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RESEARCH ARTICLE

Where Should a New Graduate Start? A Multi-Source Evaluation of the Banking Sector Business Analyst Signals in an Emerging Economy

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Abstract

Many of the existing studies focus on aligning occupations with higher education curriculum. However, it is known that with the ever-changing technology, skill requirements are constantly shifting. This discrepancy between education and employer demands can make it difficult for graduates to prepare themselves for the labor market. Accordingly, this study aims to assess the business analyst profession and recommend key skills for new graduates. We begin by analyzing the business analyst job ads within the Turkish banking sector. The research benefits from the professional qualifications of business analysts (n=15) in the National Occupational Standard (NOS) established by the Turkish Vocational Qualification Authority (VQA), including opinions of expert business analysts in the job analyst profession, to determine which skills are of critical importance. We interpret employer instrumental signals in job ads (n=323) from different sources with content analysis. Analytical thinking skills, knowledge of foreign languages, reporting, communication skills, and aptitude for teamwork and innovation are the most sought-after skills. Advertisements often request knowledge of SQL and Office programs and soft skills (SS). We have observed that the hard/technical skill requirements (such as Agile, Scrum, and Python) differ between employers. Our results emphasize that graduates should not be content with university courses, especially for developing SS.

Keywords

Business Analyst, Job Advertisements, Content Analysis, Signal Theory, Instrumental Signals

Introduction

Because the conditions of businesses are subject to constant and dynamic change, we believe that employers expect candidates to meet the current criteria and have skills that the position may require in the future before inviting them for an interview. Adapting study programs to labor market requirements based on changing conditions is one of the main challenges faced by higher education institutions. These institutions have understood the need to not only equip individuals with hard skills (a set of recognized qualifications, such as diplomas

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and certificates) but also to foster a type of education that encompasses soft skills (SS; a set of competencies specific to individuals: motivation, traits, aptitude, aspects of self-image, and social role) (Garcez et al., 2022). Hard skills are technical knowledge or training that you have gained through any life experience, including in your career or education, while soft skills are personal habits and traits that shape the manner in which you work on your own and with others (Birt, 2023).

Job opportunities increase when graduates are equipped with skills appropriate to the needs of businesses. The skill requirements of the jobs they apply for are unknown to many new graduates. Although on-the-job education can be seen as vital, new graduates are more likely to be recruited if they can signal competency for the position. At this point, the signal is defined as the information obtained from the CV or job interviews which indicate that a person is competent in the skills required for the job (Blickley et al., 2013). The existing literature focuses on two things: the education programs which impart skills to graduates and market expectations (Jaric & Deric, 2019; Rowe et al., 2020; Tyranska et al., 2021). In this study, we have interpreted employer signals by comparing them with the experts in the field and the Turkish national occupational standard data sources to identify the areas where graduates first need to improve themselves.

The signal theory is used to explain the behavior of individuals or businesses when they access different information. Typically, the sender has to choose how to transmit this information, while the other party, the receiver, has to decide how to interpret the signal. Thus, this theory is an essential component of management literature, including strategic management, entrepreneurship, and human resource (HR) management (Connelly et al., 2011).

Because the banking sector must take current (YuSheng & İbrahim, 2020) and innovative (Tajeddini et al., 2006) measures to adapt to the increasingly competitive environment, qualified personnel are needed. According to Agile Turkey's (2021) annual report on 415 companies, the adoption rate of agile applications in the banking and finance sector has the highest rate among the sectors, at 29%. Agile is a current business phenomena which focuses on how well organizations respond to change. Organizational agility refers to a firm's ability to cope with ever-changing market conditions, accelerate processes, and thrive by taking advantage of unforeseen and emerging business opportunities (Lu & Ramamurthy, 2011). The work of business analysts is critical in terms of adapting technology into the business world (Richards & Marrone, 2014), projecting the demands of internal and external customers in order to determine solution proposals (O'Loughlin, 2009). For this reason, the qualifications of business analysts are more important within the banking sector.

