

SCREENING AND SIGNALING IN HRM THROUGH ANALYZING JOB ADVERTISEMENTS¹

SZŰRÉS ÉS JELZÉS AZ EMBERI ERŐFORRÁS GAZDÁLKODÁSBAN,
ÁLLÁSHIRDETÉSEK ELEMZÉSE ALAPJÁN

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ÖSSZEFOGLALÁS

A szervezetek sikerességének egyre inkább kritikus eleme az emberi erőforrás menedzsment. Jelen tanulmány a toborzási folyamatokat vizsgál 100 LinkedIn álláshirdetés tartalomelemzésén keresztül. Ágazatspecifikus különbségek kerülnek azonosítása az oktatás, a nyelvtudás, a tapasztalat és a készségekkel szembeni elvárásokban. Az eredmények megerősítik a toborzás és a szervezeti különbségek közti összhang fontosságát, és rámutatnak az álláshirdetések jelzési és szűrési szerepére.

Kulcsszavak: emberi erőforrás gazdálkodás, jelzés, szűrés, toborzás, álláshirdetés

ABSTRACT

In today's evolving business environment, Human Resource Management (HRM) is vital for organizational success. This paper analyses job advertisements to examine recruitment practices using the signaling and screening theories as a framework. By studying 100 LinkedIn postings, sector-specific differences are identified in education, language, and skill requirements. The findings underscore the strategic importance of aligning recruitment practices with organizational differences, as well as provide evidence on the signaling and screening roles of job advertisements.

Keywords: Human Resource Management, Signaling, Screening, Recruitment, Job advertisement

INTRODUCTION

In today's dynamic and ever-evolving business landscape, Human Resource Management (HRM) has emerged as a pivotal component for organizational success. The ability of modern managers to effectively motivate and collaborate with employees underscores the strategic importance of HRM in fostering a productive workforce. This paper delves into the development of HRM, emphasizing its role in managing people and enhancing organizational effectiveness through ethical interactions. By exploring recruitment processes, the application of signaling and screening theories, and analyzing job advertisements, this study provides a comprehensive examination of HRM practices and their impact on organizational success. The primary aim of this study is to examine the concepts of screening and signaling in HRM through the analysis of job advertisements. The insights garnered from this research contribute to a nuanced understanding of the critical elements that drive effective HRM, offering valuable perspectives for both academic scholars and HR practitioners. This study aims to address the following key questions to guide our analysis:

Q1. What are the primary differences (required education level, language requirements, necessary skills) between the sectors we have chosen?

¹ The study is based on the author's thesis of the same title (2023, University of Debrecen, Faculty of Economics and Business, for the Bachelor of Science in Business Administration and Management program).

Q2. What are the primary differences in experience requirements between internships, part-time jobs, and full-time jobs?

LITERATURE REVIEW

The signaling theory is attributed to Spence (1973) and plays a role in markets characterized by information asymmetry (Akerlof, 1970) by improving market functioning. Signaling is a mechanism that is cheaper for sellers of high-quality products and more expensive for those selling lower-quality items, a fact recognized by buyers. This means that the presence of a signal provides buyers with information about the expected quality of goods that they cannot directly observe: if the good has such a signal, it is more likely to be of high quality. For example, a warranty in the used car market is a signal (buyers are less likely to ask their money back for high-quality cars than for low-quality ones) or, as noted in Spence's cited article, higher educational attainment serves as a signal since learning is "cheaper" or easier for better-capable employees. The educational signaling hypothesis has drawn the interest of economics, sociology, and education, especially in comparison to the role of education in enhancing human capital. The signaling vs. human capital investment debate has spawned numerous testing approaches over the decades (for a summary, see Kun, 2013) to determine whether employers view education as a signal or a tool for human capital enhancement. In the former case, employers are not interested in the skills acquired during education but rather in its ability to differentiate better and weaker applicants, acting as a sort of filter (Stiglitz & Weiss, 1981). It is now accepted that the issue is not mutually exclusive, meaning that employers value education for both roles, depending on the specific markets (Kun, 2009).

