

Examination of 21st-Century Competencies and Skills of Graduates from the Perspective of Sector Representatives and Academicians*

Üniversite Mezunlarının 21. Yüzyıl Yeterlik ve Becerilerinin Sektör Temsilcileri ve Akademisyenler Açısından İncelenmesi

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Abstract. This study aims to explore the 21st-century competencies and skills of university graduates from the perspectives of sector representatives and academicians. The study group consists of 10 participants, 5 (4 male, 1 female) academician and 5 (3 male, 2 female) managers in the Human Resources departments. Data were collected through in-depth interviews. Inductive content analysis method was used to analyze the data. The results of the analysis show that the qualifications of graduates and the features required by the sectors can be grouped under one theme and four sub-themes. According to the results, the theme of competence emerges as a single theme covering the sub-themes of knowledge, skill, personality traits, and vocational identity. Findings show that students' early experiences with which they can interact with sectors relevant to their fields are important. The results are discussed in light of the relevant literature and some suggestions are given.

Keywords: Skills, competencies, higher education, industry, university, university graduate

Öz. Bu çalışma, üniversite mezunlarının 21. yüzyıl yeterlik ve becerilerini sektör temsilcileri ve akademisyenlerin bakış açısıyla incelemeyi amaçlamaktadır. Çalışma grubu, 5'i (4 erkek, 1 kadın) akademisyen 5'i (3 erkek, 2 kadın) İnsan Kaynakları departmanlarında yönetici olan toplam 10 katılımcıdan oluşmaktadır. Veriler derinlemesine görüşmeler yoluyla toplanmıştır. Verilerin çözümlenmesinde tümevarımcı içerik analizi yöntemi kullanılmıştır. Analiz sonuçları, mezunların niteliklerinin ve sektörlerin ihtiyaç duyduğu özelliklerin bir tema ve dört alt tema altında gruplandırılabilceğini göstermektedir. Sonuçlara göre, yeterlilik teması bilgi, beceri, kişilik özellikleri ve mesleki kimlik alt temalarını kapsayan tek bir tema olarak ortaya çıkmaktadır. Bulgular, üniversitelerin öğrencilerine alanla ilgili bilgi, beceri ve farkındalık kazandırmasının tek başına yeterli olmadığını, aynı zamanda öğrencilerinin üniversite-sanayi iş birliği kapsamında alanlarıyla ilgili sektörlerle etkileşebilecekleri erken deneyimlerinin de önemli olduğunu işaret etmektedir. Sonuçlar ilgili literatür ışığında tartışılmakta ve bazı öneriler verilmektedir.

Anahtar Kelimeler: Beceriler, yeterlilikler, yükseköğretim, endüstri, üniversite, üniversite mezunu

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Introduction

Today, increasing technological developments have facilitated interactions among countries. In many societies, social, economic, cultural, and political changes and transformations have gained unprecedented momentum compared to previous periods. The shifting and exponential growth of existing information within the framework of this rapid change has led to a process in which not only the acquisition of knowledge but also the production, distribution, and consumption of information is essential. This change has affected the education field as much as other fields and increased and differentiated the expectations and demands of the society from education (Özgüngör & Duru, 2014). As a function of these changes and transformation, the paradigm of the 20th-century education could not be adapted to these changes, and there was a paradigm shift from behaviorism to cognitivism and (social) constructivism (Köseoğlu & Tümay, 2013). Formal education based on classroom interaction is now being replaced by interactive and non-formal education based on multiple interactions, including increasingly virtual environments. The passive understanding of education, which is based on the transfer of existing knowledge from the instructor to the student, has been replaced by a higher level and sophisticated education understanding based on the preparation of the environment in which the students can create and use mental structures that can actively use and produce information. Therefore, expectations of instructor qualifications as a function of these developments have also changed. Now, the teacher plays a facilitating role that enables the students to reach the correct and scientific information, to process this information mentally, to access the judgments, and to evaluate these judgments. In line with all these needs and expectations, the achievements of countries have been evaluated by the extent to catch up quality generally within education, notably higher education. Achieving excellence in higher education is directly related to the competence of academicians, the main actor of educational institutions, as well as improving physical conditions.

Understanding 21st-century Skills and Competencies

In general, 21st-century skills refer to the skill sets that individuals living in the information age need to have and continuously develop to be competent and qualified (Cohen, Renken & Calandra 2017; Hamarat, 2019). Dede (2010) provides us a framework for classifying the works of different groups, institutions, organizations, and associations on 21st-century skills. The most well-known formation of these is the P21 (Partnership for 21st-Century learning) formation in 2002 in the United States, bringing together business people, educational leaders, and policymakers to prepare individuals of the 21st-century. Another configuration, The Central North Regional Training Laboratory (NREL), reviews the literature and collaborates with stakeholders to help new generations learn 21st-century skills. The ATCS (Assessment and Teaching of 21st-Century Skills) aims to bring together researchers from many countries to create skill-based classrooms and curriculums. ISTE (International Society for Technology in Education) brings together global educators who believe in the power of technology in the transformation of education.

Similarly, the European Union and the OECD have had specific initiatives to classify skills (Hamarat, 2019). The World Economic Forum, for example, organizes 21st-century skills as skills, competencies, and personal characteristics (World Economic Forum Report, 2019). All of

these efforts can be considered as indicators of the continuation of work under different institutions, sectors, and organizations regarding 21st-century competencies and skills.