In this article, we aim to present an assessment of the business analyst profession in terms of which skills new graduates and early career job seekers can focus on, while obtaining information about the professions in which they are interested. The research thus contributes to the

current understanding of the business analyst profession within the banking sector in Türkiye, as well as factors which affect the employability of new graduates. It provided information about the resources that can benefit new graduates who will enter the labor market, besides the job ads. As far as we could determine, this is the first such study in Türkiye that brings together three skill definitions for the same profession. Whereas the existing literature focuses on the skills that education programs offer to graduates and the expectations of the job market (Tyranska et al., 2021), this study allows the interpretation of employer signals by pointing out the areas where graduates first need to improve themselves. We believe that graduates who realize how knowledge of the primary skills compares with the expectations of professionals and employers can more easily identify the education they need to achieve their goals.

We aimed to evaluate the business analyst profession in terms of which skills new graduates and early career job seekers should prioritize when seeking information about the professions in which they are interested. To achieve this goal, the article is structured as follows. In section 2, following this introductory section, we present the literature review in terms of studies related to the business analyst profession. In section 3, we describe the methodology steps that describe this study as qualitative research based on secondary empirical data (online job ads), in-depth interviews with professional business analysts, and an examination of the national occupational standard. In section 4, we present the findings and the discussion. In section 5, we conclude the discussion and make recommendations for future research. Following the conclusion, the limitations of the research are discussed.

Literature Review

In today's technology-driven world, information technology (IT) plays a critical role in organizational functioning. Digital skills and the emergence of new information and communication technologies are regarded as essential tools that enable organizations to transform their operational processes, strategic vision of business models, and customer relationships (Ferreira et al., 2019). The ability of institutions to respond to these processes faster than their competitors has become crucial in gaining a competitive advantage (Shukor et al., 2020).

The banking sector has been at the forefront of the technological revolution, characterized by the revitalization of digital services, rapid delivery, and innovative advancements in banking applications (Krasonikolakis et al., 2020). Traditionally, the banking industry has been focused on cost reduction and streamlining operations to enhance efficiency. However, today, the digitalization of the banking sector is expected to not only improve operational efficiency and flexibility, but also meet the ever-expanding customer needs at a high level. Consequently, cost reduction and increased productivity enhance competitiveness, producing a value chain that fosters the utilization of knowledge to support innovation and decision-making processes (Rodriques et al., 2022).

Due to its financial structure, utilization of advanced technology, and complexity of transactions and processes, the banking sector requires agility. According to a report by Agile Türkiye (2021), Agile practices are predominantly preferred in the banking sector, accounting for 29% of its application. Agile is one of the current business phenomena which focus on how well organizations respond to change. Organizational agility refers to a firm's ability to adapt to ever-changing market conditions, expedite processes, and thrive by leveraging unforeseen and emerging business opportunities (Lu & Ramamurthy, 2011). Agile business processes and IT systems safeguard and support model changes, allowing for immediate responses to opportunities and threats (Arsanjani, 2005). Although there are limited studies on Agile practices in the Turkish banking sector, those available emphasize the importance of flexibility, speed, trend monitoring, prompt decision-making, and customer orientation (Mızrak and Mızrak, 2020) while discussing their sub-dimensions (AI, 2022). Al (2022) found a statistically significant and positive relationship between the "knowledge production" sub-dimension of the knowledge management scale and the "responsiveness" sub-dimension of the organizational agility scale, highlighting the statistical associations between knowledge management and organizational agility.

Agile practices are significant in allowing business analysts to uncover the inherent value of their organization (Zajac-Woodie, 2013). As per the Turkish Vocational Qualifications Authority's definition (VQA, 2013), business analysts are skilled professionals responsible for preparing software development projects, designing projects, and conducting improvement studies. In this process, business analysts prioritize and analyze the perspectives of internal and external stakeholders, identify information technology solutions and solution dynamics (Kravchenko & Bruskin, 2017), and manage projects (Park & Jeong, 2016). These steps contribute to the production of robust, risk-free, and efficient solutions (Ten Vaanholt, 2008). They also enable continuous improvement that is aligned with project goals and requirements (Apine, 2013; Babok, 2015), which is a critical factor in determining the success or failure of a business (Bjarnason et al., 2011; Park & Jeong, 2016).

