interesting dimensions. For example, between Arts & Humanities and Social Sciences & Law, there is very small difference (*d*= 0.008) but when we look to the values between Arts & Humanities and Sciences or Arts & Humanities and Health Sciences, we see an important difference (*d*= 0.2). This pattern is same difference (*d*= 0.2) in the case of Social Sciences & Law with Sciences or Social Sciences & Law with Health Sciences.

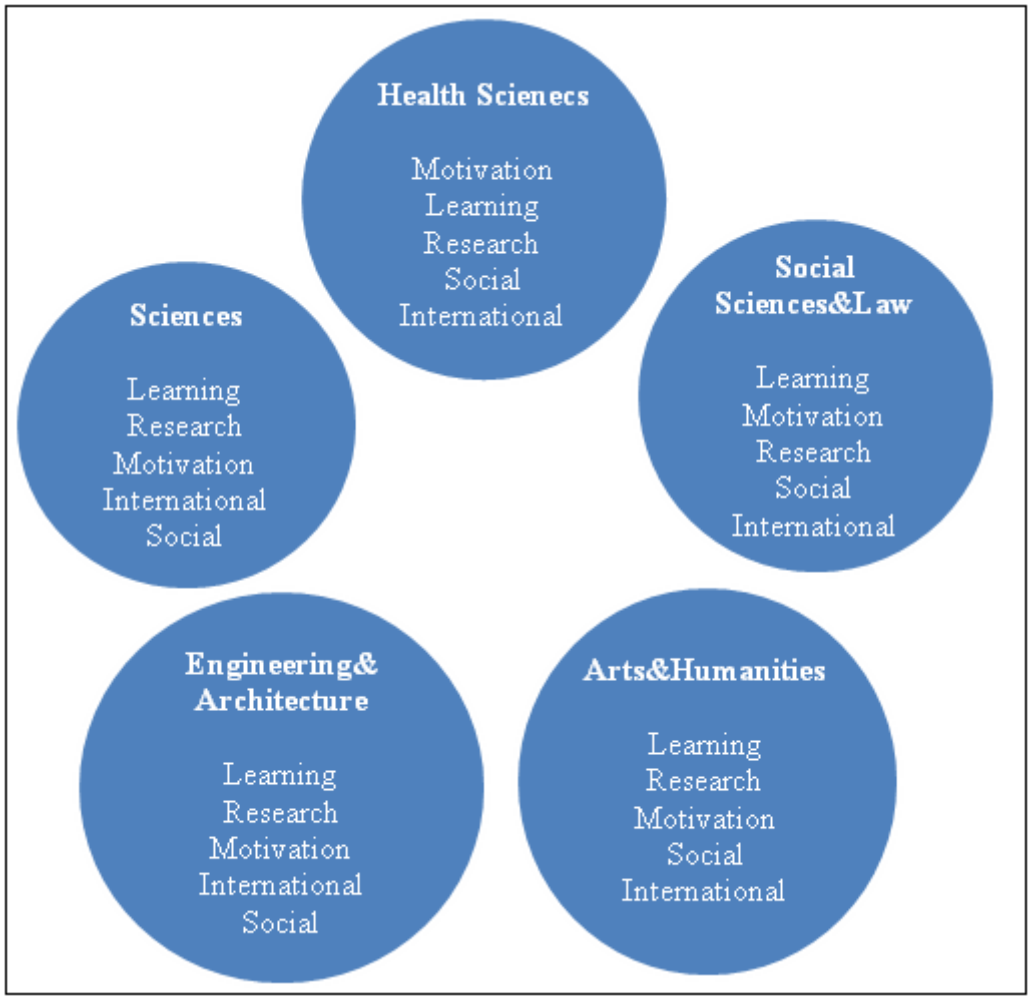
As next phase, let us now consider the effect size for factor groups. From the result on importance of competences, we could find that factor groups, namely, learning, research and motivation are scored higher than factors such as international and social. We can also see that a similar pattern exists in the case of achievement scores. These mentioned patterns on importance of competences are depicted with the help of Figure 16 shown below.

Table 36 Cohen's *d* scores for subject areas

Importance										
Subject areas/Factors	Arts/Huma-SS/Law	Arts/Huma-Sciences	Arts/Huma-H Sciences	Arts/Huma-Engi/Archi	SSLaw-Sciences	SSLaw-Hsciences	SSLaw-Engi/Archi	Sciences-Hsciences	Science-EngiArchi	Hsciences-EngiArchi
Social	0,09	0,35	-0,22	0,17	0,26	-0,31	0,08	-0,57	-0,17	0,39
Motivation	-0,07	0,25	-0,38	-0,01	0,32	-0,31	0,06	-0,63	-0,26	0,37
Learning	-0,03	0,20	-0,23	-0,01	0,23	-0,20	0,02	-0,43	-0,21	0,22
Research	0,09	0,26	-0,19	0,06	0,17	-0,27	-0,02	-0,44	-0,19	0,25
International	-0,12	0,05	-0,18	-0,09	0,17	-0,06	0,03	-0,23	-0,14	0,09
Achievement										
Subject areas/Factors	Arts/Huma-SS/Law	Arts/Huma-Sciences	Arts/Huma-H Sciences	Arts/Huma-Engi/Archi	SSLaw-Sciences	SSLaw-Hsciences	SSLaw-Engi/Archi	Sciences-Hsciences	Science-EngiArchi	Hsciences-EngiArchi
Social	-0,10	0,30	-0,14	0,20	0,40	-0,05	0,29	-0,45	-0,11	0,34
Motivation	-0,17	0,22	-0,17	0,13	0,39	0,00	0,29	-0,39	-0,09	0,29
Learning	-0,18	0,11	-0,18	0,15	0,29	0,00	0,33	-0,30	0,04	0,34
Research	-0,07	0,27	-0,04	0,23	0,34	0,03	0,30	-0,31	-0,04	0,27
International	-0,20	0,15	-0,21	0,07	0,35	-0,01	0,27	-0,36	-0,09	0,27

Arts/Huma = Arts and Humanities; SS/Law = Social Sciences and Law; H Sciences = Health Sciences; Engi/Archi = Engineering and Architecture
Negative'd' value means that the second mean score is greater than the first mean score.