The 21st-century Competence Framework report, which finds great support from the education community and business circles in the United States, emphasizes that schools must equip their students with skills of problem-solving, creativity, innovation, critical thinking, information and communication technologies. It is also emphasized the importance of analyzing, synthesizing, interpreting, and presenting information in this world where access to information is at the highest level. In addition to these essential gains, it is seen that communication and cooperation, leadership, entrepreneurship, and critical thinking skills are given great importance in the 21st-century Competence Framework report. The success of companies in the global arena is possible mainly with individuals who have creative, diverse and critical thinking skills and entrepreneurial spirit, and individuals who work collaboratively and think innovative (Aydeniz, 2017).

The study of Van Laar, Deursen, Dijk, and de Haan (2019) on professionals working in intensive information technology industries ($N = 1222$) is attractive in terms of showing which people who have 21st-century skills needed by the industrial sector and the business world. According to the results of this study, knowledge, communication, cooperation, critical thinking, creativity, and problem-solving skills are more critical skills than others. Potential determinants that could be affected by stakeholders, such as social support and education, were also included in the study. The results show that learning and teaching 21st-century skills have changed considerably. In other words, different teaching strategies and approaches are required for the development of each skill. Cohen, Renken, and Calandra (2017) examined 21st-century skills from the perspective of professionals. According to the results, professionals emphasize that problem solving, critical thinking, and communication skills are the most sought and valued skills in the business world.

Many studies are describing, classifying, and conceptualizing 21st-century skills in the literature. For example, Voogt and Roblin (2012) analyzed 32 reports examining 21st-century competencies and abilities and observed that collaboration, communication, information technology literacy, citizenship, creativity, critical thinking, and social/cultural skills were conceptualized as 21st-century skills. Voogt and Roblin (2012) emphasize that some 21st century skills, such as technology literacy, are relatively new, but some skills, such as cooperation and communication, are as old as human history.

In parallel with the changing needs of society, the demand for quality and qualified education has increased. In particular, the question of which knowledge, skills, and awareness should remain in the 21st-century. Soulé and Warrick (2015) emphasize that many new jobs will be needed in the coming years, and most of these jobs will be associated with 21st-century skills. As Dewey (1998) points out, society is changing over time, and the future is more uncertain than ever. As a result, if we want to prepare young new generations for tomorrow to grow and sprinkle in the modern world, we must give them not only academic content knowledge but also general life skills, which can be described as 21st-century competence and skills. Throughout history, the success of world economies has been dramatically influenced by technological developments and innovation. 40-50 years ago, labor meant muscle, and today, most jobs require much more use of advanced technologies than muscle. Some blue and white-collar jobs are turned into gray collar jobs due to used advanced technology (Ritz & Bevins, 2019). Greenlaw (2015) makes some explanations related to 21st-century educational needs. According to him,

21st-century education will emphasize skills rather than knowledge, process rather than content, practical skills rather than basic skills, practice rather than theory, project rather than curriculum, cooperation rather than competition, lifelong learning rather than learning at school.

These individual competences, which are called 21st-century skills, are defined not only as knowledge, qualifications but also as expertise (Alismail & McGuire, 2015). Trilling and Fadel (2009) have conceptualized these skills as life and career skills, learning and innovation skills, and digital literacy skills. Life and career skills contain skills such as flexibility, adaptability, entrepreneurship, self-directedness, intercultural skills, efficiency, leadership, and responsibility. Learning and innovation skills include skills such as critical thinking, problem-solving, cooperation, creativity, and innovation. Also, digital literacy skills involve information, media, and technology.

Another classification of 21st-century skills was made by Hilton (2015) and Ananiadou and Claro (2009). According to Hilton (2015), 21st-century skills are related to cognitive, personal, and interpersonal domains. Ananiadou and Claro (2009) add technical skills to these domains. According to them, 21st-century skills can be classified into four categories as cognitive skills, personal skills, interpersonal skills, and technical skills. While cognitive skills include problem-solving, critical thinking, and systematic thinking skills are related to self-regulation, self-management, adaptability, and flexibility. Similarly, while interpersonal skills include communication skills and social skills, teamwork, cooperation, cultural sensitivity, and empathy, technical skills are more related to research, technology, and financial literacy skills.

According to Lapek (2017), 21st-century skills can be conceptualized as a wide range of knowledge, skills, awareness, working habits, and personality traits that are believed to be essential to success in a technological world. Although it is challenging to define 21st-century skills, critical thinking, problem-solving, collaboration, communication, computational thinking, and creativity can often be included in the skills of today's world list. Students with 21st-century skills can better adapt to new situations and conditions, solve their problems, share ideas, work collaboratively, take the perspective of the other, and think about how their behavior affects others. 21st-century skills not only make it easier for students to adapt to their new environment, but also to help them change and transform this world.

Some studies in the literature have sought answers to the question of the impact of 21st-century skills on an individual's life. For example, studies showing a positive relationship between cognitive, personal, and interpersonal skills and education, career, and health are included in the literature (Lapek, 2017). Similarly, cognitive competencies seem to be moderately and positively associated with higher professional status and earn. Personal and interpersonal competences, such as awareness and sensitivity, are positively related to the desired career level and earnings and negatively associated with antisocial behaviors (Lapek, 2017). According to Lapek (2017), the strong relationship between increased education and higher incomes can be taken as an indicator that schooling and qualified labor is positively assessed by the market.