The role of a business analyst involves documenting user requests to ensure that developers and testers comprehend the expected outcomes, as well as facilitating effective communication within the team. Developing a contract for each request facilitates mediation among administrators, developers, and testers to establish agreement on the details of every issue. Additionally, business analysts assist in understanding, prioritizing, and elaborating the content of the Product Owner's backlog (Gregorio, 2012). Such a job description should highlight the fact that the business analyst role is not static, but rather adaptive to the context of specific projects. Business analysts aid in identifying business problems and guiding a team towards optimal solutions, recognizing that each problem and its corresponding solution are unique (Zajac-Woodie, 2013).

Studies have identified different skill sets for the business analyst profession. O'Loughlin (2009) has grouped the skill set required for a business analyst into four main categories: analytical, communication, technical, and business skills. Verma et al. (2019) defined the skill set of a business analyst as: decision making, organization, communication, content knowledge, and structured data management skills. Sonteya and Seymour (2012) incorporated Viitala's (2005) competency pyramid into their study and produced a skill set for business analysts. This skill set consists of five dimensions: fundamental, interpersonal, organizational knowledge, business process management, and technical. Park et al. (2016) determined six competency dimensions consisting of 30 competencies, including: behavior, knowledge, analysis, thinking, communication, and interaction. Many studies have also emphasized that soft skills are as valuable as hard/technical skills (Apine, 2013; Crawford et al., 2011; O'Loughlin, 2009; Richards & Marrone, 2014).

Although there are international studies on the qualifications of business analysts (O'Loughlin, 2009; Verma et al., 2019), we have not come across any studies that deal with business analysts in the Turkish banking sector. Considering the popularity of Agile applications in banks and the diversity of business analysts' projects, we believe that examining business analyst job postings in the banking sector will reflect the skills required by the profession in an up-to-date and comprehensive way. Job postings are frequently referenced sources on which qualifications are requested and applied (Robinson, 2021; Verma et al., 2019). Studies have utilized job postings in different ways, such as indicating change in qualifications with longitudinal data (Robinson, 2021) or revealing skill requirements of occupations (Verma et al., 2019). The skills which employers demand, can be seen as signals that provide insights about the job and business for candidates. Signal theory provides a useful argument for interpreting job postings. Studies have explained the views of candidates (Madan & Madan, 2013), the views of employees (Kim, 2019), employers' views (Renfro et al., 2020), and job postings through signal theory to reveal clues which provide detailed information about jobs (Poba-Nzaou et al. others, 2020).

Spence's (1973) signal theory is widely used in management studies. Signal theory (Spence, 1973) aims to inform job seekers about the details required for the post. Job seekers have limited knowledge of organizations and jobs, which means that they have to rely upon job postings to learn about opportunitines and make their employment decisions. In this respect, the theory provides the rationale for why job postings are critical for employers and job seekers, as well as why job postings are appropriate resources to search for competencies required for recruitment (Poba-Nzaou et al., 2020).

Signal theory also has instrumental and symbolic implications (Highhouse et al., 2007). While instrumental inference is expressed by a job offer, job description, and characteristics, symbolic inferences express subjective and abstract qualities, such as corporate image, cul-

ture, prestige, competence, and robustness (Lievens & Highhouse, 2003; Van Hoye et al., 2013). Many researchers have examined the instrumental and symbolic signals found in job postings (Ganesan et al., 2018). This study offers suggestions for the interpretation of instrumental signals through different data sources and contributes to the discussions on where new graduates should start when preparing for their chosen profession.

The study is based on three research questions:

Q 1: What skills do employers look for when hiring business analysts?

Q 2: What are the critical skills for business analysts?

Q 3: Where should a new graduate who wants to become a business analyst start?

Methodology

Previous studies have been built upon gathering a wide array of data from job ads (Kovacs & Zarandne, 2022; Lipovac & Babac, 2021; Verma et al., 2022; Walek & Pector, 2021; Wroblowska, 2019; Xiangdong, 2022; Zhou et al., 2022). This method reflects growing trends in the market and changing demand for the skills required in specific roles (Harper, 2012). This research employed data from three different data sources. Two of these are based on secondary empirical data (online job ads. and data of NOS), while the other concerns primary empirical data obtained from in-depth interviews with professional business analysts. We applied the qualitative analysis method and content analysis technique for the analysis and association of these data. Content analysis is the systematic reading of texts, images, and symbolic material, regardless of the author's or user's personal bias (Krippendorf, 2018). It is an effective reading method which emphasizes similarities and differences between the different data.