Figure 16 Patterns on importance of competences from subject area results



The results from general subject areas provide us some important patterns on the importance and achievement of competences. One of the important patterns evident from the result is the high scores on competences for the subject area, namely, Health Sciences. This reveals the fact that respondents who belong to subject area of Health Sciences score highly on importance and achievement. In addition to this dimension, we could see that Motivation related competences are highly scored for this subject. These reveal that competences used in the questionnaire of the Tuning project could have higher relevance in the Health Sciences area. When we put together the above

mentioned findings (Health Sciences and Motivation), we find the reliability of the results, signifying that motivation is one of the important aspect to pursue in health sciences. Motivation, according to Henning-Schmidt and Wiesen (2014), is a fundamental determinant of public service provisions, like health care and medicine. The patterns thus evident above indicate that competences related to motivation has higher importance for the subject area Health Sciences. Additionally, the results also indicate that competences related to the group of learning and research are also preferred highly and would support the formation and training in the field of Health Sciences. Groups such as social and international were scored comparatively low in this subject group.

Another important pattern that we can find is for the area Social Sciences & Law which reported with second highest scores. The scores on factor groups indicate us that it is competences related to Learning that has got higher scores in this subject area. From this observation, we could suggest that competences that relate to Learning help enhancing attitudes towards social sciences studies. This suggestion supported with the observed results become relevant because Caliskan and Kilinc (2012) state that learning style and learning aspects are significant factors for creating attitudes towards social sciences subjects. In addition to that, the results obtained indicate that competences related to Motivation and Research is also important groups of competences for this subject area. As observed in other subject areas, competences related to the groups of social and International were scored less when comparing scores for other factors.

Another pattern we can find relevant is for the other three subject areas together. Areas such as Arts & Humanities, Engineering &Architecture and Sciences scores almost similarly. Additionally, an exciting pattern is also found in the case of factor groups such as learning, research and motivation. From the results we could see that competences related to these three groups are being scored similarly for the above mentioned three subject areas. This pattern suggests us that competences listed for the Tuning project has become equally important for these subject areas.

From the mean score analysis and discussion by comparing single independent variables, we could understand that there are differences in the order of ranking for each factor and competences included in each factor. As we could understand those similarities, we could also look into some similarities in the rankings and for that we use multiple independent variable analysis. In the following section, we compare ranking orders between each variable and will examine if similar ranking order that we have already found would exist in other variables.

4.5.6 Interactions among regions, stakeholders and subject areas

As we have explained in the schematic presentation, in the following part we are look into the interactions among multiple independent variables. As noted above, by interactions, we mean to analyse whether those patterns we identified in single independent variable analysis are being repeated if we compare the same analysis with multiple variables. To identify such interactions, we consider ranking order in each region, stakeholder and in subject area and see whether identified ranking patterns in each of those groups are repeated between them. Identifying interactions in such as way

would help us to know whether ranking order for competences are common in different situations.

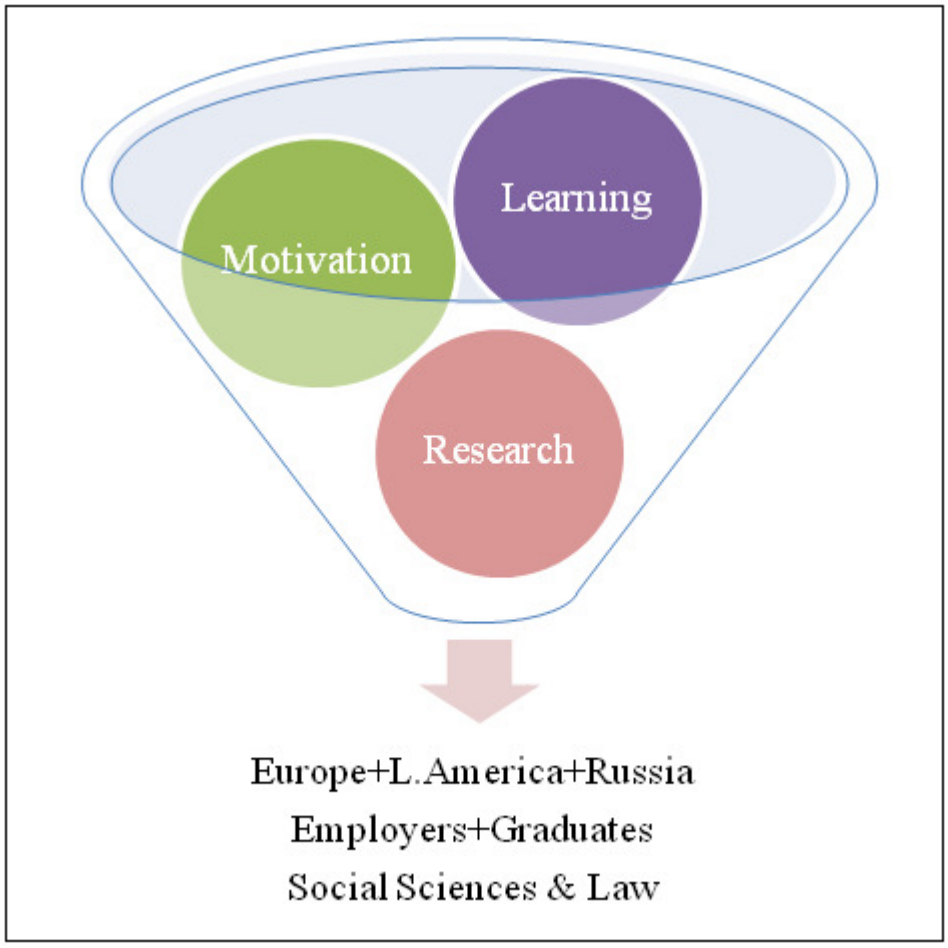
From the effect size scores obtained (Cohen's *d*) from regions (Table 32), stakeholders (Table 34) and subject areas (Table 36), we can identify two important interactions. In the section on single independent variable analysis, we identified a common pattern with ranking preference followed first with factor learning, then motivation and finally research. By comparing the mean results, it is seen that the same order is repeated in tow or more variables. Another important interaction that is observed is in the ranking order with learning, motivation and research and this pattern is also repeated in two other variables. Let us now consider these two important ranking orders and look into details to find out variables similarities.