This paper belongs to the research examining educational signals, focusing directly on the HRM activities of organizations and analyzing the role of educational signaling. This group includes works such as Chang and Chin's (2018) study on the role of corporate websites in attracting labor, Guest et al.'s (2019) survey on the informational role of HRM among employees, the Albrecht test (Albrecht & Van Ours, 2006; Kun, 2010) examining whether the employer's required educational level decreases if other information about the employee is available (e.g., previous experience), or Vogel et al.'s (2023) research analyzing the signaling role of job advertisements in the public sector. This study aligns with the last mentioned research direction, and it examines recruitment activities through job advertisements, identifying expectations regarding education among other requirements.

A key trait for modern managers is the ability to motivate and collaborate with others. Today, HRM refers to managing people within organizations. HR includes the employees and their contributions through skills, knowledge, and competence (Dransfield, 2000). HRM is essentially about managing people (Armstrong & Taylor, 2014). It is a strategic approach to hiring and developing employees to enhance organizational effectiveness while maintaining ethical interactions (Armstrong & Taylor, 2014). Boxall and Purcell (2022) simplify HRM as encompassing everything related to managing employee relationships.

Recruitment is crucial in HRM as it attracts potential talent to an organization. Aligning recruitment strategies with organizational goals and culture is essential (Jackson et al., 2014). Clear and transparent job advertisements are vital for conveying accurate role expectations and organizational values to candidates (Breaugh & Starke, 2000). Job advertisements play a crucial role in HRM by signaling various organizational features to prospective employees, shaping their perceptions, and influencing business performance. Key elements include signaling compensation packages and qualification criteria. Additionally, they communicate company culture and values, helping attract candidates who align with the organization's goals. By clearly outlining role expectations and development opportunities, job advertisements enhance candidate engagement.

Ultimately, effective job postings contribute to a positive employer brand and support overall business success.

MATERIALS AND METHODS

The dataset for this study was composed of 100 job advertisements obtained from LinkedIn (March – October, 2023), focusing on Austria, Hungary, and England. The platform was chosen for its vast and diverse range of job postings. The data collection was terminated reaching $N = 100$. The dataset was assembled to include a comprehensive coverage of various industries, based on the following criteria: sectors and language skills.

The gathered job advertisements underwent a comprehensive pre-processing phase: relevant information was extracted and organized according to the following key attributes: Education Requirements, Skills Requirements, Language Requirements, Experience Requirements. Skill requirements are presented as skill groups defined by the author. MS Office, SAP, SQL skills are covering what their title says. They are in distinct groups because the postings required them frequently. The group ‘Technical skills’ includes all other IT skills that do not belong to the previous three groups, like programming, data management, and cybersecurity. ‘Management skills’ focus on leadership and decision-making. ‘Soft skills’ are connected to communication and teamwork. Table 1 defines the variables used in the analysis.

Table 1. **Definitions of the variables**

Column	Description
Roles	Job position titles listed in LinkedIn advertisements
Sectors	Distribution of roles across 11 sectors: Accounting, Administration, Consulting, Customer Support, Engineering, Finance, HR, IT, Marketing, and Others
Sectors coded	Numeric codes assigned to each sector
Required Languages 1, 2	Languages required for each role
Required Languages coded	Numeric codes for languages: 1 (English), 2 (Hungarian), 3 (German), etc.
Skills	Essential skills required for each sector
Education Field	Education field required for each role
Education Level	Education levels required (high school, Bachelor’s, Master’s, Degree, etc.)
Education Level coded	Numeric codes for education levels: 1 (High school), 2 (Bachelor), etc.
Experience	Experience required for each role within all sectors

Source: Own definitions

The data analysis phase comprised two main parts, descriptive and comparative analysis. Descriptive statistics and data visualization techniques were used to summarize and represent the dataset. As a next step, comparative analysis was conducted to uncover differences and commonalities in skills, education, language, and experience requirements across the selected sectors. This analysis aimed to identify patterns and sector-specific variations, contributing to a nuanced understanding of screening and signaling within HRM.