In the sub-headings of the methodology of the study, information will be given about the methods of obtaining the data used, their content, and the different stages of analysis.

Job Ads

Job ads were obtained from Kariyer.net, one of Türkiye's most popular employment matching sites. We used common business analyst keywords (such as junior and senior) to test the keywords and filters of the site, we tested business analyst keywords (like junior, and senior), before summarizing the search results. We analyzed 741 business analyst job postings for the banking sector between March 15 and May 30, 2022 We chose job ads with keywords that directly matched the words "banking sector" and "business analyst" that required previous experience. Duplicate job ads were pruned from the results, which left us with 323 postings.

Job ads included the following: position title, level, department, general qualifications, and employer information. The various stages of the Content Analysis stages as they were carried out will be explained below.

The first step in content analysis is to understand and analyze the content of the job posting by carefully reading it. Two authors and a human resource specialist preflighted the job posting text to identify keywords and locate the requirements and expectations. This control phase refers to a content analysis that involved coding the demands of each of the examined job postings. This stage was key to determining the qualifications, experience requirements, and skill sets of the positions in question.

To establish the categories and to ensure the validity of the similarities between the demands, the authors sent the codes to two expert business analysts. We created two categories by the thoughts of experts:

- T-SQL, PL-SQL, and SQL were categorized under the word SQL
- Uipath, Rapidminer, Blue Prism, Orange, and Weka were categorized under the word RPA (Robotic Process Automation)

Based on the qualitative concept of data saturation (Corbin & Strauss, 2015), after analyzing a certain amount of job ads, the researchers found that no new concepts were emerging from the data, and thus concluded that the sample size was sufficient. Table 1 below illustrates the frequencies of codes (and the categorized codes).

Table 1
Frequency of Demands In Job Ads.

Demands	**Count**	**Percentage**
Communication	323	**100,00%**
Foreign Language	323	**100,00%**
Analytical Thinking	323	**100,00%**
Teamwork	323	**100,00%**
Problem Solving	323	**100,00%**
Innovative	323	**100,00%**
Office Programs	323	**100,00%**
SQL	323	**100,00%**
Reporting	291	**90,09%**
Agile	241	**74,61%**
Scrum	234	**72,45%**
Flexible Working Adaptation	163	**50,46%**
Python	159	**49,23%**
Leadership	154	**47,68%**
Ethics	144	**44,58%**
Time management	144	**44,58%**
QlikView	99	**30,65%**

Demands	Count	Percentage
QlikSense	99	**30,65%**
Project planning	97	**30,03%**
Jira	81	**25,08%**
Visio	72	**22,29%**
RPA	45	**13,93%**
Draw.io	45	**13,93%**

Interviews

LinkedIn profiles were scanned to identify professionals for interviews and reach business analysts in the banking sector. Questions were obtained from the opinions of the most senior business analysts in the industry and banking sector recruiters. All of the professionals involved in the study are in charge of a team of business analysts. For the first interview, we sent the interview questions to 37 professional business analysts with at least five years of experience. Questions were open-ended Google forms and were meant to reveal the general thoughts of the business analysts we contacted. We received 15 responses and conducted semi-structured second interviews with the same experts to further elaborate the answers they provided (**Table 2** includes the demographic data of the professionals). We also requested that the experts produce a skill pool that could be used to produce a road map of how new graduates would be able to step into the role of business analyst. It took an average of one hour for the participants to answer all of the open-ended questions. All participants answered the same questions on a standardized question form.

We left some sections of the Google form flexibile to allow the respondedns to make recommendations, in order for us to precisely identify the job requirements of the business analyst position. We interviewed each analyst twice to ensure there were no missing or misunderstood questions on the form.