The first interaction was analyzed using the identified combination of factors such as learning, motivation and research. When these three factors were considered together, we could find that they are repeated in regions, stakeholders and in subject area too. This interaction is presented with the help of following Figure 17. In the figure, it is given that the ranking order of learning, motivation and research is repeated in Europe, Latin America and Russia, and Employers and Graduates also have demonstrated similar ranking order. In addition to that in the subject area of Social Sciences & Law, we could see the same ranking followed.

Thus this interaction of three factor groups suggests that competences included in those factors are ranked accordingly in three variables. This ranking order reveals the fact that these competences are more preferred in different setting. In fact, in all regions we could see that this pattern is

following which confirms that competences related with learning aspects, competences related with motivational aspects and competences related with research are preferred accordingly.

Figure 17 First level interactions of competences



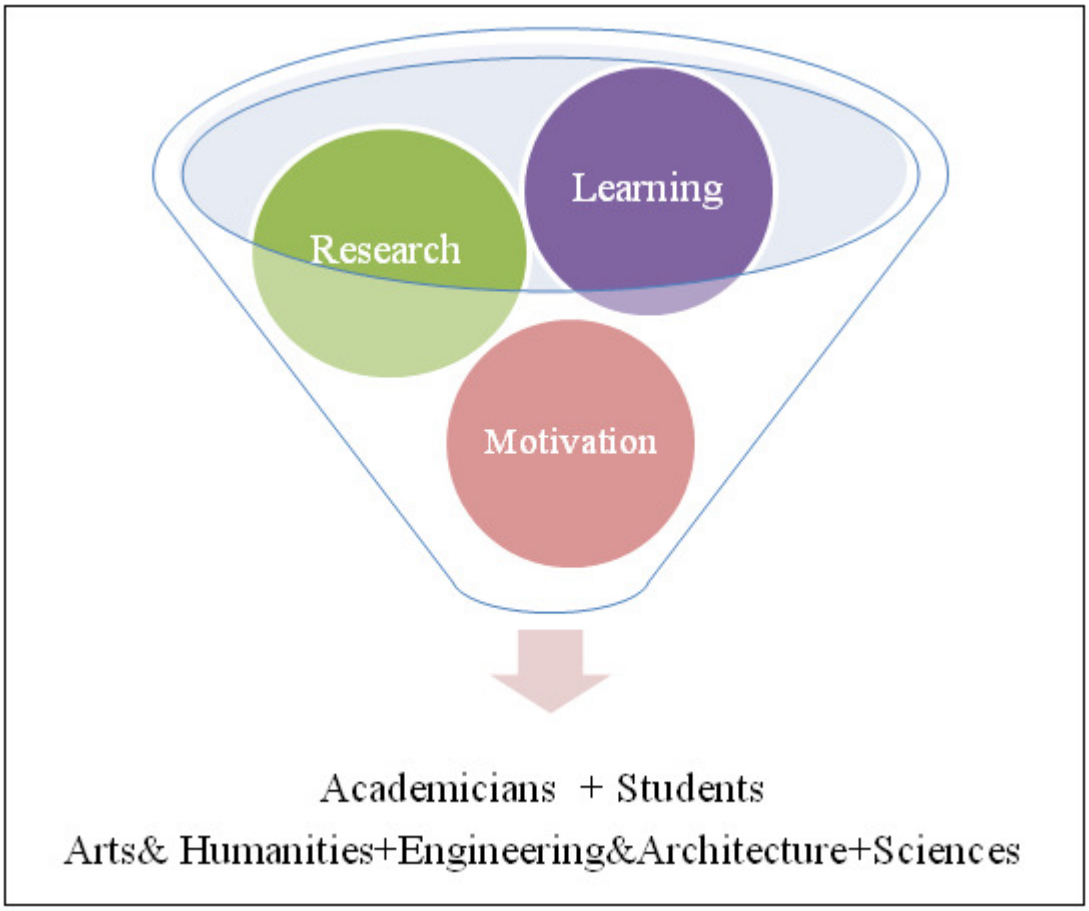
In addition to the regional relevance, the ranking order for learning is high for both employers and graduates. As these two groups are directly related with labor market, it is reasonable to understand this combination is relevant and thus those competences included in these factors are highly ranked. Additionally, the pattern of learning followed by motivation and research was

also evident in the case of Social Science & Law subject area. These ranking order from different settings confirm that those respondents who are from different regions, who represents different professional areas and who are from social sciences & law prefer learning competences as first, competences related to motivation as second and research competences as thirdly be taught and trained.

The result on the first interaction of three factors and included competences in different settings present that, general competences related to learning need to be developed firstly while planning curricula. It is clear that skills and competences related with learning characteristics would make firm base for individuals to follow their formation and training path. In addition, the ranking of competences related with motivation make it clear that the individuals can continue their learning and training path if they are really motivated. As competences related with research is seen as third important, it makes clear that individuals can widen up their knowledge and learning practical things when research competences are added up to their profiles. Thus the first interaction suggest the most preferred ranking order suggested by different stakeholders from different regional and subject area levels.

As part of multiple variable analyses, a second interaction pattern repeated is also identified. In the independent variable analysis, we identified a pattern with factors such as learning, research and motivation. After comparing the mean scores, we see that the same pattern is repeated in the case of academicians and students as well as in subject areas like Arts & humanities, Engineering &Architecture and Sciences. This repeated interaction is diagrammatically depicted in the following Figure 18.

Figure 18 Second level interaction of competences



In the above figure, displays another important interaction with factor groups such as learning, research and motivation which is repeated similarly for stakeholders such as academicians and students as well as for subject areas such as Arts & Humanities, Engineering & Architecture and Sciences. This interaction is different from the first interaction identified since this ranking order was not evident in any regions. But on the other hand, this ranking is also important to mention specifically because the ranking is suggested by

academicians and students who are directly related with higher education scenarios and this ranking was evident in three subject areas.

The second ranking order identified explain that according to academicians and students and also respondents from three subject areas, learning competences should be developed and learnt as the first step to set a strong learning and training foundation. The ranking order also makes it clear that individuals need motivation skills and competences to continue the learning and training which can then lead them to widen their knowledge by acquiring competences related to research. This interaction clearly depicts the ranking order one has to follow and it becomes highly relevant since this ranking is suggested from respondents who are directly connected with higher education scenarios.