As a result, according to the 21st-century learning framework, 21st-century competencies and skills can be classified into three main categories. These are skills related to learning, literacy, and everyday life (Hamarat, 2019). Today, instead of being a one-sided information recipient, learning has turned into an activity of producing knowledge by communicating people having critical and creative thinking in collaboration. Because of that, in this process, it is essential to develop critical thinking, communication, collaboration, and creativity skills called 4C (Critical

Thinking, Communication, Collaboration, and Creativity). The second category covers literacy skills. In this century, literacy has gone far beyond reading and writing activities, a text from printed material. At this point, digitalization is the most crucial factor that eliminates time and space that limits information. 21st-century literacy skills cover literacy processes related to economy, health, environment, communication, media, and information technologies. The aim is to create an interdisciplinary perspective and global awareness of the individual. Finally, the skills that people are needed have changed because an individual is affected by intensively and every field of their life by information and technology. Individuals must be flexible and assertive to be able to fight fast production, presentation, and exchange of information. Life and career skills cover flexibility, compliance, self-management, self-confidence, social skills, leadership, responsibility, and intercultural sensitivity.

In summary, although different conceptual frameworks for understanding 21st-century competencies and skills are used, some competencies and skills are included in almost every context. These are creativity, critical thinking, problem-solving, communication, collaboration, information and process management, effective use of technology, career and life skills, and cultural awareness (Beers, 2011, cited in Cansoy, 2018).

Current Study

One of the reasons for the existence of universities is to train qualified personnel needed by the labor market. For this reason, the question of whether universities can educate graduates with the qualifications required by the labor market is an important question. When the literature is examined, it is seen that the studies that can answer this question are not sufficient, and this situation creates a gap in the literature. The aim of this study is to fill this gap. In addition, both value-added production and graduates' employment are related to the answer to this question. It is clear that in order to answer this question, we need to learn the perspective of both academics and employers, in other words, to hear their voices. This study, as a part of the Erasmus+ KA201 project, aims to understand the 21st-century proficiency levels of university graduates in terms of business representatives and faculty members in Turkey. More specifically, this study seeks to answer the following questions.

1. What competencies and skills do business representatives seek for hiring university graduates, and why?
2. What is academics' and industry representatives' opinions about the necessary competencies and skills university graduates should have? Why?
3. Which qualifications should the university's graduate students have to meet the needs of the labor markets? Why?
4. To what extent the academics' and industry representatives' opinions about the university graduates necessary competencies and skills overlap?

Method

Research Model

To understand both academicians' and human resources (HR) managers' view about graduates' necessary qualifications with reasons, the qualitative research method was used. For this purpose, ten in-depth interviews were conducted with human resources managers from the labor market and academicians from the university.

Participants

The working group consists of 10 participants, 5 of whom are managers in the Human Resources departments of the labor market, and 5 of them are university lecturers. The ages of the faculty members ranged from 47 to 52 years. Four male and one female faculty members participated in this study. Detailed information about demographic variables related to academic staff is given in Table 1.

Table 1.

Demographic Information about Academic Staff

Participants	P1	P2	P3	P4	P5
Age	52	49	49	49	47
Gender	Male	Male	Male	Male	Female
Title	Prof. Dr.	Prof. Dr.	Prof. Dr.	Prof. Dr.	Dr. Instructor
Field	Education Management	Labor Economics and Industrial Relations	Social Policy and Work Psychology	Civil Engineering	Textile Engineering
University Experience (Years)	24	15	15	26	7
Sector experience (Years)	10	11	13	-	11
Administrative Experience	Yes	Yes	Yes	Yes	Yes

Also, 2 female and 3 male HR managers participated in the study. The ages of the HR managers ranged from 27 to 59 years. The work experience of the managers varied between 6 years and 33 years. Table 2 shows more detailed information about companies and managers.

Table 2.

Demographic Characteristics of Participating Companies and Participants

Participants	P1	P2	P3	P4	P5
<i>Age</i>	42	35	27	51	59
<i>Gender</i>	Male	Female	Female	Male	Male
<i>Operating Time of Sector (Years)</i>	62	85	20	22	39
<i>Number of Employees by Sector</i>	4250	120	54	600	943
<i>Graduate Area</i>	Industrial Engineer	Business Administration	Mechanical Engineering	Business Administration	Finance and Trade
<i>Job Experiences (Years)</i>	20	10	6	27	33

Data Collection Tool

Data were collected through interviews. Two interview forms were developed to get information from the participants. The first one was developed by all partners to interview with managers in the first meeting of the projects. The final version of the interview form was prepared by the project coordinator. Another form was developed by authors of current study to interview with academicians and shared with other partner countries and finalized in accordance with their recommendations. In addition, "Informed Consent Form" was prepared by partners from Spain and all documents were translated into Turkish. Finally, both forms were shared with academicians from partner countries and finalized.

Data Collection Process

Two different applications were made regarding the data collection process. In the determination of academic staff, attention was paid to have experience in the sector, to be different faculties, and to volunteer. In addition, communication was established with the Denizli Chamber of Industry in determining the business representatives, and the enterprises employing the most university graduates were selected. Interviews were held with Human Resources managers from different sectors who volunteered to participate in the study. An "Informed Consent Form" was given to each participant group before the interview. The interviews lasted approximately 30-50 minutes for each participant. For the privacy of the participants, codes such as P1, P2 were assigned to each participant.