Table 2
Demographics of Interviewees

Experts	Gender	Age	Experience at the Head of an Analyst Team	Industry
M1	Male	30-34	0-2 years	Bank Sector
M2	Female	30-34	0-2 years	Bank Sector
M3	Female	25-29	2-4 years	Bank Sector
M4	Female	25-29	2-4 years	Bank Sector
M5	Female	25-29	0-2 years	Bank Sector
M6	Male	25-29	2-4 years	Bank Sector
M7	Male	35-39	10+ years	Bank Sector
M8	Female	25-29	4-6 years	Bank Sector
M9	Male	25-29	4-6 years	Bank Sector
M10	Female	25-29	4-6 years	Bank Sector
M11	Male	25-29	4-6 years	Bank Sector
M12	Female	30-34	6-8 years	Bank Sector

Experts	Gender	Age	Experience at the Head of an Analyst Team	Industry
M13	Female	25-29	2-4 years	Bank Sector
M14	Male	20-24	0-2 years	Bank Sector
M15	Female	35-39	10+ years	Bank Sector

National Occupational Standard (NOS*)*

The third data source is the business analyst profession skill set in the national standard of professions created by the VQA. The National Occupational Standard (NOS) refers to the minimum norm that the VQA accepts as the necessary knowledge, skills, and attitudes for successful performance of a profession. The professions to be standardized are determined by the Board of Directors, considering the priority needs of the labor market and educational institutions and the recommendations of the sector committees (VQA, 2013). An I.T. business analyst is defined as a person who prepares a software development project, designs the project, coordinates the development studies, tests the compatibility and operability of the software within the application environment, completes the software documentation, makes the preparations for the implementation of the software, and coordinates software improvement studies. This position is a qualified professional who follows development throughout all stages (VQA, 2013).

Findings and Discussion

The findings of all three stages should provide banking industry business analysts with instrumental information regarding new graduates. In this section, we provide the findings of the three data sources, discussing shared and separate skills.

Findings of Job Ads

The list of skills obtained from the job ads is shown in Table 1 above. All ads include SQL, foreign language, analytical thinking, teamwork, problem-solving, and the ability to use office programs. Agile project management, Scrum methodology, and reporting skills are also frequently requested.

We followed the definition of Sisson and Adams (2013), which states that hard and soft skills include a combination of more task-oriented technical and/or cognitive knowledge, while soft skills on their own include personal behaviors, values, or skills, including ethics, communication, leadership skills, and teamwork. The study supports the findings of other authors (Brown & Hesketh, 2004; Calanca et al., 2019; Chamorro-Premuzic et al., 2010; Finch et al., 2013; Rivera, 2012; Szydło, 2021) that emphasize soft skills more frequently. The Agile Türkiye (2021) annual agility report observed that the Scrum methodology is pre-

ferred in 92% of Agile organizations. This information is also reflected in instrumental signals. Agile and Scrum demands reveal that teammates with experience in project design and management are sought as non-senior business analysts. Scrum is the framework of agile methodology as it focusses on the day-to-day project management and is the most widely adopted agile project management method (Hayat et al., 2019). In addition, foreign language knowledge, which is frequently requested in job advertisements (Genc, 2012), continues to be among the most demanded skills.

In addition to business analyst positions requiring a bachelor's degree, we have observed a requirement for graduated from the engineering and social science programs. All the degree sections mentioned in the advertisements are as follows: math, mathematical engineering, industrial engineering, computer engineering, management engineering, software engineering, electronic engineering, insurance, actuarial, statistics, economics, management information systems, information technologies, business, and physics.

Interview Findings

We presented demographic data about the professional business analysts interviewed in Table 2. The common feature of all the individuals included in the study was that they worked in the banking sector and served as the leader or manager of an analyst team.

In the responses provided to the question regarding the definition of a business analyst, the analysts expressed that they possess qualities of: innovation, being able to devise solutions or projects to address specific or requested problems, diligently adhering to business processes, and assuming accountability. Participant responses include:

- "To generate the solution for any business need, after clarifying the requirements by asking the right questions, designing the optimum system, and preparing the documentation for the software of this system." (M2)
- "Person in charge of the entire process, both business and technical, before, during, and after the development." (M3)
- "It is the individual that examines the demands coming from the business unit and takes the necessary actions; they are a team player." (M6)
- "It is the person who evaluates the business processes, determines the needs and the optimum solutions, then follows the actions to be taken for the solutions." (M8)
- "People who carry out the processes of detailing the needs of the business units, projecting and commissioning the project. In addition, he/she is the person who thinks about solving problems and finds solutions." (M9)

It is also noteworthy that the analyst's job is not directly related to software while carrying out this task. Participants described the job as:

- "The business analyst's job is not to transfer requests directly to the software." (M4)
- "It refers to all my friends who do not want to continue their professional life with coding, but still possess algorithmic logic." (M7)