The interactions explained above show important patterns and these patterns become very important when related with curricula designing. Although there are small differences between these two patterns, the interactions together reveal that competences related with learning has higher priorities in all settings. In addition to that competences related with motivation and research is also ranked importantly from distinct settings. So it could be suggested that individual's learning and training profiles could be relevant if these ranking orders are considered.

4.6 Summary of the chapter

In this chapter, we analyzed the data to find out two important dimension and we used two different statistical measurements. On the first hand, factor analysis was used to find out underlying structural dimensions in the scores of

importance for importance of competences and mean scores comparison was used to find out the ranking orders of importance of competences. For both of these analyses we used the Tuning project data and we carried out discussion on all results obtained. From these results, various important dimensions were observed and ranking order of competences was also made clear.

The first part of the chapter sketched differences in the underlying dimensions of competence structure for three regions and four stakeholders and intended to provide examples of graduate profiles. From the result, it was identified that there are different structural dimension of competences for all regions and stakeholders and they are different from each other. Therefore, it was successful to propose different graduate profiles. From a comparative analysis of the results from factor analysis, a comprehensive model was obtained, which could be used for further analysis.

Additionally, from the mean score analysis, an effort was made to find out some important dimensions on the importance and achievement of competences. From the data exploration, we got interesting results and from the analysis of results, an analysis was carried out to find out differences of scores according to regional, stakeholder and subject area perspectives. The results obtained demonstrated that ranking order of competences' factor groups is different in each case. The results thus provide us clear views and perspectives on the importance of competences according to different levels and these perspectives would help us to (re)frame curricula according to the requirements of each region, stakeholder or subject areas.

5 CONCLUSION

The concluding part verifies whether satisfactory results are achieved according to the objectives mentioned in the introduction part of the thesis. In the following sections we describe important findings which satisfy those objectives set and a small discussion is carried out to mention the relevance of the study. Additionally some limitations of the study are also mentioned and finally, we also discuss our opinions for further research.

5.1 Study objectives and results

The thesis primarily looked into the social and economic relevance of education and the importance given to skills and competences during formation and training periods. From the literature review, we found that educational institutions are important for social and economic restructuring and social policy reformations should give importance to human resource formation. The theories from Becker and Sen clearly state the importance for education and human resource management. From the discussions it was made clear that imparting required skills and competences is highly relevant for restructuring curricula and changes in the formation and training would enrich the social and economic status. Thus the thesis looked into more details on the relevance of skills and competences and intended to find out ranking of importance and achievement of competences.

Since it was found that skills and competences are important to equip individuals to support personal, social and economic growth and development, it was important to find whether higher education institutions are providing required skills and competences and see whether they are

demanded from employability perspectives. Interestingly, sufficient data was available from Tuning project to examine the trends and patterns on the rankings of competences. The data included information from three regions, four stakeholders and from forty subject areas and information available from the data helped to frame study objectives.

After an initial evaluation, it was found that the data could provide relevant information on different perspectives on competence structure and could find out some interactions of structural dimensions in different levels. Therefore, the data analysis was executed with the help of factor analysis and mean scores evaluations. From factor analysis results, it was clear that regional aspects are different for particular set of competences and stakeholders in between propose different dimensions.

When it comes to dimensions underlined, scores from Europe displays a dimension based on ethics, equity and diversity, then leading to motivation and management. It can be understood from the dimensions that, before obtaining academically and professionally oriented skills and competences, socially and cultural based orientations are important. The findings from Latin America shows us that academically and professionally related skills and competences are important as first steps and then could follow with socially and culturally aspects. Although similar to other regions, a different view on profiles from Russia was obtained. Russian profile shows us that a combination of both academic and socially oriented skills and competences are important.

Similar to the above mentioned results, the study could find that stakeholders are different in structuring their thinking styles on skills and competences.

One of the most important dimension that could be figured out was the similarities of opinion in between academicians-students and employers-graduates. Therefore, this can be interpreted that the results from the factor analysis represent the requirements of the present day situations. To be more explicit, the academicians-students dimension represents the educational point of view (since both stakeholders represent the higher education scenario) and employers-graduates dimension shows the labour market point of view (as these groups are directly related with job market).

Additional to the structural dimensions observed in different settings, mean scores provided the ranking order of factor groups and competences listed from each region. From regional angle, competences related to learning were highly scored, followed by competences related to research and motivation. Competences related to social and international aspects were scored as fourth and fifth. Similarly, stakeholders' opinion demonstrated that learning is highly recommended, which could be followed by motivation and research, then social and international related competences. From the subject area analysis, it was clear that learning is highly important, followed with research and motivation, and finally with social and international. This trend was not same to subject area, namely Health Sciences, in which motivation was considered as first, followed by learning and research and finally with social and international.

Understanding different dimensions obtained from regional and stakeholders' perspectives, we can see that there are some common lines that can be drawn which could help to re (structure) curricula. From the results obtained it was clear that there are different structural dimension among regions and

stakeholders. It was also clear that regional requirements are different so the results obtained from regions were different. On the other hand, when stakeholders are taken together, we saw that they have their own perspectives respective to their professions. Subject area results also indicated that obtaining skills and competences for subject are different. Thus the results obtained proved that there are different underlying structural dimensions and those dimensions are different when considered on regional, stakeholders' and subject basis.

5.2 Implications of the study results

The findings from the thesis have three important implications. First it shows the need for employability skills and competences, which could be developed in higher educational institutions in cooperation with important. Secondly, the thesis proposes profiles of skills and competences for graduates in three regions. Thirdly, thesis tries to bring into focus the importance of studies or research projects on skills and competences which should focus more on labour market needs.

As the current economic and social conditions are rapidly transforming the lives of individuals throughout the world, individuals should be prepared to face the challenges and utilize opportunities. Since employment becomes the most important part of the lives of individuals, the status of lives depend more on the personal and professional qualification. There arises the need for skills which are adequate and relevant to the time. Therefore it is important to frame plans to acquire and upgrade employability skills. The findings from the thesis remind us that employability skills are very relevant to frame graduates profiles according to regional and stakeholders' dimensions. As knowledge

has become one of the most important economic resources in addition to land, labour and capital, the future socio-economic progress would be supported mainly with knowledge.