Data Analysis

Inductive analyses approach for analysis of data was used for this research. Inductive analysis involves the discovery of patterns, themes and categories within the data. In fact, according to Patton, qualitative analysis is usually inductive from the early stages, especially when

developing a codebook for content analysis or when revealing possible categories, patterns and themes (Paton, 2014, p.453). The researchers read the data several times and with content analysis they made open coding. After open coding, they found the patterns and then reached the categories/ themes and sub-themes. When determining themes, it was checked whether the expressions under each theme were consistent in themselves and with the theme title.

Validity and Reliability

To increase the reliability of the study and to prevent data loss, interviews were recorded with the permission of participants. For a participant who did not want to get recorded, two different researchers took notes separately. While taking notes, the participant's direct statements were enclosed in quotation marks, and some abbreviations were used to avoid interruption of the interview flow. Two faculty members from the field re-encoded the coded qualitative data set to address reliability problems. To check the consistency between the two codes, the persons performing the coding came together and reviewed the meaningful data units encoded. Data units encoded in different formats were discussed, and agreed points were used as the basis for reaching the themes.

Findings

The Results of Content Analysis

The content analysis of the interviews with both academicians and human resources (HR) managers show that qualifications of graduates were gathered around competences as the main theme, which included the sub-themes, knowledge, skills, personal traits, and vocational identity. Although competence and skill can be used interchangeable by the some organizations and researchers, competent includes operational elements such as knowledge, skills and attitudes (Ananiadou & Claro, 2009). In this research, even if knowledge and skills were found as sub-themes of the competent, the personality traits and vocational identity were categorized instead of attitudes as an operational element of competent. Table 3 shows the results of the content analysis.

Table 3.

Analysis Results Related to Qualitative Interviews of Academicians and Managers

Themes	Sub-themes	Categories (obtained from academicians)	Categories (obtained from managers)
Competencies	Knowledge	Knowledge based related to content area Basic Computer literacy Basic subject area computer literacy Knowledge of laws and legislation in related area	Knowledge based related to content area Basic computer literacy Basic subject area computer literacy
	Skills	Communication skills Problem-solving skills Creativity skills Leadership skills Foreign language	Communication skills Problem solving skill Creativity (innovation) skill Leadership skill Foreign language skill

	Collaboration skills Analytical thinking Technology skill	Collaboration (Team working skill) Analytical thinking skill Learning with technology skill Agility skill
<i>Personality Traits</i>	Responsible Entrepreneur Confident Realistic Disciplined Empathic	Responsible Entrepreneur Confident Extroversion Sociable
<i>Vocational Identity</i>	Motivation Awareness Early interaction with the sector Goal Orientation Bond with professional institutions Vocational self-development	Motivation (Eagerness) Awareness Early interaction with the sector Goal Orientation Adaptive corporate culture Loving one's job

Knowledge

All professions included in universities as academic disciplines are based on knowledge in their subject fields. Although the knowledge can be different from one profession to another, all academicians and HR managers agreed upon that all graduates needed to have basic content area knowledge, and knowledge related to basic computer literacy like Microsoft Word, Excel and Access, and basic subject area computer literacy like AutoCAD and SOLIDWORKS for engineering fields. One of the academicians said that;

"A student should pay close attention to practical courses. Similarly, he/she must have understood his theoretical lessons very well. For example, counting yarn, knowing woven- knitting structures, knowing how much material and how much dye is needed for woven fabric. Students should be able to make these calculations".

Another one explained that;

"The graduates must know the programs that can perform advanced analyzes in addition to the office programs. It is not enough to know the basic office programs. The Human Resources Manager should be able to take precautions but to do so, and he/she needs a 10- year data set. He needs to be able to analyze this. To make this is possible with statistical programs such as SPSS".

Besides, two academicians added another knowledge base related to the legislation in business, which graduates should know. One of them explained that;

"You need to know the legislation very well, and in the changing world, legislation changes every day, more often. Because competition affects the labor market, it affects our laws. To attract more investments, you need to make permanent adjustments to improve employment conditions or increase employment. Then it is necessary to follow the legislation very well."

All human resources managers also complained that most of the graduates have a very deficient knowledge base. One of the managers said that;

"Especially engineering graduates have lack engineering knowledge. We are talking about the lack of technical knowledge. Knowledge they need to know. It's not about our job. Our job is a unique field. It's normal for them not to know our business. We can't even get a basic level of engineering knowledge."

Besides, they all explained that after being admitted to work, employees are provided with different training programs by the companies. The most important reasons of the deficient knowledge explained by academicians were that students do not come to the university consciously, only they want to study in university, universities accept too many students without paying attention to the quality. Therefore, lessons cannot be processed as desired. For example, three academicians expressed that case study methods, problem-based instruction should be used for each lesson. However, they added that academicians had so many students, so they could not use these kinds of instructional methods. In addition, human resources managers agreed that the university students had to take so many courses with lectures in which students could not develop their qualifications. Also, one academician explained that most of the academic personals did not know the sectors; as a result, they did not help students to connect theory-practice relationships and arranged their class according to the need of the sector.

Skills

The results of the analysis also show that skills are another factor related to the qualifications of graduates. Both the human resources managers and academicians explained that skills that are looking for job applicants were changeable according to of the needs of different departments in the companies. But, foreign language skill is a must for all companies that had to reject most of job applicants because of their foreign language level. The importance of language was also emphasized by the academicians. The reason why English is so important is increasing competition with globalization, and companies have to act faster. For this reason, it was explained that the employees responsible for the product to be marketed should contact the customers directly. They also emphasized the importance of knowing English to follow the rapid development and change in the world and to connect international networks.