The data used in this study were derived exclusively from publicly available advertisements. No private or confidential information was accessed or utilized. The research strictly complied

with LinkedIn's terms and conditions regarding data usage, ensuring the highest standards of ethical conduct.

RESULTS AND DISCUSSION

Each advertisement was categorized by sector, location, and required attributes such as skills, education level, languages, and experience. The analysis addresses the main differences in educational requirements among sectors, using tables and charts.

How does the required education level vary among these sectors?

As shown in Figure 1, a majority of job advertisements in accounting (55.6%) prioritize candidates with a high school diploma, while 44.4% emphasize the need for a bachelor's degree. Interestingly, none of the advertisements in this sector mentions a master's degree, suggesting flexibility in hiring candidates with a range of educational backgrounds. In contrast, the administration sector demonstrates a more varied approach to educational requirements. About 33.3% of job ads require a high school diploma, 25.0% a bachelor's degree, and 41.7% do not specify any educational prerequisites. The absence of master's degree requirements and the prevalence of unspecified educational needs reflect a high degree of flexibility, potentially widening the applicant pool.

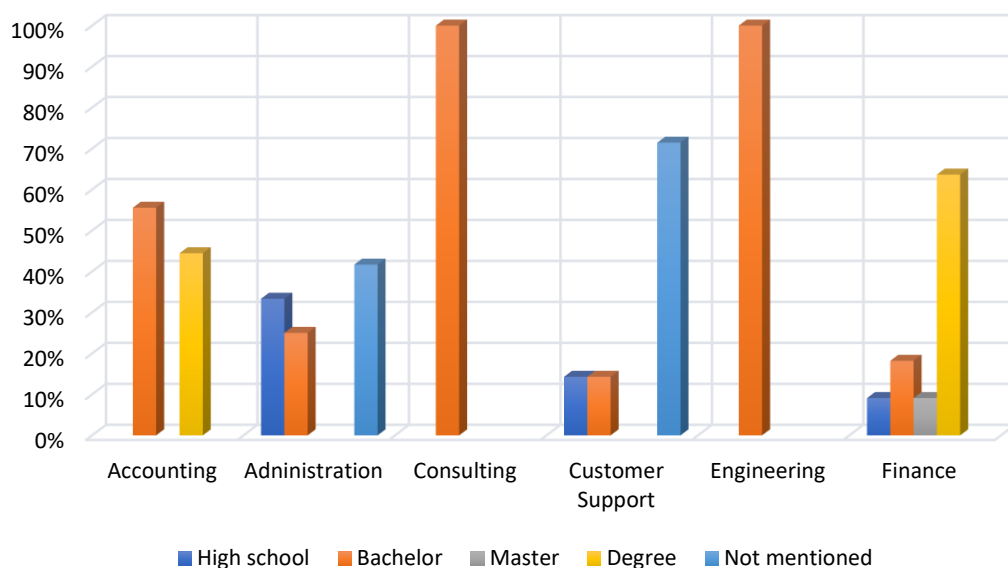


Figure 1. The differences in required education level between selected sectors: Accounting, Administration, Consulting, Customer Support, Engineering and Finance.

Source: Own calculations based on the data collected from job ads

In addition, the consulting sector is distinctive, all job advertisements lack explicit education requirements. This suggests a focus on other qualifications or experiences over formal education, prioritizing practical experience and problem-solving skills. Then, customer support roles present a mixed landscape of educational prerequisites. Approximately 14.3% of job ads require a high school diploma, 14.3% specify a bachelor's degree, and the majority (71.4%) do not mention

educational requirements. Similar to administration, this indicates accessibility for individuals with varying educational backgrounds.

Engineering is like consulting, does not specify educational requirements. This reflects a common trend in technical fields where skills, experience, and certifications are prioritized over formal degrees. Furthermore, there is a broad range of educational requirements in finance sector: the majority (63.6%) do not specify any educational prerequisites, indicating that educational qualifications vary significantly depending on the specific role and company.