While framing graduate profiles, it is important to understand how profiles are framed, with required skills and competences. One of the important factor in this process is the decision making process involved in selecting skills. Understanding the underlying dimensions brought by this study, it is important to see the relationship between factor groups based on regional preferences as well as stakeholder's perspectives. Therefore we can say that stakeholders' opinions are important and their supports should be invited while framing graduate profiles. Additionally academic as well as professional cooperation should be developed by which students could obtain practically oriented formation and training.

It has become evident from several studies (as we have noted in the second chapter) that traditional educational polices were not adequate enough to satisfy the needs of the labour market. Therefore there is lack of medium-level and high-level skills and at the same time there exists under-utilization of skills. This makes unbalances in the socio-economic situations. In order to find out those lags, unbalancing situations and lack of resources, we need practically oriented researches and studies. This thesis throws lights to the same need by indicating to concentrate more on to the demand and supply of skills and competences.

In addition to these three important points discussed above, the analysis of the results lights to the fact that various actions for reforming or restructuring of university formation and curricula which may result to the improvements in

academic and professional qualifications. The proposed profiles indicate us that while restructuring curricula or graduate profiles, importance should be given to acquisition of ethical and more humanitarian oriented skills, with critical and reflexive competences, based on scientific and intellectual thinking, those would enable an individual to work in national and international levels.

5.3 Limitations of the study

In spite of all positive aspects, the thesis also has some limitations. As skills and competence for graduate profiles from a higher education point of view is a wider aspect, it was very difficult for the study undertake the discussion from a specific point of view. As we can find out several lists of employability skills, as explained in the discussion, it was difficult to discuss about a specific model of skills. In order to avoid this difficulty, we tried to test the available list of skills and competences with Confirmatory Factor Analysis (CFA). But due to unreliable result from CFA, we could not use the model of employability skills.

One of the important drawbacks of the study is the limited use of data available from the Tuning Project. Instead of considering country-wise data analysis (like some selected countries in Europe or Latin America or Russia), thesis discuss on a region-wise aspects. This limited the thesis to propose some specific facts based on counties. In addition to this, the selection of four stakeholders from regional perspective resulted to propose dimension from a general perspective rather than concentrating in individualized proposals.

Another important limitation of the study was the difficulty in supporting the data collection process with a statistically proven theory. This was not possible since the Tuning Project is framed on a specific methodology but an effort was made to compare the project methodology with some other scholarly known theories. Although there are some limitations, the data available supported the thesis to test those objectives set for the study.

5.4 Directions for future research

Although there are some limitations to the approaches of the thesis, these limitations are not due to any approaches directly related to the thesis. Therefore we can consider the above mentioned limitations are some opportunities for further research. There are two important areas which can direct others for future research. One of them is the main objective of the thesis, i.e. skills and competences. The second important area for further research is the use of Tuning Project data. Some recommendations for further research are as follows.

As employability skills and competences has become one of the most important areas for policy discussions for higher education institutions, enterprises-labour market and public authorities, more importance should be given to understand preferences of these key players in the area of skills and competences. Collaboration between these key players for the preparation of demanded skills and competences is also an area to make more research and investigation.

Once key skills and competences are identified, an important area for further research is the designing part to identify way and means to acquire required

skills and competences. Moreover education and training programs needs to be restructured and redesigned, so that new ways to learn key skills and competences could be identified. In relations to program designing, a study could be planned to test the proposed graduate profiles of the present thesis.

When we look from the point of statistical analysis, there are two important ways for further studies in relations the themes of the present thesis. One possible way is the analysis of data base with some other statistical methods. As we have used only some basic statistical analysis, future studies can be based on specialized methodologies to evaluate the importance and achievement of skills and competences.

In relation to the above mentioned point, it is important to note that the present thesis has used the data base to test only preferences of opinions on generic competences from three regions and for four important stakeholders. As there are several countries participated from Europe, Latin America and Russia, country level studies from each region is a prospective area for study. More than that, from each country there were different types of stakeholders and a prospective study can be based on that level too. As we have got a general opinion from a general approach more specific conclusions could be drawn from further studies.

In addition to specific themes based on regions or stakeholders, a prospective study could be based on testing the teaching and learning strategies of higher education institutions who have participated in the Tuning Project. Moreover skills comprises in each of the factor groups is an important matter for further study. As we have named five important groups, it is important to see whether

these skills and competences have any direct influence with the labour market needs.

To conclude, directions for further researches have shown that the above mentioned limitations can be corrected with future studies. As this thesis cannot be very wide in discussing about all matter related to skills and competences and also cannot fully utilize the data base, it can be seen that an initiative is taken from our part to contribute to the general ideas on skills and competences. Therefore we expect that our contributions would help policy makers to improve the system by integrating some of the general proposals suggested in the thesis.

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Appendices

Appendix 1 List of generic competences for the Tuning Projects

Tuning Project in Europe
1. Ability for abstract thinking, analysis and synthesis. 2. Ability to apply knowledge in practical situations. 3. Ability to plan and manage time. 4. Knowledge and understanding of the subject area and understanding of the profession. 5. Ability to communicate both orally and through the written word in native language. 6. Ability to communicate in a second language. 7. Skills in the use of information and communications technologies. 8. Ability to undertake research at an appropriate level. 9. Capacity to learn and stay up-to-date with learning. 10. Ability to search for, process and analyse information from a variety of sources. 11. Ability to be critical and self-critical. 12. Ability to adapt to and act in new situations. 13. Capacity to generate new ideas (creativity). 14. Ability to identify, pose and resolve problems. 15. Ability to make reasoned decisions. 16. Ability to work in a team. 17. Interpersonal and interaction skills. 18. Ability to motivate people and move toward common goals. 19. Ability to communicate with non-experts of one's field. 20. Appreciation of and respect for diversity and multiculturality. 21. Ability to work in an international context. 22. Ability to work autonomously. 23. Ability to design and manage projects. 24. Commitment to safety. 25. Spirit of enterprise, ability to take initiative. 26. Ability to act on the basis of ethical reasoning. 27. Ability to evaluate and maintain the quality of work produced. 28. Determination and perseverance in the tasks given and responsibilities taken. 29. Commitment to the conservation of the environment. 30. Ability to act with social responsibility and civic awareness. 31. Ability to show awareness of equal opportunities and gender issues.