It is seen that analysts are in a position not to produce software directly in banks but to plan the design and determine the framework. The survey questions about the duties and functions of the business analyst in the organization heavily emphasized process design and management, analysis, and planning projects. Participants stated:

- "Project management, process design, screen design, and testing." (M1)
- "Receiving the business units' requests, making a needs analysis, determining the project scope accordingly, defining the flow to the software teams, communicating at the integration points between the teams, performing the customer acceptance tests with the business units, and producing the analysis documents." (M5)
- "We undertake analysis, design, and testing tasks." (M11)
- "Process analysis, testing, and coordination." (M12)
- "Scope analysis, functional analysis, testing, user acceptance test organization, and reporting." (M13)

Business analysts are required to be part of a team. Analysts take responsibility for a project and try to design the least costly solution quickly and effectively. Analysts are good communicators who can analyze and organize critical information and direct team members (Arsanjani, 2005; Vongsavanh & Campbell, 2008). In the questions regarding the skills new business analysts need to develop, experts often express effective communication, problem-solving, reporting, time management, teamwork, analytical thinking, innovation, ethics, and adaptability to flexible working. Participants stated:

- "While doing my job, I think that apart from hard/technical skills, it is imperative to demonstrate qualities of curiosity, robust analytical capabilities, effective communication skills, and the ability to guide the team." (M3)
- "In order to excel as a proficient business analyst, it is necessary to be social, solution-oriented, innovative, and have communication, writing, and analytical thinking skills." (M4)
- "The first essential criterion for a business analyst is the ability to think analytically. This is shaped by good education and personal characteristics." (M5)

- "People who can think analytically, enjoy problem-solving, attach importance to ethical values, and use time well are suitable for this profession." (M7)
- "In addition to hard/technical skills, it is necessary to have skills such as problem-solving, research, communication skills, coordination between business units, reporting, asking the right questions, concluding a subject by thinking analytically, organized, and innovative." (M10)
- "The most important feature of a business analyst, besides hard/technical skills, is communication. Communication, understanding, and patience are important." (M14)
- "I think detailed planning, a multidimensional perspective, analytical thinking, and a love to work are necessary to be a business analyst." (M15)

In answers to the same question, participants stated that it would be helpful to know SQL, MS Office, and some specific programs from data query languages. Participants stated:

- "I think office programs, SQL, and MS Office should be known in order to be a business analyst." (M3)
- "To be a business analyst, it is necessary to know SQL, MS Office, and Python programs." (M5)
- "An analyst should make good use of SQL, Office Programs, Visio, and Jira." (M6)

Findings of National Occupational Standard

NOS is the minimum norm that the VQA accepts. It requires the necessary knowledge, skills, and attitudes for the successful performance of a profession in Türkiye (VQA, 2013). As in other data sources, the most common skills include: knowing a foreign language, analytical thinking, communication skills, teamwork, solution orientation, and knowing how to use office programs. Office programs were evaluated in the same code in all data, although Microsoft was not mentioned as a commercial enterprise when referring to Office programs.

As an exception, SQL was not specified in the same code, owing to the concern of being unable to point to the commercial or direct program name, even though the database information is mentioned in the NOS, and we sought a one-to-one word match. Database, system, and application software skills are included as general titles in the NOS. Still, the programs (SQL, Python, Jira, and Visio) that these skills correspond to in practice are specified separately in job ads and interviews.

Some other basic skills not covered in different data sources are listed in NOS. These include: basic first aid knowledge, international quality standards knowledge, occupational health and safety knowledge, firefighting knowledge, and labor legislation knowledge. This

information reflects the basic requirements common to all occupational groups.

Comparison of Data Sources

The clusters in Figure 1 illustrate the skills and qualifications of business analysts listed in the NOS prepared by the VQA. In addition, they demonstrate the criteria sought in the job ads for business analysts and the skills and qualifications obtained as a result of interviews with business analysts who constituted the application area of the study. We used the Draw.io program to draw the figure.