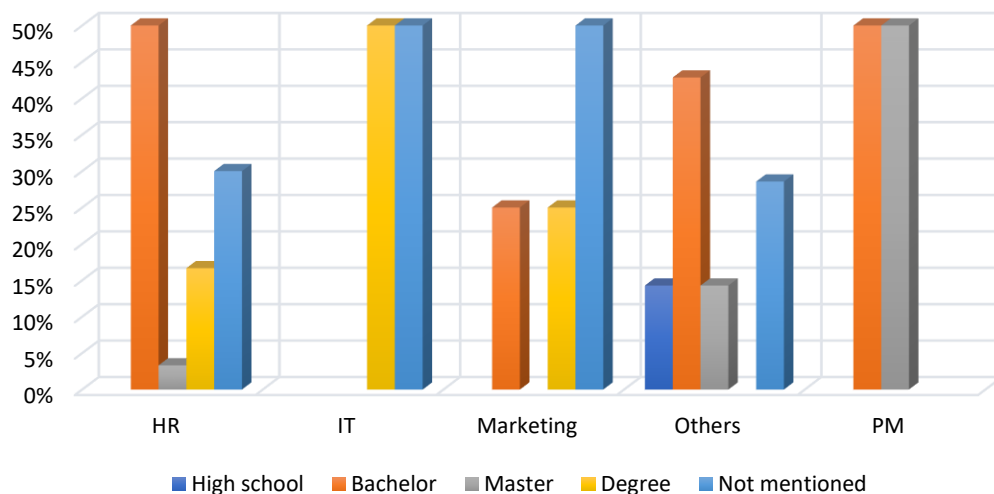


Figure 2. **The differences in required education level between selected sectors: HR, IT, Marketing, PM and other roles**

Source: Own calculations based on the data collected from job ads

As illustrated by figure 2, HR sector presents a blend of educational requirements, reflecting the sector's value for a range of educational backgrounds. For example, 3.3% require a bachelor's degree, and 16.7% call for a master's degree. Notably, 30% of HR positions do not specify educational prerequisites,

Within the IT sector, a balanced distribution of educational requirements is evident: about 50.0% of job ads require a high school diploma, while another 50.0% specify a bachelor's degree, emphasizing the importance of skills and experience. In another balanced distribution in the marketing sector: 25% of ads require a high school diploma, 25% for bachelor's degree, and other 50% for master. This indicates a preference for higher-level qualifications, potentially due to the competitive nature of the field. Furthermore, there is an even split in educational requirements in project management: half of the job ads require a high school diploma, and the other half mandate a bachelor's degree.

Finally, the "Other" category, encompassing diverse roles such as brokerage admin assistant, dual education intern, etc. About 14.3% of job ads specify a high school diploma, 42.9% a bachelor's degree, 14.3% for master's degree, and 28.6% do not mention educational prerequisites.

What are the required languages?

The globalized nature of the job market in the 21st century has given rise to a diverse and multicultural workforce, and as such, employers often seek candidates with specific language skills to meet the needs of their clientele and business operations. The second part of our analysis highlights the language requirements across various sectors.