Tuning Project in Latin America
1. Capacity for abstraction, analysis, and synthesis. 2. Ability to apply knowledge in practice. 3. Ability to organise and plan time. 4. Knowledge regarding the area of study and related professions. 5. Social responsibility and commitment to citizenship. 6. Capacity for oral and written communication. 7. Ability to communicate in a second language. 8. Ability to use information and communication technology. 9. Capacity for investigation. 10. Ability to learn and update learning. 11. Ability to search for, process, and analyse information from a variety of sources. 12. Critical and self-critical abilities. 13. Ability to react to new situations. 14. Creative skills. 15. Ability to identify, pose, and solve problems. 16. Ability to make decisions. 17. Ability to work as part of a team. 18. Interpersonal skills. 19. Ability to motivate and work towards common goals. 20. Commitment to look after the environment. 21. Commitment to socio-cultural environment. 22. Value and respect for diversity and multiculturality. 23. Ability to work in international contexts. 24. Ability to work autonomously. 25. Ability to formulate and manage projects. 26. Ethical commitment. 27. Commitment to quality.
Tuning Project in Russia
1. Ability for abstract thinking, analysis and synthesis. 2. Ability to work in a team. 3. Capacity to generate new ideas (creativity). 4. Ability to identify, pose and resolve problems. 5. Ability to design and manage projects. 6. Ability to apply knowledge in practical situations. 7. Ability to communicate in a second language. 8. Skills in the use of information and communications technologies. 9. Capacity to learn and stay up-to-date with learning. 10. Ability to communicate both orally and in written form in the native language. 11. Ability to work autonomously.

12. Ability to make reasoned decisions.
13. Ability for critical thinking.
14. Appreciation of and respect for diversity and multiculturality.
15. Ability to act with social responsibility and civic awareness.
16. Ability to act on the basis of ethical reasoning.
17. Commitment to the conservation of the environment.
18. Ability to communicate with non-experts of one's field.
19. Ability to plan and manage time.
20. Ability to evaluate and maintain the quality of work produced.
21. Ability to be critical and self-critical.
22. Ability to search for, process and analyse information from a variety of sources.
23. Commitment to safety.
24. Interpersonal and interaction skills.
25. Ability to undertake research at an appropriate level.
26. Knowledge and understanding of the subject area and understanding of the profession.
27. Ability to resolve conflicts and negotiate.
28. Ability to focus on quality.
29. Ability to focus on results.
30. Ability to innovate.

Tuning Project in Africa

1. Ability for conceptual thinking, analysis and synthesis
2. Professionalism, ethical values and commitment to UBUNTU (respect for the well being and dignity of fellow human beings)
3. Capacity for critical evaluation and self awareness
4. Ability to translate knowledge into practice
5. Objective decision making and practical cost effective problem solving
6. Capacity to use innovative and appropriate technologies
7. Ability to communicate effectively in official/ national and local language
8. Ability to learn to learn and capacity for lifelong learning
9. Flexibility, adaptability and ability to anticipate and respond to new situations
10. Ability for creative and innovative thinking
11. Leadership, management and team work skills
12. Communication and interpersonal skills
13. Environmental and economic consciousness
14. Ability to work in an intra and intercultural and/or international context
15. Ability to work independently
16. Ability to evaluate, review and enhance quality
17. Self confidence, entrepreneurial spirit and skills
18. Commitment to preserve and to add value to the African identity and cultural heritage

Appendix 2 Tuning Project Questionnaire model

TUNING EUROPE: Generic Competences

(for Graduates, Employers, Academics and Students)

This questionnaire presents a series of questions related to the generic skills and competences that may be important for success in a career. Please answer all the questions. The answers may be very valuable in improving course planning for future students. Please select the best option in each case.

For each of the skills listed below, please estimate:

- the **importance** of the skill or competence, in your opinion, for work in your profession;
- the **level** to which each skill or competence is developed by degree programmes at your university.

The blank spaces may be used to indicate any other skills that you consider important but which do not appear on the list.

Please use the following scale:
1 = none; 2 = weak; 3 = considerable; 4 = strong.

GENERIC COMPETENCE	Importance	Level to which developed by University Degree
1 . Ability for abstract thinking, analysis and synthesis	☐	☐
2 . Ability to apply knowledge in practical situations	☐	☐
3 . Ability to plan and manage time	☐	☐
4 . Knowledge and understanding of the subject area and understanding of the profession	☐	☐
5 . Ability to communicate both orally and through the written word in native language	☐	☐
6 . Ability to communicate in a second language	☐	☐
7 . Skills in the use of information and communications technologies	☐	☐
8 . Ability to undertake research at an appropriate level	☐	☐
9 . Capacity to learn and stay up-to-date with learning	☐	☐
10 . Ability to search for, process and analyse information from a variety of sources	☐	☐

Appendix 3 Interview with General Coordinators of Tuning Project

Interview 1: with Julia Gonzalez

Direct interview with Julia Gonzalez done by Gipson Varghese, dated on 14-02-2013 (Sound Clip no.60 and 61)

Question 1: What is specific for the selection of regions in the Tuning Project?

Answer: One reason is that it is been developed for fifteen countries and then for 27 countries in Europe. The countries are very variant with different backgrounds. Therefore, it is important for the system to consider different backgrounds and various needs. Therefore, if the system is prepared with a method to deal with seventeen countries and then 27 and the use of the same methodology is not difficult in the case of another 51 in Africa, because the method is prepared to deal with respect for diversity and for ranking common elements.

Second reason is that there is a great need for regionalization in terms of higher education in all over the world, it means cooperation among regions and politically they need to be united and there is a need for a method to get them united. The level of cooperation is the availability of same level of degrees, which means they can send students around. The students (Erasmus Students) who made a lot of impact into the European Identity. So when you have students going around at that particular time of life, there are people who feel that they really belong to that region. Therefore, future citizens belonging to the regions are important.

Third element is that we are in a global world and we need global indicator. Globally when something is driven from top down, in Tuning we have found the way to doing thing with bottom-up procedure. Though it is a global situation, it is done by regions. If any regions needs, they can consult. This is completely different from globalization. Globalisation is a reality, you can like or dislike but it is a fact. And everybody is looking for global indicator because people are moving from one place to another and global indicators to catch it, because probably you have global model or global language. Now as it happened Tuning has become a global model and a global language.

So these are the most important reasons that I think Tuning was successful and it happened in different regions. Because they wanted to belong to a global model and global language.