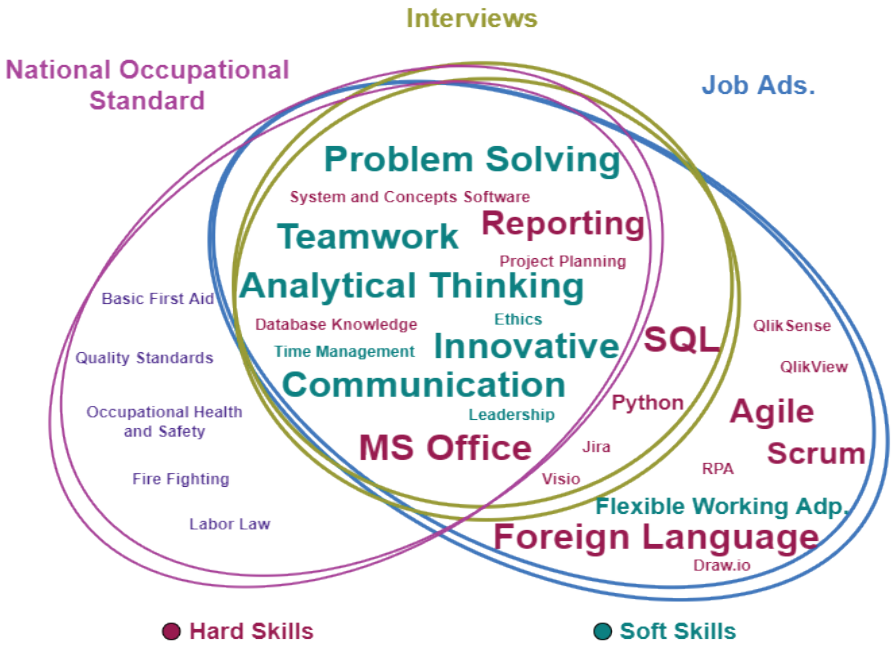

Figure 1. Clusters of business analyst skills and knowledge

Studies highlight the importance of soft skills in business analysts (Loughlin, 2009; Richards & Marrone, 2014). All data sources also emphasize that soft skills are critical. Problem-solving, analytical thinking, teamwork disposition, reporting skills, openness to improvement, and foreign language knowledge were the most frequently encountered critical skills in all data sources. We think university education should address these skills through different courses. In addition, interviewees stated that graduates benefit from ethical sensitivity, planning skills, leadership, and time management. The ability to adapt to flexible working

adaptation is the only soft skill sought in job ads but not highlighted in interviews and by the NOS. Office program skills and knowledge of data query language (SQL) were the most critical hard/technical skills. Although there are data query language courses, especially in engineering departments, universities should devote time to the self-development of office programs by assigning proper homework. These demands apply to knowledge of Python, Jira, Visio, Qlik Sense, Qlik View, Agile, Scrum, Draw.io, and Robotic Process Automation (RPA) programs. These programs can be challenging to plan earlier in university education because they specifically relate to current job needs.

While flexible working hours were not mentioned in the interviews nor by NOS, employers frequently demand business analysts be open to such a schedule. Employers may want new graduates to be able to work under an intense pace and pressure when starting a job. The agile project management cycle and Scrum methodology are frequently mentioned in job ads. Although it is not mentioned in ads, it is thought that employers demand experienced teammates for projects.

Critical Skills for Business Analysts

The most frequently requested skills for candidates entering the business analyst profession are presented in Table 3 below. Soft skills, such as problem-solving ability, teamwork predisposition, analytical thinking skills, openness to self-improvement (innovative), and communication skills, were identified as critical skills found across all data sets. Additionally, reporting skills, foreign language proficiency, using MS Office programs, and knowledge of the SQL programming language were the most important hard/technical skills. Adaptability to flexible working hours was the only soft skill mentioned in job postings. Furthermore, job postings highlighted the importance of knowledge in various programs beyond reporting, MS office programs, and SQL, as well as proficiency in the Agile and Scrum methodologies.

Table 3
Critical Skills for Business Analysts

	Critical	Required
Soft Skills	Problem Solving, Teamwork, Analytical Thinking, Innovative Skills, Communication Skills	Flexible Working Adaptability
Hard Skills	Foreign Language, Reporting, SQL, MS Office Programs	QlikSense, QlikView, Python, Jira, Visio, Draw.io, Agile, Scrum
General	Basic First Aid, International Quality Standards Knowledge, Occupational Health and Safety Knowledge, Fire Fighting Knowledge, Labor Law Knowledge,	

Although Scrum was frequently mentioned in job postings, it did not appear in interviews nor the National Occupational Standards (NOS) data. By examining signals related to Agile and Scrum and consulting expert business analysts, it can be concluded that new business analysts are expected to work as part of a team in project design and management processes.