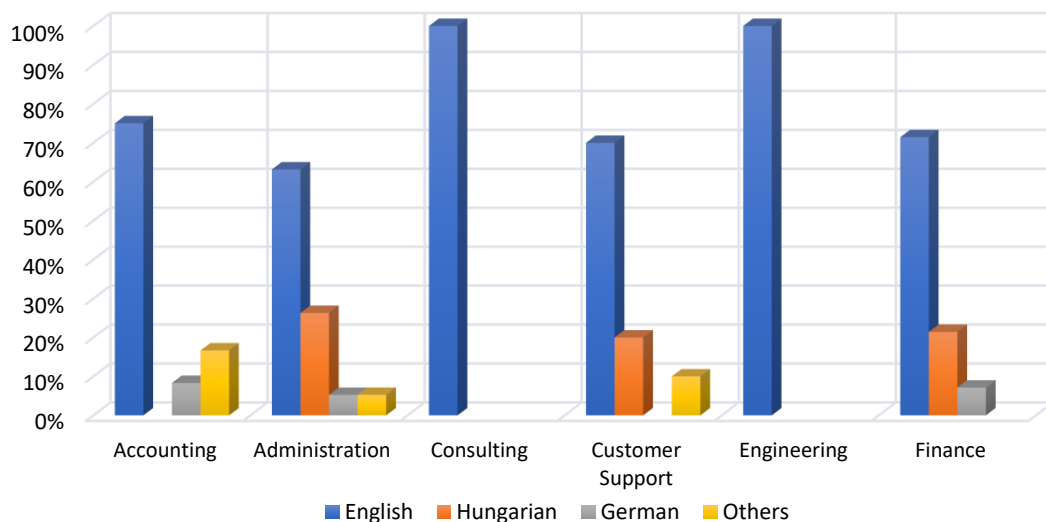


Figure 3. **The differences in language requirements between selected sectors: accounting, administration, consulting, customer support, engineering and finance**

Source: Own calculations based on the data collected from job ads

As illustrated by Figure 3, English is the most commonly required language in accounting, appearing in 75% of job ads. Additionally, 16.7% of the job advertisements specify a requirement for 'Other' languages, which include Italian and French. German is specified in 8.3% of the ads, but it is less prevalent compared to English and the 'Other' languages. Furthermore, English is the most demanded language in the Administration sector, with 63.2% of job advertisements, Hungarian (26.3%), with minor demands for German and Dutch (5.3% each).

Based on Figures 3 and 4, consulting, engineering and IT sectors indicate a strong preference for English, likely due to the sector's international focus, 100.0% of job ads mandate English. In addition, 70% of customer support's job ads require English proficiency, 20% of ads requires Hungarian, highlighting local language demands, while Italian is specified in 10%. This values a mix of languages to serve a diverse clientele like administration sector.

Finance sector prioritizes English proficiency in 71.4% of job advertisements. German is specified in 7.1% of ads, indicating regional operational needs, while Hungarian is required in 21.4% of cases. This diversity in language requirements underscores the varied linguistic needs of financial institutions operating across different countries.

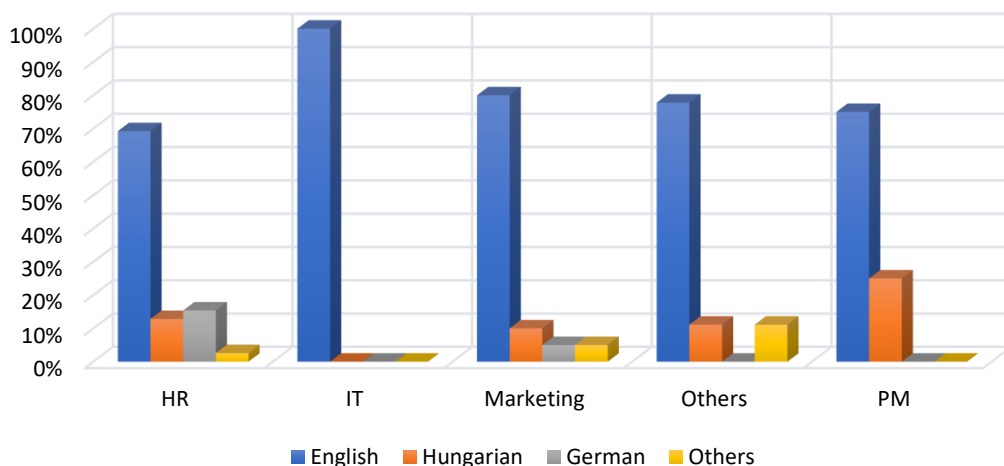


Figure 4. **The differences in language requirements between selected sectors: HR, IT, Marketing, PM, and other roles**

Source: Own calculations based on the data collected from job ads

Based on Figure 4 data, the HR sector emphasizes English proficiency in 69.2% of job ads. Hungarian is required in 12.8% of ads, and German in 15.4%, highlighting the sector's demand for local language skills. 'Other' languages like Mandarin are specified in 2.6% of job ads, indicating diverse linguistic needs.