Question 2: Are there any studies done by comparing these regions?

Answer: Not yet.

In the tuning Project, the ownership is very important; ownership by the region. Therefore, in every region, they, the people who are in tuning project, discuss and select the number and the kind of competences they think are best for them. Therefore in some cases, in Europe, they decided and selected 31 competences. In the other cases, they think of their regions and select the ones that they are best for them, like 27 competences for Latin America, 30 for Russia and 15 for Africa.

Question 3: From where are competences selected?

Answer: They come to the meeting (first meeting of Tuning project) with set of competences they think would be very relevant for their region.

Question 4: Do you ask them in advance to come with a prepared list?

Answer: Exactly. In addition to that they have all list of tuning that happened before, in Europe or in Latin America etc. more than that they can suggest list of competences which are more important for them. It is very important to know that before they come to the meeting, they

discuss in all groups, for example, in generic competences. Then they discuss in groups and select generic competences which would be good for the benefit for their country. Once the group discussion is over, the coordinator of the region collects the recommended list of competences from the groups where they had discussed with everybody. This is the way that they reach to the final list of competences.

The regionally prepared list is then consulted with the tuning general body and the general body has little control over the final selection of list of competences. This is done to make sure that the selected competences can be compared between other regions. This is the reason why some competences are common among some regions and some not common. This is not a compulsory process but regions have full freedom to select the list they want because the project makes it sure that the regional tuning project is done by the regional body.

Question 5: How was the first list of competences prepared?

Answer: The general body prepared a list of competences and gave to the European regional bodies and subject groups. In the selection process, they discuss, accept or not accept, select the list

Question 6: Was the selection of the list based on literature review?

Answer: Yes, the selection of competence list was based on literature review and the list of people who have done that is also mentioned in the first tuning meeting minutes. Maria Jose Bezanilla is the person who really done that work.

Based on the prepared list, discussion was carried out where systemic, instrumental and interpersonal competences were selected.

In the first phase of the data collection, the structure of the questionnaire was different, where there were more questions regarding age, sex, year of graduation etc., in the first phase there were studies based on correlations between male and female, age distribution etc and this categories were avoided or dropped

Question 7: How Tuning Project started in Lain America?

Answer: People from Latin America wanted the project to be implemented in their areas and they approached the European Commission and a project was approved for them. It was also thought that sharing the European project results was useful for them

Question 8: Why project are implemented in other parts of the world?

Answer: The project was not European was only at the beginning. In order to make European Higher education phase, tuning was considered as an important and useful tool. It was same in the case of LA, in order to make the LA phase and also in the case of Africa for African phase.

The tuning project gave them a tool to use for different regions. What is good for the tuning is the cooperation and collaboration of people who are working in the project. For EU, 27 countries, criteria was the concept of respect and a tool of regionalization. If we can work with 27 countries, it is evident that this tool can be applied in other areas (groups of countries)

As sense of unity and being part of a community. A common understanding and respect is created and at present the project has become a global tool.

Interview 2: with Robert Wagnaar

Direct interview with Robert Wagnaar done by Gipson Varghese, dated on 09-07-2014 (Sound Clip no.1 to 7)

Question 1. What is Tuning project and how was the selection of regions during the primary phases of Tuning Project?

Answer: Tuning follow mainly two principles. Tuning follows Bologna process (Bologna Declaration, 1999). That was one reason to set up Tuning Project. Another reason was our experience in European Credit Transfer System (ECTS). With regard to ECTS, we concluded that the traditional way of recognition with regard to credits did not really work. The idea with regard to ECTS was, we would compare periods of studies but in reality practice we saw comparing of courses form one to one. So the system was not advanced enough. We thought it was ok and we should focus more on learning outcomes. This fitted it well to the Bologna formats. So we, particularly Julia Gonzalez, tried to sell this idea to the European Commission (EC) that we should have a pilot in which we would develop learning outcomes, competences. We decided this process for five disciplines but it became seven disciplines for the countries in the European Union. EU was much smaller than it is now. It took some time to get EU on board because for them it was a political issue and they thought that they were not in the position to discuss education as part of the treatment. The inclusion of education came later in 2001 and it became as a part of the process and then got its role. But in the beginning, in 2000, although we took initiative, the Commission did not play a role. So we asked the EC to find out whether there is an interest for such a project, so we launched a call of interest and asked University presidents for their interests in the selected disciplines. We got many responses and in the end, EC had interest to support the project which was quiet unique, because there did not exist such a kind of project.

When I was preparing the project, first, I had to link it to the Bologna process. In the project, we could involve 75 universities, which we selected carefully with the help of European Union University Association. Then we had the project for Europe and from Europe, we actually developed to other parts of the world. But the initiatives were either taken by the EC or by the countries. In the case of Latin America (LA), it was through a conference attended by Rectors in LA in Madrid attended by Julia and they thought that this might be a good idea for them join the project. So in 2003, the project in LA started, basing on the philosophy that we built for Europe because what we discovered in Europe, was not only related to the Bologna process only, it was also related to modernization of higher education that will take place anyway.

Question 2.Why did you name this project as Tuning?

Answer: The naming of the project as Tuning was by accident, more or less. In the initial stages of the project, Tuning was not in the title, it was more about convergence type of wordings. Bu the commission did not find sexy enough, so they want a catchy type of word. At the time, Julia was in Latin America and I referred dictionary trying to find a title word catchy enough to reflect what we were looking for and I came up with Tuning. I thought the word similar to tuning of car engines and also tuning of an orchestra. We were looking for this similar expression. Things can be same but can also go into different directions and tuning expresses this. So it is open and allows for flexibility and autonomy. At a time you develop reference points and fit into a violin or in an orchestra. Although it has flexibility, we speak in same language and we convey the importance of having the same language globally and tuning stands for that.

Question 3: What are the criteria for selecting partners (Universities) in the project?

Answer: We have criteria and we select the criteria according to regional aspects. For Europe, prestige played a great role. So we selected five disciplines, which were very traditional disciplines because the concept was quiet new, (concept like learning outcomes, student centered learning etc). So what we did particularly for countries like UK, Ireland, Germany, we tried to pick out those universities who were very good in those particular disciplines. For example, Mathematics is an important area of study and we could get prestige. So that was the intension. So we could choose from a pool of universities and we also decided to select universities in which those selected disciplines played a great role. At the end, we come up with a list of participants and we choose best out of them.