Although both academicians and human resources managers approved the importance of the 21st century skills emphasized by the researchers, they agreed upon mostly that graduates should have communication, problem-solving, creativity, leadership, cooperation, (or teamwork), and learning with technology skills. In addition, one manager added agility skill that graduates should have. They also believed that most of the skills were related to each other. For example, according to one academician;

“The world is changing very quickly, so leadership skill is crucial for organizations to keep up with this change. In order to be an effective leader, communication skills are necessary for good cooperation and collaboration.”

Like the knowledge base, almost all participants explained that most of the graduates did not have these skills except learning with technology skills. As one academician said, “*we are digital immigrants, but the new generation is digital natives.*” Most of the human resources managers believed that although the new generation is very familiar with the computer, video games, and internet, they need to use these skills for their and company’s development.

The human resources managers from different sectors viewed that communication is essential when recruiting an employee after foreign language skills. Briefly, the managers generally took communication skill as having good interpersonal relationships with both colleagues and stakeholders by using appropriate oral and written language. On the other hand, according to academicians, the communication skill was so essential to understand a wide range of people

(with socio-economic differentiation) to be in contact with, and to solve the problem effectively. Besides, both academicians and managers agreed that because graduates represent the organizations, they have good communication skill.

For human resources managers and academicians, problem-solving could also be an important skill because companies have many different risks to be solved immediately. One of them explained that;

"Problem-solving is critical because there is intensive production at any time. A problem can be encountered in the product, and a problem can be encountered in the process, a problem can arise in the process, loss of work, loss of money, energy consumption, etc. The employer cannot afford it."

In addition, the academicians also agreed that problem-solving skill is an essential skill, but as a part of analytical thinking, creativity, and innovation skills. They believed that the person who has analytical thinking skill has the ability to see and determine the problems immediately and to solve the problems differently and in creative ways. Most of them also used analytical thinking and problem-solving skills instead of critical thinking skills like the managers.

Interestingly, most of the human resources managers explained that except for some departments like research and development or design, they were not directly looking for creativity and innovation skills that the employees should have. Still, they had some requests that encourage employees to be creative and innovative. For example, a human resources manager said that;

"We have a "suggestion reward box" for our employees. Those who have suggestions from employees but not self-confident can throw their recommendations in this box or come and tell us directly. I also send employees from different departments to different departments at least once a day. Thus, they can develop various suggestions from a different perspective".

Just the manager from the machinery industry directly gave importance to creativity, and she said, "*You cannot do anything without the creativity in machine manufacturing*" like most academicians. The academicians gave more importance to innovation and creativity, since to solve the problems effectively, to adapt easily rapidly changes in the world, and to find a place in the global market by differentiating the sector itself.

Leadership and collaboration (like managers most academicians took it as teamwork) are other skills sought in the qualifications of graduates based on the different positions. One of the managers said that "*Teamwork is one of our fundamental competence areas; we want employees who can be both a member of a team and also can be a leader of a team if it is needed.*" Again, just the manager from the machinery industry gave greater importance of collaboration, especially because she believed that the structure of their work is slightly different: the whole work needs collaboration. In order to get manufacture a machine, various employees work in numerous stages of production. She believed that if one stage fails, the whole system fails.

Besides, the academics believed collaboration skill as one of the vital skills of the 21st century, since globalization requires you to act very fast, so it is very important to work in coordination with all departments of an institution. Also, they emphasized that the collaboration skill is an essential skill to work interdisciplinary as other 21st century requirement. The one academician expressed that;

"Technology has improved; transportation technologies have improved. Then we are competing with time. So what do we do? In the company, not only you but also those who are responsible for the job should be very

good. You have to get along very well with production managers. When production increases, you need to motivate things very well. Maybe you need to hire new workers. You have to work in a very coordinated way. The way to do this is teamwork, which means that the company will be a part of a large global chain as well as a labor-value chain.”

Analytical thinking skill was mostly used by most managers and the academics instead of critical thinking skill that conceptualized as the ability to ask questions and having the courage to criticize and analyze the problems and jobs. With this restricted view, the most managers taught that asking, questioning, and analyzing is a good way to improve oneself and the very first step of personal growth, which should contribute to the development of the company. One of the academics the characteristics of a successful student as follows:

“The important thing for a student to be successful in any occupation is that he/she has taken the basic subject area knowledge very well. Some of the basic information about the profession ... after getting the basic information very well, if the student has the ability to analyze, a sense of responsibility and he/she is innovative and creative, can adapt this basic knowledge to any problem he/she has to think strategically at work. There is the high possibility to be very successful.”

Another skill mentioned in the interviews is the agility skill. Agility skill was referred by the assistant of human resources manager as an essential skill in Industry 4.0 because of increasing developments and chances. She thought that in 21st century companies were looking agile person to adapt quickly to change and to decide rapidly and accurately.

The academics explained that not so many courses in order to develop these skills except effective communication course, some courses related to technology. However, one of the academics expressed those practical courses were the most important courses to help students develop these skills. Some instructional techniques mentioned by some academics were used to support these skills like case study method, problem-based learning, and simulation. However, they explained that most academics could not use these kinds of methods because of the crowded classroom.

Personality Traits

Both the academicians and the human resources managers stated that some of the personality traits of graduates are also important in business life. Briefly, personal traits can be defined as quite stable feelings, behaviors, and thought patterns that differentiate peoples from each other. Analysis results showed that individuals who differentiate themselves from others were more advantageous in finding a job, and some personality traits have become urgent. Responsibility, entrepreneurship and confidence were common personality traits for all participants. While human resources managers added extroversion and being social as other important personality traits that they are looking for graduates, according to academicians, the graduates who have realistic, disciplined, and empathic personality traits could hire easier than others in the business area.