Experts suggest that the Agile and Scrum processes provide insights into employees' initiative, teamwork skills, interpersonal skills, motivation, flexibility, verbal and written communication skills, and stress resilience (M5). Additionally, while job postings do not provide a standardized skill set for the profession, the NOS offers a minimum set of norms for occupations.

Conclusion and Recommendations

This study aimed to evaluate the business analyst profession and prioritize the skills that new graduates and job seekers should focus on when gathering information about their desired careers. To achieve this goal, we utilized interview data from job postings, the NOS as a professional standard, and interviews with expert business analysts, as these sources provide up-to-date information from the industry. Each dataset was manually coded using content analysis. The data were initially compared within themselves and then with each other to identify similarities and differences.

As job postings do not follow a standardized format, it is not always possible for employers to present the complete skill inventory, as they often focus on immediate demands. Therefore, we believed that evaluating employer signals in conjunction with other data sources (interviews and NOS) would yield more comprehensive results.

In the interviews conducted for this study, the participating business analysts described themselves as innovative individuals capable of devising solutions or projects to address specific problems, diligently adhering to business processes, and assuming accountability. They emphasized the importance of understanding the logic of algorithms rather than coding. Interviews and job postings emphasized the need for proficiency in certain data query languages that require algorithm mastery. It is worth noting that while Scrum and Agile are frequently mentioned in job postings, they were not mentioned in the interviews nor by the NOS information.

As stated in the literature, soft skills were consistently highlighted more than hard skills in all data sources (Apine, 2013; Crawford et al., 2011; O'Loughlin, 2009; Richards & Marrone, 2014). Critical soft skills identified included: problem-solving ability, teamwork predisposition, analytical thinking skills, openness to self-improvement, and communication skills. Additionally, foreign language proficiency, reporting skills, proficiency in using MS Office programs, and knowledge of the SQL programming language were identified as critical hard/technical skills. This finding addresses the research questions, emphasizing the predominance of soft skills while highlighting the importance of developing hard/technical skills, such as SQL and MS Office program knowledge, as initial steps. Furthermore, attention should be given to the development of soft skills throughout the educational journey.

The study makes several contributions. Firstly, it uncovers critical skills for the business analyst profession, particularly for recent graduates and early career job seekers. Furthermore, it presents a unique approach by comparing the profile of the analyst profession with job postings, the National Occupational Standards (NOS), and insights from expert business analysts working in the banking sector. This approach adds reliability to the data and offers valuable insights, especially in sectors like banking where agile applications are prevalent, continuously evolving, and rapidly translating customer demands into practice.

The study suggests that course curricula in higher education should place greater emphasis on soft skills to better align with current industry needs. For instance, incorporating more group work and student-led presentations into lessons can enhance students' communication and teamwork skills. Additionally, offering comprehensive courses and certificate programs can help individuals acquire the necessary hard and soft skills for the business analyst role. Lastly, the NOS can serve as a comprehensive and easily understandable reference for employers when posting job requirements. By providing minimum standards for professions, the NOS can guide newcomers to the sector.

Future research can be designed to cover various occupational groups, thereby equipping new graduates and early career professionals with the necessary skills for their chosen professions. Studies that promote the business analyst profession will contribute to its further development. Additionally, future studies can expand their scope by incorporating the ISCO 88 occupational classification system, which is the widely-accepted standard used throughout Europe.

Limitations

The research has some limitations. The job ads are based solely on the advertisements that were obtained by web scraping weekly for ten weeks. Therefore, the acquired skills may not be final. The scope of the skills highlighted can be expanded with the wider job ads pool.

The research is also limited by the geography, only applying to the sample of Türkiye. A comparison of the results with another emerging country may contribute to different interpretations of instrumental signals.

The research targets a single sector and profession. Comparing the results with a similar methodology with different professions will benefit new graduates' career planning and choices. In addition, it can be thought that expanding the education curriculum and job ads, which are discussed with skill gaps or job adaptation, also to include sector employees, will allow for better observation of the transformation in industrial knowledge, skills, and demands.

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