In LA it was bit different because we did that with the support of government. The government made decision on the selection of universities for the project. Although the ideas was similar to the European plan but the criteria was employed by the government.

So in the selection of partners, we have to discuss with Rectors Conferences or European University Association or our own judgments. In the selection process, we were lucky to have proposals from prestigious and good universities. So that made our life little bit easier. So prestige was an important matter, prestige of university as well as for disciplines and both elements played role.

Question 4: In the initial stages of the Tuning Project, did you know about similar projects?

Answer: No, when we initiated, there were no similar projects. But now I know that competences were discussed in number of countries but it was only initial discussions. Discussions started actually in the second half of the nineties. Discussions were there about the organisation of educational systems more in the direction of competences and actually we linked our ideas to those discussions. So we know now but we did not know in the beginning. For example, there were discussions taken place in the United States, particularly focusing on learning outcomes. But it was also happening in Europe and we realized, particularly in educational sciences, that the existing formats did not work anymore. For us what was very important has been stressed and we wanted to link up our discussion to the labour market. Because what we saw in particular to Europe is that there was a concern about the relationship between university education and the needs of the labor market (EU publication in 1995) and there were high unemployment in the later nineties. We thought that programs should suit in way that they have relevance not only for the learners but also for the world in general. In the end, educational programs are there to offer people better life and also support healthier economy to each country. So that was a driver taking into account personal development and not for getting other elements.

There was a challenge to the social sciences and humanities subject compared to sciences and law subject saying that social sciences and humanities prepare students to support the society only but not for getting jobs in particular sector. We thought that that idea was too vague and it has to be more precised. That's why we have added one feature to the project by mapping the labour market in several fields. That was new and we focused more on to the generic competence, which was also new. What was quiet new was that we did not only for undergraduate studies but for graduates and doctoral students. If they want to see their role in the society, this has to be stipulated. We also noticed that the traditional way of knowledge acquisition or knowledge transfer was changing because of the invention of computer and internet. The world was changing rapidly anyway.

Question 5: How do you convince these ideas to other partners?

Answer: Our argument to get EC and other partners on board was to make discussions on standard setting. The quality assurance mechanisms and organizations got more relevance from nineties and more countries were clearer on that issue at the beginning of the twenty first century. We notices that standards were decided by people outside academia may be with the help of academicians, but outside academia.

For the projects, we have to involve academics directly which was another reason to make participation from academia. In Tuning we wanted academics to be involved in the process of forming higher education and also to develop reference points for the quality of programs. So that was very important for us. These were the arguments to get members on board. We told them that we think that general competences are transferable and skills in general are becoming more important that they were in the past. So that we have to really prepare people with competences, which require courses about analytical, theoretical, synthetically relevant skills and also about team work, learning to learn etc. Also national governments were also preparing in the same line and we could align with that. The difference was that governments were preparing in a wider area and we were more specific. But it took time to convince academics because they were thought that this was not a good approach. So the argument to convince them was to make them know that they were already doing but do not know because governments have not stipulated this practice in the course manuals. But we will try to find out how this work and that's why we set up this consultation of generic and specific competences. So we asked the groups that we had and at that time we had seven groups. We asked them to come up with lists of 30 generic competences and tell us which are the most important ones and we then we are going to check with stakeholders (employers, graduates and academics). We asked them whether they are important and whether they are taught. And we found that some competences were very important but were not taught well. That was an eye opener to those who were involved. This really helped us to get academics on board and to highlight what was important and were not well done. It took some time to convince them.

Question 6: What was the process in the selection of competences?

Answer: We give a long list of prepared competences to the subject group experts and ask them to be critical with the list. Then we ask them to figure out the relevant/most important ones and we combine all the outcomes of these seven groups and make one list. Finally the total number of generic competences was 30 for Europe and they were again discussed in different groups. We did the same way with subject specific competences and the final list was confirmed by each subject groups. So it was a process of reflection. The list was kept more or less same but it was critically analyzed later in other regions. For regions other than Europe, we provide this list and other materials. In LA and Russia, they accepted some and took out some. In China, the list is totally different from other regions. But we ask them not to be so distant from the original list because we must be able to compare throughout the world. Although there are slightly different the core is same. The preparation of the list was basically done based on literature review and them with open discussion in subject groups. The literature review alone did not work and we also ask members to come up with new list of competences. Often these competences were same, but reframed and rephrased but we have a core in all lists and it took time to develop the core. We also learn from others to rephrase to make more precise.

Question 7: What is the development process of Tuning Project for future?

Answer: What we see in the project, the approach that we developed, you can call it Tuning or other, whether it is student centered learning, competence based learning etc. which was developed in nineties. We meant something else from the original inventors of these concepts, because we linked them up with learning outcomes which they did not do at that time and they think that competence and learning outcomes are same but it is different. But we think that this

format will not go anyway because we have to really take into account what we have really asked from us. This is not limited to European process because we have same kind of discussion in Africa or in India or in China, Central Asia or in Russia because people want to know what the project's product and it leads to. They need to know the results of the time invested by the universities, individuals. They want to know the development is sufficient and they lead to an optimum result. So this approach is significant because the education is global nowadays. People can move from one country to another easily and they can do Bachelor in one country and then go for a Master in another country.

Competences are also important in the case of employability because many companies are now global and the condition within any company requires being global, because many companies are producing for global market or for regional market. With regard to civil servants, there is a wider development now than the local one. So that is the direction it will go and we will do this more and more. It is still difficult for many academics to rephrase their educational efforts and programs in terms of outcomes instead of competence. But it won't go any more. So that is the direction the project has and this is the future. It is measuring the outcome and now assessment has become very crucial. So, can you assess competences? Can you assess learning outcomes in a reasonable way? The moment you say yes, you can also compare this in a region or globally that we see in ILO. It is like a PISA for primary and secondary education. In the end, we are going to compare education in China with LA or Europe. So that will be the future.

Appendix 4 Results on Effect size (Cohen's *d*)

Cohen's *d* in between Regions

Achievement			
REGION	EU - LA	EU - RU	LA - RU
social	0,32	0,35	0,04
motivation	0,13	0,26	0,13
learning	0,00	0,22	0,22
research	0,09	0,28	0,19
international	0,14	0,44	0,31