In order to catch out on the personal characteristics of the graduates, the human resources managers stated that they asked the graduates about the social activities they participated in during their university years, whether they participated in student clubs or not, their hobbies, and social life. According to them, the graduates who work in the student clubs and do their projects in these clubs, set goals for themselves and make efforts to achieve that goal they have

differentiated themselves very easily and explained that they contribute a lot to the institution. One of the managers said that;

“We're looking for students who are social. We prefer students who have worked in school projects. The ability of a student to lead any committee is tremendously different. It is different for two reasons; because he succeeded in school, and he did successful projects in school ... for example, we ask what kind of tasks he took on projects. We're asking who created the idea. When did the project start, when did it end ... We ask what kind of work is done at which stage of the project. The student expresses this very comfortably because it is something he already knows. For example, an employee graduated from physics. He did his PhD. His technical knowledge is good, he can take responsibility, but not in the social league.”

Also, all managers stated that university students take many courses at the university, and therefore, students do not have time to participate in social activities.

Vocational Identity

In 21st century, the graduates were expected to show the indicators related to vocational identity. Graduates who have the motivation (eagerness to get the job), awareness (related to the sector which wanted to work in) and goal orientation (related to their carrier) were more willing to interact with the related sector and to develop themselves vocationally according to both academicians and human resources managers. Besides, the result of analyses showed that the graduates who have vocational identity were willing to interact earlier with the sector. Even, according to the managers, graduates' reactions related to professional identity in the job interview were among the most critical factors in hiring. One of the managers explained that “*The people we don't hire are dull, you don't see any excitement. What we're looking for is that he/ she's eager to be willing to work.*” In addition, according to the managers, graduates should love their job and should be willing to adapt to corporate culture and feel belonging to the company.

The most academics also believed that the students who have vocational identity wanted to bond with professional institutions as early as possible; they were more willing to participate in their instructors' different projects to develop their vocational skills, although they expressed that the numbers of like students were very few. The one academician articulated that;

“Early interaction with the sector facilitates the development of professional identity. If the student does not have a vocational identity; the student does not need to follow anything and is not motivated. In the process of professional development, the development of professional principles and values is also important.”

In addition, all participants expressed that collaboration between universities and companies was so important to help graduates to develop vocational identity. They thought that after the second grade, the participation of students in internship programs would make it easier for students to determine their career goals and to understand the theory-practice relationship. The academicians also emphasized that internship programs should be reorganized, and internships should be at least one semester in order to be effective. Some managers expressed that many graduates applied without knowing the sector they were asking for a job, and this was an indicator that they did not develop their vocational identity.

Discussion and Conclusions

The results of the analysis show that the qualifications of graduates and the features required by the sectors can be grouped under one theme and four sub-themes. According to the results, the theme of competence emerges as a single theme covering the sub-themes of knowledge, skill, personality traits, and vocational identity. In other words, all participants distinguish competence and skill and perceive competence as a four-component conceptual framework consisting of knowledge, skills, personality traits, and vocational identity.

Although competence and skill are sometimes used interchangeably, they are related but different concepts (Ananiadou & Claro, 2009; Rychen & Salganik, 2003; Salas-Pilco, 2013). Skill refers to the ability to solve problems, to perform tasks and, to overcome some complex functions by using context-based sufficient and quality knowledge (Rychen and Salganik, 2003). Skills can be at the cognitive level, such as logical and creative thinking, or the technical level, such as manual dexterity and the use of tools (Ananiadou & Claro, 2009). On the other hand, competence is an intricate component of knowledge, skills, attitudes, and values. Competence does not only cover the use of theory and concepts as well as subject area knowledge, but also technical skills and personal qualities and ethical values (Ananiadou & Claro, 2009).

Qualification in higher education refers to what a person who completes any higher education degree knows, do, and be competent. An individual's level of competence is measured as "learning outcomes" (Council of Higher Education, 2010). For example, Bankel et al. (2003) designed a study to determine the expected competencies in engineering education. They found that the anticipated proficiencies in engineering education are engineering reasoning and problem-solving, systemic thinking, personal skills and attitudes, teamwork, and communication. Also, Özsoy and Gürbüzöğlü (2019) found that employers expect graduates were entering the profession to have competencies such as communication, work-related knowledge, problem-solving, teamwork, persuasive, innovation, analytic thinking and performance-oriented. They also reported that it is expected that graduates have personality traits such as being honest, positive, self-confident, well adjusted, leadership, creative, openness to experience, responsible, emphatic, proactive, and patient. In a study conducted to determine the skills and qualifications sought from university graduates during the recruitment process, Kavanagh and Drennan (2008) found that employers expect graduates were entering the profession to have analytical/problem-solving skills, real-life experience, and work-related knowledge. Kavanagh and Drennan (2008) reported that employers also expect that graduates have verbal communication skills, ethical awareness, and professional skills, teamwork, verbal communication, and the interdisciplinary nature of work. The analysis results support that employers consider field knowledge, cognitive and social skills, and personality traits essential in recruiting university graduates. Similarly, unlike previous studies in the literature, it is seen that it is vital for employers to develop a professional identity of graduates. In the light of the explanations above, it can be said that our findings are compatible with the literature.