The Marketing sector predominantly requires English proficiency (80.0% of job ads). Additionally, 5.00% of ads specify the home country language, potentially for international marketing efforts. Hungarian and German are required in 10.0% and 5.0% of cases, respectively, illustrating language diversity within the sector. In the 'Other' category (Figure 4), 77.8% of job ads specify English language skills, reflecting the sector's broad diversity. Hungarian is required in 11.1% of ads, and Arabic in 11.1% of cases. Finally, within Project Management, English is the primary language requirement in 75.0% of job ads, with Hungarian specified in 25.0% of ads to meet local language needs.

To sum up, English is the universal language across most sectors, especially in Consulting, Engineering, and IT. Finance and Marketing often require multiple languages to serve a diverse clientele. Languages like Hungarian and German are crucial in certain sectors, while 'Other' languages are needed for roles with international components.

How do necessary skills differ across these sectors?

In today's job market, the skills employers seek are vital in the hiring process, with different industries valuing specific competencies to match their roles. This analysis reviews the skill requirements across several sectors with an essential focus on essential skills like MS Office, SAP, SQL, soft skills, management skills, technical skills (software and programming languages, IOS).

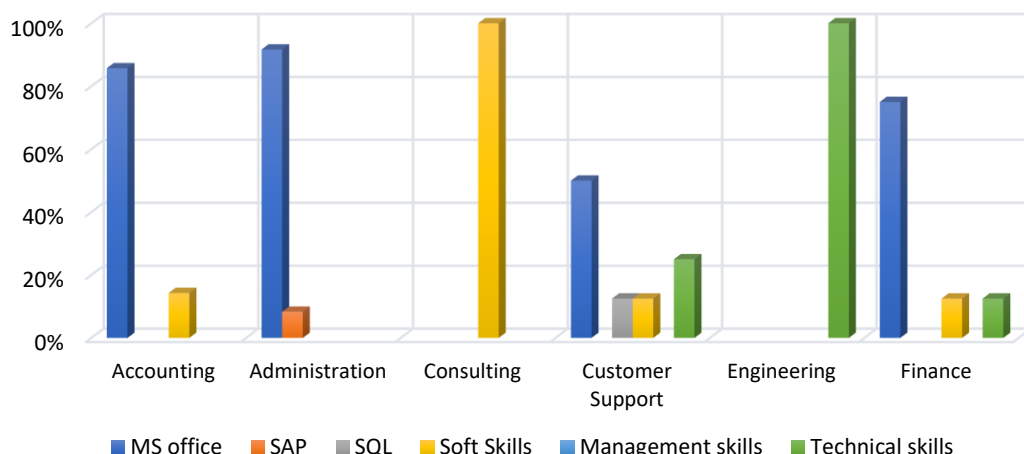


Figure 5. **The necessary skills required between selected sectors: accounting, administration, consulting, customer support, engineering and finance**

Source: Own calculations based on the data collected from job ads

In the Accounting sector, proficiency in MS Office is the most common requirement, appearing in 85.7% of job ads, as shown in Figure 5. Only 14.3% of ads emphasize soft skills like interpersonal, presentation, and communication skills. Notably, SAP and SQL are not mentioned, indicating that accounting roles prioritize software proficiency and communication abilities over database management or specialized software expertise. On the other side, the Administration sector also predominantly demands MS Office proficiency, with 91.7% of job ads highlighting this skill. Additionally, 8.3% of ads require SAP proficiency, underscoring the software-based administrative tasks common in this sector. Soft skills, SQL, and management skills are not explicitly mentioned, suggesting a focus on administrative tool proficiency.