It is seen that the employment rates of graduates vary according to different academic units. For example, academicians participating in this study stated that while the employment rate of the Faculty of Education graduates is 20%, this rate is 90% for Textile Engineering graduates. It is also reported that the difficulties experienced in the employment of graduates are related to different reasons. It is one of the reasons to raise more students than necessary. Economic stagnation stands out as another reason. Most human resources managers state that they need highly qualified blue-collar personnel. Despite the high demand for skilled staff from the

business world in the sectors with high employment, the number of graduates in these fields is low. These results show that there are some problems with employment policy and education planning. Failure to make education planning effective affects employment negatively, and this situation disrupts the supply-demand balance. Although there are no qualified personnel in some fields, there are more graduates than needed in some areas.

Knowing the basic concepts and theoretical frameworks related to the field, using the programs associated with the area, and having experience in application seems to be related to the field knowledge. Academics emphasize the importance of graduates having field knowledge. However, human resources managers emphasize that graduates' field knowledge is not sufficient. According to the academicians, this situation is related to crowded classes, low student motivation, unnecessarily increasing department quotas, and some awful sector experience. These results can be considered necessary in terms of showing that university graduates do not meet the needs of the sector, at least in terms of field knowledge. Similarly, having legislative knowledge related to the field is another area that seems essential. The participants also have two different opinions on this subject. For example, while none of the human resources managers find legislative information necessary, legislation knowledge is vital for some academicians in terms of the sector. According to them, not knowing the laws and regulations related to Labor Law and Social Security can cause significant losses to companies. These results show that many interrelated factors from curriculum to educational planning should be considered for university students to graduate with sufficient field knowledge.

Analysis results also show that another factor related to the qualifications of graduates is skills. All participants emphasized that graduates should have some skills besides field knowledge. According to the academicians and human resource managers, almost every 21st-century skill is crucial in itself. Although the participating academicians emphasize that the priority of these skills may vary according to different sectors, it is seen that four skills stand out in ordering the skills within themselves. These skills are critical thinking and problem-solving, creativity and innovation, communication, and collaboration skills. Düzakın and Yılmaz (2009) reported that while companies hire university graduates, the main characteristics they seek are communication skills and technology use skills. Similarly, although human resources managers conceptualize some skills differently, they emphasize that these four skills are essential. In the literature, these skills are conceptualized as 4C (Collaboration, Critical Thinking, Communication and Creativity) (Hamarat, 2019). These skills also seem the most sought and valued skills in the business world (Cohen et al., 2017). Davies, Fidler, and Gorbis (2011) identified ten skills for the future workforce which more focused on cognitive skills such as sense-making, social intelligence, novel and adaptive thinking, cross-cultural competency, computational thinking, new media literacy, transdisciplinary, design mindset, cognitive load management, and virtual collaboration. Jackling and De Lange (2009) found that employers also expect that graduates have professional skills, teamwork, verbal communication, and interpersonal skills. Some participants emphasize that problem solving, leadership, and analytical thinking skills are also important, while others see it as specific skills within critical thinking or as in direction. Çiftçi and Öztürk (2013) found that businesses expect graduates were entering the profession to have personal competencies such as communication skills, creativity, and problem-solving. Gabric and McFadden (2000) found that employers assume that graduates have verbal communication, problem-solving, and listening skills. These results show that both human resources managers and academicians emphasize cognitive, personal, and social skills, consistent with the literature (Hilton, 2015). While cognitive skills are essential in processes such as problem-solving and

decision making, personal and social skills are perceived as more valuable in cooperation, teamwork, and communication processes. In addition, analysis results show that both academics and human resources managers agree on 21st-century skills, the core of communication, critical thinking, creativity, and collaboration skills. On the other hand, academicians and human resources managers differ in the priority and importance of skills. According to the results, academicians perceive cognitive skills such as critical thinking skills as an essential skill. In contrast, human resources managers perceive relational skills such as communication, as the most vital skill. These results indicate that not only have cognitive skills but also whether they are in “the social league” is essential for the graduates to be employed in the sector.

The results of the analysis related to the skills development courses support that there are similar applications in each field. Each area aims to provide skills to its students at two points. The first of these is the applied courses. Practice courses are held in two different ways. Applications are carried out either in laboratories at the university or directly in the sector. The second is related to teaching methods. Even though there are different areas, situation analysis on case studies and real-life problems stand out as other skill development applications. These lessons aim to develop different 21st century skills such as critical thinking, analytical thinking, collaboration, communication, decision making, and problem-solving. On the other hand, most of the academicians emphasize that this is not acquired at the skill level, but rather based on knowledge and awareness. Crowded classes, an increasing number of students, a low number of lessons to develop skills, the limited number of lecturers who can provide these lessons, lack of coordination and motivation among academicians, and the inability to measure and evaluate these results are considered as deficiencies by academics.

Also, all academicians and human resources managers reported that foreign language skills were also essential. Foreign language seems to be valuable both to establish international connections in the globalizing world, to follow developments in its field, and to adapt to rapidly changing technology. Also, it is believed that knowing a foreign language is not sufficient alone and that graduates should have vocational foreign language proficiency in the field. This is explained as an important factor both in establishing international connections and preventing time and misunderstandings using translators. Balcar (2020) found that language skills highly transferable across the whole labour market, usable in nearly all occupational groups and sectors.