Skill requirements in customer service are diverse. MS Office proficiency is expected in 50% of job ads, indicating a need for office productivity skills. SQL and SAP each appear in 12.5% of ads, highlighting data management and problem-solving needs. Additionally, 12.5% of ads emphasize soft skills like interpersonal, presentation, and communication abilities, underscoring the importance of effective customer interactions. Furthermore, 25% of job ads require technical skills, suggesting the use of specific software or platforms in some roles. Furthermore, the consulting sector uniquely emphasizes SQL proficiency, with 100% of job ads highlighting this skill which indicates the importance of data analysis and database management.

In contrast, the engineering sector, no specific skills are explicitly mentioned. This omission likely reflects the field's focus on specialized technical qualifications and project-specific skills over general competencies. Within the finance sector, proficiency in MS Office is a common requirement, appearing in 75.0% of job ads, due to the reliance on spreadsheet and data analysis tools. SQL proficiency is required in 12.5% of ads, indicating the need for data management skills. Additionally, 12.5% of ads specify soft skills such as interpersonal, presentation, and communication abilities, underscoring their importance in the financial sector. Notably, SAP is not mentioned in finance job ads, as shown in Figure 5.

Based on figure 6 data, 58.3% of HR's job ads require MS Office proficiency. Besides, 29.2% of ads emphasize management skills, including leadership, problem-solving, organizing, planning, and research, reflecting the sector's focus on strategic planning and talent management. Notably,

SAP, SQL, and soft skills are not explicitly mentioned. Moreover, both MS Office and technical skills: such as software and programming languages, are emphasized equally (33.3% each) in the IT sector. SQL proficiency is also required in 33.3% of job ads, underscoring the importance of data management.

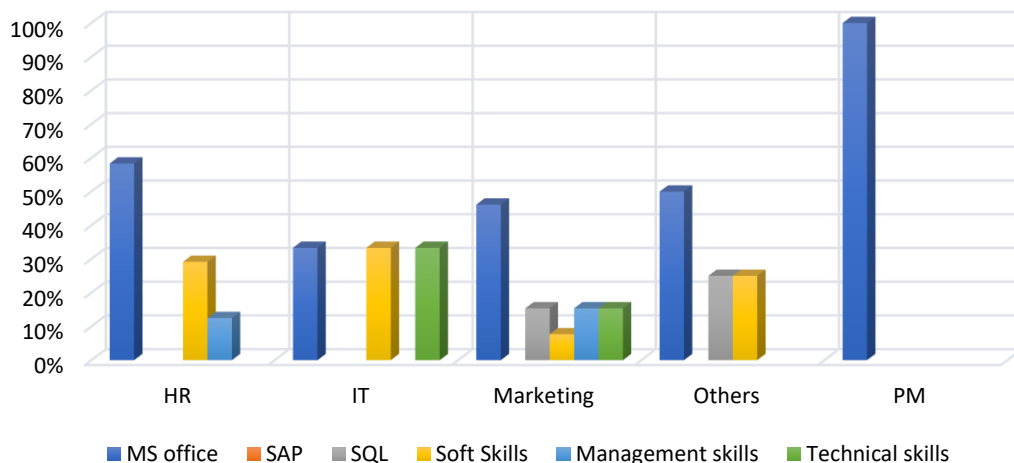


Figure 6. **The necessary skills required between selected sectors: HR, IT, Marketing, PM and other roles**

Source: Own calculations based on the data collected from job advertisements

As well, marketing primarily values MS Office proficiency (46.2% of ads). Also, 15.4% of job ads require SQL proficiency, reflecting the need for data-driven decision-making in marketing strategies. Soft skills, such as interpersonal, presentation, and communication skills, are also important, as indicated by their mention in 15.4% of ads. For roles such as treasury trading broker, travel and expense compliance, MS Office proficiency is the most common requirement (50.0% of ads). SAP and SQL are each required in 25.0% of cases, highlighting the diverse skill needs within this category. Soft skills are also emphasized in 25.0% of ads, indicating the importance of effective interpersonal skills. Finally, MS Office proficiency is universally required in project management sector (100.0% of ads), reflecting the organizational and planning nature of these roles.

In summary, this analysis highlights the varied skill requirements across different sectors. While MS Office proficiency is a common necessity, the emphasis on soft skills, management skills, and technical skills varies according to each sector's specific demands.

Differences in Required Experience for Internships, Part-Time, and Full-Time Jobs

An examination of experience prerequisites reveals distinct criteria for internships, part-time positions, and full-time employment across sectors. In Accounting, internships require basic knowledge of Accounts Receivable, while part-time roles demand a fundamental understanding of accounting principles. Full-time positions, however, necessitate extensive experience, including prior work in energy, financial, or government sectors, with comprehensive expertise in Procure to Pay, Accounts Payable, finance, Payroll processes, and management accounting.

In Administration, internships and part-time positions typically do not require prior professional experience. In contrast, full-time roles demand proficiency in office management

systems, a solid grasp of common administrative functions, and familiarity with legal, financial, or administrative industry practices. This highlights the need for more experienced candidates in full-time administrative roles. Similarly, in the Consulting sector, internships and part-time positions generally do not require prior professional experience. However, full-time roles prioritize candidates with substantial hands-on experience, particularly in SAP FI/CO consultancy, underscoring the emphasis on practical experience for these positions.

The internships and part-time roles in customer support, typically do not require prior professional experience. However, full-time positions demand expertise in Sales Support, Customer Service/Logistics, and user-facing operations, reflecting the need for seasoned professionals. Similarly, Engineering internships generally do not necessitate prior experience, while full-time roles require extensive knowledge of security standards (e.g., NIST CSF, ISO 27001), web application security testing, and network security technologies.

Moreover, finance internships typically do not require prior experience, though part-time roles may need familiarity with multinational organizations and financial reporting. Full-time finance positions demand significant experience in financial planning, budgeting, commercial training, and a strong background in M&A and corporate finance. HR internships require basic knowledge of resume writing and HRIS, while part-time roles vary. Full-time HR positions require expertise in HR administration, core HR operations, and recruiting.

Also, the analysis illustrates that IT and marketing internships generally do not require prior experience. However, part-time and full-time IT roles may need experience in IT or administrative support. Full-time marketing roles demand experience in sales within tech companies, market research, campaign analytics, lead generation, and consulting or media-related business development.

Additionally, internships and part-time of treasury field roles typically do not require prior professional experience, but full-time positions demand specific experience in treasury operations. Project Management internships usually do not require prior experience, but full-time roles necessitate substantial expertise, including knowledge of financial processes, implementation and production support experience, Workday configuration, and proficiency in business process configuration and security.

In conclusion, this sector-specific analysis highlights the varied experience prerequisites across different job types. In some industries, internship requirements closely mirror those of full-time roles, emphasizing early professional development. Conversely, other sectors nurture talent and potential without demanding specific prior experience for internships. This nuanced understanding is crucial for job seekers, educational institutions, and career advisors, helping align educational and professional development initiatives with industry-specific requirements.

CONCLUSIONS AND RECOMMENDATIONS

This study examines HRM through the lens of signaling and screening theories, and the analysis of job advertisements. The findings highlight the diverse educational, language, and skill requirements across various sectors (Q1), reflecting the complexity and specificity of HRM practices in today's global job market. Understanding these differences is crucial for organizations aiming to attract and retain top talent and for job seekers navigating their career paths. The expectations regarding work experience in the examined sectors sharply differ between internship and full-time positions, while the requirements for part-time positions vary across sectors (Q2). By aligning recruitment strategies with organizational goals and leveraging effective signaling and screening methods, businesses can enhance their competitive edge. This research underscores the importance of strategic HRM in achieving organizational effectiveness, offering practical implications for HR professionals and contributing to the broader academic discourse on HRM practices.

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