Summary, like the knowledge base, almost all participants reported that most graduates do not have 21st century skills other than learning with technology skills. These results show that practical training and early industry experience are essential to developing skills. Most academics emphasize that teaching is based on knowledge and awareness rather than skill development. Crowded classes, intensive curriculum, fewer courses to improve their skills, a large number of theoretical lessons, lack of coordination and motivation among academics, and the inability to measure and evaluate these results can be considered some of the obstacles to developing their skills.

In addition to field knowledge and skill sub-themes, another sub-theme is personality traits that seem essential. Çoşkun, Kır, and Çoşkun (2017) found that employers expect graduates were entering the profession to have personality traits such as being honest and moral, prone to teamwork and having working discipline. Analysis results show that individuals who differentiate themselves in terms of finding a job are more advantageous, and some personality traits become critical to this process (Lapek, 2017). For example, it is emphasized that graduates who are open to communication, have empathy skills, prone to teamwork, can use technology

effectively as a learning tool, creative, innovative, highly aware, and analytically thinking and are more advantageous in employment. These results are essential in terms of demonstrating that personality traits are also important for graduates in finding jobs and meeting the needs of the sector as well as competence and skills. Lin, Lamond, Yang, and Hwang (2014) found that personality contributed positively to job performance and job satisfaction. Holland (1997) argued that they chose the professions that match their personality traits and that this affects their job performance. Lin, Yu, and Yi (2014) found that person-job fit positively associated with well-being, and both person-job fit and well-being had a direct effect on job performance. While Balcar (2020) emphasis the importance of flexibility, communication and intercultural skills, the study of Gube and Lajoie (2020) also puts great importance on flexibility, adaptability, and creative thinking skills that are essential in navigating an uncertain world.

The results of the analysis can be considered as necessary in terms of showing that the cognitive dimensions of personality such as analytical thinking and problem-solving; social aspects such as openness to communication and collaboration are essential in the process of employment. Rios, Ling, Pugh, Becker and Bacall (2020) found that oral and written communication, collaboration, and problem-solving skills are in high demand by employers regardless of the sector. These results can be perceived as valuable in terms of showing the importance of the cognitive and social characteristics of the individual regarding both skills and personality traits. The findings show that graduates should have not only cognitive and social skills but also personality traits such as entrepreneurship and extroversion. The analysis results show that both academics and human resources managers think similarly about the importance of their graduates' personality traits in finding a job. Graduates with personality traits such as responsible, entrepreneur, confident, extroversion, friendly, and empathic seem to be more advantageous in finding and retaining a job.

Finally, the results of the analysis show that vocational identity is another vital sub-theme in addition to field competence, skills, and personality traits. Vocational identity is a basic structure characterized by professional motivation and openness, consistency, and stability of talents. In today's society, and adaptable, flexible, self-development oriented vocational identity contributes significantly to career success and satisfaction (Skorikov and Vondracek, 2007). The results of the study show that each department cooperates with the public and private sector institutions. While this cooperation is carried out through more traditional mechanisms in some areas, it is carried out in the form of establishing local contacts with the sector representatives and communicating via social media. It is also seen that students are encouraged to participate in this collaboration and communication process (Jackson, 2016). University-industry cooperation has a valuable contribution to students' vocational identity development process. According to some academics, this point contributes to students' recognition of sectors and institutions, on the one hand, and their professional identity development. However, this relationship and interaction is not yet desirable in terms of quality. According to most participants, full contact cannot be established between the university and the sector, and active cooperation cannot be developed. Some academics base it on different expectations and priorities of both parties, while others attribute it to lack of communication and some to lack of effective mechanisms. Most academicians recommend that their students prefer standardized companies and institutions in their internships and field practices. The academicians with industry experience, especially institutionalized companies, emphasized that the expectations of graduates were not very high and that they contributed to the development of graduates by continuing their education within the institution if they had some personality traits and skills besides their basic knowledge.

Another critical point that the academicians and the human resources managers emphasized was internship programs, which were started as early as possible. It seems to be essential for both students' professional identity development and motivation (Jackson, 2016). According to academicians, the lack and late of sector experience of students led to delays in developing themselves as they did not notice the demands and needs of the sector. Besides, most academicians emphasized that the students were disappointed when they realized that students' expectations from the industry were unrealistic.

In summary, the results of the analysis showed that the qualifications of graduates and the features required by the sectors could be grouped under one theme and four sub-themes. According to the results, the competence theme emerges as a single theme covering the sub-themes of knowledge, skills, personality traits, and vocational identity. Both academics and human resources managers emphasized that these four sub-themes were essential in determining the proficiency of graduates. Both academics and human resources managers underlined that it was crucial to know the field information and computer programs related to the field. Similarly, having some skills, in addition to knowledge, seems valuable in this process. Cognitive skills such as critical thinking, analytical thinking, and problem-solving, and interpersonal skills such as communication, collaboration, and empathy seem essential in this process. The analysis also supports that in addition to knowledge and skills, personality traits can also be a resource that fosters competence. Also, the cognitive and social dimensions of the personality are perceived as related to the ability of graduates. Finally, vocational identity seems to be valuable both in terms of the development of the concept of professional self and institutional belonging in the sector.

Finally, some limitations of this study can be mentioned. The findings of the study were obtained by the qualitative method. Therefore, the results can only provide a conceptual framework for working groups with similar characteristics. Second, content analysis is inherently descriptive, relational, and analytical. Thus, the relationships between variables should not be interpreted as cause and effect relations. Third, the research group is small and homogeneous, so it can be expected to have different dynamics in different regions, and various universities and sectors. Therefore, further studies on the subject will contribute to the effectiveness and generalization of the findings of this research.

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